RiverCOG
Lower Connecticut River Valley Council of Governments

Tighe&Bond

Route 66 Transportation Study
Portland and East Hampton, CT

Final Report

Prepared For:

RiverCOG and the Towns of Portland & East Hampton

December 2020

Appendices

Technical Appendices (Available Upon Request)

Section 1
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 following agencies and organizations:

- Town of Portland staff
- Town of East Hampton staff
- First Selectwoman of Portland
- Town of Portland Economic Development Commission member
- RiverCOG staff
- Middletown Area Transit staff
- Connecticut Department of Transportation staff

In addition to the SAC, a Community Advisory Committee (CAC) also advised the study team. The CAC included representatives from area businesses, including business and land owners along the corridor and other community stakeholder groups.

The study goals and objectives were identified at the onset of the study through meetings and public input. The goals and objectives include the following:

- 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

The study process included five primary work tasks:

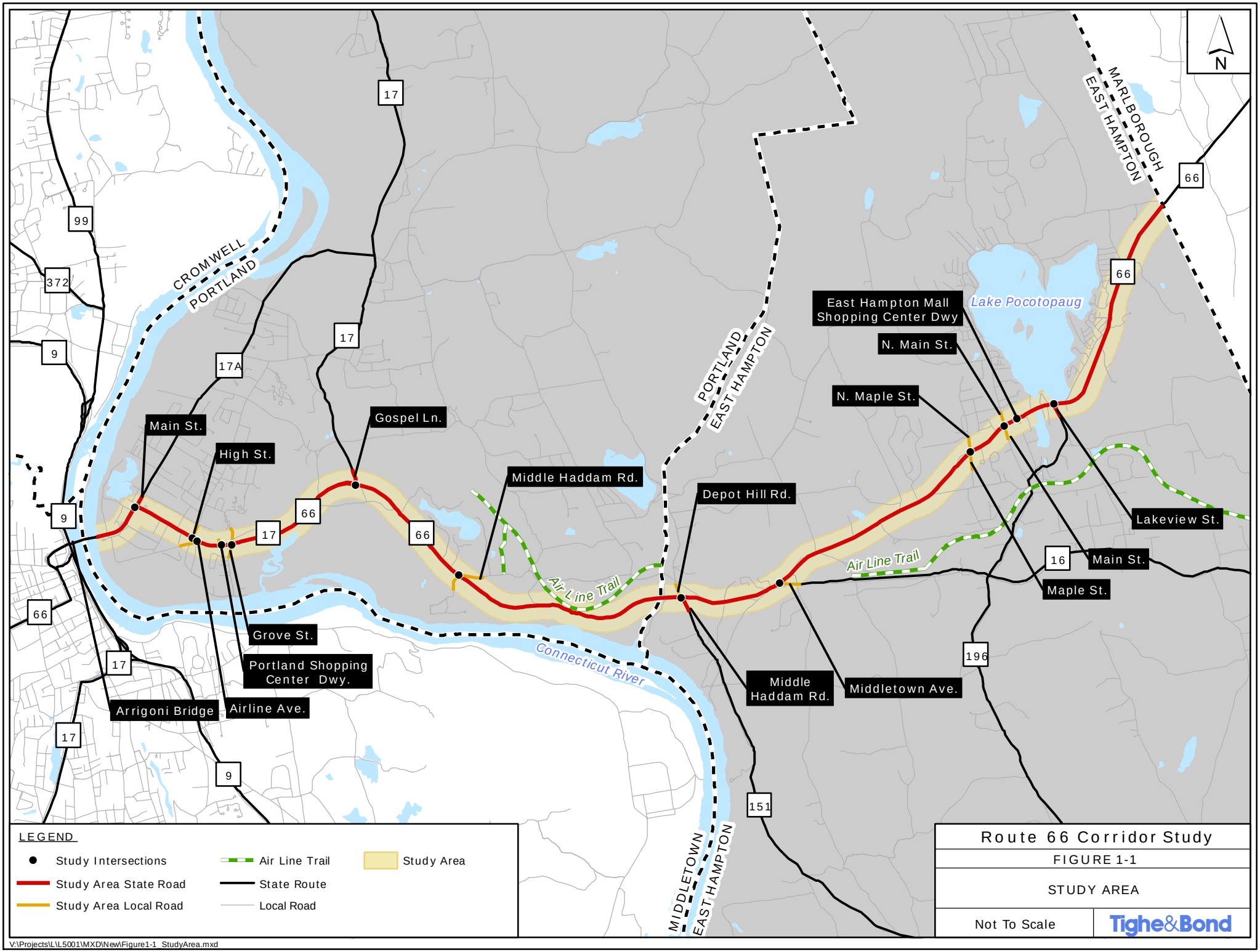
- Task 1 - Data Collection
- Task 2 - Analysis of Existing Conditions
- Task 3 - Analysis of Future Conditions
- Task 4 - Identification and Analysis of Improvement Alternatives
- Task 5 - Final Improvement and Implementation Plan

In addition, a comprehensive Public Outreach program was conducted throughout the study process to engage and obtain input from the public. The program included meetings with the Study Advisory Committee, the Community Advisory Committee, Public Information Meetings during key points in the study process and meetings with the governing bodies for each of the Towns to seek endorsement of the study recommendations. The Public Outreach program is described in more detail in Section 1.4.

1.1 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, described in Section 2.2. 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 is illustrated in Figure 1-1.

The Study also conducted an analysis of existing and future land use. Overall, the study area includes a diverse mix of land uses currently developed and/or zoned for development. Current land uses include residential, retail, commercial, office parks, and light industrial. The assessment of current land use and forecasted development growth trends are provided in subsequent sections of this report and technical memorandum associated with the land use and development tasks are included in the technical appendices of this report.



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1.2 Study Team

The study team includes representatives from the Towns of Portland and East Hampton, RiverCOG, and CTDOT, in addition to the consultant team. The consulting team includes Tighe & Bond, the prime consultant, and subconsultants VHB, Freeman Companies, and RKG Associates, Inc. Tighe & Bond is providing overall project management, traffic and transportation engineering and is leading the public involvement process. VHB assisted with transportation planning and public involvement. Freeman Companies was tasked to developing landscape and streetscape improvement concepts along the corridor. RKG is responsible for the economic development analysis and future land use assessments included with the study.

The Towns of Portland and East Hampton are represented by staff from:

- Board of Selectman
- Economic Development Commission
- Planning & Zoning Department
- Police Department

CTDOT staff from the Bureau of Policy and Planning are actively involved in the study through their participation on the Study Advisory Committee. Additionally, CTDOT staff from various other Units were involved in the review of the findings and recommendations to ensure that the Department's policies and vision for Route 66 is reflected in the final report.

RiverCOG is the Council of Governments for the Towns of Portland and East Hampton and overall project manager for the study. RiverCOG staff were actively participating in the public outreach initiatives in cooperation with the Towns. RiverCOG staff are members on the Study Advisory Committee and Community Advisory Committee. Additionally, RiverCOG is hosting the project website.

In total the study team is comprised of parties at the State, Regional, and Local levels to ensure that the planning activities conducted under this study fit within the overall planning goals at all levels of government.

1.3 Study Process

The study followed a process defined by RiverCOG. The key elements of the study included:

- Conducting technical analyses and observations of the study corridor to assess existing conditions and identify deficiencies and needs
- Forecasting future travel demand, analyzing future traffic conditions, and identifying potential future areas of concern within the 20-year study horizon
- Identifying economic development opportunities along the study corridor and assessing their effect on the transportation system
- Identifying feasible improvement alternatives to mitigate both current safety and operational deficiencies plus the effects of future traffic on the corridor
- Seeking opportunities to enhance the overall transportation system to better accommodate all modes of travel by improving access and mobility for all users
- Conducting a comprehensive public outreach program involving meetings, a survey, and a project website to obtain public input and feedback

This Final Study Report summarizes the comprehensive analysis of existing and future conditions and describes the transportation system improvement recommendations needed to mitigate the forecasted growth in traffic and development locally and in the region. The Study included both an assessment of existing conditions detailing the current study area needs, deficiencies, and opportunities as well as a future conditions analysis conducted to assess the impact of local and regional growth on the Route 66 corridor during the 20-year study horizon. Existing and Future Conditions Technical Memoranda were prepared that provided a detailed summary of the following tasks:

- Assessing the existing transportation system and identifying needs and deficiencies
- Observing traffic volumes, vehicle classifications, and travel speeds within the study area and developing 2020 Corridor Conditions traffic volumes
- Analyzing traffic safety for all travel modes
- Analyzing traffic operations during the periods of peak travel demand on the roadways for the weekday morning and weekday afternoon peak periods
- Reviewing current multi-modal transportation services and facilities
- Screening the natural and environmental resources to identify existing resources that may limit the scope and extent of physical improvements
- Forecasting 2040 Future Conditions traffic volumes that include both regional travel demand growth plus approved local development generated traffic
- Conducting an analysis of traffic conditions under the 2040 Future traffic conditions
- Identifying future areas of concern which formed the basis for the development of physical improvements to mitigate the deficiencies

The assessment of existing and future conditions provided the basis for the development of a series of improvement alternatives for the study area transportation system. The improvements were developed to provide acceptable intersection operations, mitigate the effects of projected traffic growth, address identified safety concerns, enhance bicycle and pedestrian accommodations, improve connectivity of the Air Line Trail system, and increase multi-modal access in the study area. The recommended improvement plans are presented in Section 4 of this report with the complete engineering concept plans presented in Appendix C. Finally, Section 5 of the report presents an implementation plan prioritizing recommended improvements by need and complexity to help guide future decision making.

1.4 Public Involvement and Outreach

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

In order to meet these goals, the following project committees were formed.

1.4.1 Project Committees

The study effort was guided through oversight provided by the Towns of Portland and East Hampton, RiverCOG, and CTDOT. The public outreach initiatives were facilitated through a Study Advisory Committee and Community Advisory Committee. The following section describes the groups.

1.4.1.1 Study Advisory Committee

This committee provided consistent input and oversight throughout the study process. The committee was comprised of:

- Town Representatives: Staff from the Planning and Zoning, Economic Development, Board of Selectmen, and member of the Economic Development Commission
- RiverCOG Representatives: Staff from RiverCOG participated to ensure that the planning activities meet regional goals and objectives
- CTDOT Representatives: CTDOT Staff from the Division of Policy and Planning represented the Department on this project and served as a liaison between the study and other Department Units

SAC meetings were conducted at key milestones of the study process to provide an update on the study progress and obtain guidance on the results, findings, and recommendations of the study.

1.4.1.2 Community Advisory Committee

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 of Portland and East Hampton as well as RiverCOG in order to facilitate a cohesive public outreach process and local representation.

1.4.2 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.

1.4.3 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

These meetings were a key component of acquiring information and feedback on the various work tasks conducted throughout the study. The presentations and summaries of these meetings are provided in Appendix D.

1.4.4 Project Website and Social Media Presence

RiverCOG developed a project website that provides information on the study. The website can be found at the following link:

www.rivercog.org/route66

The website provides study information, meeting information and dates, and access to study publications as they become available.

A Facebook page was developed to provide periodic information related to the study progress, meetings, and publications. Access to the page can be found at the following link:

www.facebook.com/Route66CorridorStudy

1.5 Previous Route 66 Corridor Study (1998)

A *Route 66 Corridor Study* had been previously conducted and published in August 1998 by Midstate Regional Planning Agency to review the segment of Route 66 that traverses Portland and East Hampton. The 1998 study included the *Route 66 Corridor Improvement Plan* to analyze the existing corridor conditions, project 2020 future traffic patterns, identify problem areas, and develop improvement plans to reduce congestion and improve safety through the corridor. Individual *Route 66 Access Management Plans* for Portland and East Hampton had also been developed to supplement the *Route 66 Corridor Improvement Plan*. The reports of the 1998 *Route 66 Corridor Study* are presented in Appendix E.

A number of the proposed improvements identified by the previous *Route 66 Corridor Improvement Plan* had been implemented during the past 20 years, including:

- The installation of a traffic signal at the intersection of Route 66 and Middle Haddam Road/ Payne Boulevard in Portland
- The addition of dedicated left turn lanes on all approaches at the intersection of Route 66 and Main Street/ North Main Street in East Hampton
- Addition of left turn storage lanes on East High Street near Brooks Plaza in East Hampton
- The realignment of Lakeview Street (Route 196) at Route 66 and the installation of a traffic signal at the intersection in East Hampton

The current study built upon the previously conducted *Route 66 Corridor Improvement Plan*. The current planning effort utilized current data to assess the existing conditions of traffic volumes, safety concerns, and intersection operations. The study also assessed the current and future land use demands on the road network and recommend strategies to improve safety and encourage multi-model travel modes based on the present roadway conditions.

Section 2
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.

2.1 Roadway Network

The primary roadways in the study area were reviewed in the field to observe the condition of the roadway network and identify deficiencies. Study roadways are classified as either Urban Principal (Major) Arterials, Urban Minor Arterials, Urban Collectors or Urban Local Roadways by the Connecticut Department of Transportation (CTDOT). Roadway functional classification were also reviewed based on the Towns' Plan of Conservation and Development (POCD). Both CTDOT and Town POCD functional classification maps are included in Appendix F. Based on the classifications of the study area roadways, a review of roadway characteristics was conducted to determine if deficiencies exist. The following sections summarize the results of the observations for each of the roadways.

2.1.1 State Route 66 (Main Street/ Marlborough Street/ Portland-Cobalt Road/ West High Street/ East High Street)

Connecticut State Route 66 is classified as an Urban Principal Arterial by CTDOT. It is classified as an Arterial Road by the Towns of Portland and East Hampton. The roadway runs west to east through Portland and East Hampton. Route 66 begins in Meriden at the Interstate 691 Junction and terminates at the U.S. Route 6 Junction in Windham.

Route 66 in Portland looking East near Adams Supermarket Plaza

Route 66 is a major east-west transportation corridor, serving as the primary access route to residences and commercial areas across the region. There are numerous commercial properties and a number of residences that front Route 66 in the study area.

Route 66 in East Hampton looking West near American Distilling, Inc.

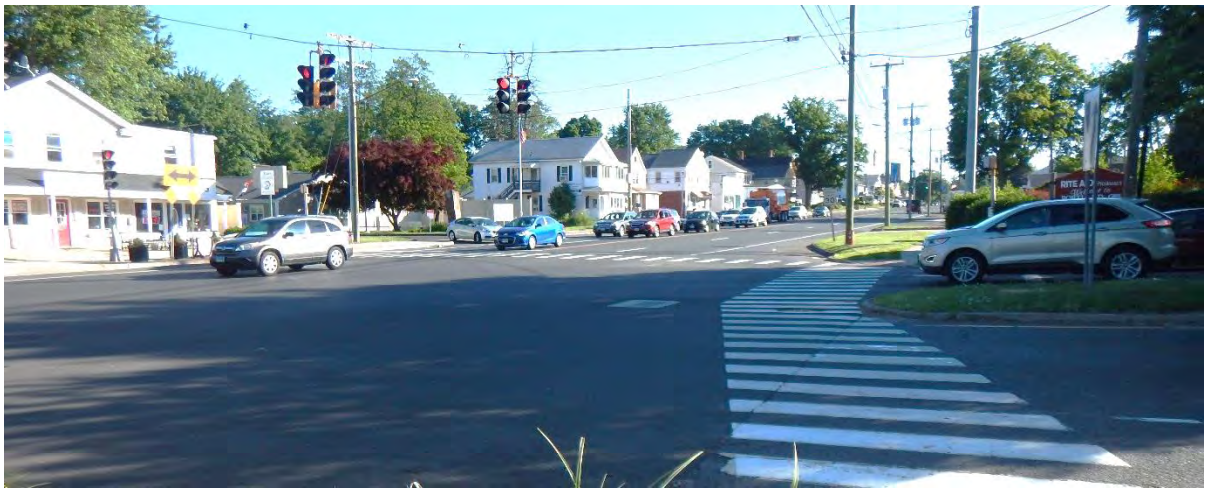
The section of Route 66 in the study area is approximately 11 miles long. Approximately 5.4 miles in Portland, and 5.6 miles in East Hampton. From the Portland town center to the Route 17 junction (approximately 2 miles) the roadway consists of four travel lanes, two in each direction, with a raised median and dedicated left turn lane at major intersections. For the remainder of the corridor, the cross section becomes two lanes, one lane in each direction, and widens to provide exclusive left or right turn lanes at key intersections. Within the study area, Route 66 contains thirteen signalized intersections, which are further described in Section 2.2. Existing centerline rumble strips are present from Payne Boulevard to the Portland-East Hampton Town Line and then again from the west junction of Old Marlborough Road, extending east beyond the study area limit of the East Hampton-Marlborough Town Line and ending 2,000 feet southwest of South Main Street in Marlborough.

Intersection of Main Street (Route 17A) and Marlborough St (Route 66) in Portland

The posted speed limit on Route 66 varies across the study area. The posted speed limit on Route 66 from the east end of the Arrigoni Bridge to Grove Street is 35 miles per hour, increasing to 45 miles per hour from Grove Street to the Portland-East Hampton Town Line. The posted speed limit decreases to 35 miles per hour east of the Portland-East Hampton Town Line to Keighley Pond Road and increases to 45 miles per hour east of Keighley Pond Road. At Maple Street, the posted speed limit drops to 30 miles per hour, before increasing to 45 miles per hour approximately 0.4 miles east of Old Marlborough Road.

2.1.2 State Route 17A (Main Street)

Route 17A intersects Route 66 at the signalized intersection with Marlborough Street. Connecticut State Route 17A is classified as an Urban Minor Arterial by CTDOT and an Arterial Road by the town of Portland. Route 17A runs north from Route 66 through Portland, terminating at State Route 17. In the study area the roadway is approximately 62 feet wide with two 11-foot travel lanes in both directions, in addition to a 6-foot and 11-foot shoulder in the northbound and southbound direction, respectively. The southbound approach has a shared through-left lane and a through lane. Route 17A abuts a number of residences and businesses in the study area and provides a regional connection to Route 17. The posted speed limit on Route 17A is 30 miles per hour in the study area.



Intersection of Main Street (Route 17A) and Marlborough St (Route 66) in Portland

2.1.3 High Street

High Street is classified as an Urban Major Collector by CTDOT. The roadway is classified as a Collector Road by the Town of Portland. It runs north from Route 66 (Marlborough Street) to Bartlett Street. The roadway is approximately 40 feet wide with two travel lanes and shoulders. High Street intersects Route 66 at a signalized intersection. High Street provides access to commercial properties near Route 66 and residential areas traveling further north. Valley View School and Portland High School are also located on High Street. The posted speed limit is 30 miles per hour from Route 66 to William Street and 25 miles per hour from William Street to Bartlett Street.

2.1.4 Airline Avenue

Airline Avenue is classified as an Urban Local Road by both CTDOT and the Town of Portland. It runs west from Route 66 to Lower Main Street. Airline Avenue intersects Route 66 at a signalized intersection with a skewed angle approach. A 'Stop Here' sign is present at the stop bar, alerting motorists to come to a complete stop at the stop bar before inching up slowly to make a right turn on red onto Route 66. The roadway width varies from approximately 19 to 21 feet, providing a single travel lane in each direction and no shoulders. Airline Avenue provides access to residences, industrial properties, Brownstone Park, and a marina. The posted speed limit is 25 miles per hour.

2.1.5 Portland Shopping Center Driveway

The Portland Shopping Center Driveway intersects Route 66 at a signalized T-intersection. The driveway provides an exclusive left turn and right turn lane exiting the plaza and a single entering lane. The entrance and exit are separated by a narrow, raised island. A secondary unsignalized right-only exit is provided approximately 180 feet west of the signalized driveway. There is no traffic control device at this exit. The driveway serves an approximately 54,000 square foot shopping plaza comprised of a grocery store, gym, and various retail locations.

Portland Shopping Center Driveway, looking South towards Route 66

2.1.6 Grove Street/Grandview Terrace

Grove Street and Grandview Terrace intersect Route 66 at a signalized intersection. Grove Street is classified as an Urban Local Road by both CTDOT and the town of Portland. It runs south from Route 66 to Riverview Street. The roadway width is approximately 25 feet with no shoulders. Grove Street provides access to residences as well as a marina at the south end of the road. The posted speed limit is 25 miles per hour.

Grandview Terrace is classified as an Urban Local Road by both CTDOT and the Town of Portland. Grandview Terrace runs parallel to Route 66 and intersect Route 66 approximately 0.4 miles to the east. The roadway is approximately 25 feet wide, providing a single travel lane in each direction with no shoulders. Grandview Terrace provides access to residences, including the Grandview Farms development. The private development has no outlet. The posted speed limit is 25 miles per hour.

2.1.7 State Route 17 (Gospel Lane)

Gospel Lane, designated as Connecticut State Route 17, is classified as an Urban Principal Arterial by CTDOT. It is classified as an Arterial Road by the Town of Portland. Route 17 intersects Route 66 at a signalized intersection. It runs north from Route 66 through the Town of Portland, becoming an expressway in the Town of Glastonbury, and terminates at Connecticut State Route 2 outside of the study area providing a north-south commuter route towards Hartford. The roadway is approximately 28 feet wide, with a 12-foot travel lane in each direction and narrow shoulders in the study area. At the intersection with Route 66, Route 17 widens to provide left and right turn lanes turning onto Route 66. Route 17 is a major north-south route, providing access to mostly residential neighborhoods except for a few commercial developments. The posted speed limit is 35 miles per hour.

Route 17 (Gospel Lane) in Portland looking South towards Route 66

2.1.8 Middle Haddam Road (W Junction) / Payne Boulevard

Middle Haddam Road (W Junction) and Payne Boulevard intersect Route 66 at a signalized intersection. Middle Haddam Road is classified as an Urban Collector Road by both CTDOT and the Town of Portland. It runs east from Route 66 in Portland, continuing into East Hampton before turning into Old Middletown Road at Penfield Hill Road. The roadway is approximately 24 feet wide at Route 66 before narrowing to 20 feet, providing a single travel lane in each direction with no shoulders. The posted speed limit is 25 miles per hour.

Payne Boulevard is classified as an Urban Local Road by both CTDOT and the Town of Portland. It runs south of Route 66 and has no outlet. The roadway is approximately 30 feet wide, with a single travel lane in each direction with narrow shoulders. It serves a residential neighborhood and a farm. The posted speed limit is 25 miles per hour.

2.1.9 State Route 151 (Middle Haddam Road) / Depot Hill Road

Route 151 and Depot Hill Road intersect Route 66 at a signalized intersection. Middle Haddam Road, designated as Connecticut State Route 151, is classified as an Urban Collector by both CTDOT and the Town of East Hampton. The roadway runs south from Route 66 through East Hampton and Haddam before terminating at Route 196 in Haddam. The roadway is approximately 25 feet wide, with a single travel lane in each direction and no shoulders. At Route 66, the roadway splits to provide a shared through-left lane that is signal-controlled and a channelized right turn lane that is controlled by a stop sign. These two lanes are separated by a raised island. Middle Haddam Road provides access to a mix of residential and commercial properties. The roadway is a scenic road. The posted speed limit is 35 miles per hour within the study area.

Route 151 (Middle Haddam Road) in Cobalt looking North towards Route 66

Depot Hill Road is classified as an Urban Collector from south of Old Middletown Road, and an Urban Local Road north of Old Middletown Road. It is classified as a Collector Road by the Town of East Hampton. Depot Hill Road runs north through East Hampton and Portland before terminating at Gadpouch Road. The roadway is approximately 25 feet wide, with a single travel lane in each direction and no shoulder. Depot Hill Road provides access to an exclusively residential area. The posted speed limit on Depot Hill Road is 25 miles per hour.

2.1.10 State Route 16 (Middletown Avenue)/Park and Ride Driveway

Route 16 and the Park and Ride Driveway intersect at Route 66 at a signalized intersection. Middletown Avenue, designated as Connecticut State Route 16, is classified as an Urban Minor Arterial by CTDOT and an Arterial Road by the Town of East Hampton. Route 16 runs from Route 66 to the east through East Hampton and Colchester before terminating at State Route 85 in Colchester. The roadway is approximately 24 feet wide, with a single travel lane in each direction. At the intersection of Route 66, Route 16 widens to provide a dedicated right turn lane and shared through-left lane. Route 16 provides access to a mix of commercial and residential developments in addition to serving as a commuter route to Colchester and points south and east via Route 2. The posted speed limit is 50 miles per hour in the study area.

Route 16 (Middletown Avenue) in East Hampton looking North towards Route 66

The Park and Ride Driveway provides access to a commuter parking lot a state highway maintenance facility. The driveway is approximate 28-feet wide and provides a single entrance lane and single exit lane to the Park and Ride.

2.1.11 Maple Street/North Maple Street/Old West High Street

Maple Street, North Maple Street, and Old West High Street intersect Route 66 at a signalized intersection. Maple Street is classified as an Urban Local Road by both CTDOT and the Town of East Hampton. The roadway runs south from Route 66 before terminating at Barton Hill Road. Maple Street is approximately 20 feet wide, with a single travel lane in each direction and no shoulders. Maple Street provides access to residential neighborhoods. The posted speed limit on Maple Street is 25 miles per hour.

North Maple Street is classified as an Urban Local Road by both CTDOT and the Town of East Hampton. The roadway runs north from Route 66 for approximately 0.60 miles before ending at a dead end. North Maple Street is approximately 30 feet wide, with a single travel lane in each direction and narrow shoulders. North Maple Street provides access to residential neighborhoods and East Hampton High School. The posted speed limit on North Maple Street is 25 miles per hour.

Old West High Street is classified as an Urban Local Road by both CTDOT and the Town of East Hampton. The roadway runs parallel to Route 66 and the west junction at Route 66 is approximately 0.15 miles away. Old West High Street is approximately 17 feet wide, with a single travel lane in each direction and no shoulders. The roadway provides access to residences and a restaurant. The posted speed limit is 25 miles per hour.

2.1.12 Main Street/North Main Street

Main Street and North Main Street intersect at Route 66 at a signalized intersection. Main Street is classified as an Urban Minor Arterial by CTDOT and a Collector Road by the Town of East Hampton. Main Street runs south from Route 66 through East Hampton, turning into South Main Street at State Route 16. The roadway is approximately 28 feet wide, with a single travel lane in each direction and narrow shoulders. At the intersection of Route 66, the roadway widens to provide a dedicated left turn lane and shared through-right lane. The Air Line Trail intersects Main Street just south of Barton Hill Road with a trail parking lot located on the east side of Main Street. Main Street provides access to a variety of residential and commercial uses, including restaurants and retail in the Town center. The posted speed limit on Main Street is 30 miles per hour.

North Main Street is classified as an Urban Minor Arterial by CTDOT and a Collector Road by the Town of East Hampton. The roadway runs north from Route 66 to Clark Hill Road, where it turns into Lake Drive. North Main Street is approximately 24 feet wide, with a single travel lane in each direction and narrow shoulders. At the intersection of Route 66, the roadway widens to provide a dedicated left turn lane and shared through-right lane. The roadway provides access to a mix of residential and commercial properties as well as access to Lake Pocotopaug. The posted speed limit on North Main Street is 25 miles per hour.

Intersection of Route 66 and Main Street/ North Main Street in East Hampton

2.1.13 East Hampton Shopping Center Driveway/ Eversource Driveway

The East Hampton Shopping Center Driveway and Eversource Driveway intersect Route 66 at a signalized intersection. The East Hampton Shopping Center Driveway provides two lanes entering the plaza and two lanes exiting the plaza, separated by a raised island. The East Hampton Shopping Center consists of an approximately 75,000 square foot shopping plaza anchored by Stop and Shop, as well as a standalone 3,500 square foot Bank of America. The Eversource Driveway provides a single entrance lane and a single exit lane providing access to the Eversource Area Work Center.

Looking North towards the East Hampton Shopping Center Driveway

The Eversource Driveway provides a single entrance lane and a single exit lane providing access to the Eversource Area Work Center.

2.1.14 State Route 196 (Lakeview Street)

Route 196 (Lakeview Street) intersects Route 66 at a signalized intersection. Route 196 is classified as an Urban Collector by both CTDOT and the Town of East Hampton. Route 196 runs southwest from Route 66 through East Hampton, Haddam, and East Haddam before terminating at State Route 151 in East Haddam. The roadway is approximately 28 feet wide, with a single travel lane in each direction and narrow shoulders. At the intersection of Route 66, the roadway widens to provide a dedicated left and dedicated right turn lane. A raised landscaped median island separates the northbound and southbound approaches on Route 196. The posted speed limit is 25 miles per hour in the study area.

Route 196 (Lakeview Street) in East Hampton looking North towards Route 66

2.2 Intersection Traffic Control

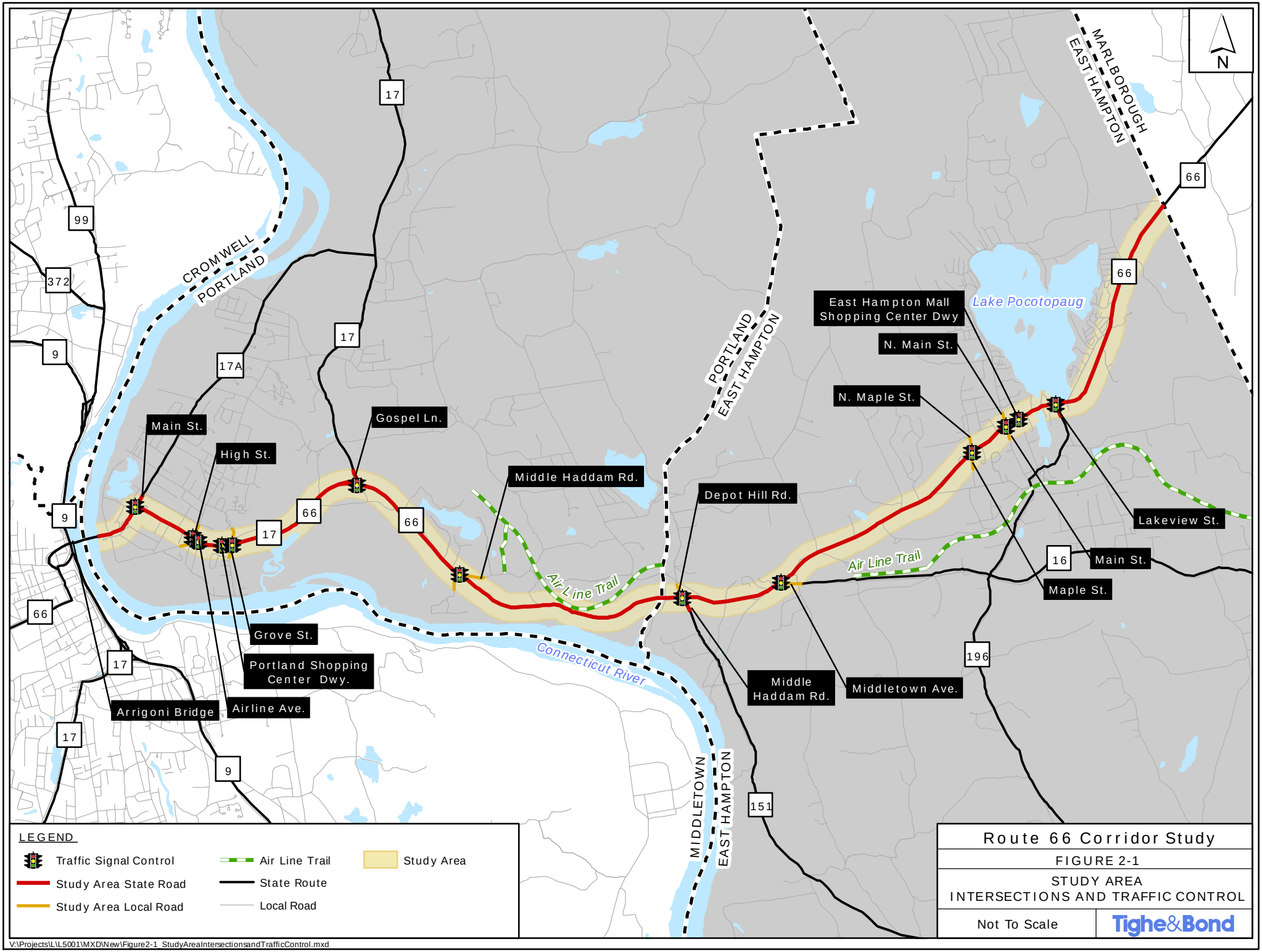
Within the study area, Route 66 intersection traffic control is generally signalized at major intersecting roadways and major driveways. Minor roadways and smaller commercial driveways are typically unsignalized with stop control on the side-street approaches. The study area features 13 signalized intersections which are illustrated in Figure 2-1 on the following page and in Table 2-1 in Appendix B.

Seven of the traffic control signals in the study area operate in one of the three time-based coordination systems owned and operated by CTDOT. Each system functions to provide coordination between several intersections to promote efficient traffic operations. One system includes the intersection of Route 66 and Main Street in Portland, which coordinates with the signals on Main Street to the north. Another coordination system includes the Route 66 intersections with High Street, Airline Avenue, Portland Shopping Center Driveway, and Grove Street in Portland. The High Street and Airline Avenue signals operate with one traffic signal controller in a cluster intersection configuration. The cluster intersection operation allows for coordination of side street and main line movements for closely spaced intersections that would not allow efficient progression under separate, coordinated operation. The third system controls the intersections of Route 66 with Main Street and East Hampton Shopping Center Driveway in East Hampton.

The Route 66 intersections with Gospel Lane and Middle Haddam Road in Portland operate with uncoordinated traffic signals. Additionally, the route 66 intersections with Route 151, Route 16, Maple Street, and Lakeview Street in East Hampton also operate with uncoordinated traffic signals.

Traffic signal control settings including coordination system signal settings related to cycle lengths, time of day signal patterns, and traffic control signal phasing information was obtained from CTDOT. These settings were utilized in the traffic model to analyze 2020 Corridor Conditions traffic control signal operations. The results of the analysis are summarized in Section 2.6 – 2020 Corridor Conditions Traffic Operations. Copies of the traffic signal plans for each of the 13 signalized intersections are provided in Appendix G.

Currently, 6 intersections in the study area provide pedestrian push button actuated exclusive pedestrian phase, as listed in Table 2-1. The remaining 7 signalized intersections are equipped with pedestrian push buttons to actuate the minor street (side street) pedestrian clearance time to allow pedestrians to cross Route 66 concurrently with vehicular traffic. Opportunities to improve access and accommodations for pedestrians will be identified as part of this study. Further detail on the existing pedestrian accommodations within the study area is provided in Section 2.9 – Alternative Travel Modes.



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2.3 Traffic Signs

Traffic signs along Route 66 were reviewed to record the traffic control signage and assess the condition of the signs within the study limit. Existing signage in the study area includes the following:

- Regulatory Signs: lane-use control signs, stop signs, signs for no parking, traffic signal signs, do not enter signs, no passing signs, keep right signs, and speed limit signs
- Warning Signs: signal ahead signs, curve signs and chevrons, arrows and intersection warning signs, deer crossing warning signs, merge sign, and pedestrian crossing signs
- Guide & Informational Signs: town line signs, state property & facility signs, commuter parking and park & ride signs, route markers, and a series of wayfinding signs for park, trail, and attractive destinations

Most of the signage was observed to be effective at indicating the purpose, compliant with Manual of Uniform Traffic Control Devices (MUTCD) and CTDOT Catalog of Signs standards, and in satisfactory retroreflectivity conditions.

However, there are locations along the study corridor where signs can be installed or improved to enhance roadway safety:

- The current lane merge warning sign at the eastbound four-lane to two-lane transition area east of Gospel Street in Portland is not installed at an appropriate location that meets the design guidelines included in the MUTCD. Additionally, the lane-reduction transition pavement markings are not provided to guide traffic through the transition area.
- School zone signs and speed limit signs for school zone do not exist in vicinity of Childs Road, where East Hampton Middle School is located along the corridor
- Speed enforcement signs including change of speed limit signs and radar speed signs do not exist and are considered necessary to help regulate travel speeds on the corridor.

Merge sign on Route 66 in East Hampton, looking East

School Crossing sign on Route 66 near East Hampton Middle School

- Due to the fact that Route 66 is a State Route, signage along this roadway, as well as on Routes 17, 16 and 151, are owned and maintained by CTDOT. Signage on the local roadways is owned and maintained by the towns in which they are located.

2.4 Traffic Volumes

2.4.1 Historic and Current Daily Traffic Volumes

Available historical traffic volume data was obtained from CTDOT. In addition, a traffic counting program was conducted to supplement the available data. Data sources included:

- CTDOT triennial 24-hour continuous automatic traffic recorder (ATR) data between 2003 and 2015. The most recent count year for the Towns was 2015.
- ATR counts at 14 locations along Route 66 in April and May 2018 as part of the study data collection effort. The raw ATR data is included in Appendix H.

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. The ADT information is summarized in Figures 2-2 through 2-4 and can be found in Appendix A. Figures 2-2 and 2-3 show the change in average daily traffic at multiple count locations in the study area. Figure 2-4 illustrates the 2018 Weekday Average Daily Traffic Volumes at count locations throughout the study area.

Table 2-2 and Table 2-3 in Appendix B summarizes the weekday and Saturday ADT data, respectively, at select study area locations. Peak hour traffic with directional distributions and the peak hour "K" factor for the morning and afternoon peak periods are also presented on the tables. The "K" factor is calculated by determining the percentage of the total ADT that occurs during the peak hour period and is used to indicate the relative intensity of the peak hour volume with respect to the balance of the average daily traffic.

A review of Table 2-2 indicates weekday ADT volumes of almost 33,000 just east of the Arrigoni Bridge on Main Street. The volume drops to under 25,000 east of Route 17A in the study area. The volumes decrease by just over 5,000 vehicles per day to the east of the Route 16 (Middletown Avenue) intersection. The volumes then steadily increase beyond the intersection of Route 66 and Maple Street, reaching a peak of just over 15,000 vehicles per day at the intersection to the west of Route 196 (Lakeview Street) before decreasing to approximately 13,400 vehicles per day at the Marlborough Town Line. The "K" factors of 7-10% suggest that commuter traffic volume is consistent with regional travel routes. The directional distribution along the Route 66 corridor is 0-15% higher westbound in the morning and eastbound in the afternoon.

A review of Table 2-3 indicates a similar trend in Saturday ADT volumes, as compared to the weekday ADT volumes. Traffic volumes east of the Arrigoni Bridge are just over 28,500 vehicles per day. West of Route 17A, the volume drops to about 22,000. East of Route 16 (Middletown Avenue), the volumes bottom out at just over 9,500 vehicles per day. Beyond Route 16, the volumes fluctuate between 10,000 to 13,000, reaching a peak of 13,000 vehicles per day west of Route 196 (Lakeview Street).

Historic peak-hour directional trends in the study area were also reviewed to examine if there have been directional shifts in commuter traffic utilizing Route 66. There have not been any major shifts traveling west towards the State Route 9/ Interstate 91 (I-91) corridor or traveling east from I-91. A majority of vehicles travel towards Route 9/ I-91 during the morning commute, and from Route 9/ I-91 during the afternoon commute.

Figure 2-5 in Appendix A shows the peak-hour directional traffic volumes between 1991 and 2009 have remained relatively constant.

2.4.2 2018 Existing Conditions Peak Hour Traffic Volumes

Traffic volumes during the weekday morning and afternoon commuter peak hours are higher than other periods throughout the day. Weekday morning (7:00 to 9:00 AM) and weekday afternoon (4:00 to 6:00 PM) peak period intersection turning movement counts were collected at the 13 study intersections on Thursday, April 26, 2018. The intersection turning movement data was analyzed and balanced between closely spaced intersections. The raw turning movement counts are included in Appendix H.

2.4.3 2020 Corridor Conditions Peak Hour Traffic Volumes

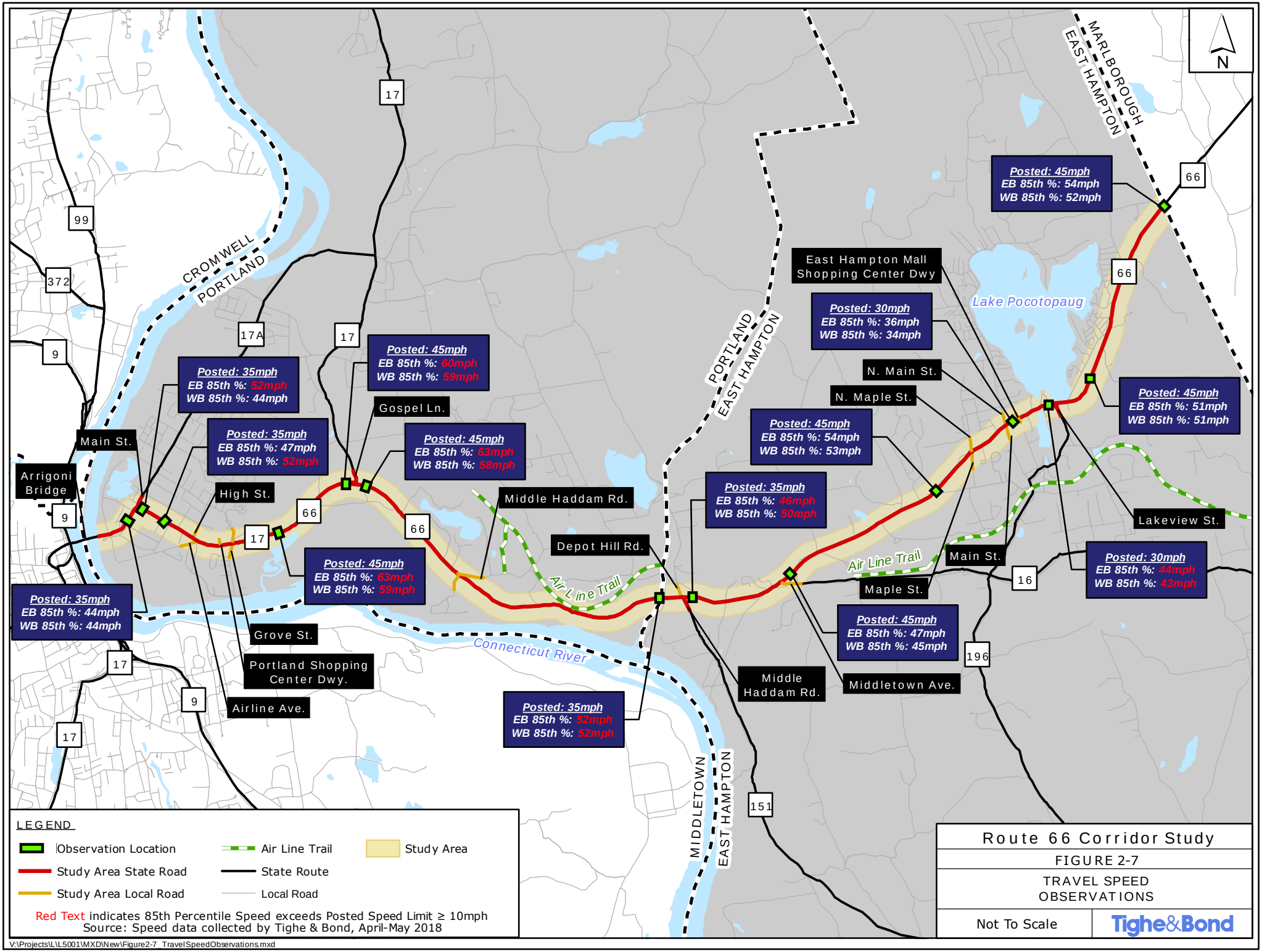
To establish the 2020 Corridor Peak Hour Traffic Volumes, CTDOT Bureau of Policy and Planning, Portland Economic Development Commission, and East Hampton Planning and Zoning Department were consulted. CTDOT advised that an ambient growth rate of 0.7 percent per year and 1.2 percent per year should be used to estimate the increase in traffic between 2018 and 2020 for the segment within Portland and East Hampton, respectively.

Portland Economic Development Commission staff indicates that the only approved major development in the town of Portland, Brainerd Place, will mostly likely not be occupied by 2020. Meanwhile, based on discussions with the East Hampton Planning and Zoning Department, portions of a few major developments including Edgewater Hills, Skyline Estates, and Dollar General within the town will be occupied by 2020. The site-generated trips for these portions of the developments were estimated and included to develop 2020 Corridor peak hour traffic volumes. The resulting traffic volumes are shown in Figure 2-6 in Appendix A for the 2020 Corridor traffic volumes for the two peak hours, respectively.

2.5 Travel Speed

Travel speed data was collected along Route 66 in the study area using Automatic Traffic Recorders (ATRs). The data was recorded during April and May 2018. Figure 2-7 on the following page and Table 2-4 in Appendix B summarize the results of the speed observations within the study area with average speeds or 85th percentile speeds that exceed the posted speed limit by 10 miles per hour or more highlighted in red. The 85th percentile speed, also known as the operating speed, is the speed at which 85% of all traffic is travelling at or below. Raw speed data is included in Appendix H.

Along Route 66, average travel speeds were higher than the posted speed limit at several observation locations. Travel speeds increase traveling east on Route 66. The divided nature of the roadway, long spacing between traffic signals, and several steep downgrades encourages high travel speeds along much of 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 85th percentile speed is over 10 miles per hour of the posted speed at 8 out of the 14 observation locations.


N
CROMWELL
PORTLAND
PORTLAND
EAST HAMPTON
MARLBOROUGH
EAST HAMPTON
MIDDLETOWN
EAST HAMPTON
Lake Pocotopaug
Connecticut River
Air Line Trail
Air Line Trail
Main St.
Arrigoni Bridge
High St.
Gospel Ln.
Middle Haddam Rd.
Depot Hill Rd.
Grove St.
Portland Shopping Center Dwy.
Airline Ave.
East Hampton Mall Shopping Center Dwy
N. Main St.
N. Maple St.
Main St.
Maple St.
Middle Haddam Rd.
Middletown Ave.
Lakeview St.
Posted: 35mph
EB 85th %: 44mph
WB 85th %: 44mph
Posted: 35mph
EB 85th %: 52mph
WB 85th %: 44mph
Posted: 35mph
EB 85th %: 47mph
WB 85th %: 52mph
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EB 85th %: 60mph
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WB 85th %: 51mph
Posted: 30mph
EB 85th %: 44mph
WB 85th %: 43mph
99
372
9
17A
17
66
16
196
151
LEGEND
Observation Location
Air Line Trail
Study Area
Study Area State Road
State Route
Study Area Local Road
Local Road
Red Text indicates 85th Percentile Speed exceeds Posted Speed Limit ≥ 10mph
Source: Speed data collected by Tighe & Bond, April-May 2018
Route 66 Corridor Study
FIGURE 2-7
TRAVEL SPEED OBSERVATIONS
Not To Scale
Tighe&Bond
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During two public information meetings, residents of Portland and East Hampton expressed concerns with speeding in the study area. In Portland, high speeds have been observed on Route 66 over the Arrigoni Bridge and the segment from the Airline Avenue intersection to Cobalt Village. In East Hampton, speed issues have been noted on Route 66 near the Edgewater Hills development and in the vicinity of Paul & Sandy's Too. Residents have also seen high speeds on cut-through roads including Middle Haddam Road in Portland and Old Marlborough Road in East Hampton. In general, these concerns with high travel speeds have been confirmed with the ATR speed data that has been collected.

2.6 2020 Corridor Conditions 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), 6th Edition* methodology.

An intersection's qualitative operational condition is described by the HCM in terms of average control delay per vehicle and volume to capacity (v/c) ratio. Average control delay is measured in seconds of delay that occurs at an intersection, per vehicle, due to the traffic control. The v/c ratio is a measurement of the volume of a traffic movement or approach in comparison with the capacity of the movement/approach. V/C ratios closer to zero represent that the approach has significant capacity remaining while approaches with v/c values approaching or exceeding 1.0 indicates that the approach is near or at capacity and not able to accommodate the traffic flow.

Together the average control delay and v/c ratio are combined to assign a Level of Service (LOS) to a particular intersection or intersection approach movement. LOS is defined by HCM, using average control delay and v/c, to assign letter grades A through F to indicate the efficiency of the traffic control at an intersection. The definitions of the letter grades in terms of average control delay and v/c are provided in the table below.

Level of Service	Signalized Intersection Criteria Average Control Delay (Seconds per Vehicle)	Unsignalized Intersection Criteria Average Control Delay (Seconds per Vehicle)	V/C Ratio >1.00[a]
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: [a]For approach-based and intersection-wide assessments, LOS is defined solely by control delay.

Source: *Highway Capacity Manual, 6th 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 a 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 Levels of Service 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 will be identified for further analysis and potential improvements to mitigate poor or failing operations.

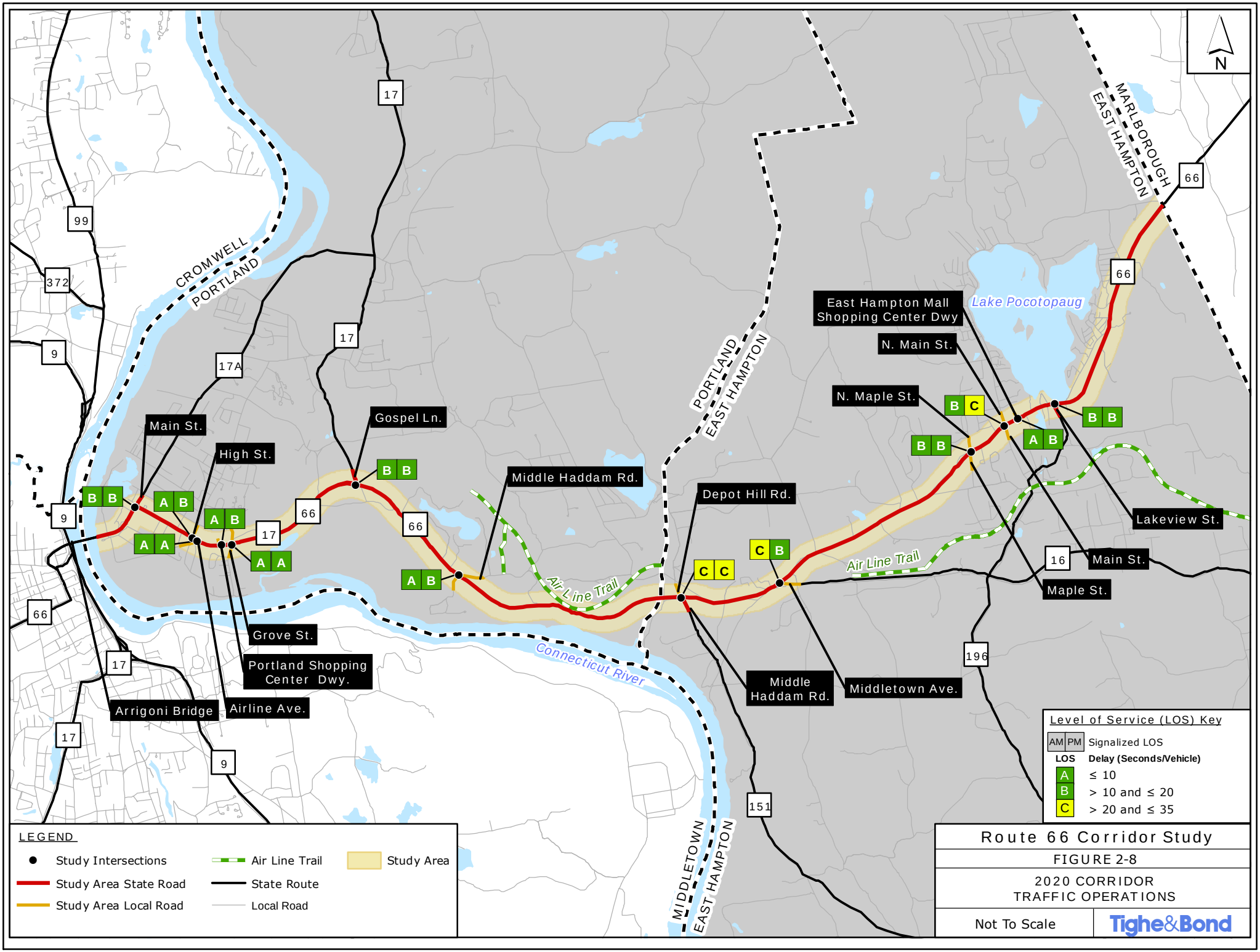
In addition to LOS, the HCM methodology also allows for the calculation of queues. Queues are the expected length of vehicles waiting at an intersection due to the delay incurred by the traffic control. The 50th percentile queues, or average queues, are the average number of vehicles expected on an approach at any given time. The 95th percentile, or design queues, are the maximum expected queues on a given approach.

Figure 2-8 on the following page presents a visual representation of the overall intersection LOS results on a study area map with the LOS color coded by letter while Tables 2-5 to 2-6 summarize the intersection operations in terms of LOS, v/c ratio, and queues at the study area intersections for the 2020 Corridor Conditions. Within the LOS tables, intersections, approaches and/or movements operating at LOS E have been highlighted yellow. Within the queue tables, approaches that exceed available storage have been highlighted in red. Capacity analysis worksheets for 2020 Corridor Conditions are included in Appendix I for the weekday morning and weekday afternoon peak hours.

2.6.1 2020 Weekday Morning Peak Hour Operations

During the weekday morning peak hour, all the study area intersections and movements operate at LOS D or better with the exception of the northbound approach of the Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road intersection, which operates at LOS E. Throughout the corridor, longer delays occur on several side streets as vehicles attempting to access the corridor from the side streets have to wait through long signal timing splits for Route 66 approaches. Additionally, there are a few intersections on Route 66 with long queues on the eastbound and westbound approaches. The following capacity issues are noted in the analysis:

- Route 66 at Route 17A (Main Street)
    - Queues of 444 feet on the westbound approach were reported based on the capacity analysis results. Field observations indicate vehicles form a rolling queue platoon up to 2,000 feet on the westbound approach during the weekday morning peak hour. The rolling queue can require 2-3 cycles to travel through the intersection.



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- Route 66 at Portland Shopping Center Driveway

    - A 95th percentile queue of 437 feet and a 50th percentile queue of 0 feet on the westbound shared through-right lane were reported based on the operational analysis results. Given that there is an upstream signal approximately 370 feet to the east at Grove Street, the 95th queue on the westbound approach at the Portland Shopping Center Driveway intersection may not be experienced in many cases due to the upstream metering. Instead, the 50th percentile queue may represent the maximum queue experienced. Field observations indicate only a small number of vehicles may back up on the westbound approach during weekday morning commuter peak hours.

- Route 66 at Middle Haddam Road/ Payne Boulevard

    - The capacity analysis results indicate that the volume for the 95th percentile cycle exceeds capacity and the 95th percentile queue exceeds 920 feet on the westbound shared through-right approach. Synchro software is developed to simulate up to two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles. In reality, heavy traffic may spill over among more than two complete cycles during weekday commuter peak hours. Field observations indicate vehicles on the westbound approach may back up to the Citgo Gas Station Driveway, approximately 3,400 feet to the east during weekday morning peak hour.

- Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road

    - LOS E operation on the northbound shared through-left approach with a v/c ratio of 0.82 and delays of approximately 74 seconds per vehicle.

    - Significant queuing approaching the intersection at approximately 790 feet for the westbound approach. Rolling queues longer than 790 feet that form a vehicle platoon have been observed in the field during weekday morning commuter peak hour.

- Route 66 at East Hampton Mall Shopping Center Driveway

    - Delays of approximately 45 seconds on the southbound shared through-left approach due to a short green time splits during each cycle for the side streets at the intersection.

2.6.2 2020 Weekday Afternoon Peak Hour Operations

Similar to the traffic operation during weekday morning peak hour, the weekday afternoon peak hour's most significant deficiency occurs at the northbound and southbound approaches of the Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road intersection, which operate at LOS E. However, the remaining study intersections and movements all operate at acceptable LOS D or better. Minor delays on side street approaches exist during the afternoon peak hour throughout the corridor. As was the case during the morning peak hour, there are a few intersections on Route 66 with long queues on the eastbound and westbound approaches. The following capacity issues are noted from the analysis:

- Route 66 at Middle Haddam Road/ Payne Boulevard
    - The capacity analysis results indicate that the volume for the 95th percentile cycle exceeds capacity and the 95th percentile queue exceeds 1,000 feet on the eastbound shared through-right approach. As mentioned previously, Synchro only simulates up to two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles, and in reality, heavy traffic may spill over among more than two complete cycles during weekday commuter peak hours.
- Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road
    - LOS E operation on the northbound through/ left and southbound approach.
    - Significant queuing exceeding 1,250 feet on the eastbound approach approaching the intersection.
- Route 66 at Main Street/ North Main Street
    - Queues of approximately 480 feet on the westbound shared through-right lane, nearing the approximately 485-foot available storage before reaching the East Hampton Shopping Center Driveway intersection.
- Route 66 at East Hampton Mall Shopping Center Driveway
    - Delays of approximately 50 seconds per vehicle on the southbound shared through-left approach exiting the supermarket plaza are a result of a 95 second cycle with short green time splits during each cycle for the side streets at the intersection.

2.7 2020 Corridor Conditions Optimized Traffic Operations

The 2020 Corridor Conditions Traffic Volumes were also analyzed with an optimized traffic network where the physical lane geometry remained unchanged but traffic signal timings including the coordination along the corridor was optimized. The purpose of the 2020 Corridor Conditions Optimized traffic analysis is to determine how the existing signalization along the corridor could be adjusted to better process expected traffic without any significant physical improvements.

The optimization process included a review of the coordinated system along Route 66, the coordinated system cycle lengths, and signal phase timing splits at each of the study area intersections to balance delays on the intersection approaches to increase the overall efficiency of the traffic operations. The optimization process was similar to those employed by CTDOT, which monitors state-maintained time-based coordination systems, periodically modifying the signal timing based on current volumes to maintain operational efficiency. A study area minimum cycle length of 60 seconds and maximum cycle length of 120 seconds were utilized during optimization. The optimization of the traffic signal operation included the following:

- Optimization of the phase splits at the time-based coordinated intersections of Route 66 at Main Street, High Street, Airline Avenue, Portland Shopping Center Driveway, and Grove Street. Retain the existing cycle length of 80 seconds at these intersections.

- Optimization of the cycle length and phase splits at the uncoordinated intersections of Route 66 at Gospel Lane (Route 17) and Middle Haddam Road (West Junction), respectively.

- Adjustment of cycle length (decrease from 128.1 seconds to 110 seconds) and optimization of phase splits at the uncoordinated intersection of Route 66 at Depot Hill Road & Route 151 to better balance green time splits between the major corridor and the side road approaches to help mitigate the unacceptable LOS on the side street approaches.

- Optimization of the cycle length and phase splits at the uncoordinated intersections of Route 66 at Middletown Avenue (Route 16) and Maple Street, respectively.

- Adjustment of cycle length (decrease from 95 seconds to 80 seconds) and optimization of phase splits at the time-based coordinated intersections of Route 66 at Main Street/North Main Street and East Hampton Shopping Center Driveway.

- Optimization of the cycle length and phase splits at the uncoordinated intersection of Route 66 at Lakeview Street.

- A study area minimum cycle length of 60 seconds and maximum cycle length of 120 seconds were utilized during optimization.

Figure 2-9 on the following page illustrates the overall signalized intersection LOS on the study area map with the LOS color coded by letter. A summary of the expected traffic operations following optimization is provided in Tables 2-7 and 2-8 in Appendix B. As shown in Table 2-7, all the study intersections are expected to operate at acceptable LOS D or better with the signal timing optimization. Capacity analysis worksheets for the 2020 Corridor Conditions-Optimized traffic network are included in Appendix J.

The traffic signal optimization mitigates some of the delay and queues caused by the heavy peak traffic flow along the corridor. Overall intersection LOS at select intersections during the peak periods are improved to acceptable levels.

2.8 Traffic Safety

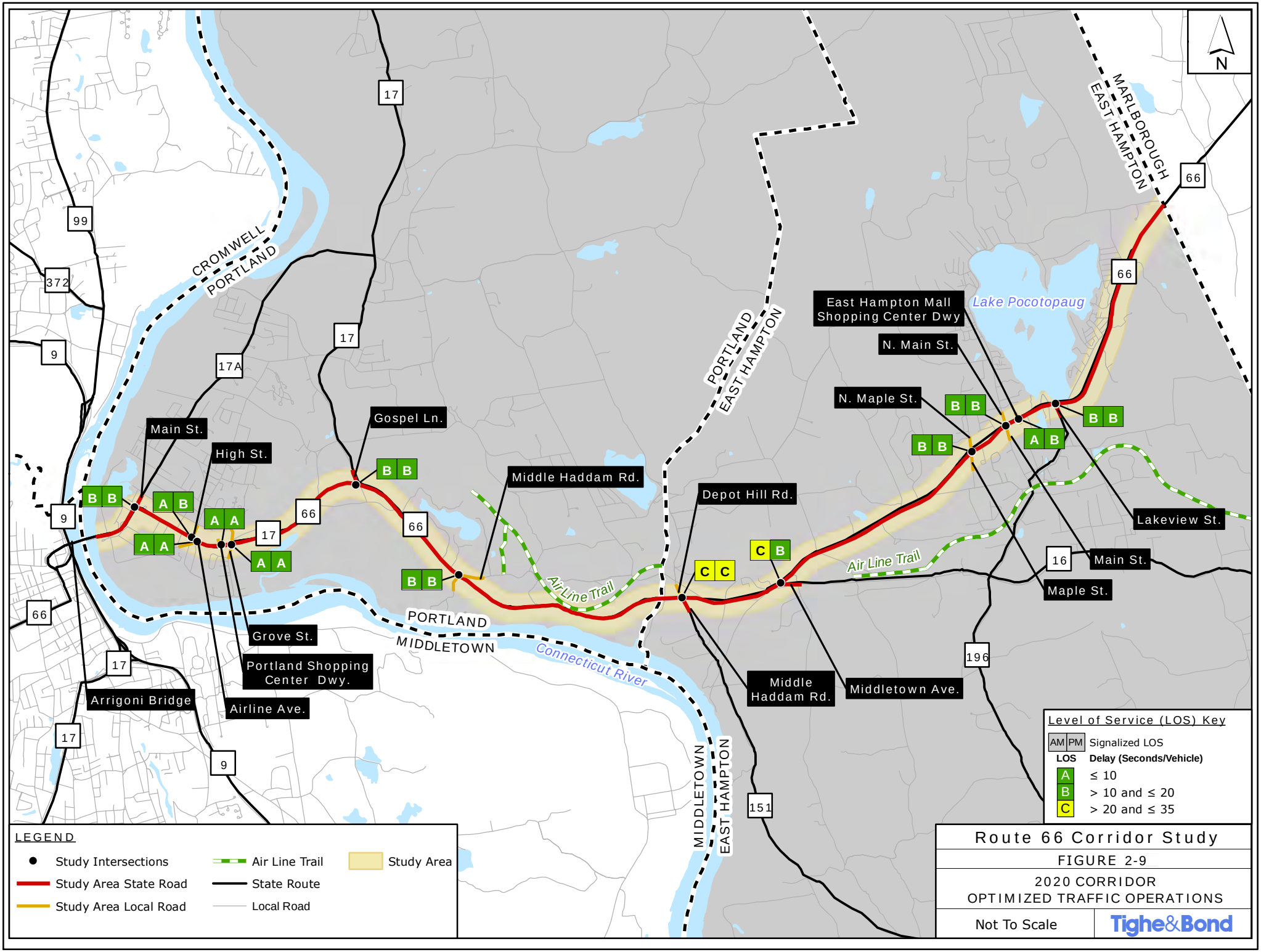
Historical motor vehicle collision data for the study area was collected from University of Connecticut Crash Data Repository for the latest three-year period of available data between January 1, 2015 and December 31, 2017. Figure 2-10 on the following page shows a graphical summary of the collisions and collision rates along the corridors and at the study area intersections. Further details for select intersections with high collision rates are provided in the following sections. Tables 2-9 through 2-12 referenced in this section can be found in Appendix B. Summaries and detailed collision history at each individual intersection are included in Appendix K.

2.8.1 Collision History

Table 2-9 summarizes the number and type of collisions recorded along Route 66 within the study area from 2015 through 2017. 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.

Table 2-10 summarizes the collision severity data along Route 66. Four fatalities occurred over the three-year collision history. The first occurred when a vehicle exiting a private driveway west of Sand Hill Road at Route 66 collided with a motorcycle, causing the motorcycle to hit the guardrail. The second fatality was caused by a vehicle colliding with a tree west of the intersection of Route 66 and Grandview Terrace. The third fatality occurred when a person fell from his motorcycle traveling westbound on Route 66 near 78 Marlborough Street. The fourth fatality was the result of a head-on collision that took place near the Portland-East Hampton Town Line. A total of 10 crashes (2%) resulted in an injury, while the remaining 442 collisions (97%) resulted in property damage only.

Table 2-11 summarizes the Route 66 collisions by study area intersection. In general, collisions were defined as occurring at an intersection if occurring within approximately 200 feet of the intersection mile post. Additionally, engineering judgement was used on a case by case basis to determine if the collision should be classified under a specific intersection. Crashes occurring at the Route 66 intersections at Rout 17A (Main Street), High Street, and Route 151 (Middle Haddam Road)/Depot Hill Road are depicted graphically on collision diagrams in Appendix A shown in Figures 2-11 to 2-13, respectively. The collision diagrams facilitate the identification of collision patterns that are occurring at a given location. As shown in Figure 2-11, the intersection of Route 66 at Route 17A (Main Street) experienced the most collisions with 38 crashes (13 crashes per year). The intersection of Route 66 at



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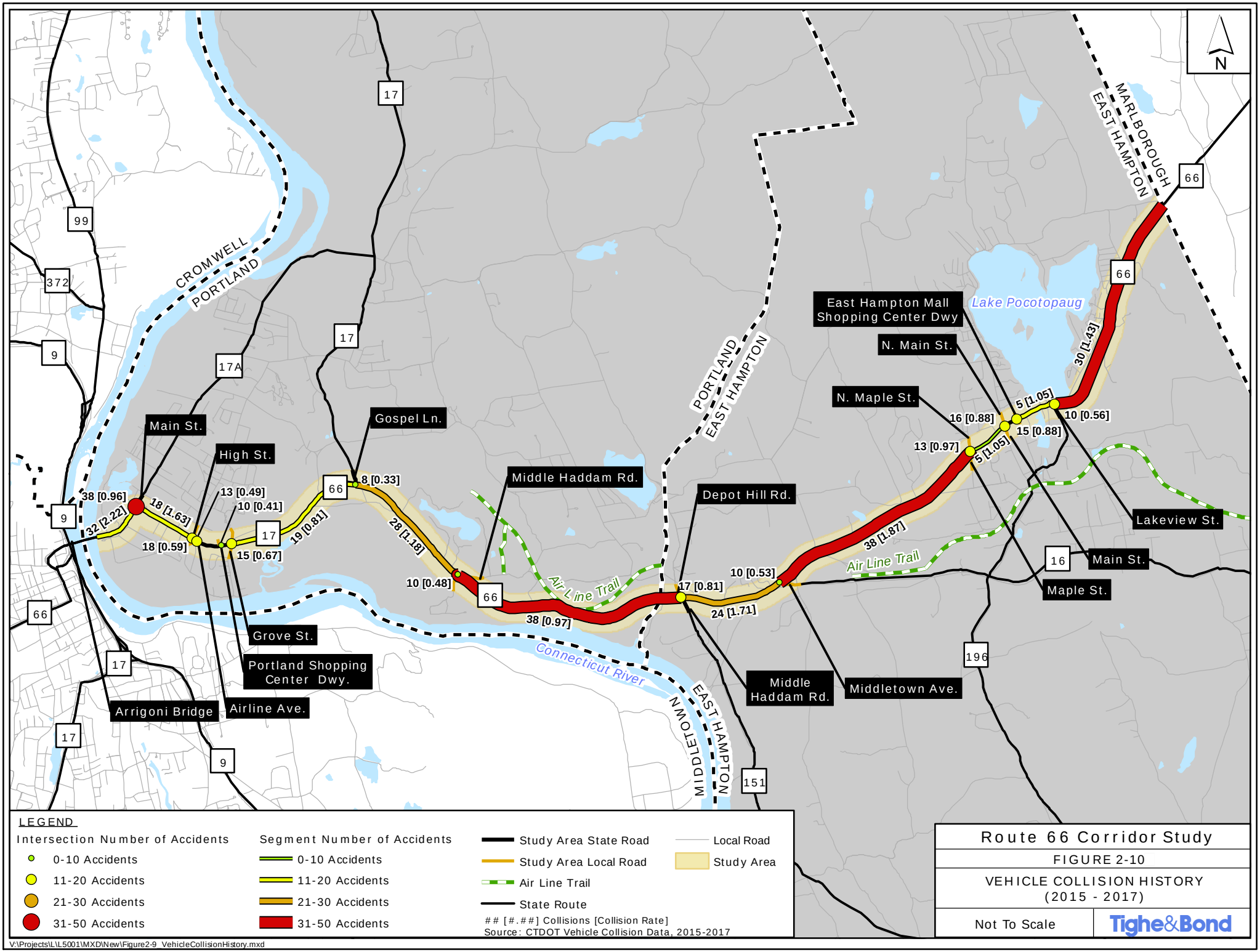

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High Street and Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road experienced 18 and 17 collisions (6 crashes per year), as shown in Figures 2-12 and 2-13, respectively. The remaining study area intersections experienced lower collision rates.

A review of the collision rates along the Route 66 segments between the intersections shows that the majority of the segments have typical rates for an urban principal arterial roadway. The Route 66 segment between the East Hampton Mall Shopping Center Driveway and Route 196 (Lakeview Street) intersections experiences a high collision rate, likely due to collisions caused by the high number of driveway access points for businesses along the segment.

The area west of the study area on Route 66, beyond the Arrigoni Bridge was reviewed separately as part of the collision analysis. The segment between the western limit of the study area and the Spring Street intersection in Middletown exhibits a high crash rate, affecting downstream traffic operations in the study area on Route 66. This segment experienced 59 collisions (20 crashes per year). Rear end accounted for just under half of the collisions along this segment with 26 crashes (44%). The second and third most common type of collisions in this segment were fixed object with 12 crashes (20%) and sideswipes with 9 crashes (15%). The remaining collision types accounted for 5% or less of all collisions on this segment.

2.8.2 Bicycle and Pedestrian Crash History

The crash data from the study area was reviewed for crashes caused by or involving bicyclists and/or pedestrians. The data summarized in Table 2-12 revealed that four direct collisions with pedestrians or bicyclists occurred within the study area.

Due to the limited number of incidents, no pattern is discernable that would suggest a specific safety hazard within the study area. However, the study area is lacking in bicycle and pedestrian facilities which exposes users to crash risk.

2.8.3 Portland Road Safety Audit

A Road Safety Audit (RSA) was conducted for the Town of Portland in June 2016 under the assistance of CTDOT's Community Connectivity Program. An RSA is a process that identifies safety issues and countermeasures to help improve safety of all road users, including pedestrians and bicyclists. A RSA typically includes a Pre-Audit Meeting, to review the objective and information relative to the RSA location, a Field Audit, to walk the area and conduct a safety evaluation of the location, and a Post-Audit Meeting, to identify safety concerns and develop recommendations for improvements. Upon completion of these tasks, a detailed RSA report documents the safety issues and identifies short-term and long-term recommendations for safety improvements.

The Portland RSA location is along Main Street (Route 17A) at Route 66 intersection and near Arrigoni Bridge, which is recognized as a high-collision location based on UConn Connecticut Crash Data Repository. During the RSA process, the following safety issues and recommendations for improvements were developed for this area in Portland, as summarized in Table 2-13 in Appendix B.

2.9 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, respectively. 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 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.

Town of Portland adopted a Complete Streets Policy, dated September 24, 2016, with the goal of making the streets of Portland safer and more accessible for all users including pedestrians, cyclists, people with mobility challenges, transit users, and motorists. Planning, designing, and constructing complete streets and encouraging non-motorized modes of transportation will promote healthy living of the community. The Town of Portland Complete Street Policy is included in Appendix L.

2.9.1 Pedestrian and Sidewalk Infrastructure

Route 66 abuts commercial and residential properties along the corridor in a low to moderate density suburban setting within the study area. A majority of the Route 66 study area has been designed to prioritize the automobile and is uninviting to walking activities. Pedestrian infrastructure including sidewalks, crosswalks, ramps, and pedestrian signals are present in the village center areas within the towns of Portland and East Hampton. Elsewhere along the corridor, large sidewalk gaps exist, creating an unsafe environment for pedestrians.

Generally, sidewalks are recognized to be vital in pedestrian environment by delineating a safe zone for pedestrians to walk between destinations and providing a sense of community. Crosswalks at major intersections provide pedestrians a safe area to cross streets and a continuous pathway to key destinations. Additionally, pedestrian signals provide safety enforcement for pedestrian crossings by separating crossing pedestrians from conflicting vehicular movements at signalized intersections. In addition, it is preferable for pedestrian facilities to comply with the accessibility standards included in *the Americans with Disabilities Act* (ADA) to meet the needs of all sidewalk/crosswalk users. A summary of the existing ADA Compliant and Non-ADA Compliant pedestrian facilities at the study area intersections is presented in Table 2-14 in Appendix B.

The inventory of existing pedestrian infrastructure along the study corridor was reviewed and summarized below:

Town of Portland

- Sidewalks are present along both sides of Route 66/Route 17 between the Arrigoni Bridge and the intersection of Main Street and Marlborough Street. Traveling to the east along Route 66, sidewalks are provided along the north side of the corridor between Main Street and the western driveway of Portland Shopping Center. An off-road walking path is provided connecting the eastern portion of the Portland Shopping Center Plaza and the residential neighborhood located at the north end of Johnson Farm Road. The sidewalks west of High Street are in fair condition while some portions of the sidewalks east of High Street have deteriorated. Sidewalks are not provided east of Grove Street along the study corridor in the Town of Portland.

- Marked crosswalks, sidewalk ramps with warning strips, and pedestrian signals are provided on the north leg and east leg of the intersection of Main Street and Marlborough Street. Concrete sidewalk is present within the channelized right-turn island to provide continuous sidewalk on the east leg of the intersection. The traffic signal at the intersection provides an exclusive pedestrian phase upon the actuation of pedestrian push buttons.

Crosswalk at the intersection of Route 66 and Route 17A (Main Street)

- A mid-block crosswalk is present approximately 500 feet east of Main Street connecting the proposed Brainerd Place Development driveway to the existing sidewalk on the north side of Route 66. A pedestrian refuge island is provided in the raised median. Pedestrian crossing signs and pedestrian crossing ahead warning signs are installed at and in the vicinity of the mid-block crosswalk, respectively. However, this marked crosswalk is installed without other substantial measures such as pedestrian beacons or ADA compliant sidewalk ramps. Once the Brainerd Place offsite improvements are determined, consideration of pedestrian facilities in this section of the study area will be reevaluated.

- Crosswalks and pedestrian signals exist on the west leg and north leg of the intersection of Route 66 at High Street. Pedestrian crossing is provided via an exclusive pedestrian phase. ADA compliant sidewalk ramps are lacking at the intersection.

- Similarly, crosswalks and pedestrian signals exist on the east leg of the intersection of Route 66 at Airline Avenue with pedestrian crossing provided via an exclusive pedestrian phasing. ADA compliant sidewalk ramps are not provided at this intersection.

Non-ADA compliant pedestrian accommodations at the intersection of Route 66 and Airline Avenue

- Traveling east from Grove Street to the Portland-East Hampton Town Line within the Town of Portland features a rural setting and lacks destinations that would attract pedestrian activities. Pedestrian infrastructure including sidewalks, crosswalks, and pedestrian signals are not provided along this segment. Greenlight push buttons are provided on both sides of the corridor to allow pedestrians to cross with the green light at the signalized intersections in this area.

Town of East Hampton

- The Route 66 corridor continues its rural setting from the Portland-East Hampton Town Line through Cobalt Village to approximately Maple Street within the Town of East Hampton. Pedestrian infrastructure is not provided except push buttons at the traffic signals that allow pedestrians to cross concurrently with vehicular with the green light at the signalized intersections along this segment of the corridor.

- A crosswalk is provided on Route 66 at the unsignalized Childs Road intersection in the vicinity of East Hampton Middle School. School crossing signs are present in both directions on Route 66.

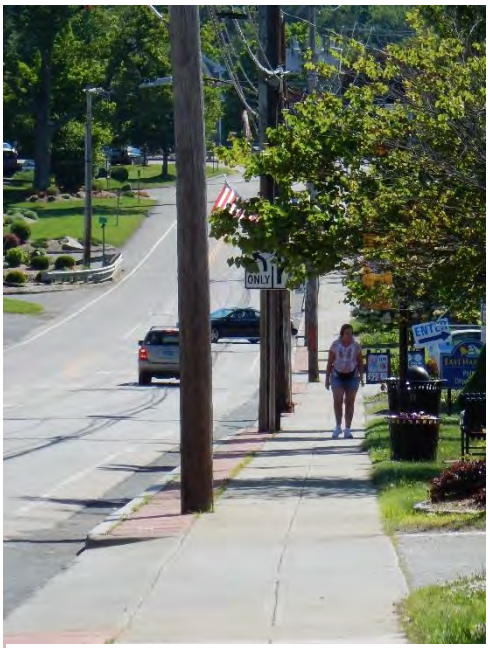
- Sidewalks begin near Maple Street, continuing east toward the commercial center in East Hampton. Sidewalks are continuously provided along the south side of the road between Maple Street and Erlandson Drive. Along the north side of the road, sidewalks are provided between North Main Street and the west junction of Old Marlborough Road with gaps existing between American Distilling & Manufacturing and Lakeview Street. Route 66 is constrained at the bridge crossing in front of American Distilling & Manufacturing, limiting the available width to add a sidewalk. Furthermore, it is the town and property owners' responsibility to maintain sidewalks along a state route, so developers are often reluctant to install sidewalks or infill sidewalk gaps along the site frontage, particularly if the town regulations on sidewalks in commercial zones are not clearly designated.

- Crosswalks and sidewalk ramps are provided on the north and east leg of the intersection of Route 66 at Maple Street. There are green light push buttons on both sides of Route 66 that allow pedestrian to cross with the green light at this intersection.

- Marked crosswalks, pedestrian signals, and ADA compliant sidewalk ramps are provided on all four legs of the intersection of Route 66 at Main Street/North Main Street. Pedestrian crossing is provided via an exclusive pedestrian phasing.

- Crosswalks, pedestrian signals, and sidewalk ramps with warning strips are provided on the west leg of the intersection of Route 66 at East Hampton Shopping Plaza driveway. Exclusive pedestrian phasing is provided at this intersection to facilitate pedestrian crossing.

- Similarly, marked crosswalks, pedestrian signals, and ADA compliant sidewalk ramps are provided on all three legs of the intersection of Route 66 at Lakeview Street. Pedestrian crossing is provided via an exclusive pedestrian phasing at this intersection.



Route 66 in East Hampton looking East near the East Hampton Town Hall

- Pedestrian infrastructure is not provided between Erlandson Drive and the East Hampton-Marlborough Town Line. Paul's & Sandy's Too and the proposed Edgewater Hill development along this segment are considered to be attractive destinations for pedestrian activities. The lack of pedestrian facilities in this area contributes to an unwelcoming environment to those on foot in this area.

Air Line Trail access at Old Middletown Road in Portland

2.9.2 Bicycle Facilities

There are currently no separated bike routes, "share the road" signage, or facilities for bicyclists along the Route 66 corridor. The Air Line Trail, a shared-use non-motorized recreational trail, is the only bicycle facility within the study area.

As previously noted, the Air Line Trail currently runs from the YMCA Camp Ingersoll to the Portland-East Hampton Town Line in Portland. In East Hampton, the trail begins at Aldens Crossing near Route 16, extending east though the study area. The final missing gap in East Hampton, a milelong section from its current termination point at Alden Crossing to the Portland Town Line at Depot Hill Road, started construction in early 2019. Beyond the study area to the east, the trail continues northeast through the eastern portion of Connecticut and extends into Massachusetts.

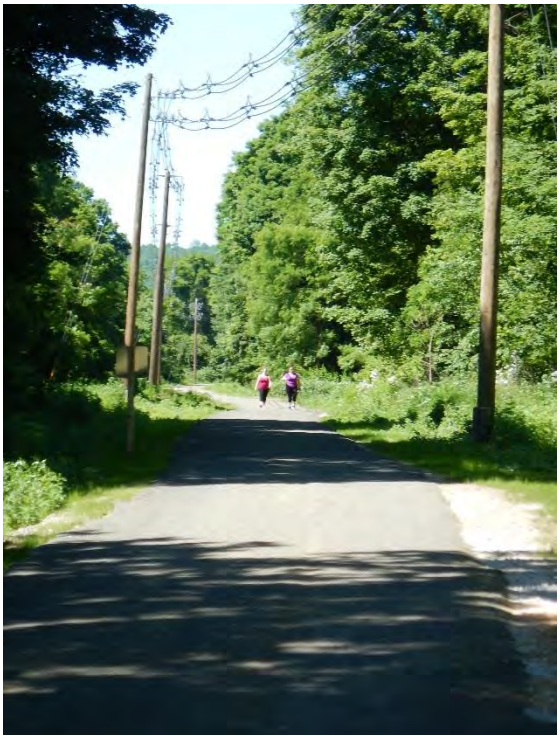
Air Line Trail extension projects have been planned to connect the current terminus at the YMCA Camp Ingersoll in Portland west to the Arrigoni Bridge, Portland Riverfront Park, and the City of Middletown. The preferred Air Line Trail extension will utilize private property that follows the former railroad bed ROW. Alternative extensions use a shared multi-use path adjacent Route 66 within CTDOT ROW.

2.9.3 Air Line Trail Usage

"Ridership" counts have been collected on the Air Line Trail in East Hampton as part of the Connecticut Trail Census project. A permanent infrared (IR) counter was installed just northeast of Cranberry Bog on Air Line Trail in East Hampton. It has been continuously collecting data since November 2016.

The 2017 counts and indicate that a total of 62,415 uses or trips were recorded on the trail in 2017 with an average daily count of 171 uses.

The heaviest monthly use of the trail occurred in June 2017, with a total of 8,100 trips. Between the months of April and October 2017, approximately 83% of total 2017 uses were recorded.



Air Line Trail looking west in Portland

Generally, heavier use occurred on the weekends than during the week. Based on the 2017 ridership count report, approximately 15,523 trips (25%) and 11,792 trips (19%) occurred on Sundays and Saturdays, respectively. The trail uses during the week are evenly split between Mondays and Fridays. Most trail use (97.9%) took place between 7am and 8pm.

The Connecticut Trail Census 2017 Counts Report is included in Appendix M of this report.

2.9.4 Transit Facilities

The towns of Portland and East Hampton are currently served by Bus Route 586 (formerly Route F) operated by Middletown Area Transit (MAT). The bus route and stop locations are illustrated on Figure 2-14 in Appendix A. This service connects Portland and East Hampton to downtown Middletown and other bus connections.

Route 586 – Portland/East Hampton buses run from 5:45 a.m. to 5:45 p.m. Monday to Friday and from 9:15 a.m. to 4:45 p.m. on Saturdays. Route F does not operate on Sundays.

On weekdays, Route F buses run every hour from 5:45 a.m. to 8:45 a.m., at 12 p.m., and every hour from 3:45 p.m. to 5:45 p.m. for a total of 8 trips. On Saturdays, Route F buses run every 90 minutes from 9:15 a.m. to 11:45 a.m. in the morning and from 2:15 p.m. to 4:45 p.m. in the afternoon for a total of 4 trips.

Bus stops, shelters, waiting areas, and bus stop signage are not present along the entire bus route. Buses along the corridor stop to pick up passengers at sporadic locations, causing potential safety concerns for riders and vehicles in the area.

The Towns of Portland and East Hampton both participate in a regional dial-a-ride service for the elderly and disabled, operated by MAT. Eligible persons can schedule trips for medical, shopping, educational, and recreational purposes. It is anticipated that the elderly population will increase in both towns and the transit usage demand may increase as the age composition of the community changes.

A Park and Ride lot with 27 parking spaces is provided at the intersection of Route 66 and Route 16 in East Hampton. The Park and Ride commuter lot helps to facilitate ridesharing to reduce transportation costs, roadway congestion, and air pollution. A field visit of the area indicates that the existing park and ride lot is very lightly utilized.

Park & Ride Lot at Route 66 and Route 16 (Middletown Avenue) in East Hampton

2.9.5 Transit Ridership

Ridership data was collected for three consecutive weekdays (Monday July 30, 2018 – Wednesday August 1, 2018) and Saturday (August 11, 2018) by MAT. The ridership data indicates that transit ridership on Route F that serves the project area is light. There was an average of 26 boardings each weekday and 7 boardings on Saturday.

The most popular locations for boarding include the Downtown Middletown Terminal with an average of 17 boardings per weekday. The most popular locations for alighting (passengers dropped off by bus) include the Downtown Middletown Terminal, Marlborough Street in Portland, and Food Bag on Route 16 in East Hampton.

Table 2-15 in Appendix B summarizes the transit usage within the study area. Day to day ridership and bus stop usage could vary. Because this analysis is limited to three weekdays and one Saturday, it provides only a "snapshot" of typical usage based on MAT's ridership data collection.

In addition to the ridership data previously discussed, RiverCOG has recently published a draft report of the *Lower Connecticut River Valley Regional Bus Ridership Study*. Ridership data was collected from April to July 2017. According to the report data, MAT Route F averaged 59 passenger trips per day on the weekdays, and 15 passenger trips per day on Saturdays. This translates to an average of 9.7 passengers per hour during the week and 4.3 passengers per hour on Saturday. Based on the findings, RiverCOG has recommended that Route F be considered for on-demand service due to the relatively small number of passengers. The elimination of the route shall not be considered, as Route F provides a vital service to the Towns of Portland and East Hampton serving as the only option for transit service in each town.

2.9.6 Lower Connecticut River Valley Regional Bus Integration Study

The region has recently begun the *Lower Connecticut River Valley Regional Bus Integration Study* as stated in the *2019-2045 Regional Metropolitan Plan,* adopted *in March 2019* by RiverCOG. The goals of the study are to: 1) Evaluate opportunities in administration, operations, and policymaking to ensure improved regional transportation for Estuary Transit District and Middletown Transit District, 2) Identify a shared structure and locations of assets and facilities to provide future service in the Lower Connecticut River Valley Region, and 3) Develop recommendations for subsequent planning and integration steps. The Regional Bus Integration Study will continue beyond the completion of the Route 66 Engineering Planning Study.

2.9.7 MAT Route F Passenger Survey

As part of the study, Tighe & Bond developed a passenger survey in collaboration with MAT and the study committee to better understand the existing system and passenger experience on Route F. The survey included a total of 8 questions intended to identify needs and deficiencies relating to the frequency of service, bus stop locations and amenities, reliability, and access to bus schedule information. The questions were mostly multiple choice and collected information regarding origin and destination of trips, purpose of trips, and suggestions on how to improve bus services. The passenger survey results are included in Appendix N.

The survey was administered by MAT staff onboard 24 circulatory bus routes during the peak commute hours of 6:45 a.m. to 9:45 a.m. and 3:45 p.m. to 5:45 p.m. between Wednesday, July 11, 2018 and Friday, July 13, 2018. A total of ten passengers participated in the survey and provided answers to the survey questions.

Trip Origin and Destination

Based on the survey results, 70% of those surveyed used Route F bus service five or more days a week, 10% used it three to four days a week, while 20% used it one to two days a week.

Forty percent of those surveyed were picked up or dropped off at the Portland Terminal located at 340 Main Street in Portland. The rest were picked up or dropped off at various locations along Bus Route F, including Middletown Bus Station; Portland Convalescent, Ferry Lane, Riverdale Motel, Butler Construction, and Dunkin Donuts in Portland; Food Bag on Route 16, North Maple Street, 140 East High Street, Dunkin Donuts, and McDonald's in East Hampton. Twenty percent of those surveyed did not specify their pickup or drop-off locations.

Eighty percent of those surveyed walked to and from their pickup and drop-off locations. The remaining 20% rode a different bus to Bus Route F bus stop locations.

Trip Purpose

Work related trips accounted for 60% of the passengers surveyed with morning rides occurred between 5:45 a.m. and 8 a.m. and afternoon rides occurred between 3:45 p.m. and 4:30 p.m. The rest of the trips included grocery shopping, medical service, and others.

Passenger Suggestions

Of the passengers who completed the survey, 90% were extremely satisfied or satisfied with the bus service on F Route. Ten percent answered "neutral" to the question. Additionally, suggestions provided by passengers to improve the bus service are summarized below:

- More bus frequency (30%)
- Bus stop facilities (20%)
- Cost (20%)
- Onboard comfort (20%)
- Access to information (10%)
- On-board assistance for old people with food carriage or kids with strollers (10%)

2.10 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.

The assessment of existing access management for this study included a field review of the existing driveways to identify multiple driveways within close proximity, driveways in excess width, and redundant driveways along the study corridor. Furthermore, driveway design guidelines available for State highways are reviewed and summarized in this document to facilitate the evaluation of current access management and development of subsequent access management plans for this study.

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, respectively.

2.10.1 Portland Access Management Conditions

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. Developments along this stretch from west to east include Rite Aid, Burger King, a dozen small but densely spaced residential homes, auto sales, Cumberland Farms, Subway, Farrell's, Adams Market, NAPA Auto Parts, Family Dollar, Portland Veterinary Hospital, Dental office, True Value Hardware store, Dairy Queen, among others. Sidewalks are provided from Main Street to the Portland Shopping Center Driveway along the north side of the corridor only. Crosswalks and pedestrian signals are generally non-exist along this segment. A driveway inventory map was created to illustrate the location, spacing, access restriction, redundancy, and connection of existing driveways within this segment, as shown on Figures 2-15 to 2-18 in Appendix A.

The following observations were made to assess existing driveway access along the segment:

- The raised median within the segment helps regulate driveway access and circulation while significantly reducing vehicular conflicting points and crashes at the driveway locations.
- Exclusive left turn lanes along the corridor are provided at some driveway locations, resulting in reduction of vehicle conflicts and rear-end collisions in the immediate vicinity of these driveways. These median breaks also facilitate access to side streets from Route 66 facilitating local circulation and access.
- A number of properties have multiple full-access driveways, which result 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.
- A number of driveways are closely spaced at adjacent properties, which generates confusion for travelers unfamiliar to the area as well as for drivers accessing and egressing from closely spaced driveways.
- Many driveways are poorly delineated, and the pavement is in poor condition or non-existent.

Route 66 in Portland looking north near the Gulf Gas Station

2.10.2 East Hampton Access Management Conditions

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. Developments along this stretch from west to east include church, butcher shop, houses, offices, car wash, hair salon, banks, Stop & Shop, Eversource Energy area work center, East Hampton Police Department, Dunkin' Donuts, Ace Hardware, Walgreens, Citgo Gas Station, a jewelry store, Food Bag, Subway, Belltown Smoke Shop, American Distilling & Manufacturing, Island Coffee Traders, Spirit Shop, and a few small but densely settled residential houses. Sidewalks, crosswalks, and pedestrian countdown signals are generally provided within the segment, but sidewalk gaps exist between Belltown Smoke Shop and Lakeview Street along the north side of the roadway. Continuous sidewalks are provided along the east side of Main Street and the west side of Lakeview Street in the area. A driveway inventory map was created to illustrate the location, spacing, access restriction, redundancy, and connection of existing driveways within this segment, as shown on Figures 2-19 to 2-21 in Appendix A.

The following observations were made during a field visit to assess the existing access management along the segment:

- The centered back-to-back left turn lane within the segment helps regulate driveway access entering the properties and reduces vehicle conflicts and rear-end collisions in the immediate vicinity of the driveways.
- Dense and poorly delineated driveways are frequent through this segment.
- A number of properties have multiple full-access driveways, which results in increased number of driveways, confusion to drivers, and potential conflicts on the road.
- Some driveways are closely spaced at adjacent properties, generating confusion to travelers unfamiliar to the area.
- A few small size properties provide front yard parking backing into Route 66, which generates safety concern.
- The driveways at Citgo Gas Station, the jewelry store, and Subway are wide and closely spaced. Vehicles tend to line up alongside one another attempting to enter Route 66 simultaneously, resulting in poor visibility.
- 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.

Route 66 in East Hampton looking East near the East Hampton Town Hall

2.11 Transportation System Condition

During data collection, the study team conducted observations of the existing roadway network seeking to identify deficiencies or areas of concern that warrant a more detailed review during subsequent study phases. The major observations are described below with additional information presented graphically in Figure 2-22 on the following page.

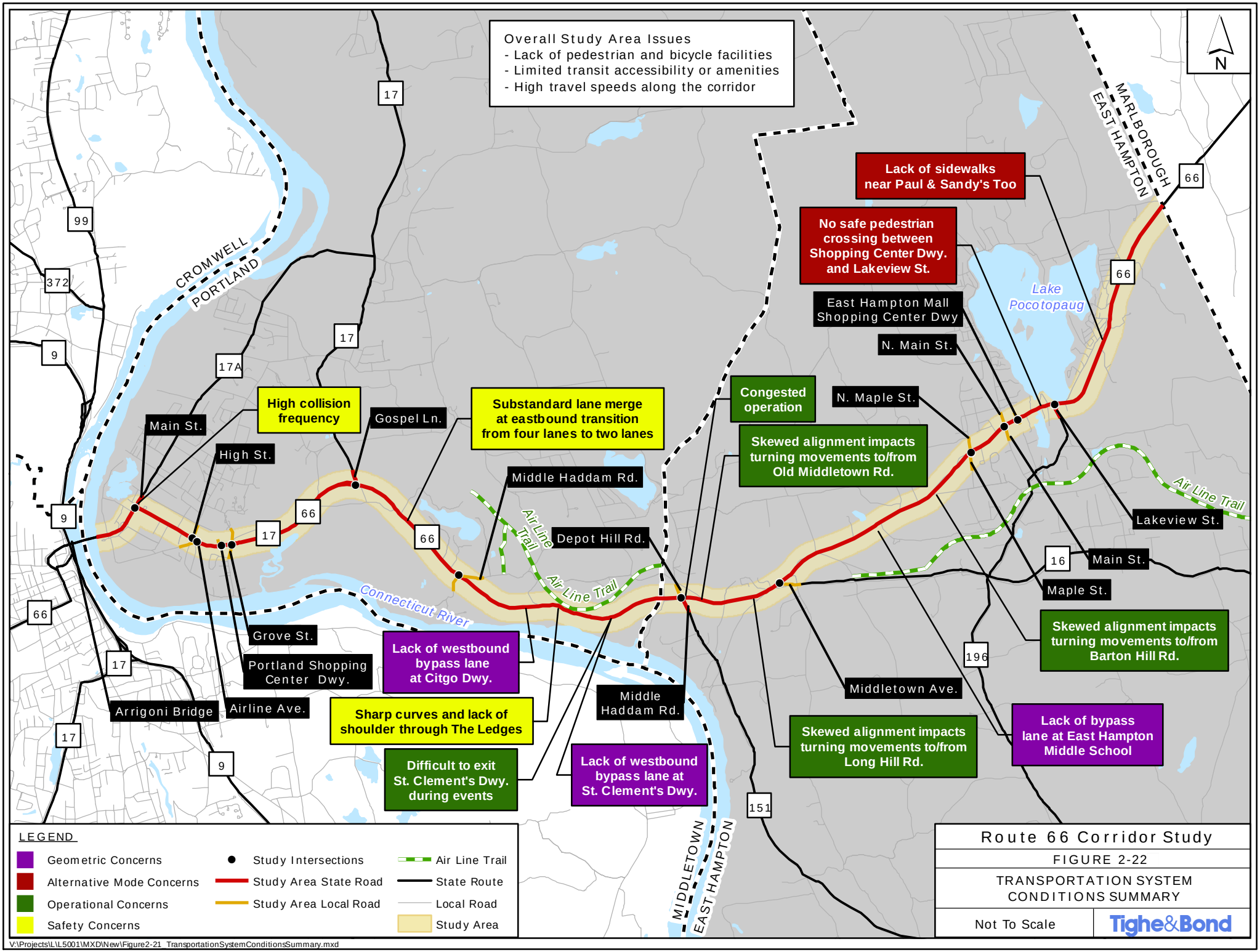
- High travel speeds exist along the Route 66 corridor.
- High collision rates occur at the following intersections:
    - Route 66 at Route 17A (Main Street)
    - Route 66 at High Street
    - Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road
- Skewed alignments impact turning movements to 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.

2.12 Existing Streetscape Analysis

2.12.1 Portland Commercial Center

Portland's commercial center is characterized by business and residential uses in a mix of historical and recent architecture. The gateway into Portland from the Arrigoni Bridge is distinguished by wide pavement, high-speed traffic, and entrance and exit ramps to Lower Main Street, with challenging sightlines and no opportunity to cross Main Street. A large billboard-style gateway sign on the west side of Main Street is difficult to see when entering the gateway from the bridge. Two signs located at the intersection of Route 17 and Route 66 welcome people to Portland, but no wayfinding signs direct visitors toward the nearby Brownstone Exploration and Discovery Park or the parking for the new Airline Rail Trail; located east of the commercial center. The walkway on the east side of Main Street is set back from the roadway, safely separating pedestrians from vehicles with lawn and street trees. The sidewalk along the west side abuts a street wall of mainly historic two-story architecture occupied by small businesses and punctuated by some new development including a Dunkin' Donuts and gas station. This broad sidewalk features streetscape elements such as ornamental banners and poles, benches, brownstone walls, colored and stamped concrete bands, trash receptacles, and young street trees. There are no provisions for cyclists, formalized bus stops, or on-street parking to support the businesses, and off-street parking is limited. Large utility poles with overhead wires located on the east side Main Street and north side of Marlborough Street detract from the view and provide the only source of street lighting. An exclusive right turn onto Marlborough Street marks the intersection with a landscaped island which provides some refuge for pedestrians crossing this street. In contrast to Main Street, a grass and tree lined median along Marlborough Street breaks up the wide road and reduces the scale and travel speeds. The median width is reduced to allow for left turn lanes at intersecting side streets and the road shoulder is narrow, limiting bicycle access.


Overall Study Area Issues
- Lack of pedestrian and bicycle facilities
- Limited transit accessibility or amenities
- High travel speeds along the corridor
N
Lack of sidewalks near Paul & Sandy's Too
No safe pedestrian crossing between Shopping Center Dwy. and Lakeview St.
East Hampton Mall Shopping Center Dwy
N. Main St.
N. Maple St.
Congested operation
Skewed alignment impacts turning movements to/from Old Middletown Rd.
High collision frequency
Gospel Ln.
Substandard lane merge at eastbound transition from four lanes to two lanes
Middle Haddam Rd.
Depot Hill Rd.
Main St.
High St.
Grove St.
Portland Shopping Center Dwy.
Lack of westbound bypass lane at Citgo Dwy.
Arrigoni Bridge
Airline Ave.
Sharp curves and lack of shoulder through The Ledges
Difficult to exit St. Clement's Dwy. during events
Lack of westbound bypass lane at St. Clement's Dwy.
Middle Haddam Rd.
Middletown Ave.
Skewed alignment impacts turning movements to/from Long Hill Rd.
Lack of bypass lane at East Hampton Middle School
Skewed alignment impacts turning movements to/from Barton Hill Rd.
Maple St.
Lakeview St.
Air Line Trail
Lake Pocotopaug
Connecticut River
CROMWELL
PORTLAND
MARLBOROUGH
EAST HAMPTON
MIDDLETOWN
EAST HAMPTON
99
372
9
17
17A
66
16
196
151
LEGEND
Geometric Concerns
Alternative Mode Concerns
Operational Concerns
Safety Concerns
Study Intersections
Study Area State Road
Study Area Local Road
Air Line Trail
State Route
Local Road
Study Area
Route 66 Corridor Study
FIGURE 2-22
TRANSPORTATION SYSTEM CONDITIONS SUMMARY
Not To Scale
Tighe&Bond
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On Marlborough Street, a narrow sidewalk connects businesses and homes on the north side. Only one mid-block crosswalk and three corner crossings, at High Street, Airline Ave, and Grove Street connect the north and south sides of the street. None of these crossings are ADA accessible and this area lacks continuous sidewalks, formalized bus stops, seating, trash receptacles, bike lanes, and bike parking. Most businesses along the north side have controlled access and concrete driveway aprons which aid in protecting pedestrians. Newer businesses, such as Cumberland Farms and Burger King, have aesthetic features such as brownstone walls and landscaping along the sidewalk. Existing businesses on the south side tend to have broad, undefined driveways and front yard parking.

Portland's eastern commercial area along Route 66 is characterized by a lower density of businesses, rolling hills, gradual curves, and a wider right of way. To the east of Grove Street, the speed limit increases. Here, the road shoulder widens which provides space for bicyclists but does not separate them from automobile traffic. There are no pedestrian amenities other than the push buttons at traffic lights. This portion of Route 66 lacks a defined street wall and sense of street enclosure. Most of the buildings are set back further from the road with automobile access and parking dominating the front yard.

The locations of the following photos in Portland Commercial Center are shown on the Photo Location Inventory Key Map, Figure 2-23 on the following page.

Photo 1	
Arrigoni Bridge Gateway Area: Poor sight lines, expansive pavement, lacks human scale	Looking North along Main Street

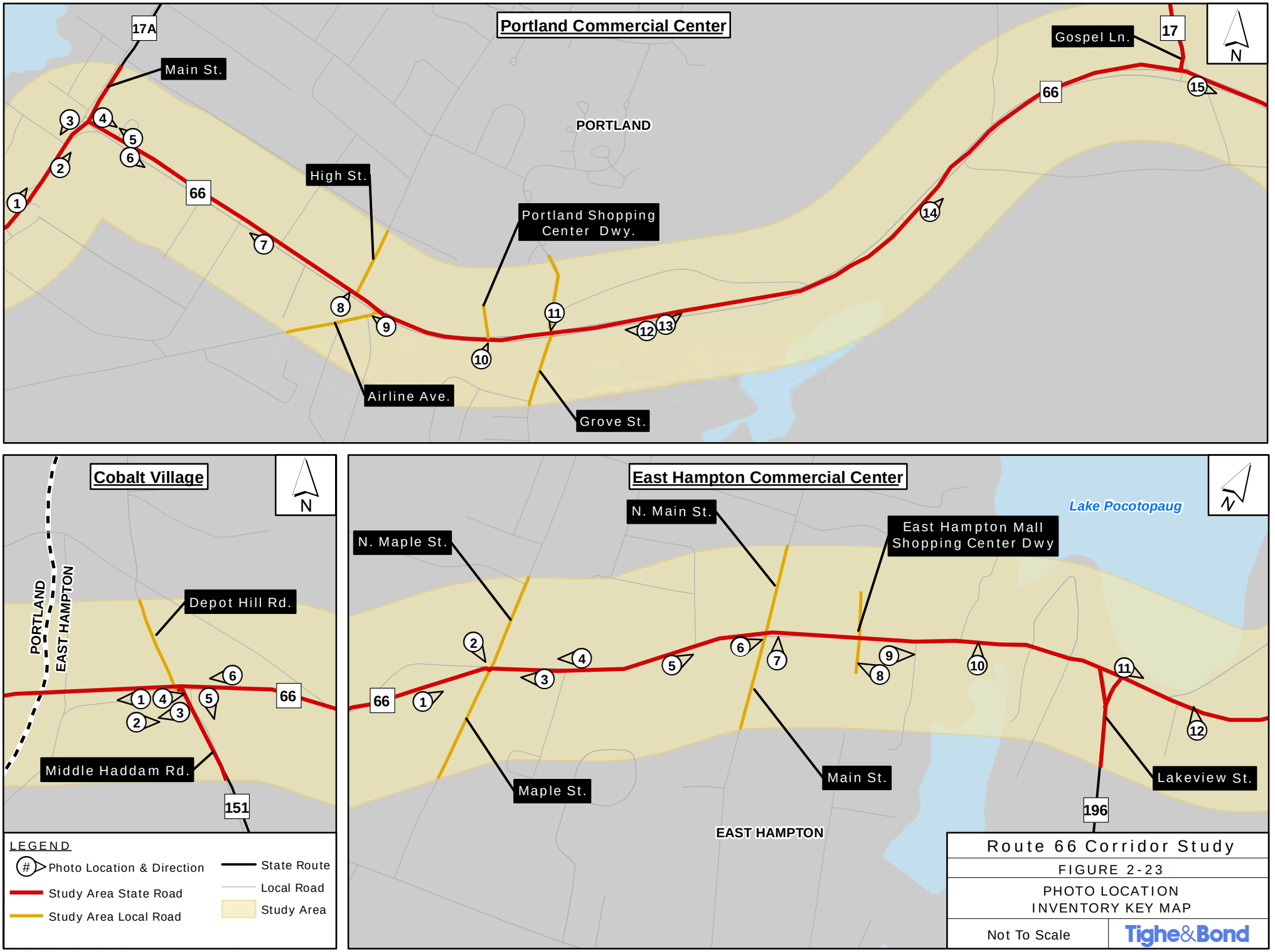

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Photo 2	
Wide roadway & overhead utilities dominate streetscape	Looking North along Main Street

Photo 3	
Historic architecture and streetscape elements	Looking South along Main Street

Photo 4	
Sidewalks on north side only; narrow width	Looking East along Route 66 near Main Street

Photo 5	
Commercial property with human scale streetscape elements	Looking West along Route 66 near Main Street

Photo 6	
Midblock crossing with signage, pavement markings, & refuge island but no flashing beacon or accessible ramps	Looking East along Route 66 in Portland

Photo 7	
Excessive wide curb cuts; lack of pedestrian amenities	Looking West along Route 66 near Pickering Street

Photo 8	
Non-compliant pedestrian crosswalks	Looking North towards Route 66 at High Street

Photo 9	
No sidewalk along south side; narrow shoulder limits bicycle access	Looking West on Route 66 at Airline Avenue

Photo 10	
Signaled intersection lacks pedestrian crossing & bus provisions	Looking East on Route 66 at the Portland Shopping Center

Photo 11	
Signaled intersection with pedestrian push button; lacking all other pedestrian amenities	On Grandview Terrace looking South towards Grove Street

Photo 12	
Multiple, excessive, wide driveways, front parking, and no pedestrian amenities	Looking West on Route 66 at Portland Veterinary Hospital

Photo 13	
Billboards, guide rails, median divided roadway, and expansive pavement are characteristic of roads with high travel speeds	Looking East on Route 66 from Portland Veterinary Hospital

Photo 14	
Multiple, wide business driveways; limited breaks in median to access businesses	Looking East on Route 66 towards Moore Brothers Inc.

Photo 15	
45 mph speed limit posted at commercial intersection	Near Route 17, looking East on Route 66

2.12.2 Cobalt Village

Cobalt is the western gateway to East Hampton. It is a dominantly residential area marked by small businesses, a gas station, post office, and fire House at the intersection of West High Street (Highway 66), Middle Haddam Road (Highway 151; a designated scenic road), and Depot Hill Road; just over the town line into East Hampton. This rural commercial center consists of a signaled intersection without sidewalks, defined curb cuts, crosswalks, or other streetscape amenities and lacks human scale. Middle Haddam Road is split by a bituminous island to allow right turning traffic to meet West High Street at a right angle. This traffic island, along with the wide driveway entrances and front parking lots, creates a gateway dominated by pavement. State wayfinding and road signage direct vehicles to nearby towns and Hurd State Park. A historic home which has been adaptively re-used as a doll store marks the southwest corner and further east an old gas station has been converted to a pizzeria with outdoor seating. There are no formalized bus stops or provisions for bicyclists.

The locations of the following photos in Cobalt Village are shown on the Photo Location Inventory Key Map, Figure 2-23.

Photo 1	
One of many skewed intersecting roads with difficult sight lines	Looking West along Route 66 near Middle Haddam Road

Photo 2	
Vehicle / pavement dominated gateway	Looking East along Route 66 at Middle Haddam Road

Photo 3	
Adaptive reuse of historic architecture enhances sense of place	Looking West from Middle Haddam Road

Photo 4	
Intersection lacks pedestrian crosswalks & ramps; bituminous islands & excessive pavement lack visual interest	Looking East along Route 66 at Middle Haddam Road

Photo 5	
Unorganized front yard parking	Looking Southeast from Middle Haddam Road

Photo 6	
Excessive pavement; lacks visual & pedestrian amenities	Looking West on Route 66 towards Middle Haddam Road

2.12.3 East Hampton Commercial Center

East Hampton's commercial center begins upon a steep ascent up West High Street (Highway 66) to the intersection of Maple Street. This western gateway is signified by St. Patrick Church, cemetery, and historic residences adaptively re-used as small businesses. Pavement dominates the northeast corner at this 5-way intersection. There is a traffic and pedestrian signal and crosswalk striping, but not all corners have accessible curb ramps. East Hampton High School is accessed to the North by a narrow bituminous walk adjacent to the west side of N. Maple Street.

Sidewalks line the south side of West and East High Street (Highway 66) from Maple Street to just east of Lakeview Street. On the North Side of the street, sidewalks connect businesses between North Main Street to the Walgreens driveway and begin again between Lakeview Street and Old Marlborough Road. The shoulder width varies with limited provisions for bicyclists. East of Main Street, the shoulder narrows to accommodate center turn lanes which continue to Lakeview Street. A cyclist was observed on the north sidewalk near Stop and Shop. Pedestrian amenities such as seating areas with benches and trash receptacles have been installed in front of the Town Hall and Classic Auto on the south side of the street and the furnishings match the ones found in East Hampton Village Center.

Opportunities to cross West High Street are limited to the signaled intersections of Main Street, Lakeview Street, and the entrance to Stop and Shop. Each of these intersections is complete with crosswalks and accessible curb ramps. Sidewalks with a colored concrete band and unique scoring pattern along the south side are associated with recent streetscape improvements. Gaps in sidewalks on the north side impede safe circulation and overall pedestrian connection to adjacent residential areas is lacking. The Street is lit from cobra-heads on utility poles along the south side of the street.

Town wayfinding signage is located throughout the commercial center and Village Center, directing to schools, services, and recreation within East Hampton. The best views of Lake Pocotopaug can be observed driving down Lakeview Street, but it can also be seen from either direction down East High Street just east of the Lakeview Street intersection. On the north side, wayfinding signage, road signage, utility poles, and vegetation obscure a sign for the lake and the view beyond. The speed limit increases entering and exiting the central commercial area.

The locations of the following photos in the East Hampton Commercial Center are shown on the Photo Location Inventory Key Map, Figure 2-23.

Photo 1	
Gateway signage & steep slope approaching commercial center	Looking East along Route 66 near Maple Street

Photo 2	
Signaled intersection lacks pedestrian crossing & bus provisions	Looking Southeast at Route 66 and Maple Street

Photo 3	
Overhead utilities dominate, misshapen trees. Flags on utility poles are a repetitive element throughout East Hampton.	Looking West along Route 66 near Maple Street

Photo 4	
Sense of place enhanced by historic elements	Looking West along Route 66 near Gov. Bill O'Neill Drive

Photo 5	
Sidewalks on South side. Wide shoulders provide room for cyclists.	Looking East along Route 66 near Laurel Glen Drive

Photo 6	
Town standard wayfinding signage	Looking East along Route 66 at Main Street

Photo 7	
Recent streetscape improvements provide safe pedestrian crossing	Looking East along Route 66 at Main Street

Photo 8	
Narrow shoulders inadequate for cyclists; concrete driveway ramps emphasize pedestrian way	Looking West along Route 66 at the Eversource Driveway

Photo 9	
Streetscape amenities provide visual interest & enhances walkability	Looking East along Route 66 at the East Hampton Town Hall

Photo 10	
Front yard parking backs into the road; gap in sidewalk on north side	Looking North from Route 66 near Mallard Cove

Photo 11	
Safe pedestrian crossing at signaled intersection; however, lacks continuous walk on north side	Looking East along Route 66 at Lakeview Street

Photo 12	
Lake Pocotopaug: visual & recreational amenity at eastern town center gateway	Looking North towards Lake Pocotopaug from Route 66

2.13 Environmental and Natural Resources

The study area was screened for the following natural and cultural resources and physical environment features:

- Surface Water Resources
- Groundwater Resources
- Wetlands
- Floodplains
- Threatened and Endangered Species and Critical Habitats
- Historic Register Properties
- Sensitive Noise Receivers
- Hazardous Risk Sites

In addition to reviewing aerial images of the study area, current Geographic Information Systems (GIS) data from the Connecticut Department of Energy and Environmental Protection (CTDEEP), and the Towns of Portland and East Hampton were obtained and reviewed during this screening analysis.

2.13.1 Surface Water Resources

Surface water resources within or near the study area include the Connecticut River, and Lake Pocotopaug, as well as numerous ponds and creeks.

In Portland, the Connecticut River is classified by CT DEEP as Class SB, which designated uses are habitat for marine fish and aquatic life and wildlife, commercial shellfish harvesting, recreation, industrial water supply, and navigation.

The water quality of Lake Pocotopaug in East Hampton is classified by CT DEEP as Class A, which is a designated use for potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply, and other legitimate uses including navigation. Discharges are restricted from drinking water treatment systems, dredging and dewatering, and emergency and clean water discharges. The water quality of Bevins Pond is classified as Class B water. Designated uses include recreational use, fish and wildlife habitat, and other legitimate uses including navigation. In addition to the restricted discharges for Class A surface water, Class B waters are also restricted to cooling waters and discharges from industrial and municipal wastewater treatment facilities. The 2016 East Hampton Watershed Based Plan finds that the water quality of the Lake Pocotopaug is fully supportive of aquatic life.

2.13.2 Groundwater Resources

The groundwater in the study area in Portland is classified by the CTDEEP as GB near the Connecticut River and GA or GAA near Pecausett Pond. In East Hampton, the groundwater is classified as Class GA or GAA in East Hampton near Lake Pocotopaug.

Class GB designated uses are industrial process water and cooling waters and presumed unsuitable for human consumption without treatment. Class GAA designated uses are existing or potential public supply of water suitable for drinking without treatment and baseflow for hydraulically connected surface water bodies. Class GA designated uses are existing private and potential public or private supplies of water suitable for drinking without treatment and baseflow for hydraulically connected surface water bodies. All groundwaters not specifically classified are considered as Class GA.

2.13.3 Wetlands

According to the U.S. Army Corps of Engineers (ACOE) 1987 Wetlands Delineation Manual, federal wetlands can generally be defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The State of Connecticut defines wetlands as land, including submerged land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the Natural Resources Conservation Services (NRCS).

Based on a review of CTDEEP GIS mapping, as shown in Figure 2-24, wetland soils are located throughout the study area. These areas indicate potential for the presence of wetlands, but do not represent delineated wetland areas.

2.13.4 Floodplains and Stream Channel Encroachment Lines

Floodplains are low-lying areas adjacent to rivers or streams that are inundated periodically by floodwaters. A 100-year floodplain is an area that has a one percent chance of being inundated by floodwaters in a given year, whereas a 500-year floodplain is an area that has a one-five hundredth chance (0.2%) of being inundated by floodwaters in a given year. Floodways are located within floodplains and consist of the river or stream channel plus any portion of the 100-year floodplain which carries stream flows during flood events. Floodplains and floodways are important for storing floodwaters so that adjacent properties and downstream areas are not damaged during flood events. In Connecticut, stream channel encroachment lines (SCELs) are jurisdictional boundaries established by the CTDEEP that outline riverine floodplain areas and which may also include portions of 100-year floodplains and floodways.

There are 100-year floodplains and 500-year floodplains within the study area, primarily associated with the Connecticut River and Lake Pocotopaug. These can be seen in Figure 2-25 in Appendix A.

There are no Stream Channel Encroachment Lines within the study area.

2.13.5 Threatened and Endangered Species

Rare, threatened, and endangered species are protected by federal and state legislation. Information on species designated (listed) as threatened and endangered at the state and federal levels is compiled and made available through the CTDEEP's Natural Diversity Data Base (NDDB).

The CTDEEP NDDB GIS data layer was consulted to determine if there were any records in the study area. Due to the sensitivity of the information, the GIS data layer only depicts approximate locations of protected species, their habitats, and/or significant natural communities. The GIS data review revealed NDDB areas surrounding the Connecticut River in Portland and areas surrounding Lake Pocotopaug in East Hampton.

2.13.6 Historic Register Properties

There are no properties listed on the National Register of Historic Places within the project study area based on national register database (dated 10/18/19). However, a majority of the properties along Main Street and Marlborough Street in Portland Commercial Center and along West High Street and East High Street in East Hampton Commercial Center are listed on the State of CT Register of Historic Places.

2.13.7 Sensitive Noise Receivers

The Federal Highway Administration's Noise Abatement Criteria (NAC) documented in 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise is based on Land Use Activity Categories. Land uses considered most sensitive to highway/roadway noise are designated as either Land Use Activity Category A or B. Land Use Activity Category A includes lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such uses include outdoor amphitheaters, outdoor concert pavilions, and National Historic Landmarks with significant outdoor use. The only potential Category A use in the project area is Old Mine Park, given its historic significance and passive recreational use.

Land Use Activity Category B includes picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. The study area possesses multiple properties that qualify as Category B sensitive noise receivers.

2.13.8 Hazardous Risk Sites

Data sources that were reviewed to identify potential hazardous materials and environmental risk sites within the study area include the Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) GIS database, CTDEEP's List of Contaminated or Potentially Contaminated Sites, CTDEEP's Brownfields Inventory, and CTDEEP's Landfill Leachate and Wastewater Discharges GIS data.

CTDEEP's List of Contaminated or Potentially Contaminated Sites (Dated 7/10/2019) identified forty-three sites within the study area. These sites within Portland include:

- 1611 Portland-Cobalt Road
- 150 Marlborough Street
- 204 Marlborough Street
- 1096 Portland-Cobalt Road
- 182 Main Street
- 1621 Portland-Cobalt Road
- 426 Gospel Lane
- 464 Portland-Cobalt Road
- 200 Main Street
- 421 Gospel Lane
- 61-131 Marlborough Street
- 1 Grove Street
- 1633 Portland-Cobalt Road
- 181 Main Street
- 309 Airline Avenue
- 687-691 Portland-Cobalt Road
- 127 Main Street
- 90 Main Street
- 231 Airline Avenue
- 271-277 Marlborough Street
- 80 Main Street

CTDEEP's List of Contaminated or Potentially Contaminated Sites within East Hampton include:

- 70 Main Street
- 115 Main Street
- 80 East High Street
- 25 East High Street
- 35 West High Street
- Route 16 & 66 (Dot East Hampton)
- 253 West High Street
- 59 Main Street
- 15 North Maple Street
- 368 West High Street
- 32 East High Street
- Route 16 at Route 151 (former Gulf Station and Charter Marketing)
- 100 Main Street
- 103 Main Street
- 37 East High Street
- 25 East High Street
- 190 East High Street
- 4 West Point Road
- 56 Main Street
- 11 East High Street & 5 East High Street
- 51 North Main Street
- 209 West High Street

There are no sites within the study area identified in the EPA CERCLIS database. The CTDEEP's Brownfields Inventory revealed one site within, or near, the study area. There are no sites within the study area identified in CTDEEP's Brownfields Inventory. Additionally, there are no listed CT DEEP Landfill Leachate and Wastewater Discharges in the study area.

2.14 Land Use and Economic Development

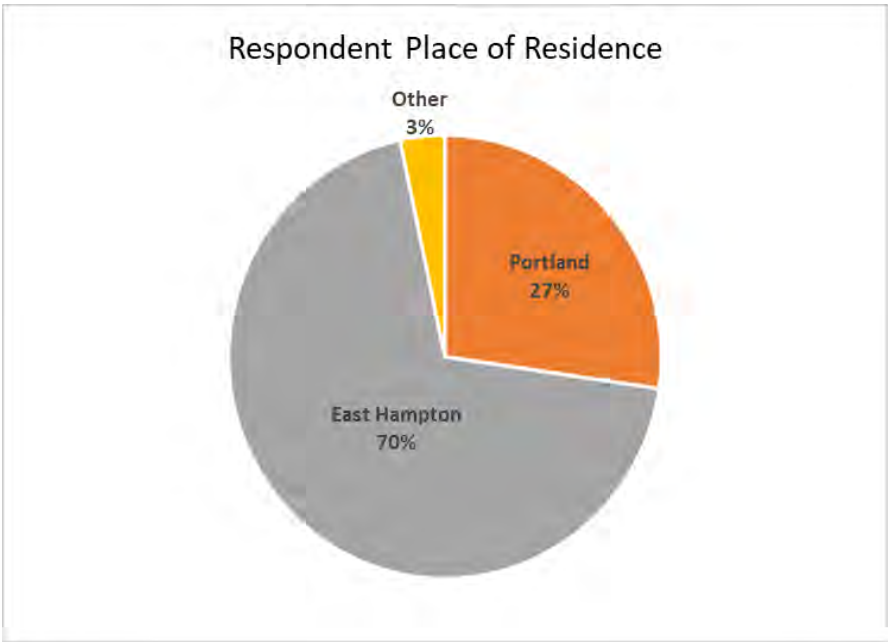
In addition to the transportation and environmental analysis, land use, zoning, economic and market trends on the study area were evaluated. A review of planning documents helps develop a clear understanding of existing land use and economic conditions in the study area to facilitate an understanding of how future development will occur. A review of the existing demographic and economic conditions on the study area was conducted and provided in Appendix O, which presents demographics, economic profile, market trends, as well as land use and zoning for the Towns within the study area.

2.15 Online Public Engagement Survey

As part of the study, an online survey was conducted to collect additional information from the public on existing deficiencies and potential improvements to include in the study recommendations. The public was notified of the online survey through e-mails, social media outlets, and other direct interactions with the public. The survey was conducted between August 1, 2018 and September 30, 2018 via SurveyMonkey, with 485 responses received. The online public engagement survey questions and result charts are included in Appendix P. The section below presents the detailed summary of the survey results.

Survey Demographics

Seventy percent of respondents reside in East Hampton, 27% live in Portland, and 3% reside in various Towns in the region.



Fifty two percent of respondents live along the Route 66 Corridor. Eighteen percent of respondents work at a business along the corridor. The following percentages denote the Towns in which the respondents work:

- 16% in East Hampton
- 13% are either retired or do not work
- 10% in Middletown
- 9% in Portland
- 9% in Hartford
- 3% in East Hartford
- 2% in Glastonbury
- The remaining respondents work in various Towns through the state

Travel

Route 66 is utilized in a variety of ways. Eighty eight percent of respondents use Route 66 for shopping and local errands. Relating to regional travel, 62% commute to the West towards Middletown, 59% commute towards Marlborough, 72% traveling to Route 2 for regional destinations, and 73% traveling to Route 9 and I-91 for regional destinations. Twenty seven percent of respondents use Route 66 for recreation, 12% use it for walking or biking, 6% for driving to school. Less than 1% of respondents utilize it for waiting for a bus or walking to school.

Of the respondents who commute east toward Marlborough, 60% travel toward Route 2 West, 51% to both Route 2 East and Route 66 East towards Hebron, 31% travel toward I-91 North, 26% to I-91 South, and 25% to Route 3. Only 4% of this group utilize the Park and Ride at Route 2 – Exit 12 and take the commuter bus to Downtown Hartford.

Of the respondents who commute west toward Middletown, 62% continue to Route 9 North, 59% west on Route 66 toward Middlefield, 44% to Route 9 South, 42% to I-91 North, and 37% to I-91 South.

All respondents travel using a personal vehicle to travel on Route 66. Between 7% and 12% of respondents use a motorcycle, work vehicle, bicycle or walk. Less than 2% of respondents travel using a tractor trailer, take the bus or use a rideshare/ carpool program on Route 66.

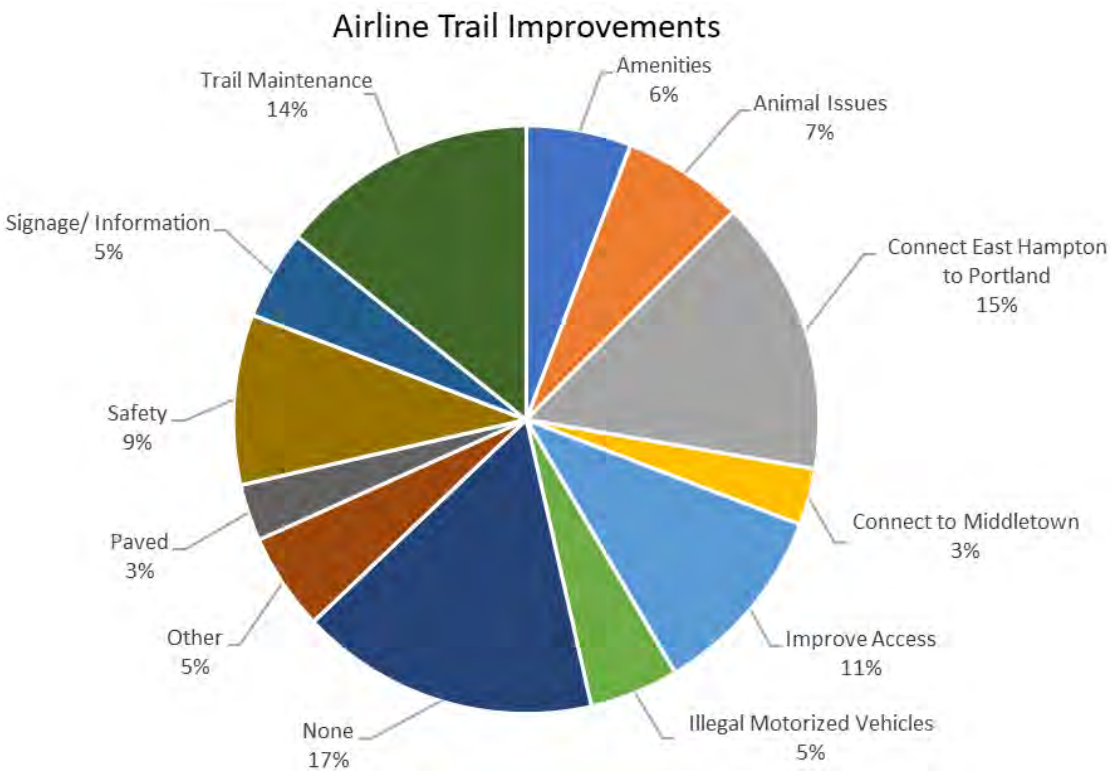
Fitness and Recreation

Respondents in general do not use Route 66 for fitness or recreation. Sixty percent do not use the roadway at all for fitness, 26% use it 1-3 days per week, and 14% use it 4-7 days per week. Eighty percent walk, 32% bike, and 18% run.

Seventy percent of respondents use the Airline Trail. Forty one percent use it a few times a year, 17% monthly, 11% over twenty times per month, and 8% a few times per month. Over 80% of Airline Trail users drive to a parking lot to access the Airline Trail, while 16% either walk or ride a bicycle to access the trail. Almost 40% of users access the trail at Cranberry Bog in East Hampton. Eleven percent of users access the Airline Trail from Main Street in East Hampton. The remaining trail users access the trail at various locations throughout Portland, East Hampton, and surrounding towns.

Respondents expressed their most important concerns and/ or suggested improvements with the Airline Trail. Seventy percent of respondents agree the Airline Trail should be connected through East Hampton to the new segment in Portland. Improvements trail users would like to see on the Airline Trail include:

- Improved connectivity between East Hampton, Portland, and Middletown
- Improved or additional access points (parking facilities, ease in accessing)
- Increased amenities (bathrooms, garbage facilities, wheelchair accessibility)
- Improved trail maintenance (erosion issues, tree trimming, litter)
- Improved safety (illegal motorized vehicles, road crossings, lighting, parking lot theft)
- Increased information and signage (maps, trailhead locations, parking)



Transit

Almost 80% of respondents are not aware that Middletown Area Transit (MAT) operates bus service between East Hampton and Downtown Middletown. A majority of respondents would not begin to use transit if it were more readily available. However, over half of respondents believe bus stop amenities should be installed along the MAT Route F to encourage more bus travel. Most agree that bus service should be maintained to provide service to residents regardless of the operation cost.

Land Use and Future Development

In Portland, over 70% of respondents would like to see more retail/ restaurants, 30% more professional services, 29% mixed-use development, 17% light manufacturing businesses, 12% corporate offices, 10% single-family homes, and 10% multi-family homes. Twenty percent of respondents would like to see no new development in Portland.

In East Hampton, 68% of respondents would like to see more retail/ restaurants, 31% more professional services, 27% mixed-use development, 19% light manufacturing businesses, 10% corporate offices, 9% single-family homes, and 9% multi-family homes. Twenty-four percent of respondents would like to see no new development in East Hampton.

Outside of the Downtown areas of Portland and East Hampton, 63% of respondents would like to see more retail/ restaurants, 36% more professional services, 23% mixed-use development, 22% light manufacturing businesses, 16% corporate offices, 13% multi-family homes, and 10% single-family homes. Twenty-four percent of respondents would like to see no new development in East Hampton. Twenty percent of respondents would like to see no new development along the corridor.

Section 3
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.

This section concludes with future areas of concern based upon the results of the traffic analyses and identified safety concerns. These areas will be the focus of planning and traffic analyses with the goal of generating a set of physical improvements to accommodate projected travel demand, in addition to addressing the safety concerns, multi-modal accessibility, and other operational goals on the Route 66 corridor.

3.1 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. The potential future developments that are anticipated to generate additional traffic on Route 66 study area within the 20-year study horizon are summarized below. It should be noted that the future traffic forecast was estimated based on currently approved and/or pending improvement plans and projects. A review of the traffic volume growth is summarized below.

3.1.1 Future Developments

In order to forecast traffic to be generated by potential development and redevelopment that may occur along the corridor within the study time horizon, the study team prepared a *Route 66 Corridor Study Future Conditions Planning Study Report* (conducted by RKG Associated, Inc., July 2019). The Future Conditions Planning Study Report is a synopsis of the projected population and employment growth in East Hampton and Portland, as well as a catalogue of development projects that are anticipated along the Route 66 corridor. The report highlights the anticipated background growth in both communities and describes development activity that will impact travel along the corridor. Zoning considerations are also included that identify potential growth areas to help inform infrastructure needs and improvements. The information in this report will feed into the transportation recommendations so future changes along Route 66 are not negatively impacted by traffic, access, or safety issues. The *Route 66 Corridor Study Future Conditions Planning Study Report* is provided in Appendix Q. Based on the planning study, the parcels and areas identified for future development and/or redevelopment within the 20-year study horizon are illustrated in Figure 3-1 and 3-2 in Appendix A, for Portland and East Hampton, respectively. The potential land use and completion year for these future developments are summarized in Table 3-1 in Appendix B.

In Portland, the prominent developments will take place near the west end of the Route 66 study area between Gospel Lane and Main Street, focusing on residential and commercial mixed-use development. This area has easy access to Route 66 and Route 17A and the surrounding amenities. The proposed Brainerd Place mixed-use development will be located at the southeast corner of the Route 66 and Route 17A (Main Street) intersection and is anticipated to generate significant traffic on the Route 66 study area.

Intersection of Route 66 at Route 17A (Main Street) in Portland, Looking East

In East Hampton, the major developments will be located close to the east end of the Route 66 study corridor, which is in proximity to Route 2. The developments that are anticipated to generate significant traffic in East Hampton include Edgewater Hills mixed-use development and Hampton Woods residential development.

East Hampton Commercial Center, Looking East

Route 66 corridor close to Portland and East Hampton Townline is expected to see less significant additional development within the study horizon. In addition, the areas such as Downtown Portland, Historical Village Center in East Hampton, Downtown East Hampton, and Cobalt Area are considered to have the potential for small commercial or mixed-use redevelopment even though no specific plans are in place yet.

3.1.2 2040 Future Traffic Volumes

Based on the CTDOT transportation model and methodology described above, the 2020 Corridor Conditions intersection turning movement traffic volumes were projected to 2040 Future Conditions intersection turning movement traffic volumes for the peak hours at the study intersections, as shown in Figure 3-3 in Appendix A.

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. Table 3-2 in Appendix B shows that 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.

In addition, the available CTDOT triennial 24-hour continuous automatic traffic recorder (ATR) data between 2003 and 2015, as well as the ATR data collected by Tighe & Bond in 2018, were reviewed to evaluate the historical traffic and growth in the study area. The historical ATR data are summarized in Table 3-3 in Appendix B, while the historical traffic growth is summarized in Table 3-4 in Appendix B.

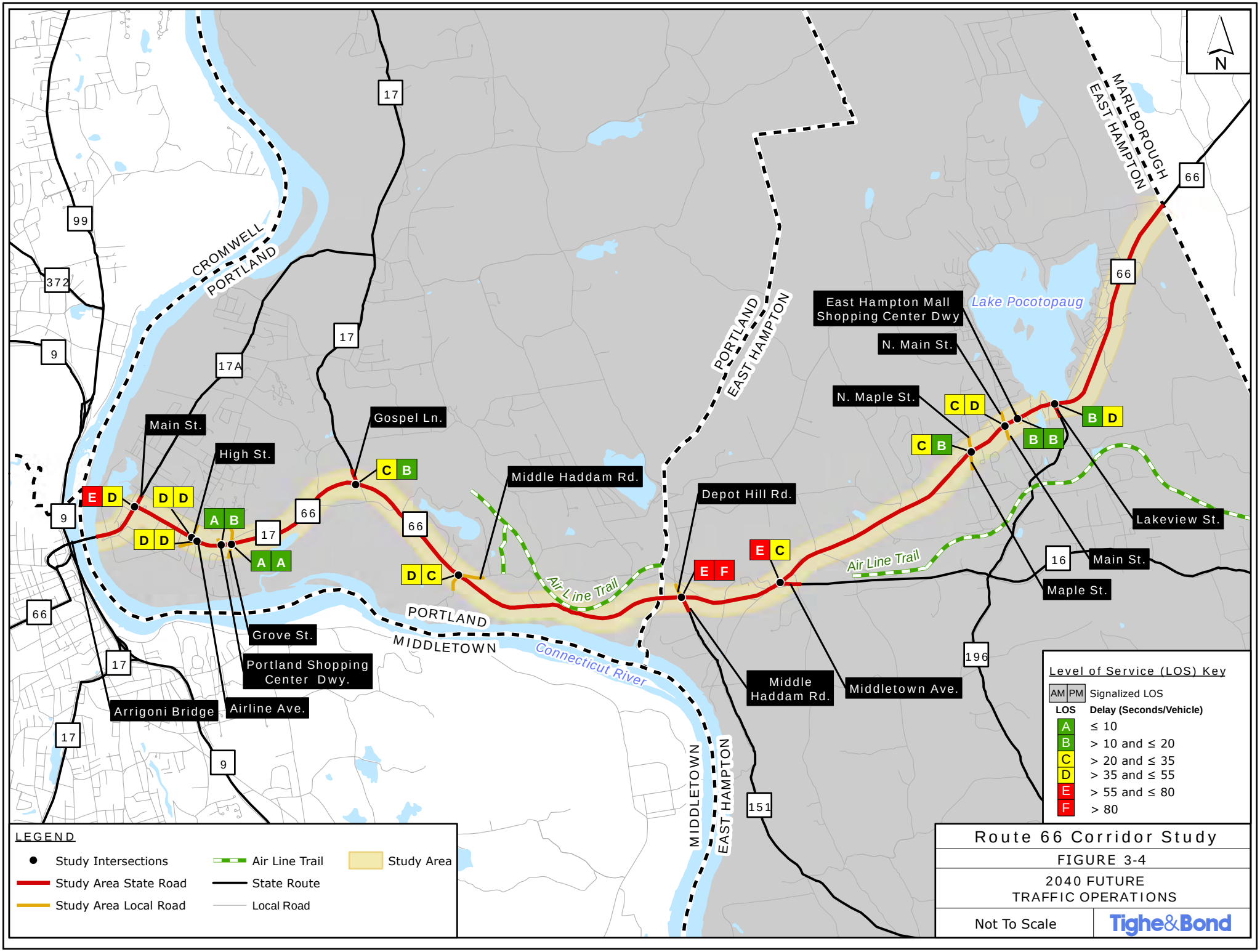
As shown in Table 3-3, the daily traffic volumes along Route 66 peaked around 2006 before the economic recession and began to decline. Route 66 started to recover in 2012 and volumes have since returned to pre-recession levels in most areas along the corridor by 2018. The traffic growth included in Table 3-4 shows a long-term annual growth rate of 0.2 percent between 2003 and 2018. For a short-term period, Route 66 have seen a growth rate of 2.9 percent between 2012 and 2018 and a growth rate of 1.8 percent between 2015 and 2018. In general, the historical traffic volume growth rates are consistent with the traffic volume projection between 2020 Corridor Conditions and 2040 Future Conditions for the study area intersections.

3.2 Future Traffic Operations

Utilizing the existing geometry and traffic signal settings established under the 2020 Corridor Conditions traffic analyses, traffic operations for the 2040 Future Conditions traffic volumes were evaluated for the study area intersections using Trafficware's Synchro plus SimTraffic 10 – Traffic Signal Coordination Software, based on the *Highway Capacity Manual (HCM), 6th Edition* methodology.

Figure 3-4 on the following page and Tables 3-5 and 3-6 in Appendix B summarize the expected traffic operations of the corridor in each of the peak periods. Figure 3-4 presents a visual representation of the overall signalized intersection LOS results on a study area map with the LOS color coded by letter. Within Table 3-5, intersections, approaches and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 3-6, approaches or movements with average and/ or design queues that exceed the available storage are highlighted in red. Capacity analysis worksheets for the 2040 Future Conditions traffic operations are included in Appendix R.

The future traffic growth further exacerbates existing capacity issues along the Route 66 corridor at the study area intersections during the peak hours. Select approaches experience an increase in delay and reduction in LOS due to the increased traffic volumes. In general, similar to the traffic operations under Existing Conditions, queueing in the westbound direction during weekday morning commuter peak hours and in the eastbound direction during weekday afternoon commuter peak hours at the study area intersections are significantly increased due to the increased traffic volumes. These delays will likely cause residual delays in excess of those shown by the LOS results. Traffic operations along Route 66 are significantly impacted during the peak hours due to the significant amount of traffic growth expected along the corridor as described in Section 3.1.



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3.3 Future Optimized Traffic Operations

The 2040 Future Traffic Volumes were also analyzed with an optimized traffic network where the physical lane geometry remained unchanged, but traffic signal timings including the coordination and system settings along the corridor was optimized. The purpose of the 2040 Future Optimized traffic analysis is to determine how the signalization along the corridor will process expected traffic without any significant physical improvements.

The optimization process included a review of the coordinated system along Route 66, the coordinated system cycle lengths, and signal phase timing splits at each of the study area intersections to balance delays on the intersection approaches to increase the overall efficiency of the traffic operations. The optimization process was similar to those employed by CTDOT, which monitors state-maintained coordination systems, periodically modifying the signal timing based on current volumes to maintain operational efficiency. A study area minimum cycle length of 60 seconds and maximum cycle length of 120 seconds were utilized during optimization to assess the opportunities available from optimization. The optimization of the traffic signal operation included the following:

- Optimize the cycle length (increased from 80 seconds to 120 seconds) and the timing splits at the intersection of Route 66 and Main Street during weekday morning peak hours. Retain the existing cycle length of 80 seconds but optimize the timing splits at the intersection during weekday afternoon peak hours. It should be noted that the traffic signal at the intersection of Route 66 and Main Street is operated on a time-based coordination system along Route 17A (Main Street) and the traffic signal optimization should be further reviewed along with the remaining traffic signals on the same coordination system along Route 17A. The optimization of the cycle length and timing splits at the intersection are expected to improve the overall intersection operation, however, the southbound approaches on Route 17A (Main Street) will continue to operate at unacceptable LOS F with the optimization.

- Optimize the cycle length (increased from 80 seconds to 100 seconds) and the timing splits at the coordinated intersections of Route 66 at High Street, Airline Avenue, Portland Shopping Center Driveway, and Grove Street, which operate on a time-based coordination system on the west end of Route 66. These four intersections are expected to operate at acceptable LOS with the traffic signal optimization during both peak periods.

- Optimize the cycle length (decreased from 112.2 seconds to 110 seconds) and the timing splits at the uncoordinated intersection of Route 66 and Middle Haddam Road (West Junction) during both peak periods. The intersection is expected to operate at acceptable LOS with the traffic signal optimization.

- All the approaches of the uncoordinated intersection of Route 66 at Depot Hill Road & Route 151 are expected to operate at unacceptable LOS during both peak periods. The optimization of the cycle length and timing splits will not resolve the operational issues at this intersection.

- Optimize the cycle length (increased from 86.9 seconds to 90 seconds) and the timing splits at the uncoordinated intersections of Route 66 and Route 16 during both peak periods. The intersection is expected to operate at acceptable LOS with the traffic signal optimization.

- The uncoordinated intersection of Route 66 and Lake View Street is expected to operate at acceptable LOS during weekday morning peak periods under 2040 Future Conditions and therefore no traffic signal optimization is required. During the weekday afternoon peak hours, the intersection is expected to operate at acceptable LOS with the optimization of the cycle length (increased from 78.4 seconds to 80 seconds) and the timing splits.

A summary of the expected traffic operations following optimization is provided in Figure 3-5 on the following page and Tables 3-7 and 3-8 in Appendix B. Figure 3-5 illustrates the overall signalized intersection LOS and intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 3-7, intersection approaches and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 3-8, approaches or movements with average and/ or design queues that exceed the available storage are highlighted in red. Capacity analysis worksheets for the 2040 Future Optimized traffic conditions are included in Appendix S.

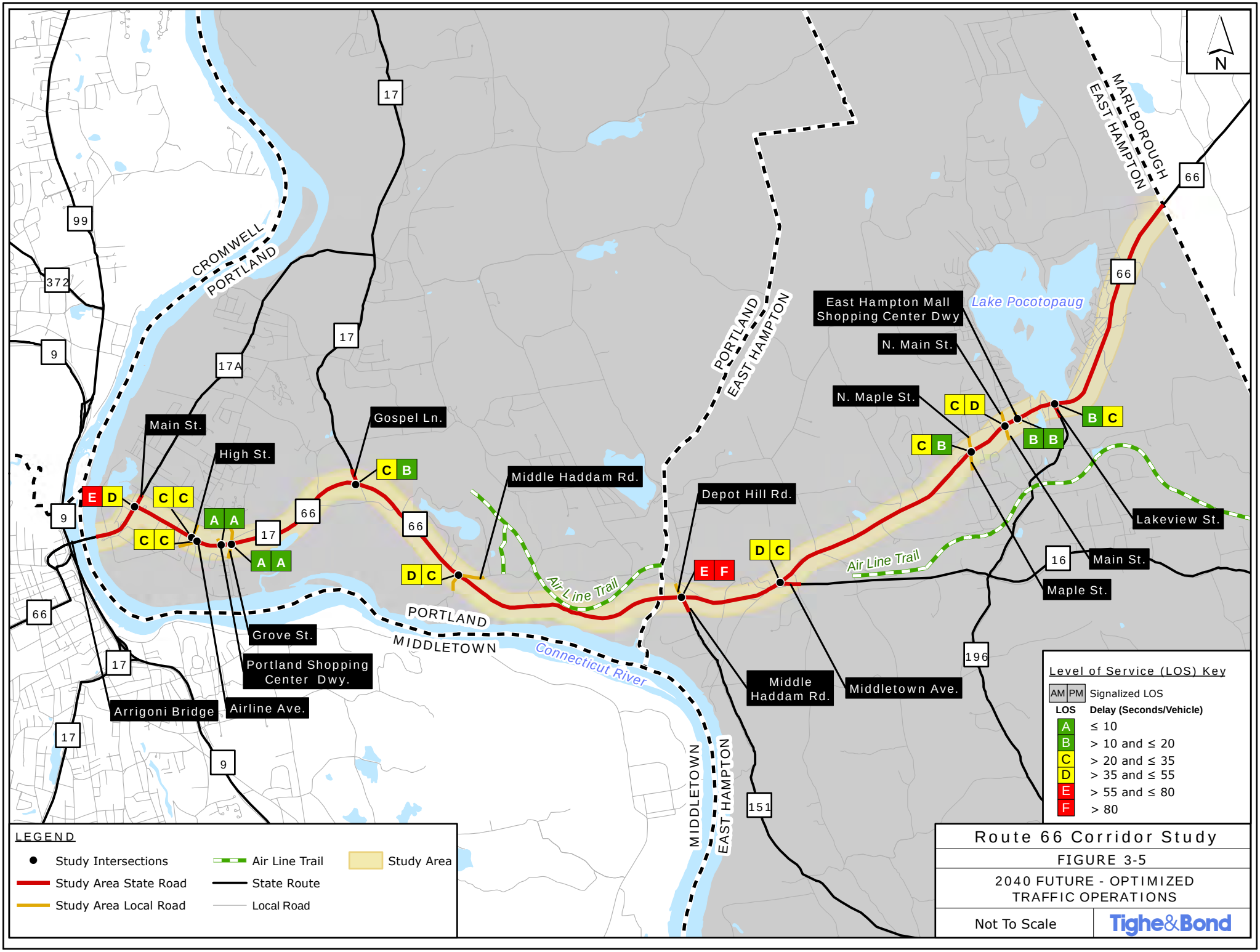
The traffic signal optimization mitigates some of the delay caused by the additional future traffic growth. Overall intersection LOS at select intersections during the peak periods are improved to acceptable levels, however, several intersections and/ or approaches remain at poor to failing LOS E and F conditions. A few approaches continue to operate at failing levels with queues beyond available storage and extending to and through adjacent intersections indicating the need for further investigation and potential physical improvements to the transportation system to mitigate poor operating conditions.

3.4 Areas of Concern

3.4.1 Traffic Operations

As identified in the traffic analyses, the poor traffic operations that were identified under the Assessment of Existing Conditions become worse under future travel demand and some intersections that exhibited acceptable operations begin to degrade with the additional forecast traffic volume. The intersections that experience long queues on the eastbound and westbound approaches under the existing conditions show increased queues under the future conditions. The areas outlined below will be the focus of efforts to plan roadway improvements to mitigate the impact of projected travel demand on Route 66 study corridor.

- Route 66 at Route 17A (Main Street)
    - LOS F operation on Route 17A southbound approach and LOS E operation on Route 66 westbound approach during weekday morning peak period. Route 66 westbound approach will operate at acceptable LOS D but Route 17A southbound approach will continue to operate at LOS F with traffic signal timing optimization.
    - Significant queues on Route 66 westbound approach during weekday morning peak period. Signal timing optimization will not resolve the queue issues at the intersection.



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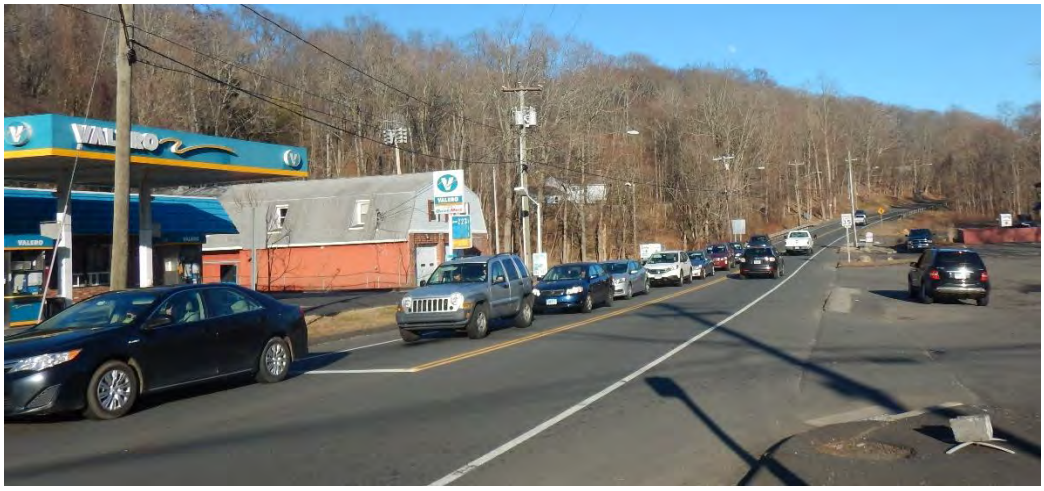
- Route 66 at High Street
    - LOS E operation on Route 66 eastbound approach during weekday afternoon peak hour. However, with the optimization of the cycle length and timing splits, this approach will operate at acceptable LOS D under 2040 Future Conditions.
    - Significant queues for Route 66 westbound approach during weekday morning peak hours and for Route 66 eastbound approach during weekday afternoon peak hours due to heavy commuter traffic along Route 66. Signal timing optimization itself will not resolve the queue issues at the intersection.
- Route 66 at Airline Avenue
    - LOS E operation for Route 66 westbound through approach during weekday morning peak hour and for eastbound approach during weekday afternoon approach. However, with the optimization of the cycle length and timing splits, these approaches will operate at acceptable LOS D or better under 2040 Future Conditions.
    - Significant queues for Route 66 westbound approach during weekday morning peak hours and for Route 66 eastbound approach during weekday afternoon peak hours due to heavy commuter traffic along Route 66. Signal timing optimization itself will not resolve the queue issues at the intersection.
- Route 66 at Middle Haddam Road/ Payne Boulevard
    - LOS E operation for the westbound shared through-right approach during weekday morning peak hour. However, with the optimization of the cycle length and timing splits, the intersection will operate at acceptable LOS under 2040 Future Conditions.
    - Significant queues for Route 66 westbound approach during weekday morning peak hours and for Route 66 eastbound approach during weekday afternoon peak hours due to heavy commuter traffic along Route 66. Signal timing optimization itself will not resolve the queue issues at the intersection.
- Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road
    - Overall LOS E/F operation and LOS E/F operation on all the approaches of the intersection during both morning and afternoon peak periods. The optimization of the cycle length and timing splits will not resolve the operational issues at this intersection.
- Significant queues for Route 66 westbound approach during weekday morning peak hour and for Route 66 eastbound approach during weekday afternoon peak hour based on the capacity analysis results. The optimization of the cycle length and timing splits will not resolve the queue issues at this intersection.

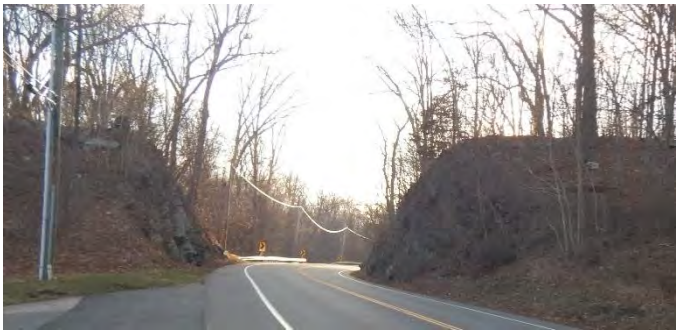


Long queues at the intersection of Route 66 at Route 151 in Cobalt, Looking East

- Route 66 at Route 16 (Middletown Avenue) / Park & Ride Driveway
    - Overall LOS E operation and LOS F operation on Route 16 (Middletown Avenue) northbound shared left-through approach during weekday morning peak hour.
    - Significant queues for Route 16 (Middletown Avenue) northbound approach during weekday morning peak hour based on the capacity analysis results. The long queues do not improve with signal timing optimization.
- Route 66 at Main Street / North Main Street
    - Significant queues for Route 66 westbound approach during both peak hours based on the capacity analysis results. The long queues do not improve with signal timing optimization.
- Route 66 at Lake View Street
    - LOS E operation for Route 66 eastbound approach during weekday afternoon peak hour. However, with the optimization of the cycle length and timing splits, this approach will operate at acceptable LOS C under 2040 Future Conditions.
    - Significant queues for Route 66 eastbound approach during weekday afternoon peak hour based on the capacity analysis results. Queues for Route 66 eastbound approach during weekday afternoon peak hour are improved with traffic signal optimization.

3.4.2 Safety Concerns

As discussed in the Existing Conditions Technical Memorandum, there are several safety concerns throughout the Route 66 Corridor. With the projected 2040 traffic volume growth, the safety concerns identified in the Existing Condition may be amplified under additional travel demand, higher congestion and additional development. Vehicles may increasingly utilize cut-throughs on local roads to avoid significant delays at poorly performing areas of the corridor. Currently, vehicles use Wolcott Avenue as an alternate to the intersection of Route 66 and Route 17A, William Street Extension to avoid the intersection of Route 66 and Route 17, and Middle Haddam Road as an alternative to Route 66 in Cobalt. These roadways, as well as other roadways, are expected to see increased cut-through traffic. In addition, an increasingly unsafe environment may develop along these relatively quiet, low-speed local roadways as cut-through and by-pass traffic increases. Concerns with vehicles leaving and entering the Route 66 corridor at intersecting roads with skewed alignments will likely worsen with the increased future traffic volumes on Route 66. The Ledges area in Portland is one location where existing unsafe conditions may worsen with increased future traffic volumes. The high collision rates at the intersections of Route 66 at 17A (Main Street), Route 66 at High Street, and Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road during the existing conditions may increase in the future as a result of the projected increase in future traffic volumes. Finally, as alternative travel modes become more utilized for both travel and recreation, the mixing of these modes along the existing Route 66 roadway is a concern that needs further investigation to identify viable off-road solutions to meet this travel demand.



The Ledges at St. Clement's Castle Driveway in Portland, Looking West

Section 4
Recommendations

This section details the recommended transportation system improvements and enhancements. 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 Study Advisory Committee, the Community Advisory Committee, 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 identified in Section 3.4 and address future traffic growth, improve safety, increase accessibility, 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.

The development and refinement of the preferred improvements was guided by the Towns of Portland and East Hampton as well as RiverCOG's desire to identify implementable solutions that adequately meet study goals by addressing both the existing deficiencies and potential future operational issues identified and described in the previous sections of this report.

4.1 Summary of Recommendations

The following sections present the recommended improvements for the areas of concern. The sections include a description of the improvement, illustrations of the recommended concepts and roadway cross-sections, as well as a summary of the expected traffic operations following implementation of the improvements when compared to the 2040 Future no-build condition. Concept drawings for each of the recommendations are included in Appendix C. The recommendations are accompanied by a Concept Improvement Alternatives Summary Matrix describing the existing and future deficiencies at each location, the scope of the improvements, and the benefits achieved through implementation.

A summary of the traffic analyses for each of the improvements, when applicable, is also provided. The overall intersection operations for the 2040 Future Improved Conditions are illustrated on Figure 4-1. A detailed summary of the traffic operations for 2040 Future Improved Conditions, with Level of Service and vehicular queues by approach, is provided in Table 4-1 and 4-2, respectively. Tables 4-3 and 4-4 in Appendix B provide a full summary of the traffic operations for each of the scenarios analyzed for comparison purposes. Capacity analysis worksheets for the 2040 Future Improved traffic operations are included in Appendix T.

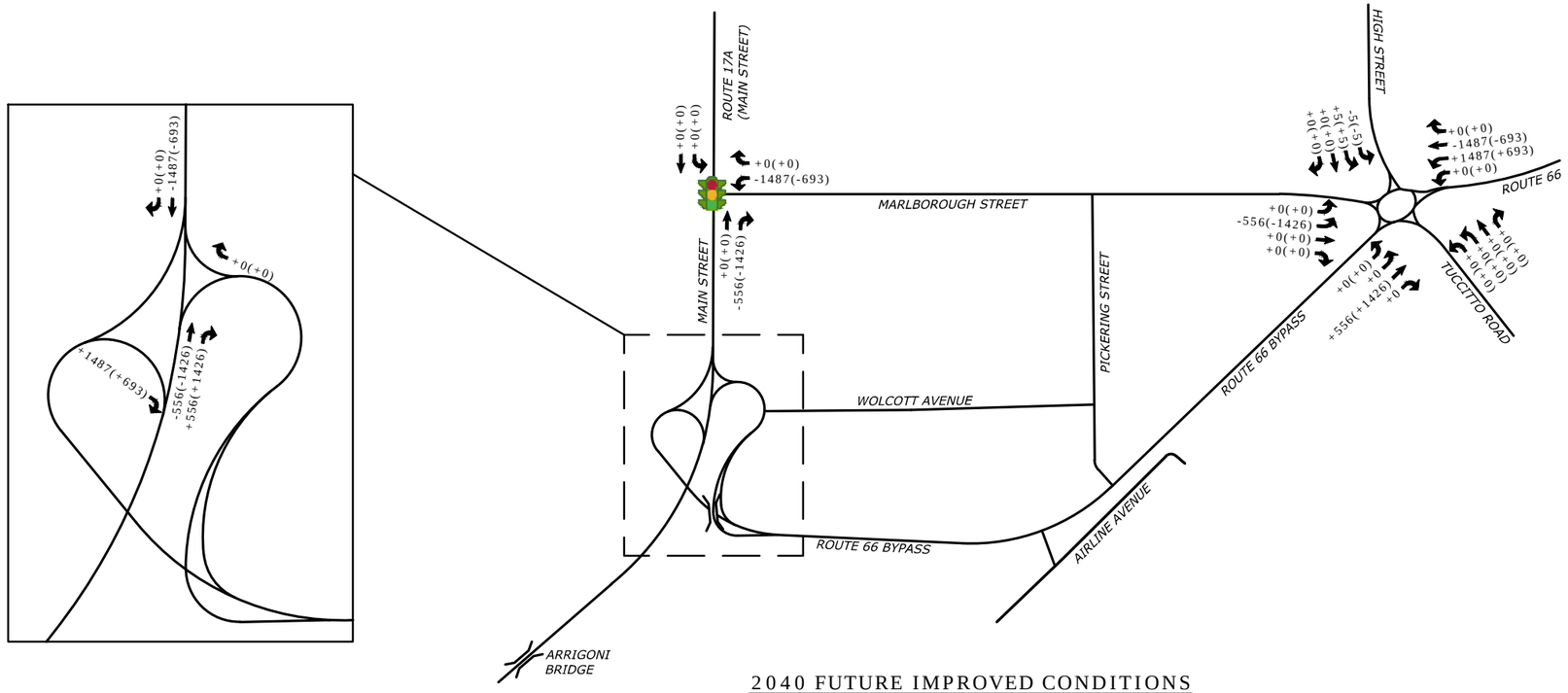
4.1.1 Concepts A-1, A-2 & A-3: Route 66 - Arrigoni Bridge to Airline Avenue

The Route 66 (Marlborough Street) at Main Street intersection serves as the western gateway to the Portland Village Center, carrying high traffic volumes and experiencing congestion under existing conditions due to the presence of the Arrigoni Bridge which carries Route 66 over the Connecticut River. The potential of future development along the Route 66 corridor exacerbate these issues and leads to significant congestion at the intersection in the future. Concepts A-1, A-2, & A-3 propose alternative improvement plans to address traffic congestion issues at the intersection and provide a "Complete Street" environment along Route 66. Concepts A-1 and A-2 present a long-term Route 66 Bypass alternative while Concept A-3 illustrates the intersection improvement plan that is part of the offsite mitigation of the proposed Brainerd Place development, which has been approved at the State and local levels. The following sections discuss the concepts in more detail.

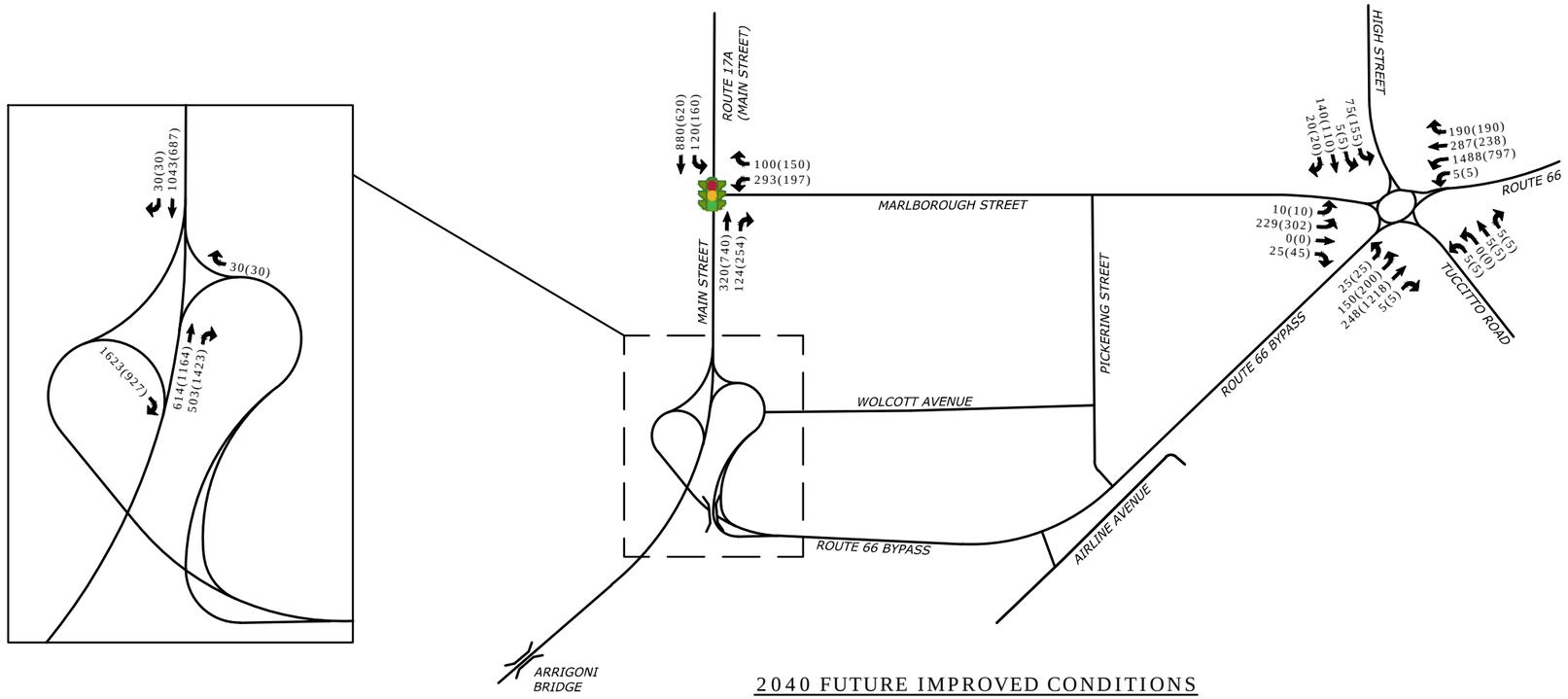
4.1.1.1 Route 66 Bypass - Concepts A-1 & A-2

These concepts present alternative improvement plans to develop a Route 66 Bypass between the intersection of Route 66 at Airline Avenue to the east and the Arrigoni Bridge ramps at Main Street/Lower Main Street to the west. The purpose of the bypass roadway is to divert regional traffic to the new Route 66 corridor leaving the segments of Main Street and Marlborough Street to carry less traffic and function as multi-modal town roadways. The proposed Route 66 Bypass will convert the abandoned railroad right-of-way adjacent to Airline Avenue and the southern section of Pickering Street to a four-lane roadway with two travel lanes in each direction, separated by a raised median. Sidewalks will be provided along both sides of the roadway. The Route 66 Bypass will have significant private property impacts along the new roadway corridor to accommodate the proposed cross section of the relocated state route. The 2040 Future traffic volumes associated with Route 66 Bypass improvements are projected and shown in Figure 4-2 and 4-3 for Concept A-1 and A-2, respectively, and can be found in Appendix A.

The western terminus of Route 66 Bypass requires realignment of the ramp system servicing the Arrigoni Bridge at Main Street and Lower Main Street to provide direct access to Route 66 Bypass. However, due to the elevation difference between the bridge and Pickering Street, tight curvature of the ramps and right-of-way restrictions, the geometric layout of the intersection of the bypass route with Main Street presents challenges that would result in significant impacts to private property and may require structural modifications to the east approach roadway to the Arrigoni Bridge.



2040 FUTURE IMPROVED CONDITIONS
ROUTE 66 BYPASS RE-ROUTED TRAFFIC VOLUMES - CONCEPT A-1



2040 FUTURE IMPROVED CONDITIONS
ROUTE 66 BYPASS TRAFFIC VOLUMES - CONCEPT A-1

LEGEND

VOLUMES: AM (PM)

Route 66 Corridor Study	
FIGURE 4-1	
2040 FUTURE IMPROVED CONDITIONS TRAFFIC VOLUMES - CONCEPT A-1	
Not To Scale	Tighe&Bond

At the east end of Route 66 Bypass, concepts A-1 and concept A-2 propose improvement alternatives, as described below:

- Concept A-1 proposes a five-leg hybrid multi-lane modern roundabout at Route 66, High Street, Marlborough Street, Route 66 Bypass, and Tuccitto Road. This concept represents widening but can be implemented without significant property impacts. The multi-lane hybrid modern roundabout would provide unique intersection control given the multi-leg configuration combined with high east-west traffic volumes travelling along Route 66 through this area.

- Concept A-2 proposes two closely spaced intersections, similar to existing conditions, at realigned High Street and realigned Marlborough Street/Riverside Street, respectively. These two intersections will operate under the same traffic signal control in a cluster configuration due to the proximity. Although the concept improves intersection capacity, it presents significant private property impacts in the adjacent area.

The Route 66 Bypass concept aims to divert significant amount of traffic from Main Street (between Arrigoni Bridge and Marlborough Street) and Marlborough Street (between Main Street and Airline Avenue) to the new roadway corridor, creating an excellent opportunity to reimagine Main Street and Marlborough Street and provide a "Complete Street" environment in the Portland Village Center. Concepts A-1 and A-2 propose the following complete street improvements on Main Street and Marlborough Street in Portland Village Center:

- Main Street between the Arrigoni Bridge and Marlborough Street is proposed to be converted from a four-lane roadway to a three-lane segment consisting of two 11-foot through lanes and a 14-foot center two-way left-turn lane (TWLTL). The remainder of the right-of-way is reallocated to provide a 5-foot bike lane in each direction and 10-foot on-street parking lane along the west side of the roadway, where feasible.

- Marlborough Street currently consists of four travel lanes with two lanes in each direction, separated by a raised median. Left-turn pockets are provided at major intersections along the segment. Concepts A-1 and A-2 propose two improvement alternatives for Marlborough Street. Alternative 1 provides a 11-foot travel lane, a 5-foot bike lane, a 2-foot buffer and an 8-foot parking lane in each direction with a 14-foot raised median and 11-foot left-turn lanes at major intersections. Alternative 1 maintains the existing access management restriction with the raised median. Alternative 2 provides a 11-foot travel lane, a 5-foot bike lane, a 2-foot buffer and an 8-foot parking lane in each direction, with a 14-foot two-way left-turn lane down the center of the corridor. Alternative 2 provides full access to the driveways along both sides of Marlborough Street via the proposed two-way left-turn lane. This option would significantly alter access along Marlborough Street and could better support redevelopment through better bi-directional access.

Given that traffic volumes at the intersection of Main Street and Marlborough Street are significantly reduced by the proposed Route 66 Bypass, the existing northbound channelized free-flow right-turn lane on Main Street can be eliminated and a traditional northbound shared through/right-turn lane provided. In addition, the existing westbound shared left/right-turn lane on Marlborough Street will be converted to a dedicated right-turn lane only.

Marlborough Street Alternative 1:

Marlborough Street Alternative 2:

As previously noted, the preliminary analysis of the bypass concept revealed significant obstacles to implementation. If the bypass project is pursued further in the future, the following items should be investigated further to assess the feasibility and benefit of the concept relative to both local and regional travel:

- Proposed horizontal alignment should be confirmed based on an appropriate design vehicle, CTDOT design criteria and standards, and available land adjacent to the bridge to seek a more feasible and less impactful horizontal alignment
- Proposed vertical alignment from the Arrigoni Bridge approach to the bypass roadway should be confirmed. While it has been noted that an extensive retaining wall will be required, more detailed analyses and calculations should be conducted to determine the retaining wall size and details of the ramp structure in addition to reviewing alternative alignments that would improve the overall geometrics of the bypass roadway
- Property impacts and associated driveway impacts should be further analyzed. There are several businesses adjacent the proposed Route 66 bypass alignment. Access to these properties will need to be reviewed and reconciled as necessary. Additional review of potential full-takes of residential properties along Airline Avenue should also be reviewed
- Potential modifications to the Arrigoni Bridge and/ or approaches as a result of the addition of the new ramp structure should be investigated

4.1.1.2 Main Street at Marlborough Street Intersection Improvements - Concept A-3

This concept presents the proposed off-site improvements at the intersection of Route 66 and Main Street as part of the impact mitigation of the Brainerd Place mixed-use development. The concept proposes minor roadway widening and restriping along the Main Street southbound approach at Marlborough Street to provide a dedicated southbound left-turn lane. The curve radius and lane width of the existing northbound channelized free-flow right-turn lane is tightened to reduce right-turning travel speeds. The crosswalk on the east leg is shifted away from the intersection to provide a refuge area on the median island. Americans with Disabilities Act (ADA) compliant pedestrian signals, push buttons, crosswalk, and sidewalk ramps are proposed at the intersection. This concept received Town of Portland and State approvals and will be implemented by the developer to mitigate the capacity impact of the development and improve pedestrian safety, however, capacity issues will persist at the intersection of Main Street and Marlborough Street with the projected traffic growth. In addition to the changes at Main Street, the Brainerd Place development will also construct a new traffic control signal at the main site driveway on Marlborough Street. The signal will provide a westbound left turn lane into the development and accommodate pedestrian movements across Marlborough Street at this location.

4.1.2 Concept B: Route 66 Pedestrian Safety and Mobility Improvements

There are multiple houses, businesses, jobs, goods and services, and other destinations along Route 66 in the Portland commercial center between Main Street, at the west end, and Grandview Terrace, on the east end. These complimentary uses create demand for a pedestrian friendly environment to accommodate alternative modes of transportation. The following sections summarize the recommended pedestrian mobility improvements along Route 66 in the Portland commercial center.

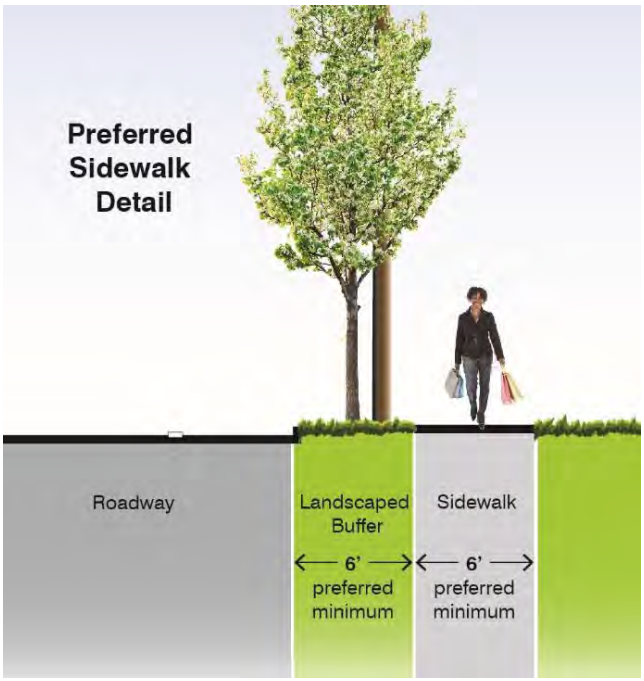
4.1.2.1 Sidewalk Installation & Extensions

Sidewalks are present along the north side of Route 66 within the Portland commercial center. General trends within transportation planning favor a "complete streets" approach to roadways by providing facilities for all user types. Residents expressed support for expanding sidewalk infrastructure in the study area.

In-fill sidewalk and concrete driveway apron improvements are proposed along the south side of Route 66 between Perry Avenue and Grove Street in Portland.

Sidewalks should be a minimum of 5-feet wide, with a preferred width of 6-feet where space allows. Given the travel speeds and traffic volume on Routes 66, sidewalks should be offset from the edge of the roadway to the greatest extent possible, preferably 6 feet or more where space allows. This separation removes pedestrians from exposure to large vehicle wind gusts, roadway noise, and water spray from wet payment. The separation area also provides space for snow storage and landscaping when appropriate.

Private property right-of-way impacts are expected to accommodate the in-fill sidewalk installation.



Typical Elevation View: Preferred Sidewalk Detail

4.1.2.2 Crosswalks & Actuated Pedestrian Crossing Signals

Crosswalks (that cross a public roadway) are present at three locations in Portland. Crosswalk facilities should be expanded as pedestrian infrastructure is expanded in the study area. The recommended locations for new crosswalks, based upon the proposed sidewalk network, include:

- Route 66 at Airline Avenue
- Route 66 at Portland Shopping Center Driveway
- Route 66 at Grandview Terrace

These locations would require the installation of crosswalk pavement markings, ADA compliant sidewalk ramps, push buttons and pedestrian signals. Additionally, existing crosswalks should be upgraded via construction of sidewalk ramps leading to pedestrian push buttons and installation of countdown pedestrian signal heads. It is also proposed to relocate the existing metal beam guiderail at Airline Avenue intersection further back to create space for pedestrian signal equipment and sidewalk ramp installation.

Crosswalk markings and pedestrian crossing signalization may precede longitudinal sidewalk construction in areas where intersections are improved. The potential impact of crosswalk installation is minimal, with pedestrian crossing times at signalized intersection causing a slight delay to traffic and only when pedestrian phases are actuated.

Due to the current traffic volumes and speeds in much of the study area, the location and treatment options of additional crosswalks should be evaluated for durability, visibility and their consistency with the streetscape of the surrounding area. Longitudinal (continental style) crosswalk markings are recommended for use at sidewalk and trail crosswalk locations that have high auto traffic volumes in the study area. These crosswalks provide the best visibility for drivers and pedestrians. This crosswalk marking type is preferred over decorative treatments due to superior visibility and lower maintenance cost on high volume roadways.

The use of decorative pavement markings in lieu of retro-reflective pavement markings should be reserved for low speed areas and are more appropriate in a downtown or village center district when combined with complementary streetscape amenities or enhancements. Decorative pavement materials are susceptible to deterioration when exposed to high traffic volumes and high turning movements.

4.1.3 Concept C: Multi-Modal Mobility Enhancements

Route 66 has traffic conditions that are generally unfavorable to bicyclists. High traffic volume and vehicular travel speed makes the roadway an unsuitable environment for most bicyclists. The inclusion of dedicated and/or shared bike lanes along and near Route 66 in the Portland commercial center should be considered as a means of providing operating space for bicyclists. Extension and improvements to the Air Line Trail are intended to provide an alternative route for bicyclists within the study area. The following sections summarize the recommended multi-modal improvements with a focus on the Airline Trail extension and enhancements to existing trail sections near the study area.

4.1.3.1 Portland Bike Access at Arrigoni Bridge and the Ramp Area

Concept C proposes bicyclists share the existing sidewalk with pedestrians on both sides of the Arrigoni Bridge to utilize the existing infrastructure at no cost.

On the Portland side of the bridge at the ramp area sight line issues were identified by cyclist groups during the public involvement process, specifically along the east side of Main Street. The concept proposes to slightly shift the existing sidewalk between the bridge and the off-ramp to the east and provide space for a bike ramp and dedicated bike lane following the Route 66 roadway alignment. Yield to bicyclist signs and bike lane pavement markings are proposed as part of the improvement.

In addition, to facilitate bicyclists crossing under the bridge to reach the other side of the road without sharing the travel lanes with vehicles on the ramps, the concept proposes to expand the embankment under the bridge to provide a bike path adjacent to the abutment that connects both sides on a dedicated path facility to accommodate both bike and pedestrians.

4.1.3.2 Portland Bike Access between Arrigoni Bridge and Airline Avenue

The Concept presents the following three bike access alternative plans between the Arrigoni Bridge and Airline Avenue:

- Alternative 1 proposes a shared bike lane on Main Street, Freestone Avenue, High Street, connecting to the intersection of Route 66 and Airline Avenue. This concept aims to utilize Freestone Avenue, a low-volume residential neighborhood street, to improve bike access. The proposed pedestrian signals, crosswalks, and sidewalk ramps at the intersections of Route 66 at High Street and Airline Avenue included on Concept B would facilitate safe crossing for bicyclists at those intersections.

- Alternative 2 proposes a dedicated bike lane on each side of Main Street and Marlborough Street, respectively, as part of the Route 66 Bypass improvement plans. The bike lane would be provided via 5-foot wide shoulder areas on both sides of the Route 66 travel way.

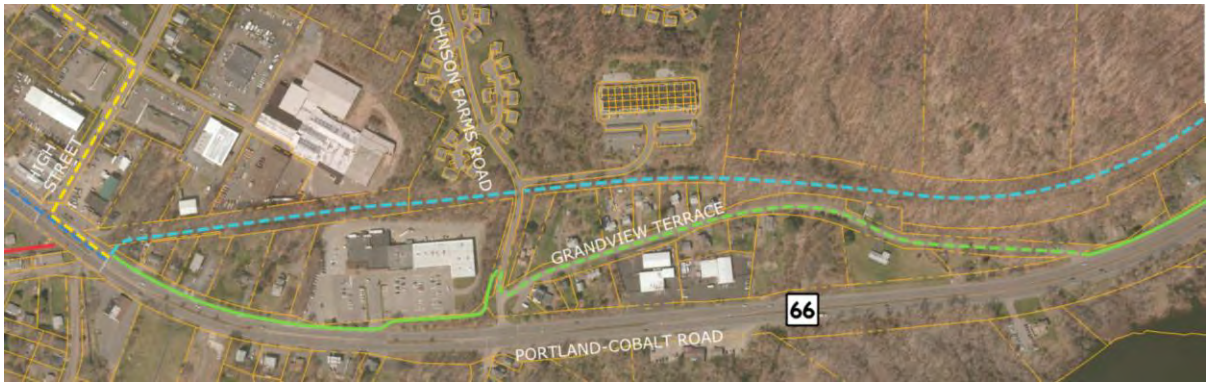
- Alternative 3 proposes to convert the existing railroad bed to an off-road multi-use path between Route 66 and Picking Street and a shared bike lane along the southern section of Pickering Street connecting to Arrigoni Bridge. Also, if the Route 66 Bypass is ever advanced, multi-modal accommodations should be incorporated into that project to provide a complete transportation system link along Route 66.

4.1.3.3 Portland Multi-Use Access between Airline Avenue and YMCA Camp Ingersoll

The Air Line Trail provides an alternative travel and recreation route through the study area for bicyclists and pedestrians. The trail is currently open from the YMCA Camp Ingersoll to the Portland-East Hampton Town Line in Portland. Concept C presents two alternative plans to extend the Air Line Trail between Airline Avenue and its current terminus at Portland YMCA Camp Ingersoll. The following sections discuss the concept in more detail.

- Alternative 1 proposes Air Line Trail extension, which converts the former Air Line Railroad right-of-way property, currently owned by multiple property owners, to an off-road multi-use path between Airline Avenue and Camp Ingersoll. A compacted fine-gravel trail is recommended for the entire length to mimic other sections of the facility. The trail should be a minimum of 10 feet to 12 feet wide, although 8 feet is an acceptable width for limited distances in constrained locations. Drainage improvements including the installation of additional drainage facilities and overland drainage swales should be considered to ensure that the trail is not adversely affected by storm events.

- Alternate 2 proposes a 10-foot 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, where the multi-use path connects to the proposed off-road Air Line Trail extension. The multi-use path would be separated from Route 66 but remain within the Route 66 right-of-way. The concept also proposes a shared bike lane for the segment on Grandview Terrace.



4.1.3.4 East Hampton Village Center

In East Hampton, the Air Line Trail begins at Aldens Crossing near Route 16, extending east though the study area. In addition, a mile-long section from its current termination point at Alden Crossing extending to the Portland Town Line at Depot Hill Road, started construction in early 2019. Concept C proposes a low-cost improvement to install ADA compliant sidewalk ramps at the existing Air Line Trail crossing at Main Street in vicinity of the East Hampton Village Center, to improve access for all users.

Trail Crosswalk with Longitudinal Markings, Cady Way Trail, Orange County, FL.
Photo Credit: americantrails.org

4.1.4 Concept D: Route 66 Eastbound Merge Lane Area Safety Improvements

The length of the existing Route 66 eastbound merge lane just east of Gospel Lane is substandard, which generates safety concerns with high vehicle traveling speeds. The concept proposes to install lane merge signs and pavement markings in accordance with the Manual on Uniform Traffic Control Devices to provide a 1,200-foot merge lane on Route 66 west of Camp Ingersoll Road. In addition, the concept proposes a dedicated eastbound left-turn lane at Camp Ingersoll Road to separate the left-turn traffic from through traffic and other pavement marking modifications in the vicinity of the merge to improve safety for traffic entering the facility.

4.1.5 Concept E: Route 66 at Citgo and Opticom Driveways Improvements

This concept proposes the installation of left-turn lanes at the Citgo driveway and future Opticom Headquarters driveway, respectively. This improvement aims to alleviate potential backups and mitigate potential safety issues associated with left-turning traffic blocking through traffic at these driveways. Minor widening within the Route 66 right-of-way is required as part of the improvements. Due to the offset of the Opticom driveway and the Citgo western driveway, the concept proposes to convert the Citgo western driveway to be entrance only and the eastern driveway to be exit only to avoid vehicular conflicts at the driveway locations.

4.1.6 Concept F: Route 66 at the "Ledges" Area Safety Improvements

Route 66, between the Citgo gas station and the St. Clements Castle is known as the "Ledges" area due to the steep rock cuts that were conducted to carve in Route 66 during its original construction. This segment of Route 66 experiences safety concerns due to high travel speeds, sharp reverse horizontal curves, and limited sight lines caused by the rocks and trees along both sides of the roadway. This area of Route 66 also has very narrow shoulders which contribute to safety concerns for both vehicular and alternative mode travel in this area. Concept F proposes rock removal and tree clearing to expand the roadside area to increase the clear zone to improve sightlines and safety.

4.1.7 Concept G: Route 66 at Route 151 & Depot Hill Road Intersection Improvements

The Route 66 at Route 151 intersection serves as the gateway to Cobalt Village Center, carrying high traffic volumes and experiencing congestion under existing peak hour conditions. Potential future development along the Route 66 corridor will exacerbate these issues and lead to significant congestion at the intersection in the future. Concept G proposes to address traffic congestion issues by widening Route 66 at the intersection to provide center opposed left-turn lanes and two travel lanes in each direction. The concept also proposes to provide sufficient extension of receiving lanes and lane reduction merges on the departure sides of the intersection as part of the improvement plan. The existing northbound Middle Haddam Road channelized right-turn lane is proposed to be removed to provide a shared northbound travel lane controlled by the signal. In addition, the concept proposes shared bike lanes and sidewalks on Depot Hill Road extending to the existing Air Line Trail to the north as well as new sidewalks and crosswalks at the intersection to improve mobility and safety for alternative travel modes. Access management recommendations are proposed at several driveway locations as part of the improvement plans. Concept G shows minimal property impacts while improving operations and safety at the intersection.

4.1.8 Concept H: Route 66 at Route 16 and Park & Ride Driveway Intersection Improvements

The Route 16 northbound approach to the intersection of Route 66 is expected to experience capacity and queue issues during weekday morning peak periods under 2040 Future traffic conditions. Concept H proposes to modify the lane use at the intersection to increase left turn capacity for the predominant movement from Route 16 to Route 66. The revised lane geometry provides a dedicated left-turn and a shared left-through-right turn lane, respectively. Two westbound receiving lanes are proposed to accommodate the traffic from Route 16. Minor widening is required within the available right-of-way along the north side of Route 66 west of the intersection to accommodate the two-lane section. It is worth noting that the Connecticut Department of Transportation is currently reconstructing the existing maintenance facility located to the north of Route 66 and as part of the project are proposing an eastbound left turn lane into the facility. Future traffic volumes and operations at this intersection should dictate when this recommendation is considered for implementation.

4.1.9 Concept I: Route 66 at Childs Road Operational Improvements

Childs Road serves as the driveway to East Hampton Middle School. Due to the lack of a left-turn pocket at the intersection, vehicles traveling westbound attempting to make a left turn on to Childs Road often block through vehicles traveling westbound on Route 66 during the school morning arrival and afternoon dismissal peak periods. Concept I propose to establish a Route 66 westbound left-turn pocket at Childs Road to separate the left-turn and through traffic. School zone signs and school zone speeds limit signs are proposed as part of the concept plan. The concept also proposes to remove the existing crosswalk that is striped at the intersection on Route 66 due to low pedestrian activity and no pedestrian accommodations on Route 66 in this area.

4.1.10 Concept J: Route 66 at East Hampton Commercial District Improvements

The East Hampton commercial area on Route 66 features land uses that include retail, restaurants, offices, small shops, services, and other destinations between Main Street to the west and Lakeview Street (Route 196) to the east. Driveways are dense and closely spaced through this segment, generating confusion and safety concerns. In addition, the uses in the commercial area generate pedestrian traffic in addition to the existing recreational walking that takes place through this area dictating the need for a pedestrian friendly environment. The details of the concept are summarized below.

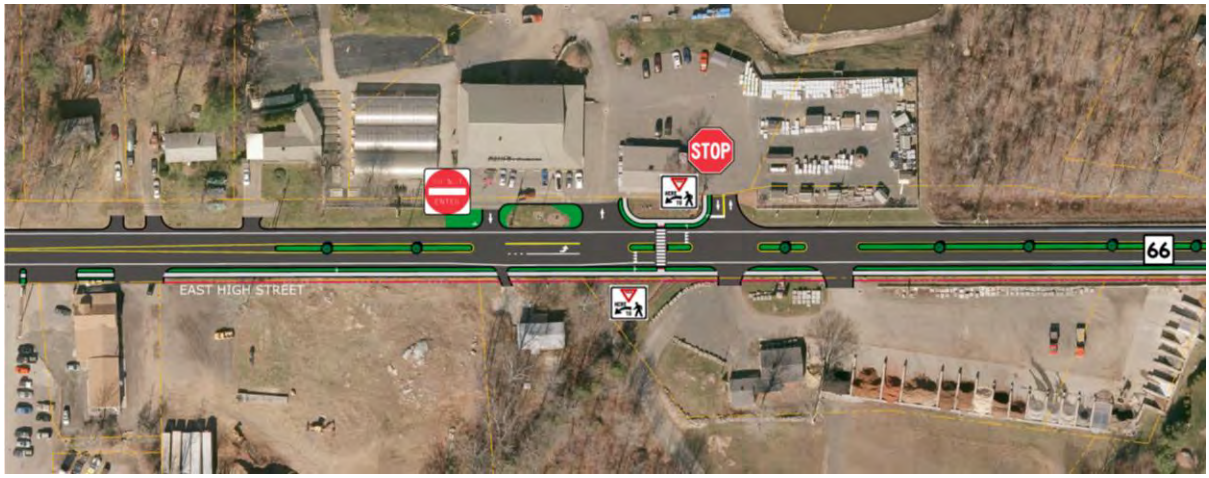
- Lengthen the Route 66 eastbound left-turn pocket at McDonald's without blocking the existing driveways to the former East Hampton Town Hall entrance driveway and Eversource. This improvement aims to alleviate the congestion issues caused by the heavy eastbound left-turn traffic entering McDonald's driveway currently utilizing a short left-turn lane into the site
- 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 and improve safety both on Route 66 and internal to the site
- Install a mid-block crosswalk and Rectangular Rapid Flash Beacon (RRFB) on Route 66 to the west of West Point Road (west junction). Consider closing the eastern driveway of Classic Auto west of West Point Road to avoid potential vehicular/pedestrian conflicts at the proposed mid-block crosswalk location. This improvement aims to accommodate heavy pedestrian activities in East Hampton Commercial Center by providing additional pedestrian crossing location on Route 66
- Infill sidewalk gaps and concrete driveway apron along the north side of Route 66
- Install crosswalks on West Point Road (west junction & east junction)

4.1.11 **Concept K: Route 66 at Paul's & Sandy's Too** Safety Improvements

This concept proposes traffic calming measures in the vicinity of Paul's & Sandy's Too to mitigate the existing speeding issues and improve safety in the area. The following summarizes the concept in more detail:

- Install a landscaped median along the entirety of the site frontage, aiming to reduce vehicular travel speeds
- Replace the existing 30-mph speed limit ahead sign with a 30-mph speed limit sign for the westbound direction. Relocate the existing 30-mph speed limit ahead sign to Laurel Ridge, approximately 0.4 miles to the east along Route 66

- 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 along with yield to pedestrian signs and pavement markings 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 at the proposed mid-block crosswalk location
- 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 to improve pedestrian mobility and safety and to connect with the proposed Town Hall location to the east on Route 66

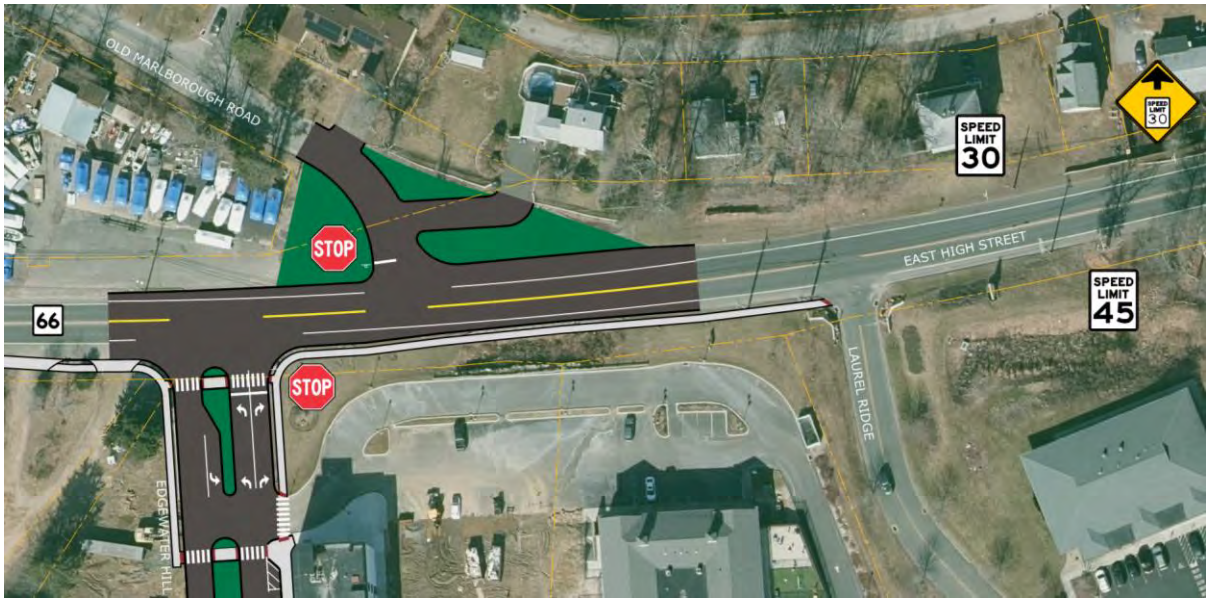


4.1.12 Concept L-1 & L-2: Route 66 at Edgewater Hill Driveway Intersection Improvements

The Edgewater Hill mixed-use development is proposed to include a variety of land uses, including residential, office, retail, restaurant, and daycare interconnected via streets, sidewalks, and trails. The intention of the project is to create a new livable neighborhood where residents have access to local businesses within walking distances of their homes. The development is located along Route 66 between Laurel Ridge and Lake Vista and would serve as the eastern gateway into East Hampton from Marlborough. These concepts present alternative improvement plans on Route 66 at and in the vicinity of the proposed Edgewater Hill development driveway. The following sections discuss the concepts in more detail.

4.1.12.1 Intersection Improvements - Concept L-1

This concept maintains the stop sign on Edgewater Hill development driveway and a boulevard style driveway as part of the Edgewater Hill development. The concept proposes to realign the existing Old Marlborough Road skewed approach to a more perpendicular alignment with Route 66. A sidewalk is proposed along the south side of Route 66 to support the proposed mixed-use development. The 30-mph speed limit and 30-mph speed limit ahead signs are proposed to be relocated east of Laurel Ridge for traffic travelling along Route 66 in the westbound direction.



4.1.12.2 Modern Roundabout - Concept L-2

This concept proposes to convert the intersection of Old Marlborough Road and Edgewater Hill development driveway at Route 66 into a single-lane modern roundabout. This reconfiguration eliminates the offset of the intersecting side streets and mitigates the skewed approach for Old Marlborough Road. The concept aims to reduce vehicle travel speeds on Route 66 and create a "gateway" into East Hampton from Marlborough. Pedestrian improvements include the installation of sidewalks along both sides of Route 66.

4.1.13 Concept M: Route 66 at Lake Drive Safety Improvements

This concept presents improvements to mitigate the safety concerns at the intersection of Route 66 and Lake Drive. The concept proposes to re-align Lake Drive at the Arrow Fence driveway to eliminate the existing split-skewed approach of Lake Drive and improve sight lines for that approach. The concept also proposes to install a streetlight on an existing nearby utility pole to improve intersection visibility at night.

4.1.14 Concept N: Transit Accommodations

This concept summarizes recommended improvements to the existing Middletown Area Transit (MAT) service in the area. Route 586, formerly known as Route F, is currently a flag-down service, connecting Portland and East Hampton to the downtown Middletown hub. MAT is currently seeking funding to install bus stops and amenities along the route. The following sections summarize the recommended improvements.

Installation of New Bus Stop Locations

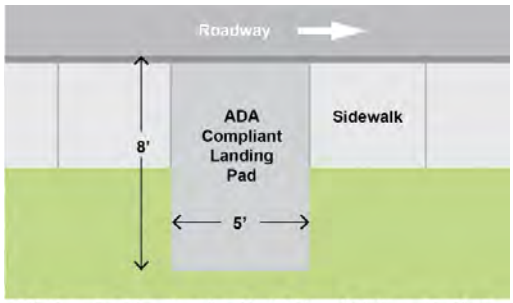
Five (5) new bus stops are recommended for the study area. These new stops are intended to improve service to areas along the corridor that are not currently served by formal stops. Suggested new bus stop locations include:

- Quarry Heights
- Brainerd Place
- Portland Shopping Center
- East Hampton Shopping Center
- Edgewater Hill Development

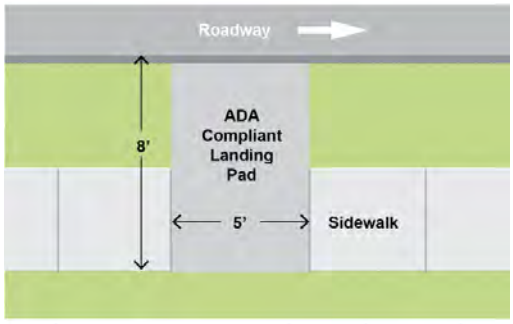
Bus Shelters and Waiting Areas

Paved bus waiting areas of sufficient size to accommodate an ADA compliant landing pad (required for operation of wheelchair lifts) are recommended at all formalized bus stop locations. Bus shelters with benches are also recommended where space and sightlines (shelters should not obstruct critical sightlines at intersections) permit. One consistent bus shelter designs should be selected in coordination with both towns, to ensure that shelters are architecturally suitable for each community while providing a consistent aesthetic for MAT.

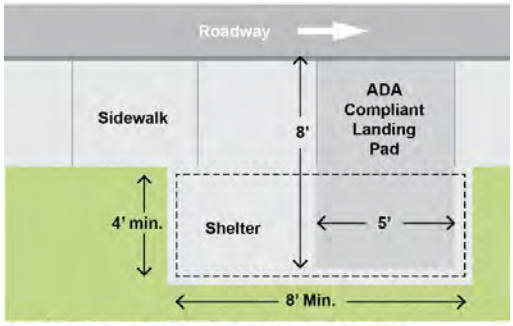
The preferred surface for the ADA compliant landing pad is concrete. The pad must be a minimum of 5 feet wide by 8 feet deep without obstruction within that area. When accompanied by a shelter, the landing pad may extend into the shelter, providing there are no obstructions such as shelter posts or benches.



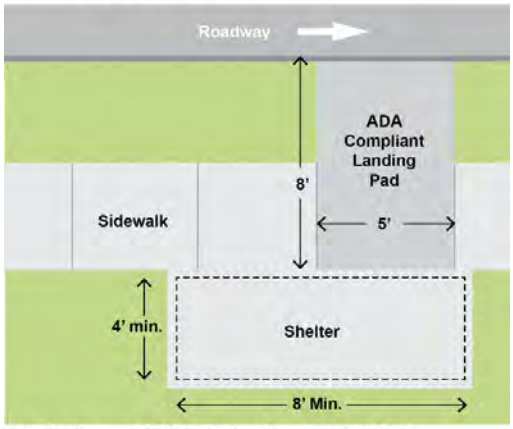
ADA Compliant Bus Landing Pad: Sidewalk Adjacent to Curb



ADA Compliant Bus Landing Pad: Sidewalk Offset from Curb



Bus Shelter and ADA Compliant Bus Landing Pad: Sidewalk Adjacent to Curb



Bus Shelter and ADA Compliant Bus Landing Pad: Sidewalk offset from curb

Bus Shelter and Waiting Area Layout

Shelters typically range in depth from a minimum of 4 feet to 6 feet and range in length from 8 feet to 18 feet. Benches are only provided if the shelter is large enough to accommodate without obstructing with the ADA landing pad area if that area falls within the shelter.

The installation of shelters and benches will require the establishment of a maintenance agreement between the Towns, CTDOT, and MAT.

Bus Shelter Examples

Sidewalks Connecting to Bus Stop Locations

Sidewalk connections to bus stop locations is recommended to improve pedestrian mobility from all bus stops along the corridor. Where sidewalks only serve one side of the roadway, crosswalks are recommended at signalized intersections to access bus stops on the opposite side of the roadway. Expansion of the sidewalk network would connect bus stops to residences, places of employment, and goods and services.

Lower Connecticut River Valley (LCRV) Transit Study

RiverCOG has been developing the Lower Connecticut River Valley (LCRV) Transit Study to review and develop recommendations for bus transit services in the region. The following potential improvements have been identified for MAT Route 586 that serves Portland and East Hampton:

- Alignment: The alignment along Route 66 is proposed to be modified to operate in a clear bi-direction manner. It would operate through downtown Portland on Main Street and High Street, and travel via West High Street and South Main Street to East Hampton Center. The proposed bus route of Route 586 is included in Appendix U.

- Service Span: Currently, Saturday service to Portland is operated on a special alignment combined with other routes. Regular Saturday service on Route 586 is a potential improvement being presented to the public for input.

- Currently, MAT operates largely as a flag-stop system, with just a few signed bus stops. The installation of signed bus stops is recommended as part of a potential future transition away from a flag stop system.

- Technology upgrades to bring the Go CT smart card fare system to MAT, as well as improved on-line scheduling for on-demand services are also proposed.

4.1.15 Concept AM: Access Management Plan

Access management is the practice that aims to balance the need for access to land development and the preservation of safe and efficient flow of traffic on the surrounding roadway system. Good access management ensures safe and efficient use of the transportation network while minimizing traffic congestion and collisions related to local developments along the roadway system.

The focus of access management is to minimize vehicle conflict points to maintain traffic flow along a roadway, help reduce delays for through traffic, and consequently reduce the need for roadway capacity improvements. Effective access management facilitates the establishment of good relationship between the transportation system and adjacent land use and can ensure that motorists safely reach local business and that access for new developments will not create a safety risk. The goal of the access management plans is to offer recommendations for long-term changes to the existing undesirable driveway arrangements and to serve as a tool for the State, the Towns, and private property owners when considering applications for changes in land use, increases in intensity of existing uses, or redevelopment of properties.

The following sections summarize the benefits, design guidelines, improvement plans, and implementation procedures including zoning regulation recommendations and access management guidelines/tools to assist both municipalities to enact access management principles along Route 66.

Benefits

Access management has the following benefits:

- Ensure that traffic can access land uses safely and efficiently and that traffic generated by local development will not create congestion or induce accidents. Access management can, by limiting the number and location of curb cuts, help minimize potential conflicts between vehicles and pedestrians.
- Improve or protect the quality of the pedestrian environment. The fewer driveway openings with cars and trucks that a pedestrian navigates along the sidewalk, the safer and more inviting the walking experience will be.
- Improve access to local roads which also serves economic development goals.
- Help maintain the safety and capacity of roadways relative to the functions they are expected to serve.

Design Guidelines/Standards

CTDOT established driveway design guidelines in the 2003 Highway Design Manual (Revised February 2013) and these guidelines were reviewed for the development of the access management plans for the Route 66 corridor. The CTDOT design standards for driveways along State routes include the following:

- Driveway Alignment – Driveways and side streets should preferably be perpendicular to the state highway. All curb cuts and/or roadway intersections on opposite sides of the road should preferably be aligned directly opposite one another.
- Driveway Width – Minimum 10 feet for residential driveways and maximum 30 feet for all type of driveways, depending on 1-way or 2-way operation and selected design vehicle template.
- Maximum Driveway Grade – 12 percent for residential driveways and 8% for commercial driveways.
- Number of Driveways – No more than one combination entrance and exit shall be allowed for any property with frontage of less than 50 feet. Parcels having a frontage from 50 to 100 feet may be permitted two entrances if a minimum of one-third of the total frontage is used to separate driveways.
- Driveway Location – No entrance or exit should be constructed at the un-signalized intersection of two State highways, town road, and city street for 25 feet from the intersection.
- Driveway Spacing - Access driveways on the same side of the road should be separated as far apart as is practical, with a minimum separation of 60 feet for residential drives and 120 for commercial drives.
- Driveway Sight Distance - All entrances and exits shall be so located that vehicle operators approaching or using them shall have adequate sight distances in both directions along the State highway in accordance with current Department of Transportation geometric design standards. The permit applicant shall stabilize all slopes by loaming and seeding or other method directed by the Permit Inspector.
- Driveway Connections – Provide internal circulation among adjoining properties of similar existing or potential use when possible.

Improvement Plans

The Access Management Plans (Concept AM) illustrates a number of improvements that could improve access along the corridor, while also enhancing traffic flow, traffic safety, and the quality of the pedestrian environment where sidewalks are present.

The access management design techniques include minimizing conflict points for vehicles to cross path; providing safe and adequate spacing between driveways and intersections; maintaining sufficient sight-lines for all drivers; and providing internal circulation among adjoining properties where possible. Specific recommendations include:

- Close driveway: close existing driveway to eliminate the redundant driveway for a single parcel
- Consolidate driveways: consolidate two or more closely spaced driveways and provide shared access for adjacent parcels
- Create or improve interconnection: create connections between adjacent parcels to eliminate driveway redundancy
- Reduce driveway width: narrow wide driveways through new curbing and removal of pavement to conform to driveway width design standards
- Define driveway: better define driveway through geometry improvement and signing and pavement markings
- Convert to right-in/right-out only driveway: convert existing driveway to right-in/right-out only through driveway geometry modifications and signing and pavement markings to improve traffic circulation and safety
- Convert two-way to one-way entry or exit driveway: convert existing driveway to one-way entry or exit only through signing and pavement markings to improve traffic circulation and safety
- Prohibit driveway left-turn exit: prohibit left-turn violation through driveway geometry modification and signing and pavement markings to improve traffic circulation and safety
- Improve signage and pavement markings on one-way entry and exit driveway: improve signage and pavement markings on one-way entry and exit to provide clear direction of traffic flow to drivers
- Improve sightlines: improve sightlines from existing driveways through the clearing of parcel frontage vegetation. Consider relocation of driveways where geometry restricts sightlines
- Install sidewalk across driveways: install sidewalk gaps across driveways to improve safety for pedestrians

Implementation Procedures

Improvement recommendations are developed to highlight access management opportunities, not to modify existing access. These improvements would be implemented over time as a function of the site plan review and approval process, if property owners seek approval for a change in use or increase in intensity. The commercial access improvements will require planning and coordination with CTDOT, the towns, and the property owners prior to implementation.

The recommended strategy for implementing access management within the study area is to integrate access management design guidelines or standards within the zoning codes of Portland and East Hampton. This can take the form of an access management overlay zone or can be applied to all zones within the community. Access management provisions can be prescriptive (required by zoning) or can be in the form of guidelines (non-mandatory advisory recommendations).

The Towns of Portland and East Hampton should consider integrating access management guidelines or standards as recommended above.

The Town of Portland has limited provisions in place via its zoning regulations (Effective December 16, 2019). These should be expanded to provide additional guidance regarding location of driveways relative to intersections and driveway width. Specific recommendations for the Town of Portland are as follows:

Town of Portland Section 8.2.6 of the Town of Portland Zoning Regulations	Recommended Section Number	Recommended Regulations
Article 8, Site Development Regulations: Section 8.2.6 Design Requirements: Section 8.2.6.D Curb Cuts	8.2.6.D.1.	All curb cuts and/or roadway intersections on opposite sides of the roadway should be aligned directly opposite one another.
	8.2.6.D.2.	Maximum Driveway Widths: 26 feet maximum driveway width, measured at and parallel to the street line, except for non-residential drives with a raised median divider. 40 feet maximum width of a non-residential driveway with a median divider, measured at and parallel to the street line. *Driveways in excess of the maximum width may be allowed if there is a demonstrated need to accommodate multiple traffic queuing lanes or the turning movements of long-wheelbase vehicles such as tractor-trailers.*
	8.2.6.D.3.	Minimum Driveway Widths: 20 feet minimum width for two-way non-residential driveways. 12 feet minimum width for one-way non-residential driveways.

The Town of East Hampton has limited regulations regarding site access via its zoning regulations (Effective September 1, 2019). The following access standards are recommended for addition to Article 9, Procedures:

Town of East Hampton Zoning Regulations	Recommended Section Number	Recommended Regulations
Article 9, Procedures: Section 9.1 Site Plan Requirements: Section 9.1.B.6 Site Access	9.1.B.6	Title: "Site Access Standards"
	9.1.B.6.a	Driveways shall intersect public streets at an angle greater than or equal to 60 degrees.
	9.1.B.6.b	For corner lots, driveways shall be located as far from the intersection of the street lines of the lot as is practical, but a driveway shall not be located within 50 feet of such intersection.
	9.1.B.6.c	Access drives should not be located within the functional area of an intersection.
	9.1.B.6.d	Driveways serving the same lot shall be at least 150 feet apart (measured centerline to centerline), unless they are one-way driveways.
	9.1.B.6.e	All curb cuts and/or roadway intersections on opposite sides of the roadway should be aligned directly opposite one another.
	9.1.B.6.f	Maximum Driveway Widths: 30 feet - maximum driveway width, measured at and parallel to the street line, except for non-residential drives with a raised median divider. 44 feet - maximum width of a non-residential driveway with a median divider, measured at and parallel to the street line. *Driveways in excess of the maximum width may be allowed if there is a demonstrated need to accommodate multiple traffic queuing lanes or the turning movements of long-wheelbase vehicles such as tractor-trailers.*
	9.1.B.6.g	Minimum Driveway Widths: 20 feet minimum width for two-way non-residential driveways. 12 feet minimum width for one-way non-residential driveways.

Access Management Tools

In addition to zoning code provisions, multiple tools can be used to encourage the implementation of access management. This includes:

1. The requirement of a Traffic Impact Analysis and Third-Party Review for all proposed developments
2. Addressing non-conforming accessways/driveways
3. The provision of incentives

1. Traffic Impact Analysis and Third-Party Review

A Traffic Impact Analysis (TIA) may be required by a Planning and Zoning Commission for new development and redevelopment projects particularly under the following conditions:

- When the access point is on a State road or major arterial
- When the access point could create traffic impacts that affect intersecting state roads or major arterials or their intersections
- Where the access point results in traffic impacts that, based on P&Z review, are potentially significant enough to warrant a detailed engineering evaluation

A TIA should conform to standard accepted traffic engineering practices and include the site driveway(s) and potentially impacted intersections. Standard elements of a TIA should include:

- Existing and future traffic estimation
- Review of crash data and a safety analysis
- Trip generation and distribution analysis
- Capacity analysis (for both site access and adjacent roadway network)
- Engineering design review including sight distance analysis
- Internal site circulation review
- Identification of improvements necessary to accommodate the development
- Coordination preview with Town Engineer, Town Planner or P&Z Administrator, and P&Z Commission.

In cases where a full TIA is not warranted, but some questions arise during the preliminary application review relating to safety and operations potentially resulting from a proposed new driveway or system of access design, the P&Z Commission may elect to require the applicant to prepare an engineering analysis of the proposed access point(s).

The engineering analysis may be 'tiered' to include some, or all, of the elements listed above for the TIA; however, the analysis may be limited to the access point(s) in question and may not take into account the surrounding roadway network. The tiered analysis approach is intended to answer only those questions regarding site access design that require further investigation and to streamline the approval process. The determination of which components of a TIA analysis will be required to be completed will be based on:

- Aspects of site access in question
- Professional judgment of the Town Engineer and Town Planner
- Professionally accepted engineering practices

A Third-Party Review of the TIA and other related application materials may also be required for developments in the study area as a means of providing an objective review of a proposed development's impacts with respect to access management and traffic operations.

2. Addressing Nonconforming Accessways/Driveways

The following sample language could be incorporated into zoning regulations to assist with addressing nonconforming accessways and driveways (language provided below that is redundant with other sections of the code should be omitted):

Nonconforming access features are those access points or driveways in existence and lawful at the time of adoption of this section of the zoning regulations, but which would be prohibited, regulated or restricted under the provisions of this section. Such nonconforming access features are considered incompatible with the intent and purposes of this section. It is the intent of these regulations to permit these nonconforming access features to continue until they are removed or until any substantial change to an existing use is approved on the lot where the nonconforming access feature exists. After the effective date of adoption of this section of the zoning regulations, no nonconforming access feature may be moved, extended, or enlarged unless the result will be to bring the access into closer compliance with these Access Management Regulations.

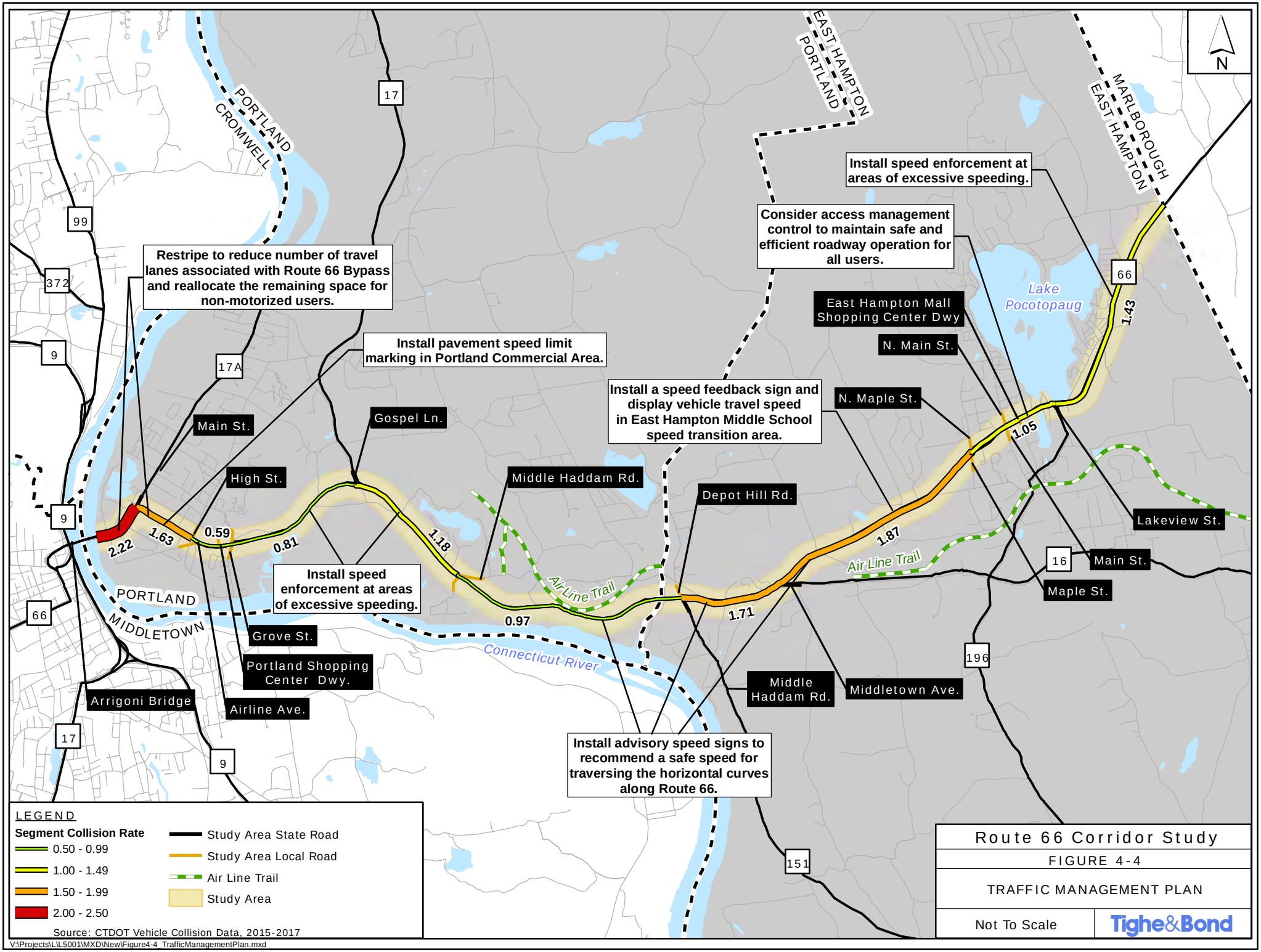
Substantial Change to an Existing Use: The provisions of this section shall apply to any Substantial Change to an Existing Use. The provisions of this section shall also apply to any Change to an Existing Use requiring site plan approval or modification of an existing approved site plan, as defined in Section ___ of these regulations. A substantial change" is one which involves (1) a change in use from residential to any commercial or industrial use, (2) a __% or greater increase in gross floor area or required parking spaces of any non-residential land use, (3) a ___square foot or greater increase in gross floor area, (4) a ___ space or greater increase in the required or provided parking spaces. Notwithstanding the above, the Commission may determine that the character of a Change to an Existing Use will not have an impact on adjacent properties and/or surrounding neighborhood such that this requirement does not apply.

3. Provision of Incentives

Incentives could be used to improve access management. Under an incentive-based policy, an increase in the intensity of a proposed development could be granted by the Planning and Zoning Commission where a development plan complies with all required access management provisions and provides one or more of the following additional benefits to the community:

- Improvement of the Level of Service on existing intersections in the vicinity of the proposed project
- Reduction in the number of existing access points onto a public street, or would result in fewer access points than would otherwise be permitted
- Provides shared access connections between adjoining uses to eliminate or reduce curb cuts and the demand for turning movements onto or from a public street to or from those properties
- Provides shared access in the form of access easements for adjoining properties which are not otherwise required or obtains access through an easement across adjoining property which is not otherwise required.
- Provides expanded pedestrian and transit circulation improvements which enhance the movement of travelers within the site and/or the community

Such density bonuses may include a reduction in parking space requirements, a modification of signage requirements, an increase in floor area ratios, an increase in allowable building coverage, or other similar incentive.


N
PORTLAND
CROMWELL
EAST HAMPTON
PORTLAND
MARLBOROUGH
EAST HAMPTON
Restripe to reduce number of travel lanes associated with Route 66 Bypass and reallocate the remaining space for non-motorized users.
Install pavement speed limit marking in Portland Commercial Area.
Install speed enforcement at areas of excessive speeding.
Consider access management control to maintain safe and efficient roadway operation for all users.
Install a speed feedback sign and display vehicle travel speed in East Hampton Middle School speed transition area.
Install speed enforcement at areas of excessive speeding.
Install advisory speed signs to recommend a safe speed for traversing the horizontal curves along Route 66.
Lake Pocotopaug
East Hampton Mall Shopping Center Dwy
N. Main St.
N. Maple St.
Main St.
High St.
Gospel Ln.
Middle Haddam Rd.
Depot Hill Rd.
Lakeview St.
Grove St.
Portland Shopping Center Dwy.
Arrigoni Bridge
Airline Ave.
Middle Haddam Rd.
Middletown Ave.
Maple St.
Air Line Trail
Connecticut River
2.22
1.63
0.59
0.81
1.18
0.97
1.71
1.87
1.05
1.43
99
372
9
17
17A
66
16
196
151
LEGEND
Segment Collision Rate
0.50 - 0.99
1.00 - 1.49
1.50 - 1.99
2.00 - 2.50
Study Area State Road
Study Area Local Road
Air Line Trail
Study Area
Source: CTDOT Vehicle Collision Data, 2015-2017
V:\Projects\L\L5001\MXD\New\Figure4-4_TrafficManagementPlan.mxd
Route 66 Corridor Study
FIGURE 4-4
TRAFFIC MANAGEMENT PLAN
Not To Scale
Tighe&Bond

4.2 Traffic Management Plan

Route 66 experiences heavy traffic volume and speeding issues at selected locations along the corridor, resulting in peak hour congestion and increased traffic accidents. A traffic management plan was developed to provide adjustments that would benefit the transportation system and mitigate existing congestion and safety "hot spots" along the study corridor. Figure 4-4 on the following page shows a graphical summary of the areas of concerns and recommended traffic management plan strategy. Further details for select locations with safety concerns are provided in the following section.

4.2.1 Areas of Safety Concern

The areas of concern were identified based on review of vehicle travel speeds and vehicle collision data along the corridor throughout the study area, as presented in Section 2.5 and 2.8, respectively, of this study.

The intersection of Route 66 at Route 17A (Main Street) and adjacent segment experienced high vehicle operating speed that is 10 miles per hour over the posted speed limit. A review of the collision data shows that the intersection of Route 66 at Route 17A (Main Street) experienced the most collisions along the corridor with 38 crashes during a three-year period (between January 1, 2015 and December 31, 2017). The collision rates along the Route 66 segments between Arrigoni Bridge and High Street are high (1.63-2.22). This is contributed to the heavy traffic volumes and high vehicle operating speed in the area.

The vehicle operating speeds are approximately 10 miles per hour over the posted speeds along the Route 66 segment between High Street in Portland and Maple Street in East Hampton, as well as the segment between Route 196 (Lakeview Street) and East Hampton/Marlborough Town Line. This is due to the long spacing between traffic signals, a number of steep grades, and rural settings along the segments. The high vehicle operating speeds inevitably lead to high collision rates along the segments.

The Route 66 segment between East Hampton Shopping Center driveway and Route 196 (Lakeview Street) experiences a high collision rate, even though the vehicle operating speed is consistent with the posted speeds. This is likely attributed to the high number of driveway access points for the businesses along the segment.

4.2.2 Traffic Management Plan

The following section presents a traffic management plan that can be utilized to monitor identified areas of safety concerns and benefit the transportation system throughout the corridor.

4.2.2.1 Speed Management

Speed management are strategies that address the concern of undesirable speeds at specific locations along a corridor based on engineering and enforcement countermeasures. The following section describes several cost-effective speed reduction management strategies in detail for selected locations along corridor:

- Advisory speed signs can be installed with curve warning signs, either on the same sign or as a supplemental plaque, to recommend a safe speed for traversing the horizontal curves along Route 66 corridor.

- A pavement speed limit marking displays the posted speed limit on the pavement. It can be used to emphasize the speed limit where speeding issue occurs along Route 66 corridor. The pavement markings require regular maintenance to ensure their continued visibility.

- A speed feedback sign can be connected to a speed measuring device and displays the speed at which a vehicle is traveling while collecting travel speed data. Speed feedback signs can be effective in speed transition areas such as entering East Hampton Middle School or areas characterized by high volumes of on-motorized traffic.

- Restriping to reduce lane width and reallocate the remaining space for non-motorized users can be effective at improving mobility and safety for multi-modal travel modes at Portland commercial center.

- Enforcement is critical in some locations to achieve compliance with posted speed limits. Speed enforcement should be considered at areas of excessive speeding. The primary speed enforcement tools used by law enforcement patrol officers include RADAR (RAdio Detection And Ranging) and LIDAR (LIght Detection And Ranging) due to the ease of use, accuracy, and steadily decreasing costs.

4.2.2.2 Access Management

Access management defines how access to adjacent properties is regulated and designed along a roadway. Access control is among the most useful tools to maintain safe and efficient roadway operations for all users, particularly in the Towns' commercial areas with high number of driveways. Access controls are more flexible in developing areas for future land use to conform to access management standards than in developed areas where the pattern of land use has been established. However, the designers and planning agencies should consider the possibility of relocating, redesigning, or consolidating driveways along an existing roadway associated with site redevelopment to meet the project's purpose and need. Access control is exercised by zoning regulations, driveway control, and geometric design, and administered by OSTA and local Planning and Zoning Commission.

4.3 Streetscape Improvement Plan

Streetscape improvements were developed for the urban areas along the corridor to help define the community's aesthetic quality, sense of place, economic health, and social cohesion. Streetscape improvements can include changes to the roadway cross section, traffic management, sidewalks, landscaping, street furniture, and material specifications. The following sections present the recommended streetscape plan for Portland Commercial Center, Cobalt Center, and East Hampton Commercial Center along Route 66, respectively. Concept drawings for each of the streetscape plan are included in Appendix C.

4.3.1 Portland Commercial Center

Streetscape Concept A was developed for Portland's commercial center to improve the experience and aesthetics of downtown Portland for all modes of transportation. The addition of 5' bike lanes with a 2' buffer from moving vehicles provides a safer and more comfortable cycling experience and reminds vehicles of the presence of bicyclists within the roadway. The addition of sidewalks on the south side of Route 66 increases options for accessible pedestrian connections. New crosswalks with ADA accessible ramps at intersections replace the existing midblock crosswalk to increase the visibility and safety for crossing pedestrians. Decorative crosswalks and center turn lanes help to delineate the roadway and provide visual interest in the Town Center. The addition of a bus shelter and designated bus stop at the future Brainerd Place entrance improves the visibility of the bus route and the experience for bus riders waiting in variable weather conditions. Preserving existing trees and incorporating new trees along the street will help with stormwater absorption and provide shade and a sense of enclosure over the roadway and sidewalk. Under areas with powerlines, smaller ornamental trees or species with columnar form will contribute repetition and visual interest along the corridor. The pedestrian scale ornamental lighting, seating walls, street trees, plantings, and various pavement materials build on the character of this commercial center and enhance the sense of place, inviting people to stop and spend time rather than just passing through.

4.3.2 Cobalt Center

The Streetscape Concept B for Cobalt Center utilizes various materials and site elements to enhance the proposed intersection improvements alternative and enrich the currently pavement dominated intersection. Sidewalks and ADA accessible ramps increase pedestrian visibility and accessibility. The addition of sharrows on Depot Hill Road can pair with cyclist wayfinding signage at the Airline Trail crossing to the North to encourage bicyclists to detour from the trail and visit the shops and restaurants in Cobalt Center. Bicyclist access between the shared Depot Hill Road and the new sidewalk will encourage bicyclists to dismount and safely cross the road using the crosswalks. New plantings, pedestrian scale ornamental lights, and stone walls enhance the sense of place and pedestrian experience. Various pavement materials and access management provide additional clarity to vehicle and pedestrian areas to reduce conflict. The illustrated access management and delineated parking spaces offer additional space for plantings, green infrastructure additions, and a picnic area.

4.3.3 East Hampton Commercial Center

The Streetscape Concept C shows recent streetscape work in the East Hampton Commercial center to improve sidewalk conditions, access management, and pedestrian amenities which can built on to improve the experience of other transportation options. The addition of a sheltered bus stop and pedestrian scale lighting will improve the comfort of bus riders at various times of day and weather conditions while simultaneously increasing the visibility of the bus route as a transportation option. Pedestrian amenities at the designated bus stop compliment the seating areas installed at the Town Hall and Classic Auto.

Section 5
Implementation Plan

The Route 66 Transportation Improvement Program (TIP) includes 16 improvement projects that address the roadway network, pedestrian and bicycle mobility and safety needs, transit system, and access management in the study area. The TIP recommends physical roadway improvements and identifies opportunities to enhance pedestrian and bicycle access to the roadway system through construction of new and improved facilities for alternative modes. These alternative transportation mode recommendations are shown on the concept plans (Concept A-3 through Concept AM in Appendix C), where applicable.

5.1 Transportation Improvement Program

5.1.1 Project Categorization

The TIP classifies projects as small, medium, and large based on project size, complexity, and project cost. The projects are also prioritized as short-term, mid-term, and long-term to represent when implementation of the project is anticipated to be necessary. A short-term project prioritization indicates an immediate need to address an existing deficiency or operational concern. Conversely, a project prioritized as long-term is intended to address an anticipated future issue or need such as operational issues that are expected to occur due to future traffic growth. Table 5.1 provides additional information related to the project types in the TIP.

TABLE 5-1
Project Type Characteristics

Project Type	Implementation Time	Complexity	Approximate Project Cost
Small	Less than 3 years	Low	Less than $1 million
Medium	Between 3-6 years	Moderate	$1 million - $2 million
Large	More than 6 years	High	More than $2 million

Implementation time refers to the time frame required to initiate a project, conduct the remaining planning and engineering design work required to prepare the project for construction, and to initiate construction assuming that funding for all phases of the project is available. Section 5.2.1 identifies potential funding sources to support the implementation of each project. Implementation time is not intended to indicate the priority or a relative timeframe with respect to the completion of this Study, but rather to provide planners and decision makers with a metric related to potential total time to implement the improvements from the date of initiation.

The complexity of each project has been established based on the overall effort to plan, design, and construct the improvement. Several metrics were considered in the establishment of each project's relative complexity. Projects are categorized into Low, Moderate, and High Complexity based on the qualitative metrics described in Table 5-2.

TABLE 5-2
Summary of Project Complexity Characteristics

Complexity Level	Project Characteristics
Low Complexity	• Little to no additional planning needed - concept planning sufficient to proceed into design • Design effort is limited and typical • None to minor right of way action • Environmental resource impacts and permitting requirements are very low • Utility impacts are considered minor or not anticipated • Project has broad support by both policymakers and the public
Moderate Complexity	• Additional planning required to define comprehensive project scope • Detailed design effort needed to define construction and impacts • Right of way impacts and acquisitions anticipated • Environmental impacts and permitting expected • Comprehensive environmental documentation under CEPA/NEPA not anticipated • Potential for utility impacts and relocations • Project costs require additional planning to identify funding well in advance of project initiation
High Complexity	• Significant planning still required to define project • Environmental documentation to meet CEPA/NEPA regulations is likely required prior to initiation of the design phase • Detailed design effort following planning is required • Significant right of way actions and acquisitions needed – private ownership coordination • Major environmental impacts, significant State & Federal permitting process, and agency involvement at all levels of government • Major utility relocations and design efforts to coordinate Project costs require additional planning to identify funding well in advance of project initiation

Project costs have been estimated following the guidelines published by the Connecticut Department of Transportation and are presented in 2020 dollars. Project costs may require inflation factors looking out into the future to determine actual funding needs for funding programming. The "Preliminary Cost Estimating Guidelines" provide unit costs and percentage-based lump sum costs to facilitate the estimation of project costs at the Preliminary Engineering level of project development. The approximate project costs presented in this Study are limited to the construction item costs and exclude costs related to rights of way actions and environmental remediation and engineering design. The estimates include contingency (25%) and incidentals (25%) in the total opinion of probable costs for each project.

5.1.2 Project Prioritization

The priority for each of the recommended improvement projects has been established based on two primary criteria: project necessity and local interest for implementation. Project necessity considers the urgency 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, reduce barriers to accessibility, or mitigate a current mobility or operational issue. The project priority categories are defined at Short-Term, Mid-Term, and Long-Term based on the criteria described in Table 5-3.

TABLE 5-3
Summary of Project Prioritization Metrics

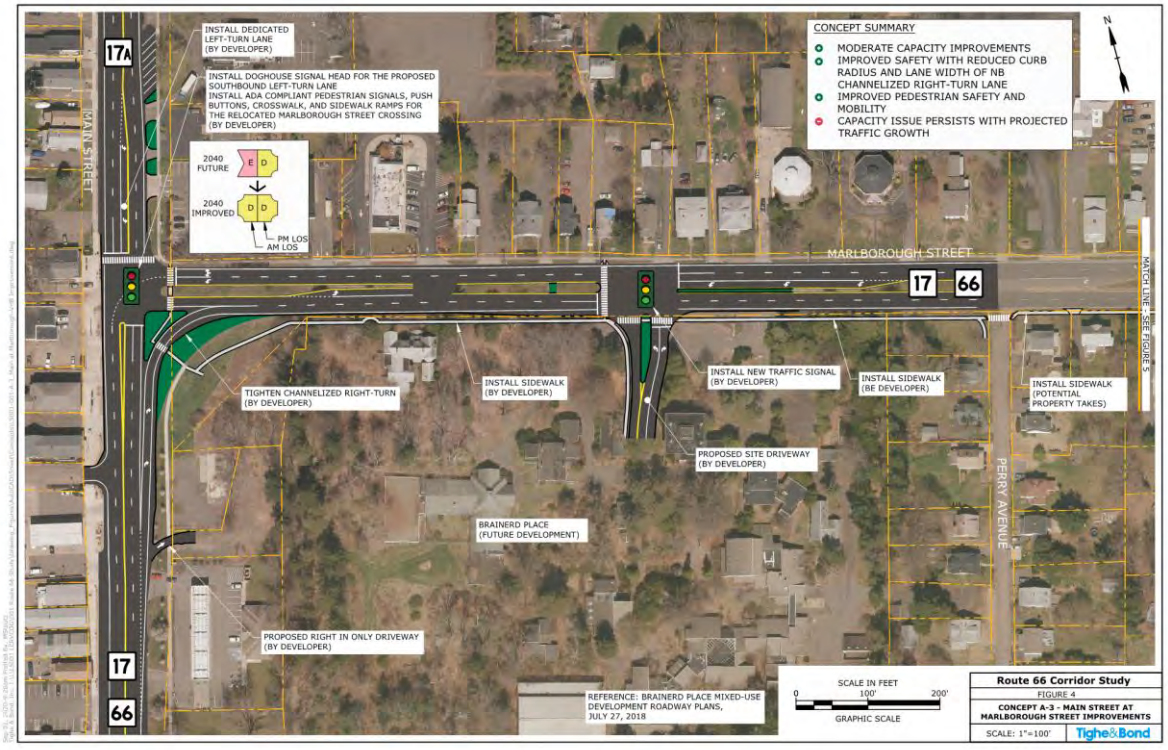
Project Priority	Project Characteristics
Short-Term	• Project addresses an urgent safety issue • Project is intended to address an existing operational deficiency • Project addressed a deficiency in accessibility that has been identified as a local concern
Mid-Term	• Project scope provides operational and mobility benefits that are currently an issue, but traffic operations are not poor or failing • Local stakeholders have expressed interest in implementing the improvement to enhance the transportation system
Long-Term	• Project does not address an identified safety concern • Project addresses future travel demand and traffic operations • Project may have mobility, accessibility, or multi-modal benefits

In addition to the priority assigned to the project based on project need, input from the Towns and RiverCOG was obtained for each of the projects to determine their relative importance from a local and regional planning and policy perspective. The overall priority presented for each of the projects is based on transportation need with other factors taken into consideration when developing the overall plan. However, in cases where the Towns or RiverCOG has indicated that a project is a higher priority to address local interests, adjustments have been made to factor local input into the prioritization process.

5.1.3 Recommended Projects Summary

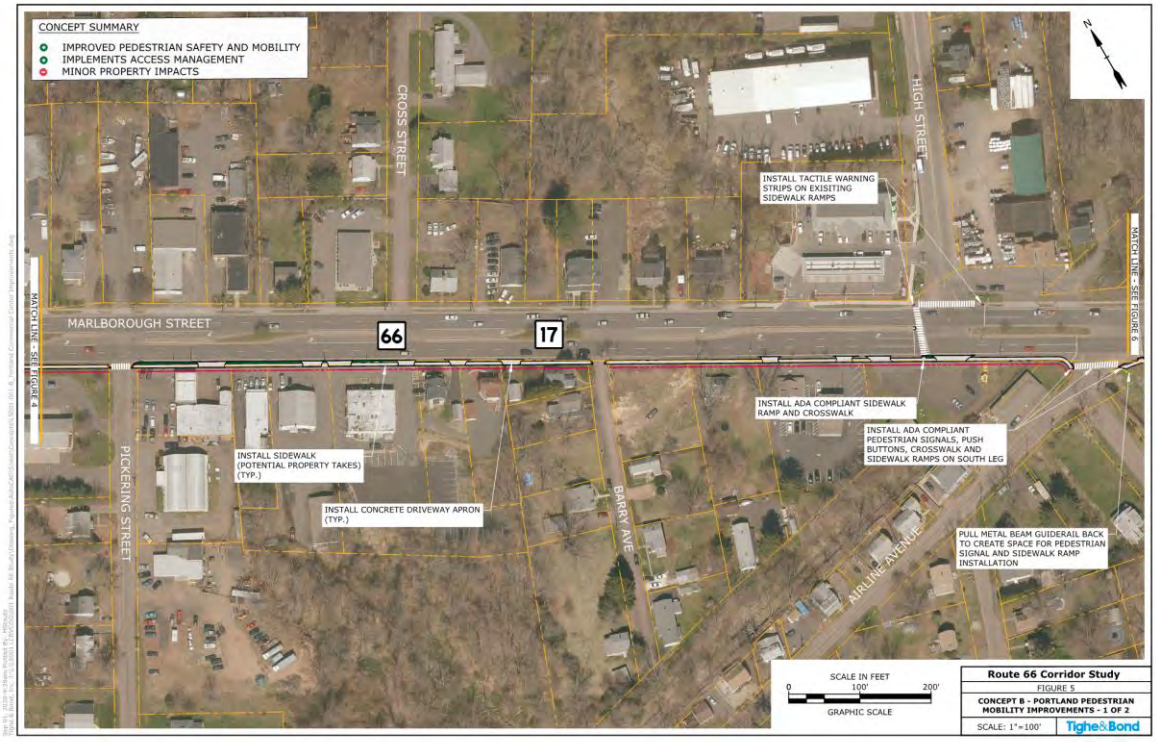
The following section outlines the recommended proposed improvement projects and describes them in terms of the scope of the improvements, project type, prioritization, estimated project cost, and associated permitting needs (See Section 5.2.2.3 for Additional Permitting and Compliance). It should be noted that some priorities are subjective and founded in the policies and goals of the Towns, RiverCOG, and project stakeholders. The local and regional priorities should continue to be reviewed and evaluated to determine if changes to the priorities of the recommendations are needed to remain current with local and state trends, policies, and priorities as well as the conditions within the study area.

Project 1: Marlborough Street at Main Street Intersection Improvements (Concept A-3)			
Project Goals:	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	Project Type:	Medium
		Project Complexity:	Moderate
		Project Priority:	Short-Term
		Project Cost[1]:	(See note)
Major Project Elements:	• Minor roadway widening along Main Street southbound approach to provide a dedicated southbound left-turn lane • Reduce the curve radius and lane width of the existing northbound channelized right-turn lane to reduce right-turning travel speeds • 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 • Install ADA compliant pedestrian signals and pushbuttons • Install traffic signal at Brainerd Place driveway on Marlborough Street • Provide right-in only driveway for Brainerd Place along Main Street north of Gulf gas station		
Permits:	• OSTA approval for Brainerd Place development • Town roadway construction permits for construction within Town right-of-way • CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way		



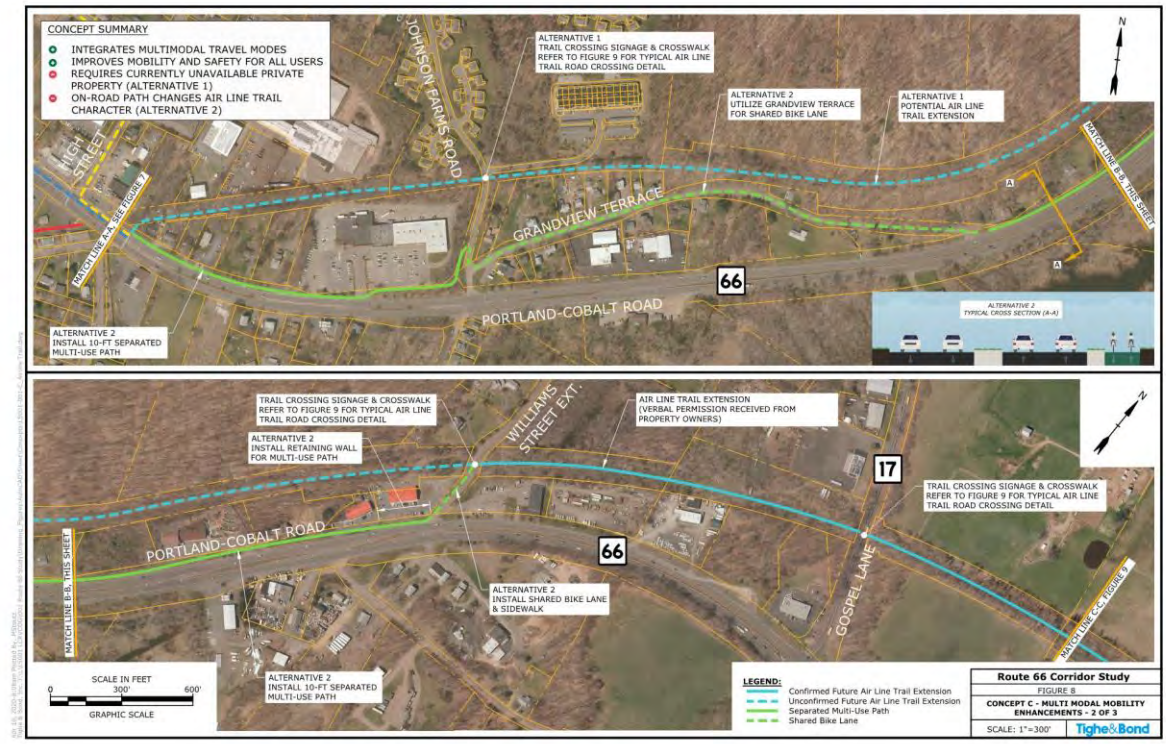
[1] The project will be funded and implemented by the developer of Brainerd Place Mixed-Use Development.

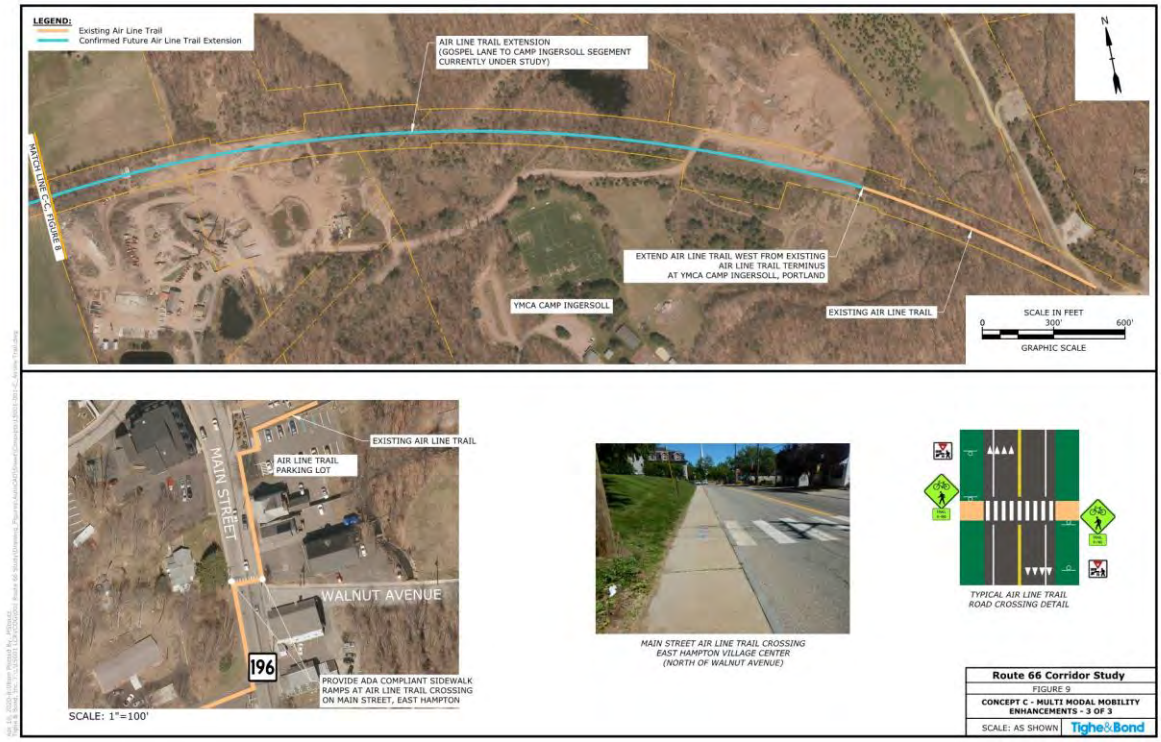
Project 2: Route 66 Pedestrian Mobility Improvements (Concept B)			
Project Goals:	Infill sidewalk gaps and install ADA compliant pedestrian crossing infrastructures to improve pedestrian mobility and safety along Route 66 between Main Street and Grandview Terrace in the Portland commercial center	Project Type:	Medium
		Project Complexity:	Moderate
		Project Priority:	Short-Term
		Project Cost:	$1.5 Million
Major Project Elements:	• 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 • Provide painted crosswalks, sidewalk ramps, pedestrian signals, and pushbuttons at signalized intersections to facilitate safe crossings for bicyclists and pedestrians • 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		
Permits:	• Town roadway construction permits for construction within Town right-of-way • Encroachment permits for construction within CTDOT right-of-way		



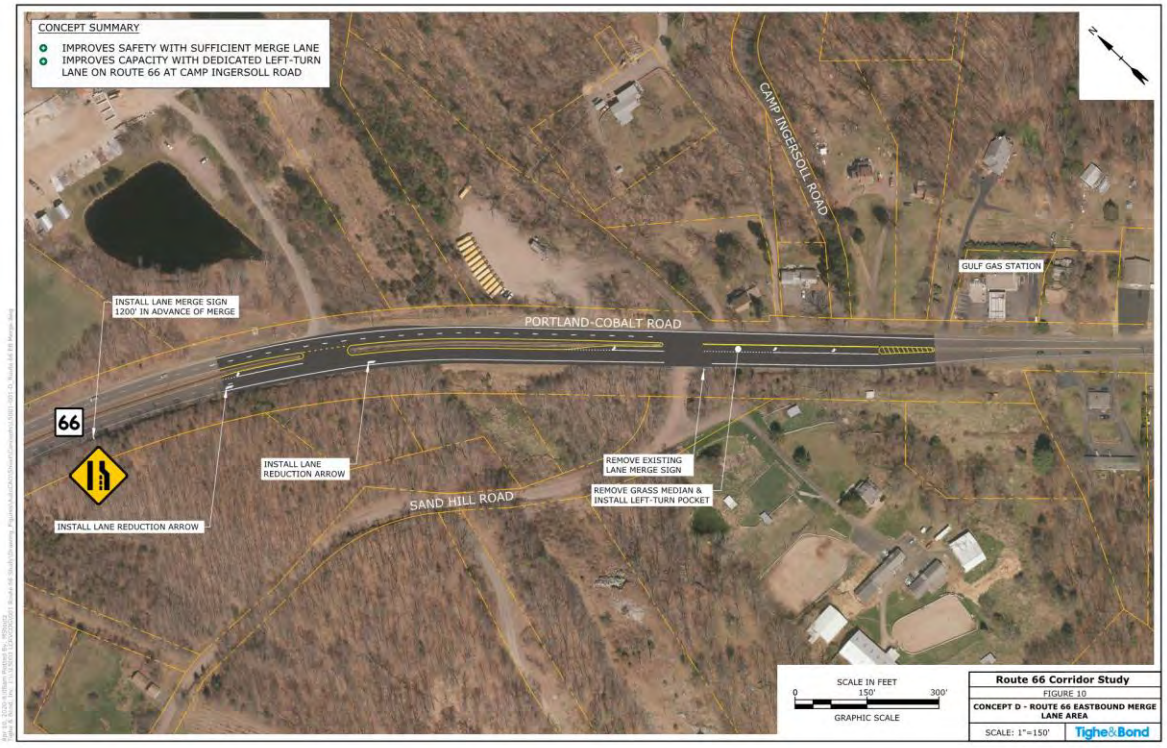
Project 3: Multi-Modal Mobility Enhancements (Concept C)			
Project Goals:	Improve bicycle routing between Arrigoni Bridge and YMCA Camp Ingersoll to enhance bicycle accommodations, connectivity and mobility in Portland; improve access at the Air Line Trail crossing on Main Street in East Hampton by installing ADA compliant sidewalk ramps.	Project Type:	Medium
		Project Complexity:	Moderate
		Project Priority:	Short-Term
		Project Cost:	Varies by Alternative
Major Project Elements:	• At Arrigoni Bridge and the Ramp Area: o Allows bicyclists to share the existing sidewalk with pedestrians on both sides of Arrigoni Bridge o Provide space for a bike ramp and dedicated bike lane along the east side of Main Street o Expand the embankment under the bridge to provide a bike path that connects both sides to facilitate crossing Route 66 under the bridge • Provide bicycle route alternatives between Arrigoni Bridge and Airline Avenue: o Alternative 1: Provide shared bike lane on Main Street, Freestone Avenue, and High Street o Alternative 2: Provide dedicated bike lane on each side of Main Street and Marlborough Street as part of Route 66 Bypass concept o 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 • Air Line Trail Extension from YMCA Camp Ingersoll to Airline Avenue o Alternative 1: Convert the former Air Line Railroad property to an off-road multi-use path between Camp Ingersoll and Airline Avenue o 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 • Install ADA compliant sidewalk ramps at the Air Line Trail crossing at Main Street in vicinity of East Hampton Village Center • Right-of-way actions; private property negotiations for Air Line Trail extension		
Permits:	• Town roadway construction permits for construction within Town right-of-way • Encroachment permits for construction within CTDOT right-of-way		


66
LOWER MAIN STREET
PROVIDE BIKE RAMP & BIKE LANE SHIFT SIDEWALK TO EAST
INSET A
SCALE: 1"=75'
17A
FREESTONE AVENUE
QUADRANT ROADWAY
MAIN STREET
HIGH STREET
PORTLAND BIKE ACCESS ALTERNATIVE 1: SHARED BIKE LANE TO ARRIGONI BRIDGE
MARLBOROUGH STREET
PORTLAND BIKE ACCESS ALTERNATIVE 3: CONVERT EXISTING RAILROAD BED TO OFF-ROAD MULTI-USE PATH
PORTLAND BIKE ACCESS ALTERNATIVE 2: DEDICATED BIKE LANES AS PART OF ROUTE 66 BYPASS CONCEPT
REFER TO INSET A
PERRY AVENUE
PICKERING STREET
BIKE PATH ADJACENT EXISTING BRIDGE ABUTMENT REFER TO INSET B
SHARED ON-ROAD BIKE ROUTE TO PORTLAND QUARRIES
WOLCOTT AVENUE
AIRLINE AVENUE
RIVERSIDE STREET
TO PORTLAND QUARRIES
17
PICKERING STREET
TO MIDDLETOWN
BICYCLISTS AND PEDESTRIANS SHARE THE EXISTING SIDEWALK ON EACH SIDE OF ARRIGONI BRIDGE
PORTLAND BIKE ACCESS ALTERNATIVE 3: SHARED ON-ROAD BIKE ROUTE
INSET B
NO SCALE
SCALE IN FEET
0 300' 600'
GRAPHIC SCALE
Route 66 Corridor Study
FIGURE 7
CONCEPT C - MULTI MODAL MOBILITY ENHANCEMENTS - 1 OF 3
SCALE: AS SHOWN
Tighe&Bond

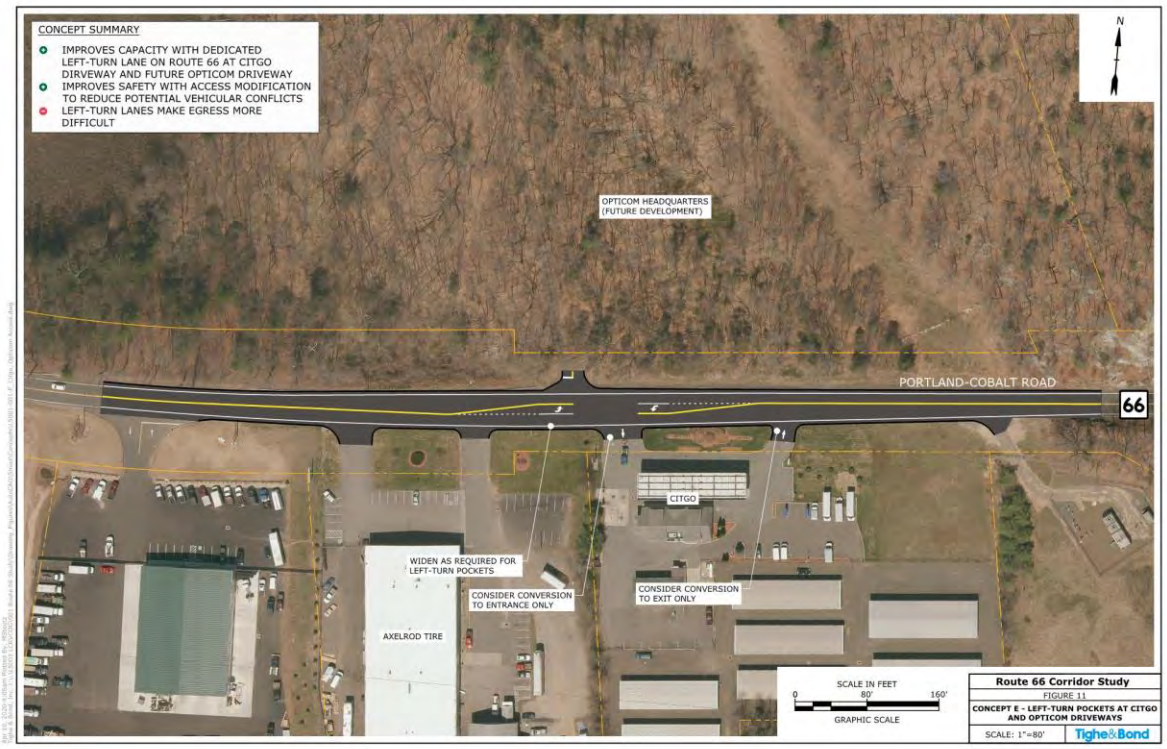

CONCEPT SUMMARY
INTEGRATES MULTIMODAL TRAVEL MODES
IMPROVES MOBILITY AND SAFETY FOR ALL USERS
REQUIRES CURRENTLY UNAVAILABLE PRIVATE PROPERTY (ALTERNATIVE 1)
ON-ROAD PATH CHANGES AIR LINE TRAIL CHARACTER (ALTERNATIVE 2)
JOHNSON FARMS ROAD
ALTERNATIVE 1 TRAIL CROSSING SIGNAGE & CROSSWALK REFER TO FIGURE 9 FOR TYPICAL AIR LINE TRAIL ROAD CROSSING DETAIL
ALTERNATIVE 2 UTILIZE GRANDVIEW TERRACE FOR SHARED BIKE LANE
ALTERNATIVE 1 POTENTIAL AIR LINE TRAIL EXTENSION
HIGH STREET
MATCH LINE A-A, SEE FIGURE 8
MATCH LINE B-B, THIS SHEET
GRANDVIEW TERRACE
66
PORTLAND-COBALT ROAD
ALTERNATIVE 2 INSTALL 10-FT SEPARATED MULTI-USE PATH
ALTERNATIVE 2 TYPICAL CROSS SECTION (A-A)
TRAIL CROSSING SIGNAGE & CROSSWALK REFER TO FIGURE 9 FOR TYPICAL AIR LINE TRAIL ROAD CROSSING DETAIL
ALTERNATIVE 2 INSTALL RETAINING WALL FOR MULTI-USE PATH
WILLIAMS STREET EXT.
AIR LINE TRAIL EXTENSION (VERBAL PERMISSION RECEIVED FROM PROPERTY OWNERS)
17
PORTLAND-COBALT ROAD
66
ALTERNATIVE 2 INSTALL SHARED BIKE LANE & SIDEWALK
GOSPEL LANE
MATCH LINE C-C, FIGURE 9
SCALE IN FEET
0 300' 600'
GRAPHIC SCALE
ALTERNATIVE 2 INSTALL 10-FT SEPARATED MULTI-USE PATH
LEGEND:
Confirmed Future Air Line Trail Extension
Unconfirmed Future Air Line Trail Extension
Separated Multi-Use Path
Shared Bike Lane
Route 66 Corridor Study
FIGURE 8
CONCEPT C - MULTI MODAL MOBILITY ENHANCEMENTS - 2 OF 3
SCALE: 1"=300'
Tighe&Bond


LEGEND:
Existing Air Line Trail
Confirmed Future Air Line Trail Extension
AIR LINE TRAIL EXTENSION
(GOSPEL LANE TO CAMP INGERSOLL SEGEMENT
CURRENTLY UNDER STUDY)
MATCH LINE C-C, FIGURE 8
EXTEND AIR LINE TRAIL WEST FROM EXISTING
AIR LINE TRAIL TERMINUS
AT YMCA CAMP INGERSOLL, PORTLAND
YMCA CAMP INGERSOLL
EXISTING AIR LINE TRAIL
N
SCALE IN FEET
0
300'
600'
GRAPHIC SCALE
EXISTING AIR LINE TRAIL
AIR LINE TRAIL
PARKING LOT
MAIN STREET
WALNUT AVENUE
196
PROVIDE ADA COMPLIANT SIDEWALK
RAMPS AT AIR LINE TRAIL CROSSING
ON MAIN STREET, EAST HAMPTON
SCALE: 1"=100'
MAIN STREET AIR LINE TRAIL CROSSING
EAST HAMPTON VILLAGE CENTER
(NORTH OF WALNUT AVENUE)
TYPICAL AIR LINE TRAIL
ROAD CROSSING DETAIL
Route 66 Corridor Study
FIGURE 9
CONCEPT C - MULTI MODAL MOBILITY
ENHANCEMENTS - 3 OF 3
SCALE: AS SHOWN
Tighe&Bond

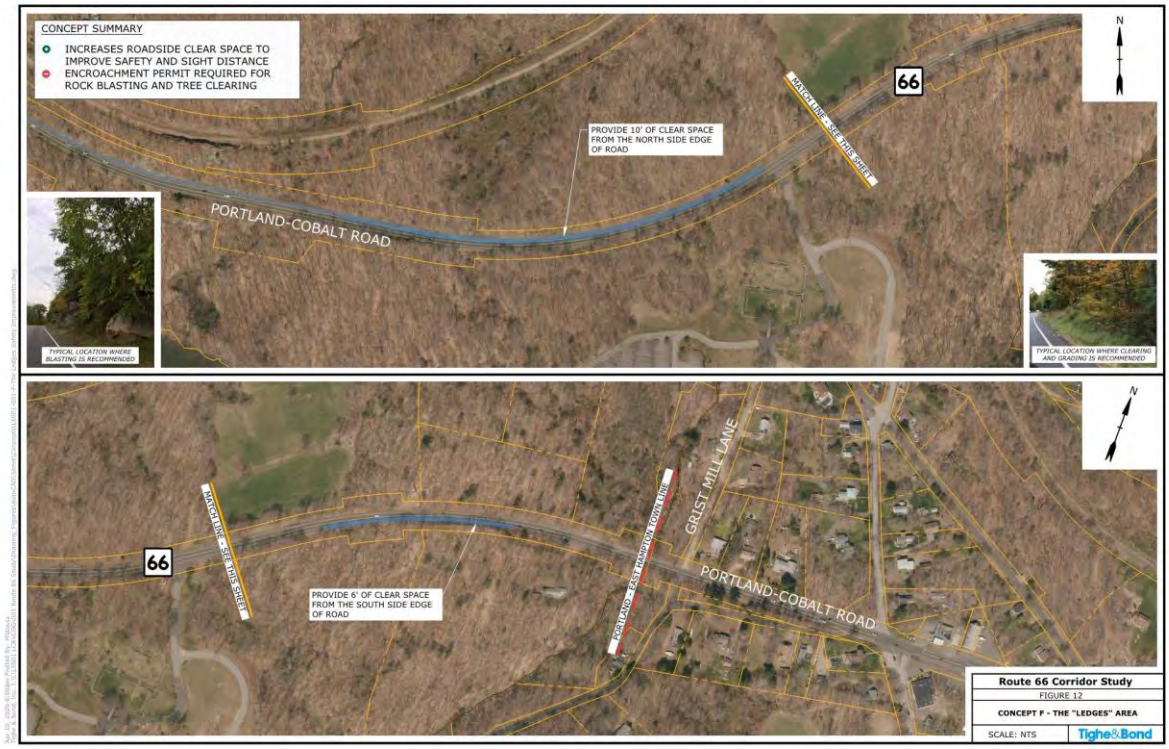
Project 4: Route 66 Eastbound Merge Lane Area Safety Improvements (Concept D)			
Project Goals:	Provide sufficient length of merge lane to improve Route 66 eastbound merging operations near Portland Gulf gas station; facilitate Route 66 eastbound left-turn movements into YMCA Camp Ingersoll by installing a dedicated eastbound left-turn lane	Project Type:	Small
		Project Complexity:	Low
		Project Priority:	Short-Term
		Project Cost:	$165,000
Major Project Elements:	• Install lane merge signage and pavement markings to provide sufficient length of Route 66 eastbound merge lane near Portland Gulf gas station • 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		
Permits:	• CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way		



Project 5: Route 66 at Portland Citgo and Opticom Driveways Operational Improvements (Concept E)			
Project Goals:	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	Project Type:	Small
		Project Complexity:	Low
		Project Priority:	Mid-Term
		Project Cost:	$710,000
Major Project Elements:	• 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 • 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		
Permits:	• CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way		

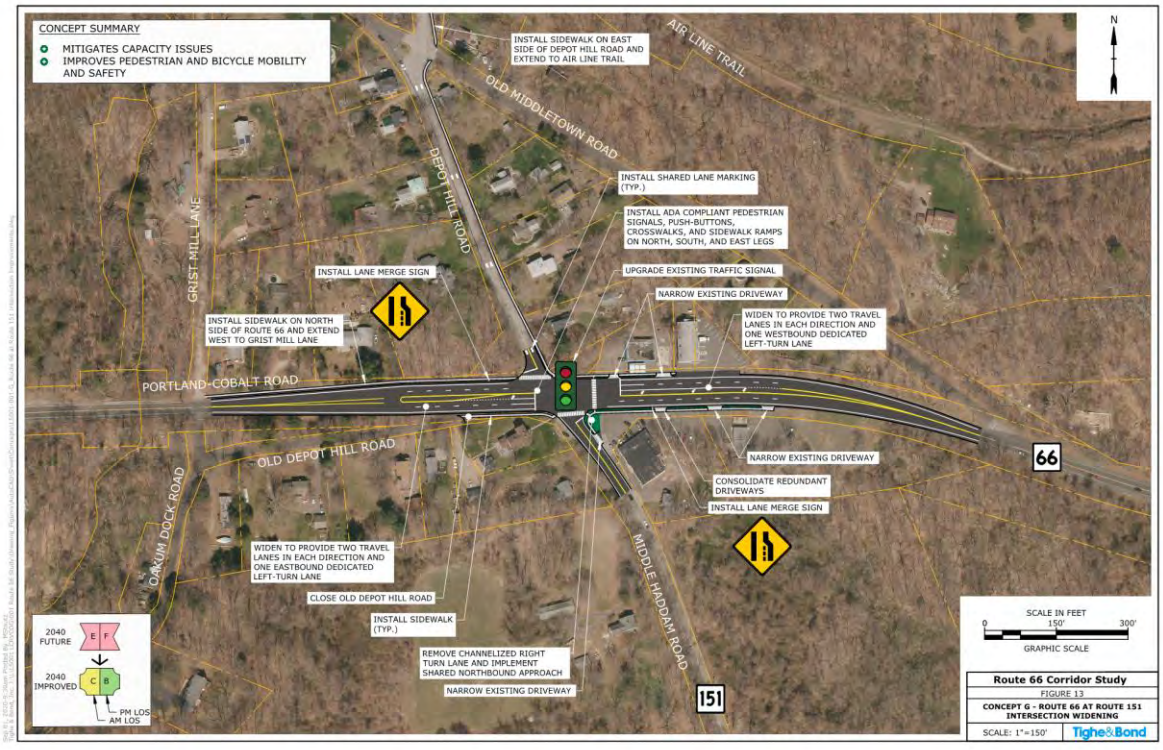


Project 6: Route 66 at Portland Ledges Area Safety Improvements (Concept F)			
Project Goals:	Improve safety at Portland Ledges area along Route 66 by eliminating existing sightline restrictions caused by reverse horizontal curves and insufficient clear zone due to the proximity of the steep rock cut slopes, primarily along the north side of Route 66	Project Type:	Small
		Project Complexity:	Moderate
		Project Priority:	Mid-Term
		Project Cost:	See Note 1
Major Project Elements:	• 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		
Permits:	• CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way		

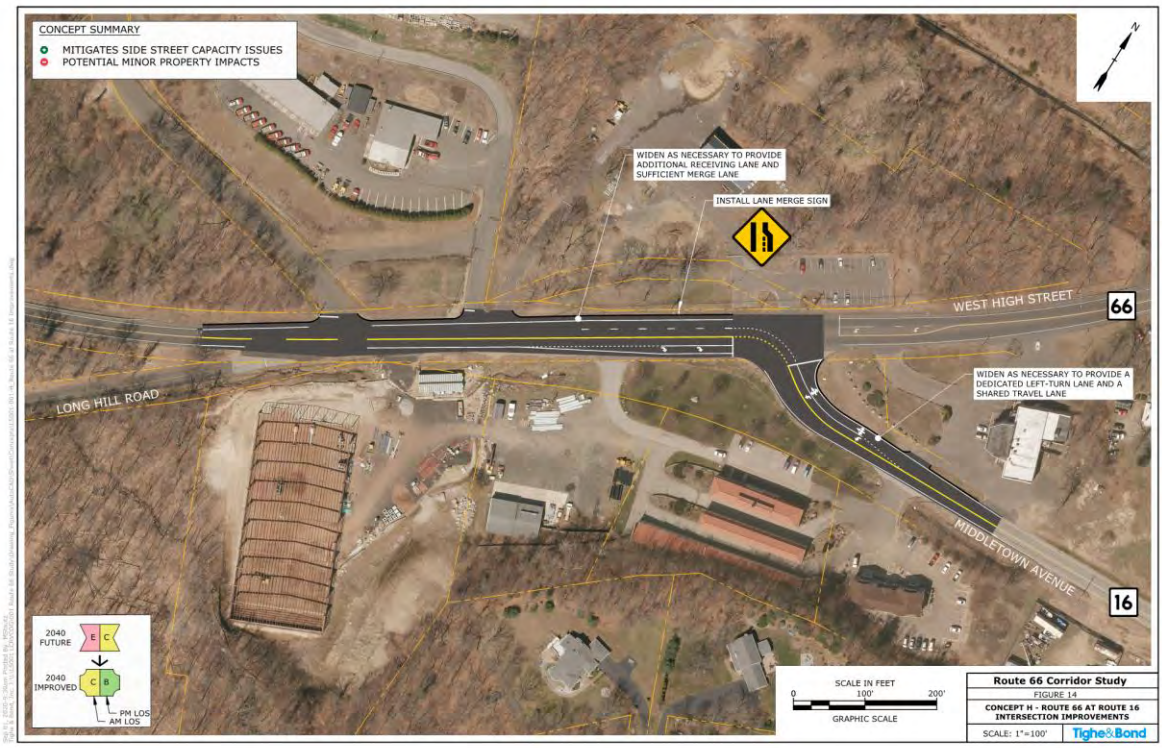


[1] This project requires additional investigation and engineering analysis to determine project scope and associated costs.

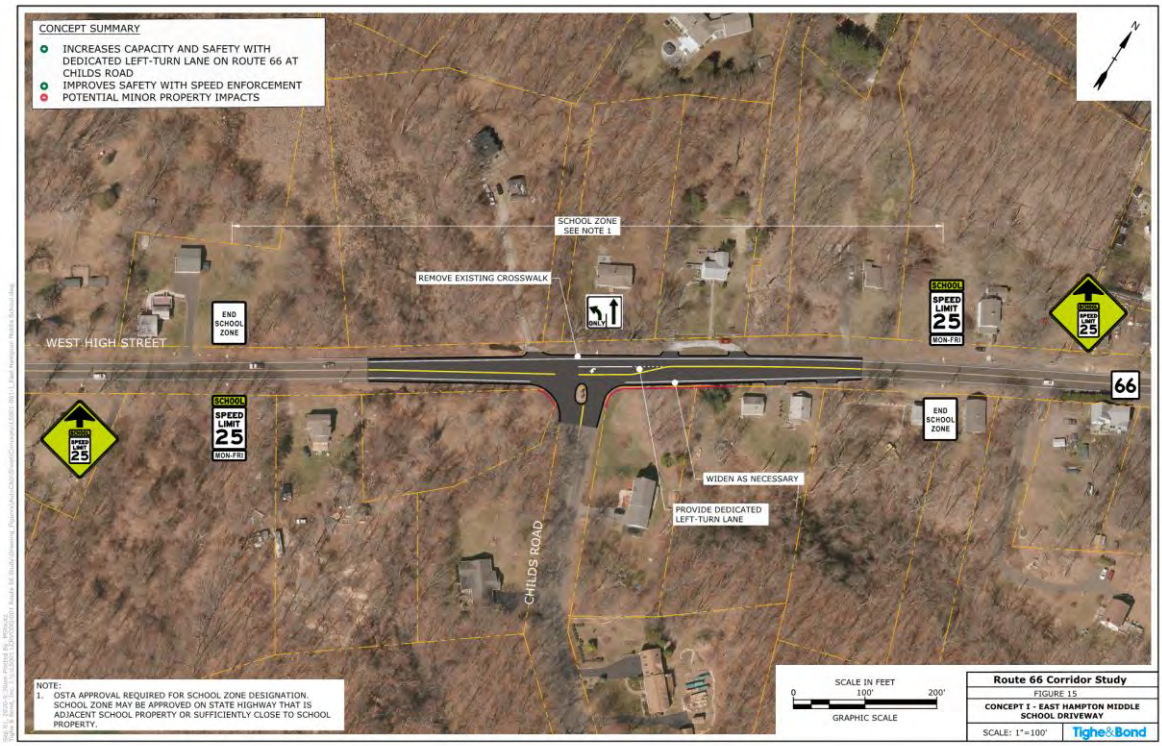
Project 7: Route 66 at Route 151 and Depot Hill Road Intersection Improvements (Concept G)			
Project Goals:	Widen the intersection to improve operation and mitigate delays and queues at the intersection; install multimodal facilities on Depot Hill Road and at the intersection to improve mobility and access of alternative travel modes	Project Type:	Large
		Project Complexity:	Moderate
		Project Priority:	Mid-Term
		Project Cost:	$4.2 Million
Major Project Elements:	• Widen Route 66 at the intersection to provide opposing left-turn lanes and two through lanes in each direction along Route 66 • Provide sufficient extension of receiving lanes and downstream lane merges on the departure side of the intersection • Eliminate the existing channelized right turn lane from Route 151 north to Route 66 east • Provide shared bike lane and sidewalk on Depot Hill Road extending to the Air Line Trail to the north • Provide sidewalks, crosswalks, pedestrian signals, and push buttons at the intersection • Minor right of way taking of private property		
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		



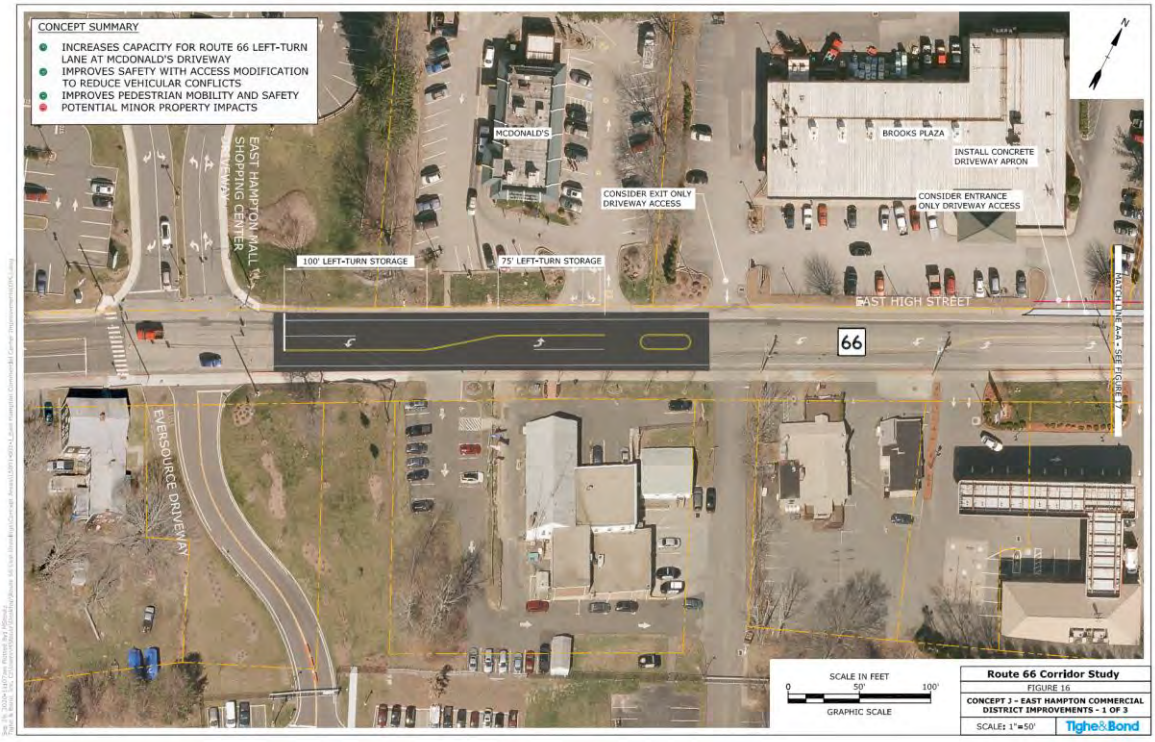
Project 8: Route 66 at Route 16 and Park & Ride Driveway Intersection Improvements (Concept H)			
Project Goals:	Improve future capacity issues for Route 16 approach by modifying lane arrangement to accommodate forecast future traffic volumes	Project Type:	Small
		Project Complexity:	Moderate
		Project Priority:	Long-Term
		Project Cost:	$880,000
Major Project Elements:	• 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 • Provide two westbound receiving lanes to accommodate the traffic from Route 16 • 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)		
Permits:	• CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way		

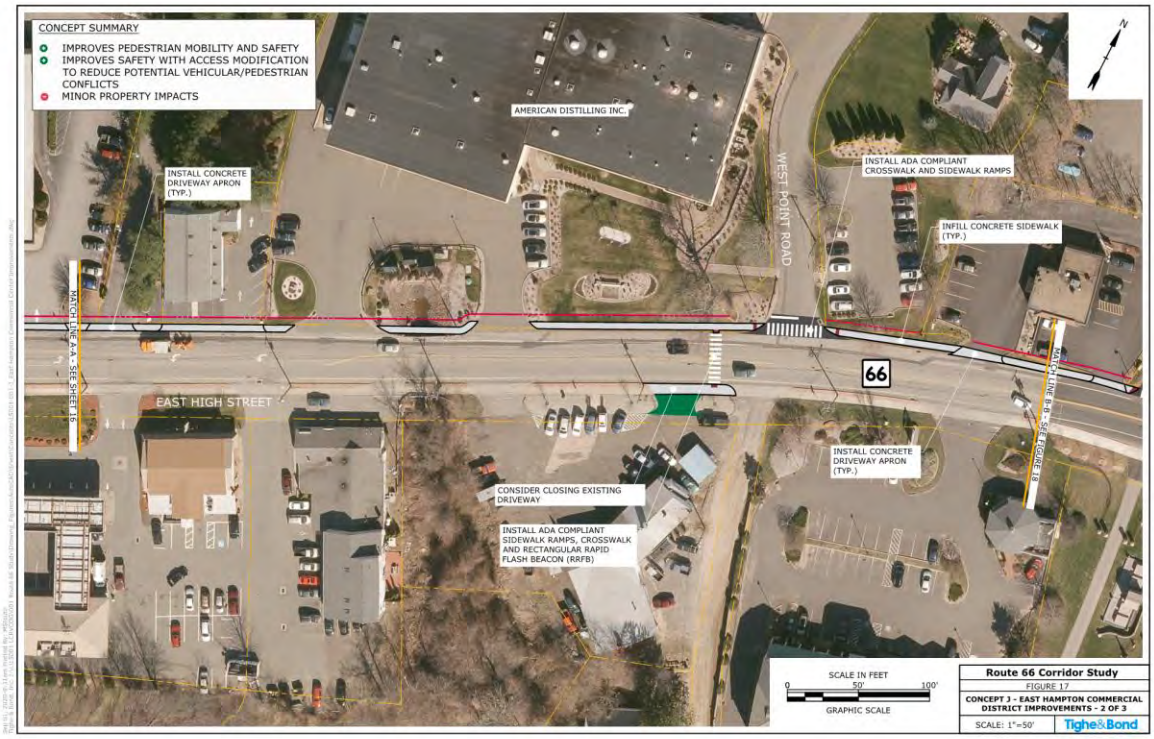


Project 9: Route 66 at Childs Road Operational Improvements (Concept I)			
Project Goals:	Improve access and safety on Route 66 at Childs Road (East Hampton Middle School access) intersection with dedicated left-turn lane; install school zone signs and school zone speed limit signs to reduce speed and improve safety	Project Type:	Small
		Project Complexity:	Low
		Project Priority:	Mid-Term
		Project Cost:	$550,000
Major Project Elements:	• 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 • Install school zone signs and school zone speed limit signs • Remove the existing crosswalk striped at the intersection due to low pedestrian activity and lack of pedestrian facilities on Route 66 in the area		
Permits:	• CTDOT approval and/or encroachment permit for construction within CTDOT right-of-way		



Project 10: Route 66 at East Hampton Commercial District Improvements (Concept J)			
Project Goals:	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	Project Type:	Small
		Project Complexity:	Moderate
		Project Priority:	Short-Term
		Project Cost:	$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		




CONCEPT SUMMARY
IMPROVES PEDESTRIAN MOBILITY AND SAFETY
IMPROVES SAFETY WITH ACCESS MODIFICATION TO REDUCE POTENTIAL VEHICULAR/PEDESTRIAN CONFLICTS
MINOR PROPERTY IMPACTS
AMERICAN DISTILLING INC.
WEST POINT ROAD
INSTALL ADA COMPLIANT CROSSWALK AND SIDEWALK RAMPS
INSTALL CONCRETE DRIVEWAY APRON (TYP.)
INFILL CONCRETE SIDEWALK (TYP.)
MATCH LINE A-A' - SEE SHEET 16
MATCH LINE A-A' - SEE SHEET 18
EAST HIGH STREET
66
INSTALL CONCRETE DRIVEWAY APRON (TYP.)
CONSIDER CLOSING EXISTING DRIVEWAY
INSTALL ADA COMPLIANT SIDEWALK RAMPS, CROSSWALK AND RECTANGULAR RAPID FLASH BEACON (RRFB)
SCALE IN FEET
0 50' 100'
GRAPHIC SCALE
Route 66 Corridor Study
FIGURE 17
CONCEPT J - EAST HAMPTON COMMERCIAL DISTRICT IMPROVEMENTS - 2 OF 3
SCALE: 1"=50'
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CONCEPT SUMMARY
IMPROVES PEDESTRIAN MOBILITY AND SAFETY
MINOR PROPERTY IMPACTS
LAKE POCOTOPAUG
WEST POINT ROAD
INSTALL ADA COMPLIANT CROSSWALK AND SIDEWALK RAMPS
INSTALL CONCRETE DRIVEWAY APRON (TYP.)
INFILL CONCRETE SIDEWALK
MATCH LINE B-B' - SEE SHEET 17
66
LAKEVIEW STREET
196
SCALE IN FEET
0 50' 100'
GRAPHIC SCALE
Route 66 Corridor Study
FIGURE 18
CONCEPT J - EAST HAMPTON COMMERCIAL DISTRICT IMPROVEMENTS - 3 OF 3
SCALE: 1"=50'
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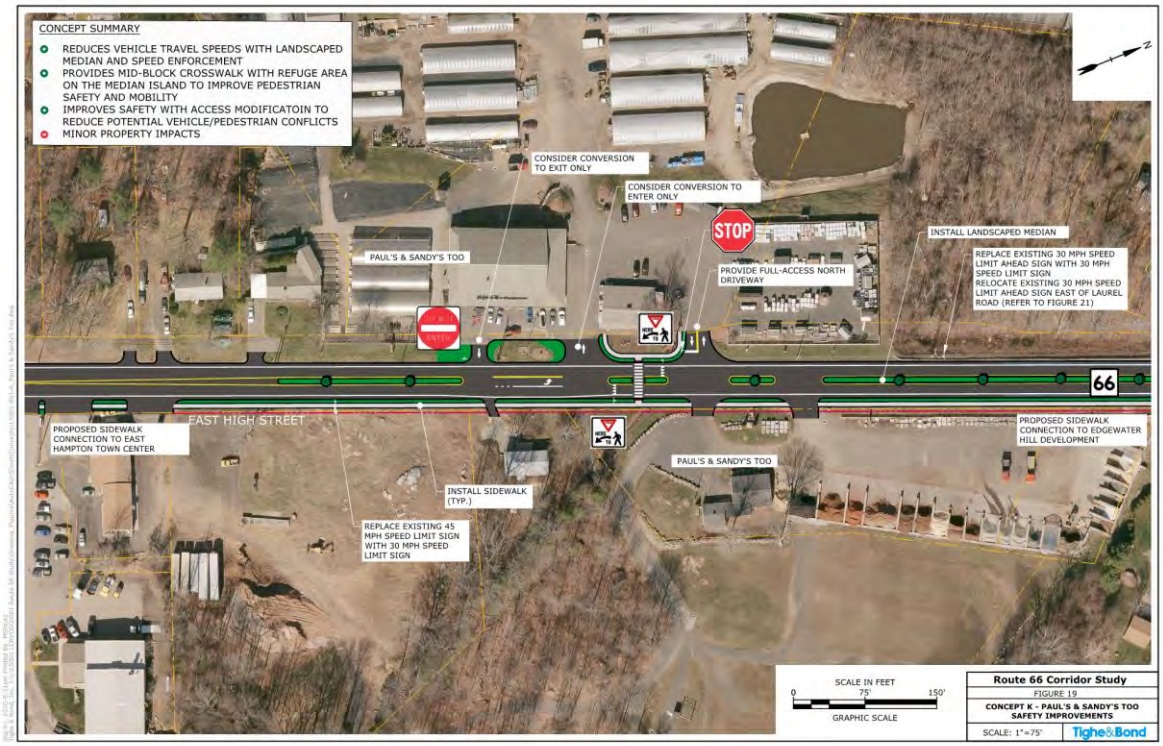
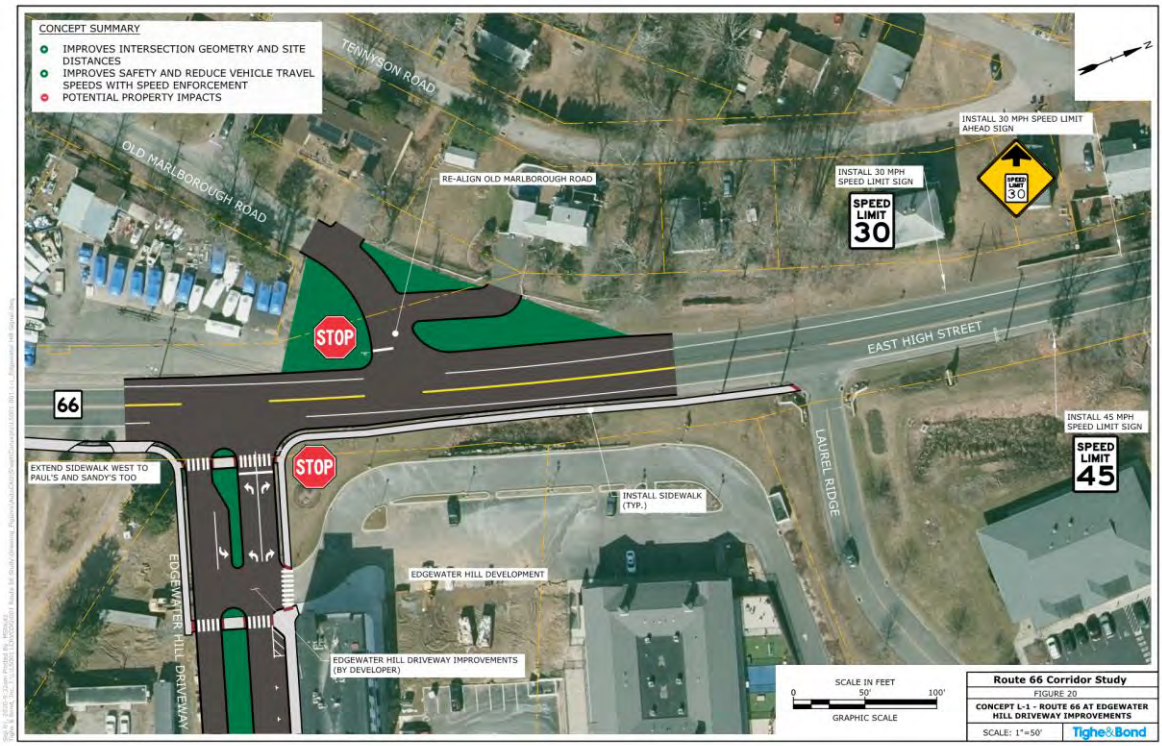
Project 11: **Route 66 at Paul's & Sandy's Too Safety Improvements** (Concept K)			
Project Goals:	Install traffic calming measures to mitigate existing speeding issues and improve safety in the vicinity of Paul's & Sandy's Too	Project Type:	Medium
		Project Complexity:	Moderate
		Project Priority:	Short-Term
		Project Cost:	$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		

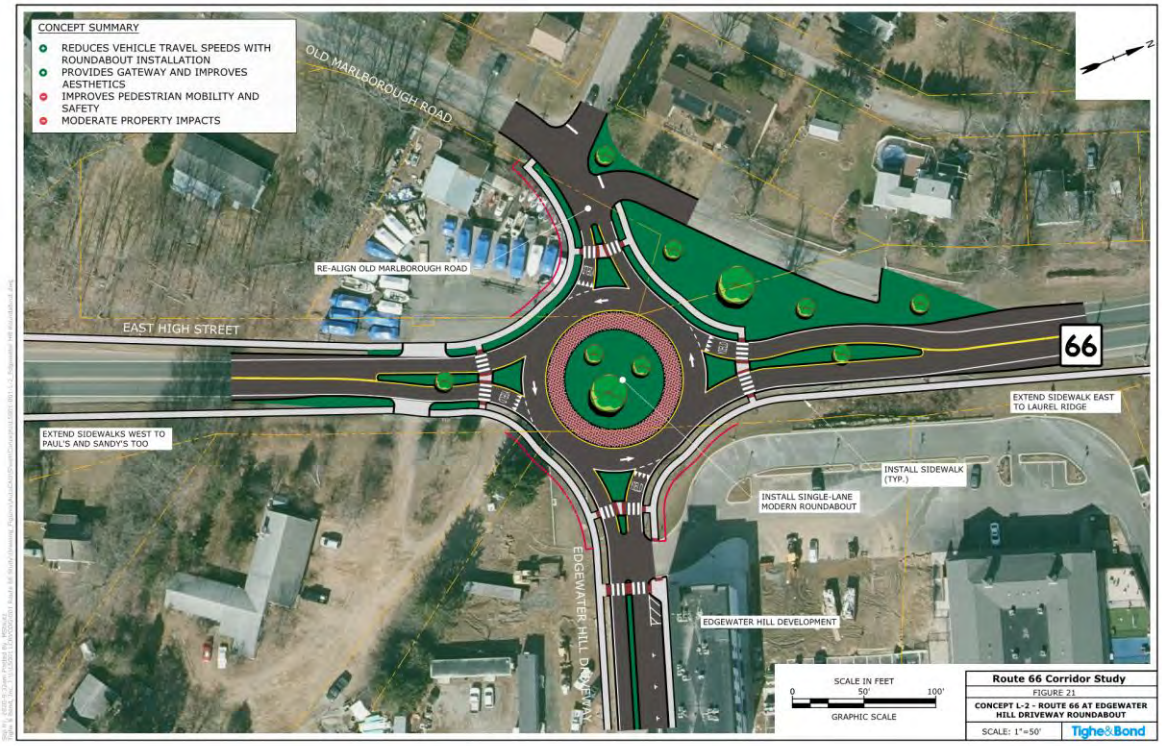


Project 12: Route 66 at Edgewater Hill Driveway Intersection Improvements (Concept L-1)			
Project Goals:	Improve traffic operation and safety at and in vicinity of the Edgewater Hill Driveway intersection on Route 66; install sidewalks along the site frontage to support pedestrian mobility and access	Project Type:	Small
		Project Complexity:	Moderate
		Project Priority:	Short-Term
		Project Cost[1]:	$870,000
Major Project Elements:	• Maintain stop sign and boulevard style driveway as part of the Edgewater Hill development • Realign Old Marlborough Road skewed approach to a more perpendicular alignment with Route 66 • Install sidewalks along the site frontage to support the pedestrian mobility and access associated with the proposed mixed-use development		
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 developer of the Edgewater Hill development for site driveway modifications associated with any improvements in this intersection area		



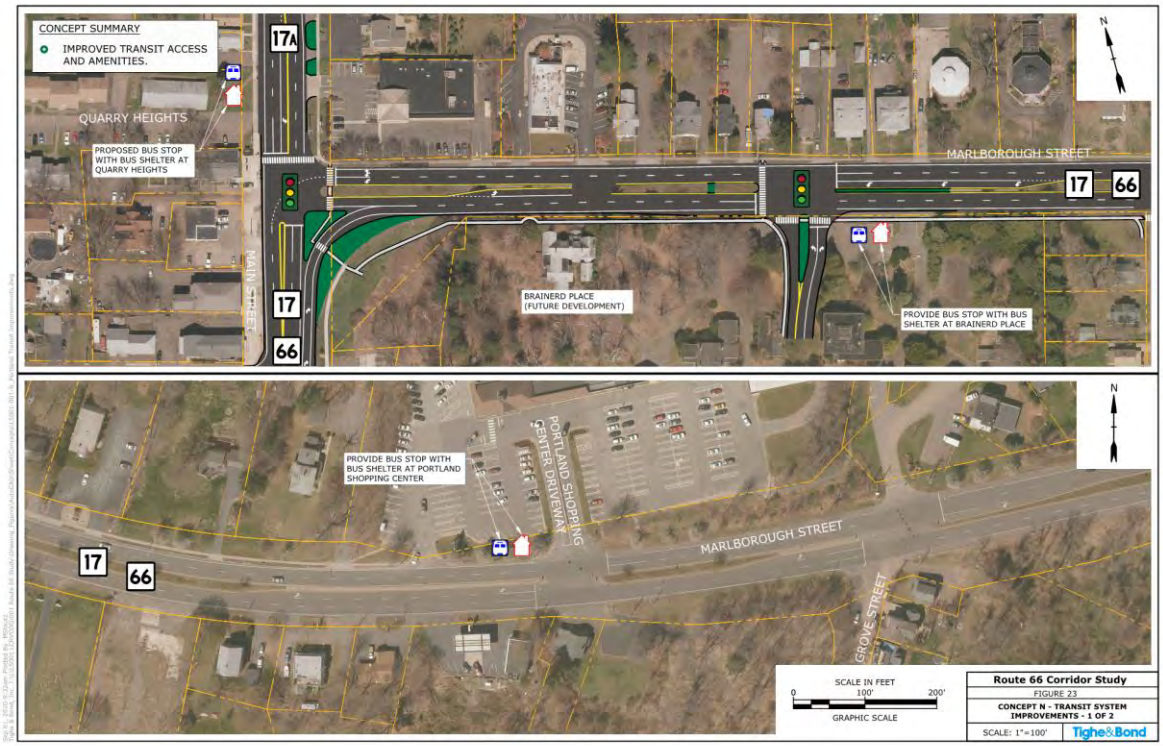
[1] The improvements on the Edgewater Hill Driveway and will be funded and implemented by the developer of Edgewater Hill Mixed-Use Development.

Project 13: Route 66 at Edgewater Hill Driveway Modern Roundabout (Concept L-2)			
Project Goals:	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	Project Type:	Medium
		Project Complexity:	High
		Project Priority:	Long-Term
		Project Cost:	$2.3 Million
Major Project Elements:	• 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 • Install sidewalks along both sites 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 developer of the Edgewater Hill development for site driveway modifications associated with any improvements in this intersection area		

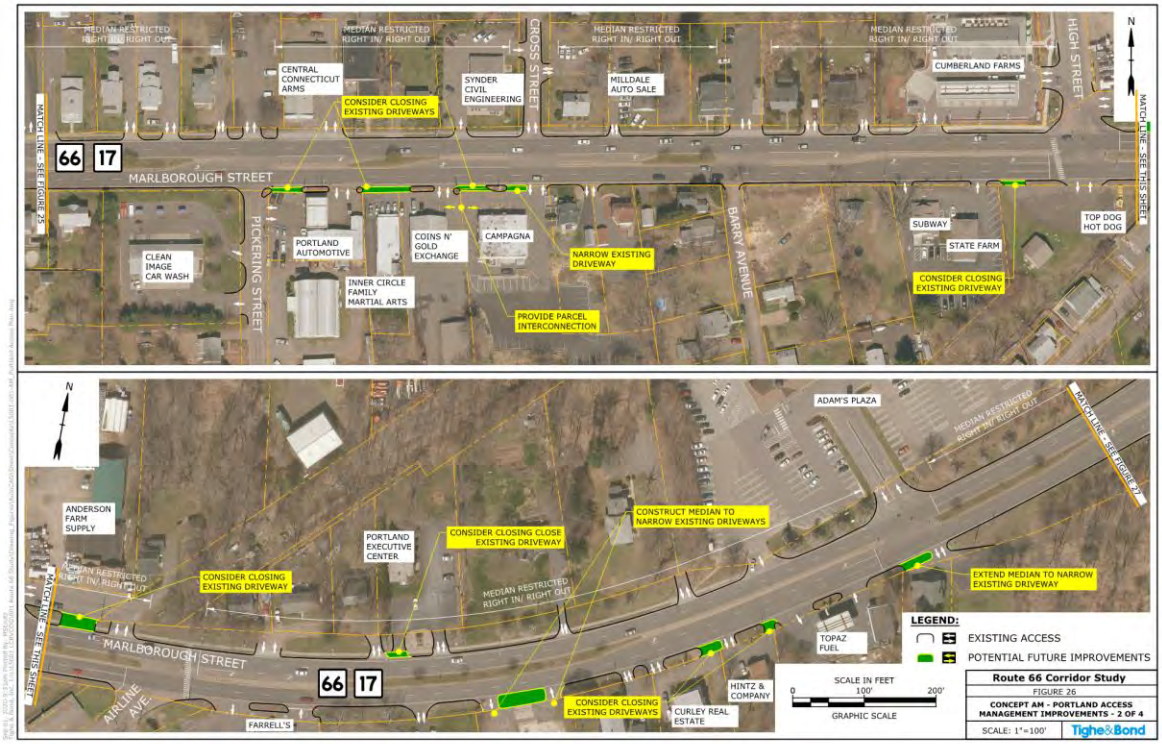


Project 14: Route 66 at Lake Drive Safety Improvements (Concept M)			
Project Goals:	Realign Lake Drive at Route 66 to improve sightline, intersection geometry, vehicular turning operations and mitigate safety concerns at the intersection	Project Type:	Small
		Project Complexity:	Moderate
		Project Priority:	Mid-Term
		Project Cost:	$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)			
Project Goals:	Improve transit infrastructure and service to promote alternative travel modes	Project Type:	Small
		Project Complexity:	Low
		Project Priority:	Short-Term
		Project Cost:	$250,000
Major Project Elements:	• 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) • Provide bus shelters at regular bus stops along the route • Improve sidewalk connectivity to bus stop locations from transit generating uses		
Permits:	• Town roadway construction permits for construction within Town right-of-way • Encroachment permits for construction within CTDOT right-of-way		



Project 16: Access Management Policy (Plans AM)			
Project Goals:	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	Project Type:	Medium
		Project Complexity:	Moderate
		Project Priority:	Mid-Term
		Project Cost[1]:	N/A
Major Project Elements:	• Modify driveway ingress/egress restrictions as needed • Reduce select driveway widths • Close redundant driveway access to parcels in areas where high driveway density exists • Interconnect adjacent parcels when appropriate to reduce the demand on entering and exiting driveways for short trips • Review and implement access management strategies into local regulations to ensure implementation during development and other regulatory activities		
Permits:	• OSTA approval for large developments • Town Planning and Zoning approvals for developments • Encroachment permits for construction within CTDOT right-of-way		



[1] Project cost would be incurred by private development or public improvement project.

5.1.4 Implementation Plan Summary

Table 5-4 summarizes the implementation plan recommendations. Six projects have been identified as Short-Term priorities, seven projects as Mid-Term priorities, and three projects as Long-Term priorities. The projects prioritized as Short-Term indicate that funding sources should be sought to mitigate existing needs and deficiencies. The worksheets used to develop the project costs can be found in Appendix V.

Project 1 includes the off-site improvements at the intersection of Main Street and Marlborough Street proposed by the Brainerd Place development and is classified as short-term priority to address the existing operational deficiency and pedestrian safety. The project is moderate in complex and the improvements received approvals from the State and the Town. The project will be funded by the proposed Brainerd Place Development.

Route 66 pedestrian mobility improvements in Portland commercial center are compiled into Project 2 and considered as short-term priority due to the lack of adequate existing infrastructure. The project is moderate in complexity. The construction of sidewalks along the south side of Route 66 between Perry Avenue and Airline Avenue will be directly impacted by the widening. However, the sidewalks along Route 66 between Airline Avenue and Grandview Terrace can be more readily implemented. The project costs approximately $1.5 million.

The proposed multi-modal mobility enhancements are grouped into Project 3 and classified as short-term priority to provide mobility benefits and enhance the multi-modal transportation system. The project is moderately complex since right-of-way actions and acquisitions are required.

Spot improvements are proposed along Route 66 at the eastbound merge lane near Portland Gulf Gas Station and Portland YMCA Camp Ingersoll driveway (Project 4), Portland Citgo and Opticom driveways (Project 5), and the ledges area (Project 6) in Town of Portland. Project 4 is considered as short-term priority to address an existing operational and safety issue. Projects 5 and 6 are classified as mid-term priority to provide operational benefits where traffic operations are not failing. Project 4 and 5 are low in complexity and cost $165,000 and $710,000, respectively. Project 6 is moderately complex as environmental impacts and encroachment permit are required. Additional investigation and engineering analysis will be required to determine the costs associated with Project 6.

Project 7 includes Route 66 widening at the intersection of Route 66 at Route 151 and Depot Hill Road in Cobalt village center. Project 7 is considered as short-term priority to improve existing queue issues on Route 66 and future traffic operation at the intersection as traffic grows. Project 7 is moderately complex with additional planning and design effort required. The cost associated with Project 7 is $4.2 million.

Spot improvements are proposed along Route 66 at Route 16 (Project 8), Childs Road (Project 9), East Hampton commercial district (Project 10), Paul's & Sandy's Too (Project 11), Edgewater Hill Driveway (Projects 12 and 13), and Lake Drive (Project 14) in Town of East Hampton. Project 8 is classified as long-term priority due to issues with traffic operations not being significant until the 2040 Future year. Projects 9 and 14 are considered mid-term priorities to improve the operation and mobility of the transportation system. Projects 10, 11 and 12 are classified as short-term priorities to address the existing safety and operational issues. Project 13 is considered a long-term priority to provide eastern gateway into East Hampton town center. Project 9 is low in complexity, projects 8, 10, 11, 12 and 14 are moderate in complexity, while project 13 is high in complexity as significant planning and right-of-way acquisition is required. The costs associated with Projects 8 to 14 are $880,000, $550,000, $470,000, $2.2 million, $870,000, $2.3 million, and $380,000, respectively.

Project 15 encompasses improvements to the study area transit accommodations. It is classified as a short-term priority due to the lack of existing infrastructure. The installation of bus stops and shelters should be implemented as funding allows. The project is low in both complexity and cost with a short implementation time.

Access management to the properties along the Route 66 corridors constitutes the scope of Project 16. It is considered a mid-term priority as there are well known benefits to access management, but it is not critical to corridor operations. Project 16 has moderately complex elements and is tied to the conceptual corridor, site redevelopment applications, and sidewalk improvements.

Table 5-4
Summary of Projects in Implementation Plan

	Project Description	Project Priority	Project Complexity	Project Cost
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

5.2 Project Implementation

The transition from project planning to implementation is the critical step forward in the project development process. Utilizing the ideas and conceptual designs developed under this Study, and with the help from RiverCOG, CTDOT, and the Towns of Portland and East Hampton, projects have been identified for implementation to address the existing and future needs and concerns in the study area. Once a project has been identified, implementation will follow a well-defined process based on the funding source. The most critical first-step towards implementation is the identification of a funding source to support the engineering, right-of-way acquisition, utility modifications, and the construction of the improvements.

5.2.1 Project Initiation and Funding

The majority of the recommendations and improvements identified in this Study will be publicly funded through State and/or Federal Transportation Funding Programs as provided for in the Federal transportation legislation, through State funding made available in the State of Connecticut transportation budget, or through the State Bond Commission. However, there are other improvements that could be constructed by private entities as mitigation for proposed development in the study area. The Towns should rely on the recommendations of this Study to ensure that local regulatory approvals consider the recommendations of this Study when determining the appropriate level of mitigation to be included as a condition of approval for a new or redevelopment.

There are many current funding sources to support the recommendations presented in the Study. Current funding programs include:

- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Local Capital Improvement Program (LoCIP)
- Local Transportation Capital Improvement Program (LoTCIP)
- National Highway Performance Program (NHPP)
- Highway Safety Improvement Program (HSIP)
- Local Road Accident Reduction Program (LRARP)
- Recreational Trails Program
- Special Tax Obligation Bonds
- Surface Transportation Program (STP)
- Transportation Alternatives Program (TAP)

It is worth noting that with any program reliant on public funding, either by the Federal Government or State of Connecticut, priorities may change in the future along with available funding for transportation system improvements. In addition, there are several large construction projects currently underway and in design in the State of Connecticut that can constrain transportation spending looking forward as available funds are dedicated to completing these projects. The State of Connecticut Department of Transportation published the "Transportation Infrastructure Capital Plan: 2017 – 2021" describing the state of available funds and programmed spending over the next few years.

However, the current fiscal constraints should not limit the identification and pursuit of projects and funding for the priority projects identified by the Study so that as funding becomes available, projects are ready.

5.2.2 Design, Permitting and Construction

5.2.2.1 Engineering Design

Following the initiation of a project and identification of a funding source, the remaining steps to implement an improvement will involve design and construction. Based on the complexity of a project, an initial Preliminary Engineering phase may be required to conduct a more detailed engineering study and refine the concept plans and project scope. A preliminary engineering study can help establish the potential impacts to environmental and natural resources, identify potential property and utility impacts, and help refine the expected costs in current dollars rather than forecasting based on estimates reported in this Study which are provided in current, 2020 dollars.

Once Preliminary Engineering is complete and the decision is made to move forward with a project, Final Design will take place to add detail to the plan, conduct a right-of-way acquisition process, address utility conflicts and possible relocations, and develop construction documentation to facilitate bidding and construction of the improvements. Projects that are identified as having a low level of complexity can be designed within 12-18 months from initiation of the project. As complexity grows, so does the timeframe required to design improvements. Design phases can potentially last three years or more for complex projects.

5.2.2.2 Green Infrastructure and Landscaping

Corridor improvement should be accompanied by green infrastructure and landscaping including trees, median island plantings, and low impact design (LID) techniques that minimize stormwater runoff and mitigate against the expansion of impervious surface associated with roadway widening. The provision of landscaping with roadway improvements will also seek to preserve the rural character of the study area. The concepts are discussed in more detail in the following sections with the last section providing suggested applications within specific improvement projects identified by this study.

Tree Planting

Tree planting should accompany roadway improvements to improve air quality, aesthetics, and to provide a traffic calming effect. Trees should be located, and appropriate species should be selected, so as not to adversely impact traffic sightlines, sidewalks, or utility infrastructure. Trees should be selected for drought and salt tolerance when located close to the roadway. Native species are preferred and invasive species such as Norway Maple should not be planted.

The tree species identified in the table below are recommended street trees by the University of Connecticut Department of Plant Science and Landscape Architecture. These species are recommended for use within the study area.

Latin Name	Common Name
Acer buergerianum 1	Trident Maple
Acer campestre	Hedge Maple
Acer rubrum 'Armstrong'	Armstrong Red Maple
Acer rubrum 'Columnare'	Columnar Red Maple
Acer rubrum 'Northwood'	Northwood Red Maple
Acer rubrum 'October Glory'	October Glory Red Maple
Acer rubrum 'Red Sunset'	Red Sunset Red Maple
Aesculus octandra flava	Yellow Buckeye
Aesculus x carnea	Red horsechestnut
Aesculux x carnea 'Briotii'	Briotii Red horsechestnut
Celtis occidentalis 2	Common Hackberry
Cercidiphyllum japonicum 3	Katsuratree
Corylus colurna	Turkish Filbert
Crataegus x lavallei	Lavalle Hawthorn
Crataegus x mordenensis 'Toba'	Toba Hawthorn
Crataegus phaenopyrum	Washington Hawthorn
Crataegus phaenopyrum 'Fastigiata'	Fastigiate Washington Hawthorn
Crataegus viridis 'Winter King'	Winter King Hawthorn
Fraxinus pennsylvanica 'Marshall's Sdls.'	Marshall's Seedless Green Ash
Fraxinus pennsylvanica 'Newport'	Newport Green Ash
Fraxinus pennsylvanica 'Patmore'	Patmore Green Ash
Fraxinus pennsylvanica 'Summit'	Summit Green Ash
Fraxinus pennsylvanica 'Urbanite'	Urbanite Green Ash
Ginkgo biloba	Ginkgo
Ginkgo biloba 'Fastigiata'	Fastigiate Ginkgo
Ginkgo biloba 'Sentry'	Sentry Ginkgo
Gleditsia triacanthos inermis	Thornless Honeylocust
Gleditsia tri. in. 'Halka'	Halka Honeylocust
Gleditsia tri. in. 'Moraine'	Moraine Honeylocust
Gleditsia tri. in. 'Shademaster'	Shademaster Honeylocust
Gleditsia tri. in. 'Skyline'	Skyline Honeylocust
Gleditsia tri. in. 'Sunburst'	Sunburst Honeylocust
Koelreuteria paniculata 3	Goldenrain Tree
Liquidambar styraciflua 1	Sweetgum
Maackia amurensis 3	Amur Maackia
Malus 'Adams'	Adams Crabapple
Malus x atrosanguinea	Carmine Crabapple
Malus baccata 'Jackii'	Jackii Crabapple
Malus baccata mandshurica	Manchurian Crabapple
Malus 'Baskatong'	Baskatong Crabapple
Malus 'Beverly'	Beverly Crabapple
Malus 'Bob White'	Bob White Crabapple
Malus 'Centurion'	Centurion Crabapple
Malus 'Donald Wyman'	Donald Wyman Crabapple
Malus 'Doubloons'	Doubloons Crabapple
Malus 'Evelyn'	Evelyn Crabapple
Malus floribunda	Japanese Flowering Crabapple

Latin Name	Common Name
Malus 'Harvest Gold'	Harvest Gold Crabapple
Malus hupehensis	Tea Crabapple
Malus 'Jewelberry'	Jewelberry Crabapple
Malus 'Katherine'	Katherine Crabapple
Malus 'Liset'	Liset Crabapple
Malus 'Prairifire'	Prairifire Crabapple
Malus 'Prince Georges'	Prince Georges Crabapple
Malus 'Professor Sprenger'	Professor Sprenger Crabapple
Malus 'Red Jade'	Red Jade Crabapple
Malus 'Robinson'	Robinson Crabapple
Malus 'Selkirk'	Selkirk Crabapple
Malus 'Sentinel'	Sentinel Crabapple
Malus sieboldii zumi 'Calocarpa'	Zumi Crabapple
Malus 'Snowdrift'	Snowdrift Crabapple
Malus tschonoskii	Tschonoski Crabapple
Malus 'White Angel'	White Angel Crabapple
Malus 'Zumirang'	Zumirang Crabapple
Ostrya virginiana	Hop Hornbeam
Phellodendron amurense	Amur Cork Tree
Platanus x acerifolia 'Bloodgood'	London Plane Tree
Pyrus calleryana 'Aristocrat'	Aristocrat Callery Pear
Pyrus calleryana 'Chanticleer'	Chanticleer Callery Pear
Pyrus calleryana 'Redspire'	Redspire Callery Pear
Quercus coccinea	Scarlet Oak
Quercus palustris	Pin Oak
Quercus robur	English Oak
Quercus robur 'Concordia'	Golden Leaved English Oak
Quercus robur 'Fastigiata'	Fastigiate English Oak
Quercus rubra	Red Oak
Quercus x shumardii	Shumard Oak
Sophora japonica	Japanese Scholar Tree
Sophora japonica 'Fastigiata'	Fastigiate Scholar Tree
Syringa reticulate	Japanese Tree Lilac
Tilia americana 'Redmond'	Redmond American Linden
Tilia cordata	Littleleaf Linden
Tilia cordata 'Chancellor'	Chancellor Littleleaf Linden
Tilia cordata 'Glenleven'	Glenleven Littleleaf Linden
Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden
Tilia tomentosa	Silver Linden
Tilia x euchlora	Crimean Linden
Ulmus 'Homestead'	Homestead Elm
Ulmus 'Pioneer'	Pioneer Elm
Ulmus 'Urban Elm'	Urban Elm
Ulmus parvifolia	Lacebark Elm
Zelkova serrata	Zelkova
Zelkova serrata 'Halka'	Halka Zelkova
Zelkova serrata 'Village Green'	Village Green Zelkova

Median Island Plantings

Median islands can be comprised of a combination of plantings, sod, and hardscape elements. Given sight line and visibility concerns, small shrubs, perennials, grasses, and bulbs are recommended. Landscaped areas cost approximately $10 per square foot, sodded areas cost approximately $2 per square foot and hardscaped areas cost approximately $10 to $15 per square foot.

Plants used in landscaped medians should be drought resistant, low maintenance, and salt tolerant species. The use of native plants whenever possible is recommended. Below is a list of suitable species for use in landscaped medians.

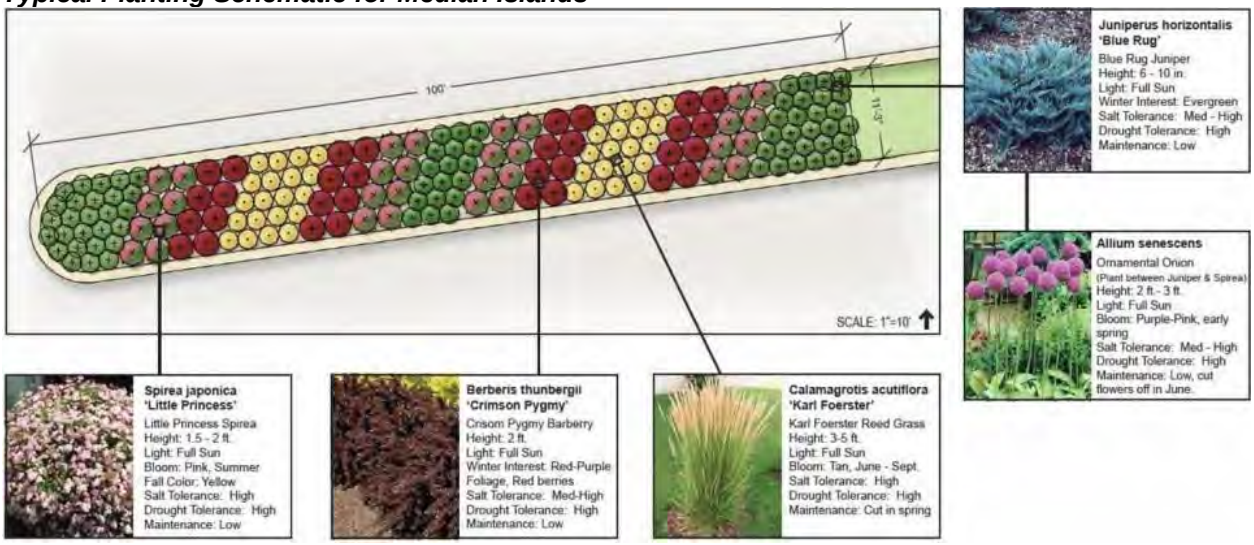
Curb-height median with plantings set back from the curb to allow for easier maintenance: Merrick Boulevard, Queens, New York. Source; NY DOT Street Design Manual

	Appearance			Tolerances			
Shrubs	Height	Spread	Characteristics	Drought-Flood	Light	Salt	High pH
Hydrangea paniculata 'DVPinky' Pinky Winky Hydrangea	6'-8'	5'-6'	JUL SEP		✓	◆	◆
Cornus sericea 'Farrow' Arctic Fire Red Twig Dogwood	3'-4'	3'-4'	MAY JUN		✓	◆	◆
Rosa 'Radcor' Rainbow Knock Out Rose		4'-5'	MAY NOV		✓	◆	◆
Abelia x grandiflora 'Rose Creek' Rose Creek Glossy Abelia	<3'	3'-4'	MAY SEP	✓		◆	–
Caryopteris x clandonensis 'Dark Knight' Dark Knight Blue Mist Shrub		1.5'-2'	JUL SEP	✓		◆	–
Juniperus chinensis var. sargentii 'Glauca' Blue Sargent Juniper		6'-9'		✓	✓	◆	◆
Lagerstroemia indica 'Gamad II' Razzle Dazzle Crepe Myrtle		3'-4'	JUL SEP	✓	✓	◆	◆
Potentilla fruticosa Shrubby Cinquefoil		3'-4'	JUN NOV	✓	✓	◆	◆
Rhus aromatica 'Gro Low' Gro Low Sumac		6'-8'	APR	✓	✓	◆	◆
Spiraea x bumalda 'Goldmound' Goldmound Spirea		3'-4'	MAY	✓	✓	◆	◆
Yucca filamentosa 'Color Guard' Color Guard Adam's Needle		2'-3'	JUN SEP	✓	✓	◆	◆
Perennials							
Liriope muscari 'Big Blue' Big Blue Lilyturf	1'-2'	1'-2'	AUG SEP	✓	✓	◆	◆
Nepeta x 'Walker's Low' Walker's Low Catmint	2'-2.5'	2.5'-3'	AUG SEP	✓	✓	◆	◆
Perovskia atriplicifolia 'Little Spire' Little Spire Russian Sage	1.5'-2'	1.5'-2'	JUN NOV	✓	✓	◆	◆
Echinacea purpurea Coneflower	2'-3'	1.5'-2'	JUN AUG	✓	✓	◆	◆
Grasses/Grass-like Plants							
Chionodoxa forbesii 'Pink Giant' Pink Giant Glory of the Snow	3'-5'	1.5'-2.5'	JUN FEB	✓	✓	◆	◆
Bulbs							
Narcissus 'Improved King Alfred' Trumpet Daffodil	1'-2'	.5'-1'	APR MAY	✓	✓	◆	◆
Allium 'Globemaster' Globemaster Ornamental Onion	1.5'-2.5'	1'-1.5'	JUN	✓	✓	◆	◆

* Fall Dig Hazard ^ ALB Host Species ✿ Bloom/Showy Flowers ❦ Showy Fruit ✿ Distinct Foliage ✿ Fall Color ■ Distinctive Bark ▲ Evergreen

Source; NY DOT Street Design Manual

Typical Planting Schematic for Median Islands



Typical planting schematic of landscaped median, source; Pennsylvania Department of Transportation

Low Impact Design Options

This section provides an overview of landscaping and Low Impact Development (LID) techniques that can be considered for incorporation into improvement projects. Integrating LIDs will reduce the strain on the existing drainage system with the increased impervious surface area associated with the improvements. The LID options presented include the use of pervious pavements and bioswales. Sample landscaping options are also provided for use within the medians.

Bioswales

Bioswales are vegetated channels that provide treatment and retention as they move stormwater from one place to another. Vegetated swales slow, infiltrate, and filter stormwater flows. Bioswales are typically used as parking lot islands, in medians, as roadside swales, or as landscape buffers. Bioswales can offer the following benefits:

- Treat stormwater using vegetation, soil, and microbes
- Reduce the total volume of stormwater runoff
- Slow the velocity of runoff and reduce the peak discharge
- Increase infiltration and groundwater recharge
- Can be an aesthetic part of the landscape and increase biodiversity

Bioswales should be considered in areas with well drained soils. Areas with poorly drained sites will require an underdrain to remove overflow stormwater. Compacted soils, short runoff contact time, large storm events, and steep slopes reduce the effectiveness of bioswales.

Bioswales are inexpensive relative to traditional curb and gutter treatment or underground stormwater systems. Maintenance (seasonal trimming and removal of debris) is required more often but is much less expensive than that of traditional curb and gutter system maintenance. Installation cost per square foot varies depending on drainage requirements and density of planting. Typical costs range from $5 to $10 per square foot.

Typical plant types used in bioswales include:

- Achillea millefolium, Common Yarro
- Aronia arbutifolia, Chokeberry
- Baptisia sphaerocarpa, Yellow Wild Indigo
- Echinacea, Coneflower
- Iris laevigata, Iris
- Kalimeris incisa, Japanese Aster
- Monarda, Bee Balm
- Phlox paniculata, Perennial Phlox
- Solidaga rugosa, Goldenrod
- Ilex verticillata, Winterberry
- Lindera Benzoin, Spicebush
- Panicum virgatum, Switch grass
- Schizachyrium scoparium, Little Bluestem

Bioswales should be planted with a mix of close growing vegetation that is water and salt tolerant. Plants should be selected for their nutrient uptake ability and appropriateness for the site. The use of native plants is recommended.

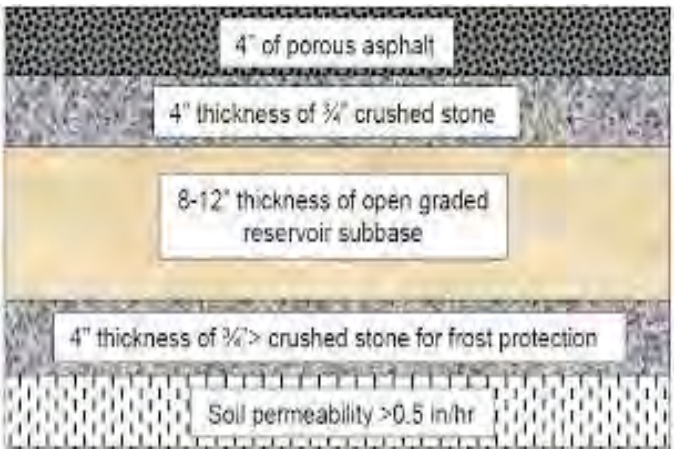
Bioswale Detail and Example

Pervious Asphalt

Pervious (or porous) asphalt is a mix that is designed to allow for onsite stormwater infiltration. This pavement type is not suitable for high traffic areas, but is suitable for pathways, sidewalks, and low traffic parking areas. Pervious asphalt has been shown to reduce slipping hazards by absorbing water from the surface in cold climates. It can be installed with the same equipment as traditional asphalt and is designed to have an equal lifespan. Installation involves less labor than is required with pervious concrete. Typical uses of this treatment include parking lots, driveways, walkways.

Plowing and poor drainage can lessen the life span. Tight parking lots which cause many turning movements can cause spalling. This product is also prone to clogging, leaves and sand reduce the infiltration rates.

Pervious asphalt has been used in multiple locations at the University of Connecticut Storrs Campus. The product has held up well in these locations and the university is in the process of purchasing a maintenance vacuum.



Typical Pervious Pavement Section

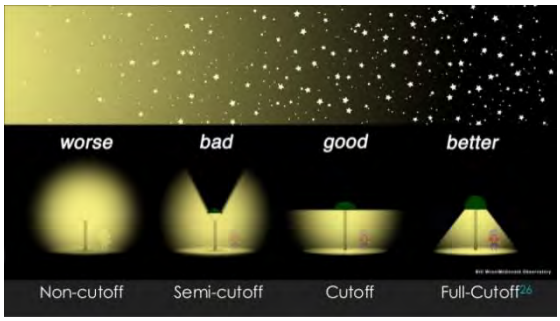
(Source: Tompkins County Soil and Water Conservation Stormwater Program)

Installation costs approximately $5 a square foot. Required maintenance includes twice yearly truck vacuuming and special snowplow blades designed to not damage the surface. The implementation of this type of LID measure may be appropriate for shared use pathways but is not considered a feasible solution for roadway pavement.

Application to Route 66

Green infrastructure and low-impact development practices should be incorporated into the subsequent planning, design, and construction of future improvements in the Route 66 corridor. Given the proximity of the Connecticut River, its floodplains, and adjacent wetlands to a number of the improvement recommendations of this study, the implementation of innovative and environmentally-sensitive stormwater management practices will help minimize the potential impacts that runoff from new roadway surfaces and parking lots could have on these resources. Specific green infrastructure measures that could be utilized in the corridor include full cutoff lighting, protection of mature trees, addition of new trees, use of local materials, pervious pavement or pavers, open vegetated channels, bioretention areas, bioswales and rain gardens. The following images illustrate these practices.

Full cutoff lighting

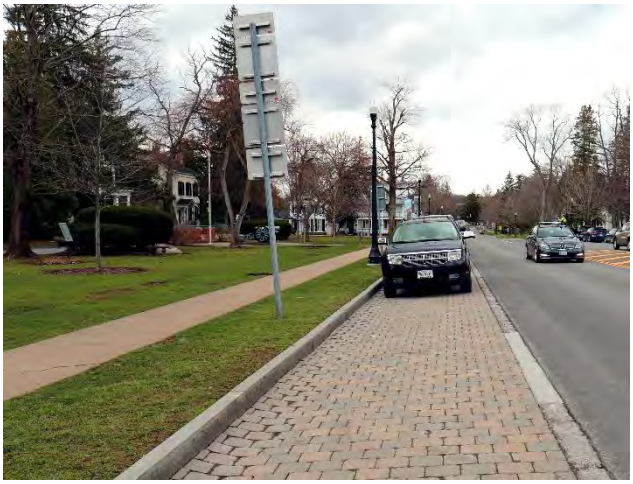


Options for lighting cutoffs

Incorporation & protection of mature trees

Utilizing on site materials – Field Stone

Utilizing local materials – Portland Brownstone



Pervious pavement or pavers at on-street parking

Pitch pavement toward bioswales & planted areas

Incorporate bioswales & raingardens into medians, bump outs, or back of walk planting beds

5.2.2.3 Permitting and Compliance

Environmental Permitting

As noted in Section 2.13 of this report, there are numerous regulated natural resources within the study area. Resources of note include: Threatened and Endangered Species and Critical Habitats, Floodplains, and Wetlands. The Threatened and Endangered Species information is available through the CTDEEP Natural Diversity Data Base (NDDB). Within the study area, the NDDB areas are located surrounding the Connecticut River in Portland and areas surrounding Lake Pocotopaug in East Hampton. The floodplains exist surrounding the Connecticut River and Lake Pocotopaug as well. The wetlands are mapped in the vicinity of the Connecticut River, and at smaller streams located throughout the study area. It is worth noting that natural resource mapping is based on statewide databases and from project development. More detailed investigations will better define the scope and nature of the resources that may be impacted by the projects. Project improvements planned within these mapped resource areas have been identified. Work proposed within these mapped resource areas may require permits from local, state, and federal regulatory entities. The environmental permits anticipated for each proposed concept are described in the following sections and summarized in Table 5-5. Funding sources also play a role in which environmental permits may be required for future work.

TABLE 5-5
Environmental Permitting Requirements by Concept

Location of Improvement	Anticipated Approvals	Comments
Route 66 Pedestrian Mobility Improvements		
Concept B	N, F, W	All within mapped resource areas
Multi-Modal Mobility Enhancements		
Concept C	N, F, W	All within mapped resource areas
Route 66 at East Hampton Commercial District		
Concept J	N, F	Located within natural diversity database area and mapped floodplains
Route 66 at Paul's & Sandy's Too		
Concept K	N, W	Located adjacent mapped wetland area

N = NDDB coordination

F = Floodplains permit

W = Wetlands permit

Threatened and Endangered Species and Critical Habitats

NDDB areas are identified surrounding the Connecticut River in Portland and areas surrounding Lake Pocotopaug in East Hampton. Concepts with improvements proposed within the mapped NDDB areas will be required to coordinate with CTDEEP to determine what species may be affected by the project and any preventative or mitigative measures needed in the project design/schedule/approach. To request an NDDB state listed species review, the NDDB review request form package must be completed and submitted to CTDEEP. NDDB mapping is updated on an annual basis, so projects should be re-screened if they move forward in the future. The concepts that currently will require an NDDB review include:

- Route 66 Pedestrian Mobility Improvements (Concept B)
- Multi-Modal Mobility Enhancements (Concept C)
- Route 66 at East Hampton Commercial District (Concept J)
- Route 66 at Paul's & Sandy's Too (Concept K)

Preparation of the NDDB form submittal is estimated to take approximately two weeks, with an estimated agency review time of one to three months.

Floodplains

Floodways, 100-year floodplains, and 500-year floodplains are mapped along the Connecticut River. There is also unnamed stream with mapped 100-year floodplains and floodway located east of Route 16. 100-year floodplains also exist near Lake Pocotopaug in East Hampton.

Concepts with improvements proposed within the mapped floodway and 100-year floodplains will be required to obtain a Flood Management Certification approval. Areas of 500-year floodplain also exist within the study area, and these will need to be considered during design and permitting. It is assumed that since the work is proposed on state roadways, that state funding would be used, and the applicant for permits would be CTDOT. Depending upon the impacts and extent of the work, this permit could be a CTDEEP Individual Flood Management Certification or CTDOT Flood Management General Certification (CTDOT applicant and minimal impacts). The concepts that would require a Flood Management Certification include:

- Route 66 Pedestrian Mobility Improvements (Concept B)
- Multi-Modal Mobility Enhancements (Concept C)
- Route 66 at East Hampton Commercial District (Concept J)

Preparation of the Flood Management permit package is estimated to take approximately six weeks, with an estimated agency review time of four to six months.

If CTDOT is the permit applicant, there would be no municipal floodplains permits required.

Wetlands

There are mapped wetlands surrounding the Connecticut River and Lake Pocotopaug as described in the Floodplains section above. Wetlands are also mapped along smaller streams, ponds, and wet areas throughout the study area. There are mapped wetlands identified along Route 66. The mapped wetland areas are those comprised of poorly and very poorly drained soils, as well as alluvial and floodplain soils. In addition, both waterbodies and watercourses (intermittent and perennial) are regulated resources under the state Wetland Protection Act.

To determine if a project requires a wetlands permit, wetlands must be delineated in the field by a professional soil scientist, as well as waterbodies and watercourses. For purposes of this study, concepts within mapped wetland areas, waterbodies or watercourses have been identified as having the potential for wetland permitting needs.

Concepts with improvements proposed within the mapped wetland resource areas have the potential to be required to obtain an Inlands Wetlands and Watercourses permit through CTDEEP. If there are activities that alter or fill wetlands or watercourses, a United States Army Corps. of Engineers (USACE) Section 404 permit would be required. For USACE Section 404 approval, if impacts are less than 5,000 square feet (sf), then submitting a Self-Verification (SV) form to USACE would be needed. If impacts are greater than 5,000 sf and less than one acre, then a Pre-Construction Notification (PCN) would be needed. If the extent of the work within wetlands and watercourses causes greater impacts than one acre, an individual Section 404 permit would be required. Authorization would likely be through General Permit (GP) No. 18, however, if authorization under a different GP was required, then thresholds may be different than those outlined above.

In addition to the USACE Section 404 permit, a Water Quality Certification (WQC) approval under Section 401 of the Federal Clean Water Act would be needed. If authorization under GP 18 is sought, WQC approval would be granted as part of the SV approval process if SV applies to the project. If the PCN is being sought and the project has under 0.5 acres of impact, the CTDEEP Connecticut Addendum Army Corps of Engineers General Permit State of CT (CT Addendum) would be required for the WQC. If impacts are over 0.5 acres, an individual WQC through CTDEEP would be required. If USACE Section 404 approval were through a GP other than GP 18, then Section 401 WQC thresholds may change. If a USACE Section 404 permit is needed, the CTDEEP General Permit for Water Resource Construction Activities will also apply as long as the project has under one acre of wetland and watercourse impacts.

If CTDOT is the permit applicant, there would be no municipal wetlands permits required, as CTDOT coordinates with the municipalities during the design process.

The concepts that may require a wetlands permit include:

- Route 66 Pedestrian Mobility Improvements (Concept B)
- Multi-Modal Mobility Enhancements (Concept C)
- Route 66 at Paul's & Sandy's Too (Concept K)

Preparation of the SV form submittal is estimated to take approximately two weeks, with no agency review time. Preparation of the PCN, General Permit for Water Resource Construction Activities permit, and/or CT Addendum packages are estimated to take approximately six weeks, with an estimated agency review time of four to six months. Preparation of Individual USACE and/or Individual WQC permit packages are estimated to take approximately twelve weeks, with an estimated agency review time of eight to twelve months.

Federal Funding and Preservation Compliance

Depending upon the funding source for projects, federal and/or state-level environmental documentation would be required. If federal funding is used, and if impacts are minimal, a Categorical Exclusion (CE) would likely satisfy the federal requirements. If the project has federal funding and greater impacts are anticipated, then the preparation of an Environmental Assessment (EA) may be necessary. If state funding is involved, to satisfy Connecticut Environmental Policy Act (CEPA) state environmental documentation requirements, a Post Scoping Notice, or an Environmental Impact Evaluation (EIE) would be required. As the project advances into conceptual design and additional project details are known, a determination should be made about the applicability of NEPA and CEPA and the proper class of documentation. Opportunities for streamlining the environmental documentation process should be used, if available (e.g., preparation of a combined NEPA/CEPA document).

If federal funds are used for the improvements, the project would be subject to Section 4(f) of the US Department of Transportation Act. As the project advances into conceptual design and additional project details are known, an assessment should be undertaken to determine what documentation is required in order to comply with Section 4(f) of the US Department of Transportation Act.

Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of their actions on properties listed in, or eligible for listing in, the National Register of Historic Places. Once the design has been advanced to the concept level, and if federal funds are used for the improvements, consultation should be undertaken with the CT State Historic Preservation Office. Similarly, consultation will have to be undertaken with the Connecticut State Historic Preservation Office regarding any potential effects to the state-listed Monroe Elementary School.

Stormwater Permitting

It is unknown which concepts and segments will be constructed together, however if the soil disturbance proposed for a project is over one acre, a CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Stormwater GP) would be required. With CTDOT as the applicant, this project would be classified as a locally exempt project. Any concepts that require the Stormwater GP, even if located outside of a mapped NDDB area, must also request the NDDB review and include the CTDEEP response in the stormwater permit package.

Preparation of the Stormwater GP package is estimated to take approximately six weeks. This permit filing must be submitted to CTDEEP 60 days before the start of construction if the soil disturbance area is between one (1) and twenty (20) acres. If the project's soil disturbance is greater than 20 acres, the permit should be submitted 90 days before the start of construction. CTDEEP has the 60- or 90-day timeframe to review the filing and provide any feedback to the applicant.

If CTDOT is the permit applicant, there would be no municipal stormwater permits required. If soil disturbance for the project is less than one acre, and a CTDEEP wetlands permit is required, no municipal stormwater permits would be needed.

CTDOT Improvement Construction & Development Permitting

In addition to the permitting for natural resources, CTDOT will require permits for developments and construction of improvements within the State right-of-way for Municipal roadway improvements and driveways to developments. The permits include encroachment permits and signal revision permits for the Municipal roadway and development driveway improvements and Office of State Traffic Administration (OSTA) permits for large developments that exceed the OSTA size limits. The permits required for the recommended improvement plan are summarized in the improvement matrices in Section 5.1.3. Depending on the scope of the work and the entity, the Municipality or a private developer performing the design, funding for the permits may come from public and/or private resources.

5.2.2.4 Construction

Following the completion of the design phase, the projects will begin the construction phase. The steps involved in a publicly funded project include advertisement for bids to contractors, collecting bids on the work and awarding the contract, and finally conducting the construction to build the improvement. Utility relocations typically take place during construction, but in some instances a utility company may relocate facilities in advance of a project taking place once a utility agreement is in place. Generally, smaller projects are completed within one construction season between March and November. Larger projects can span several construction seasons depending on the complexity of the work, the construction staging and phasing needed to facilitate the maintenance and protection of traffic operations during construction, and possibly the availability of funding. Projects identified as having Moderate Complexity can be expected to take up to two construction seasons and complex projects could take more than two construction seasons to build.

APPENDIX A
Figures

FIGURE 2-2
Route 66 Historical Average Daily Traffic – Portland Count Stations

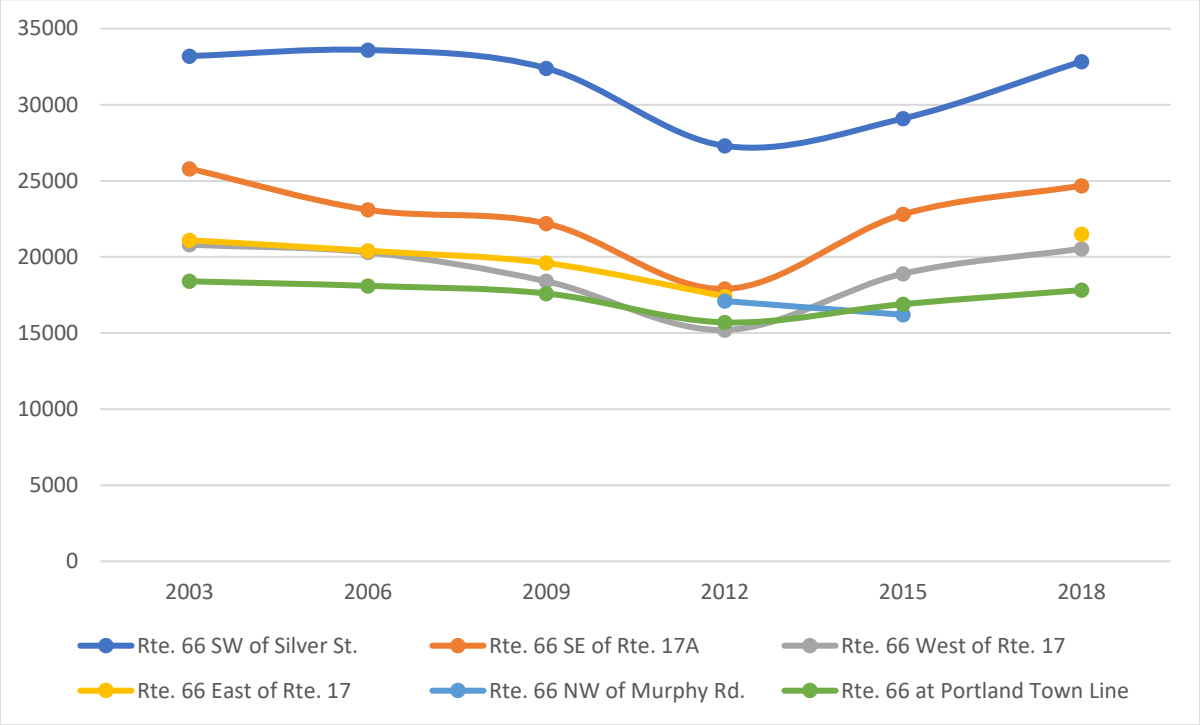
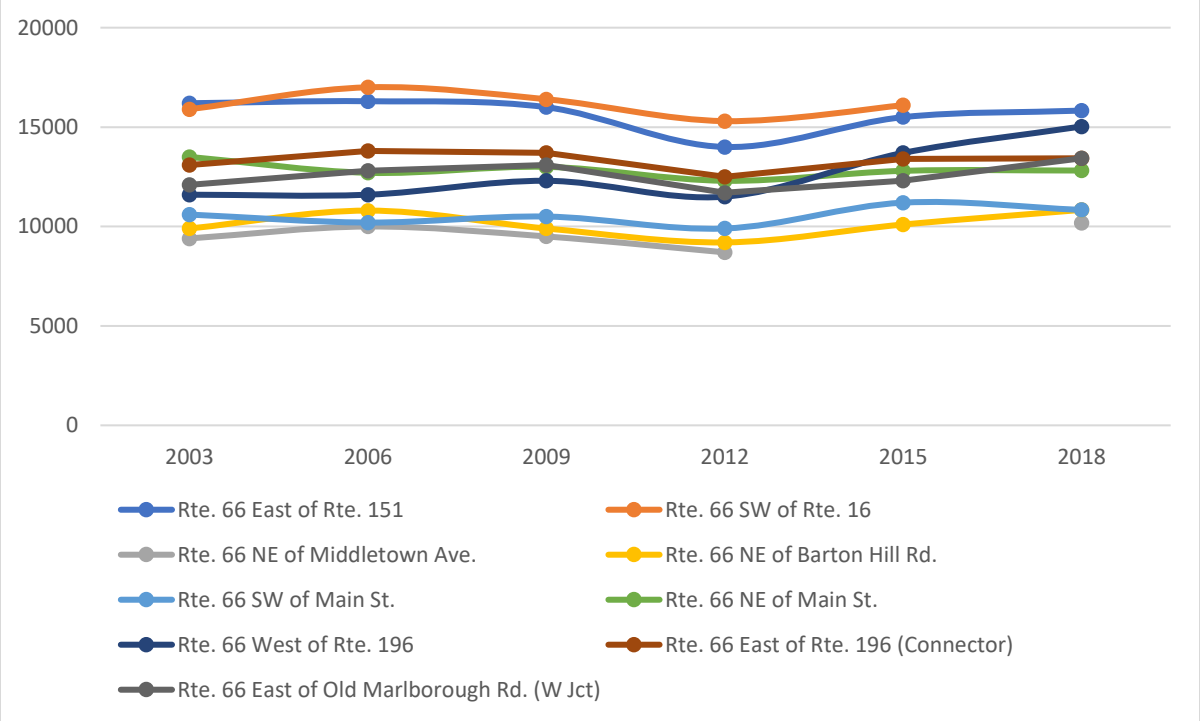


FIGURE 2-3
Route 66 Historical Average Daily Traffic – East Hampton Count Stations



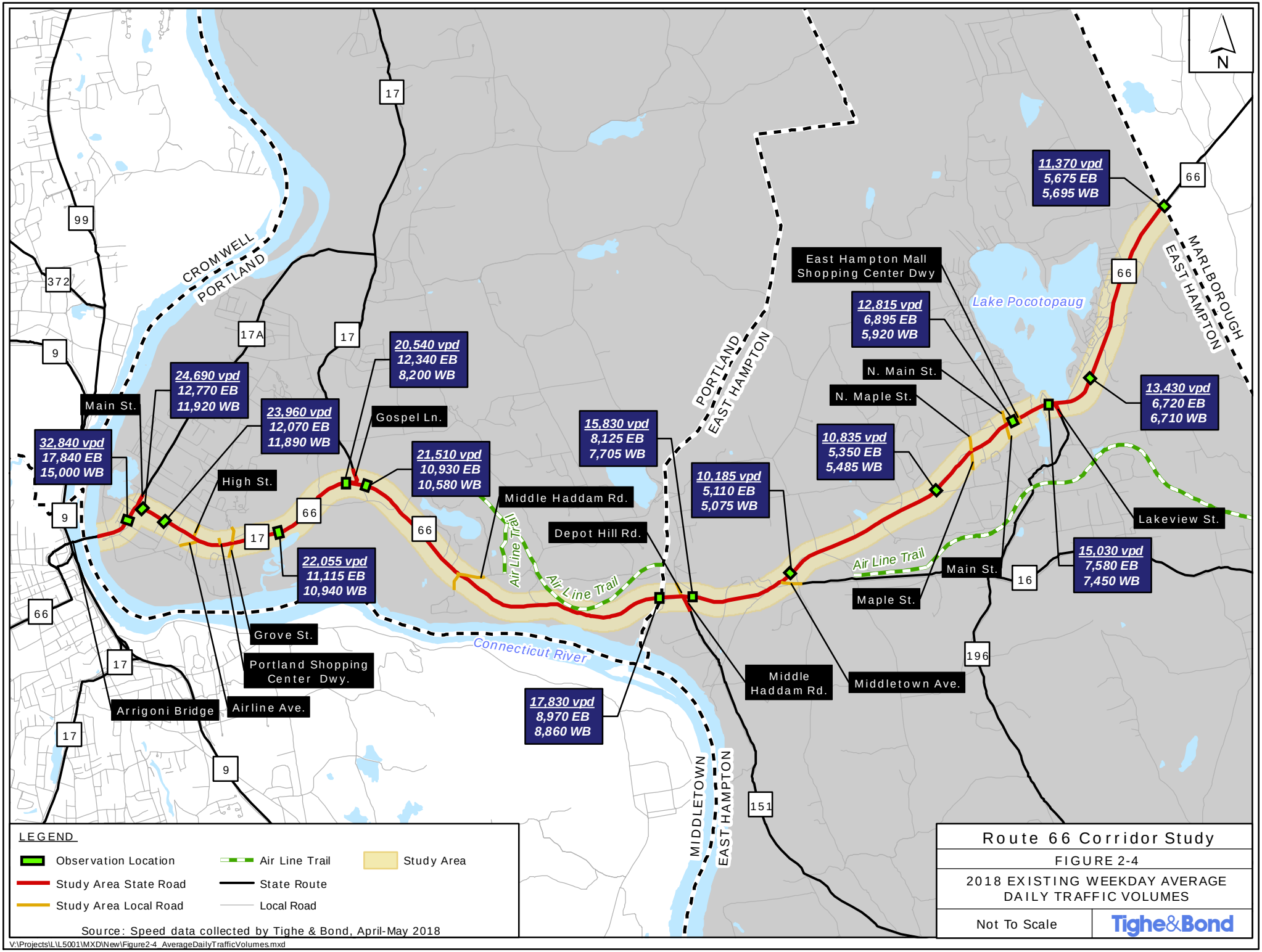


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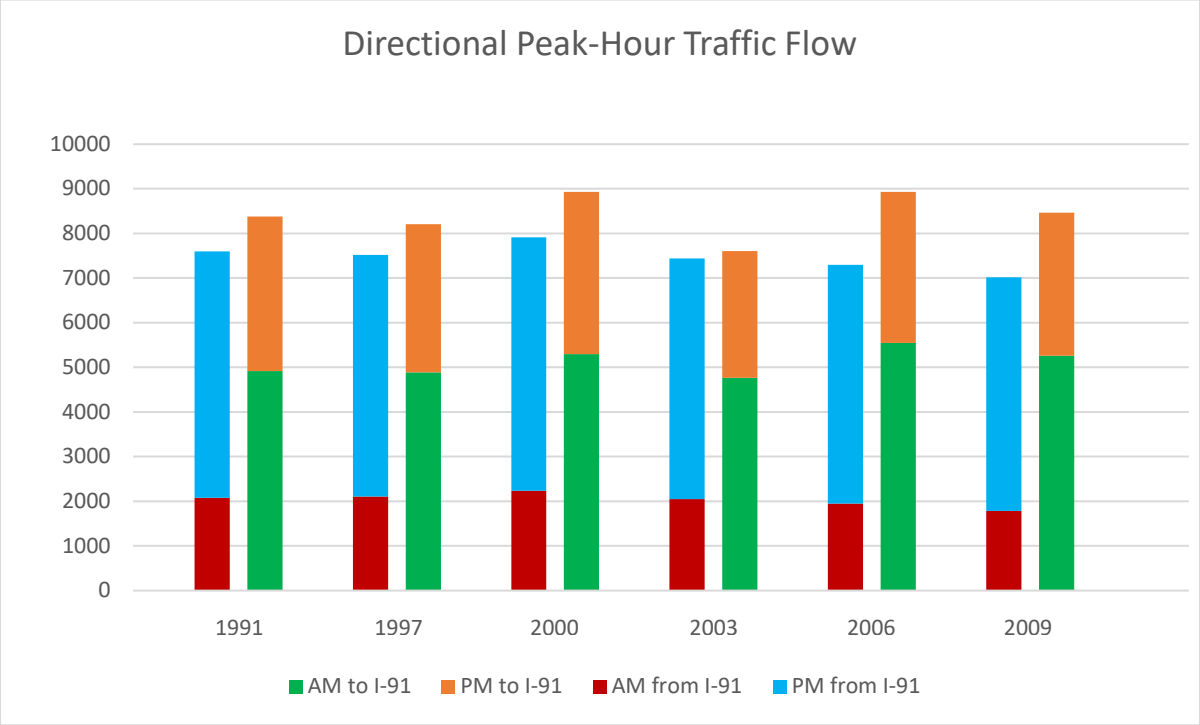
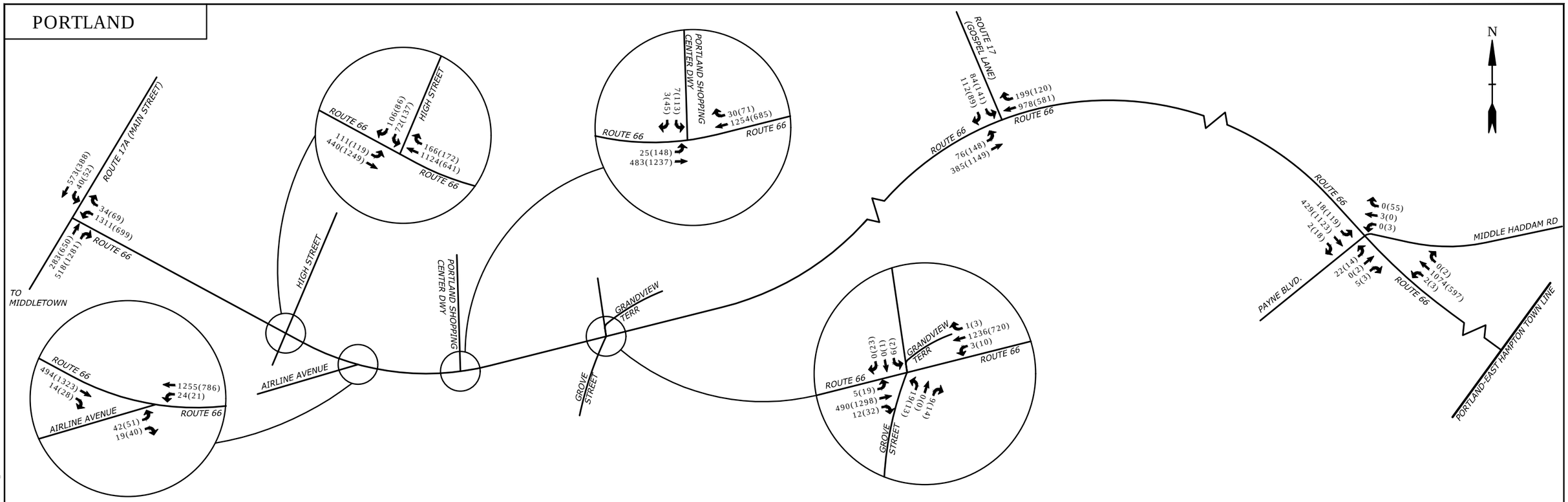
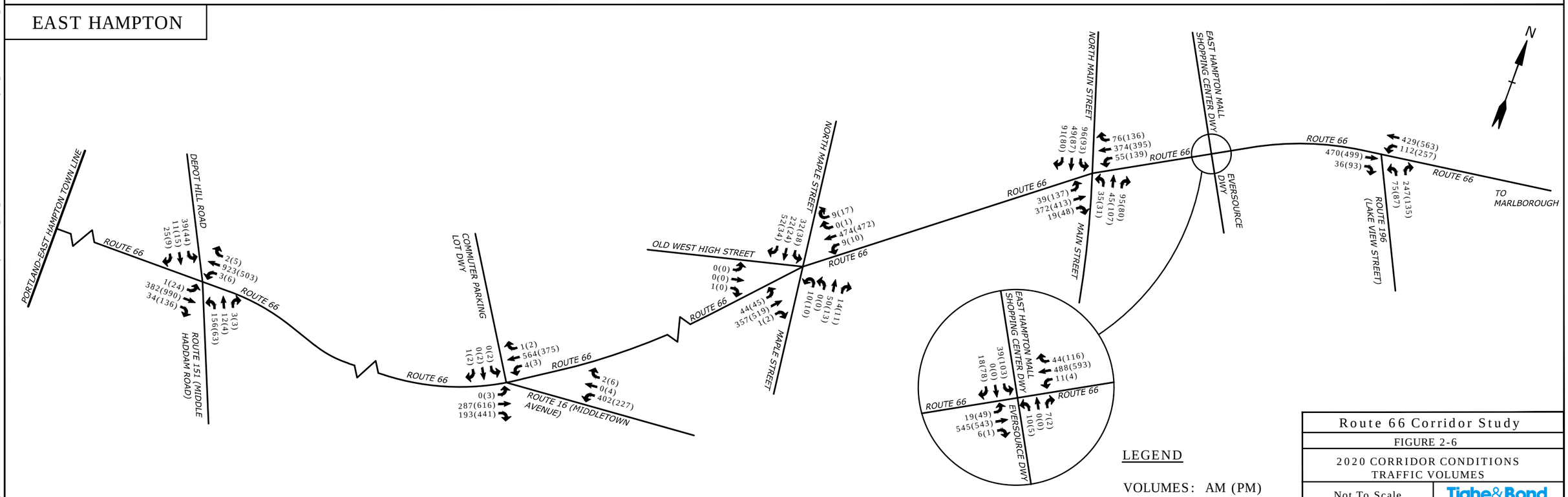
FIGURE 2-5
Route 66 Directional Peak-Hour Traffic Flow



PORTLAND



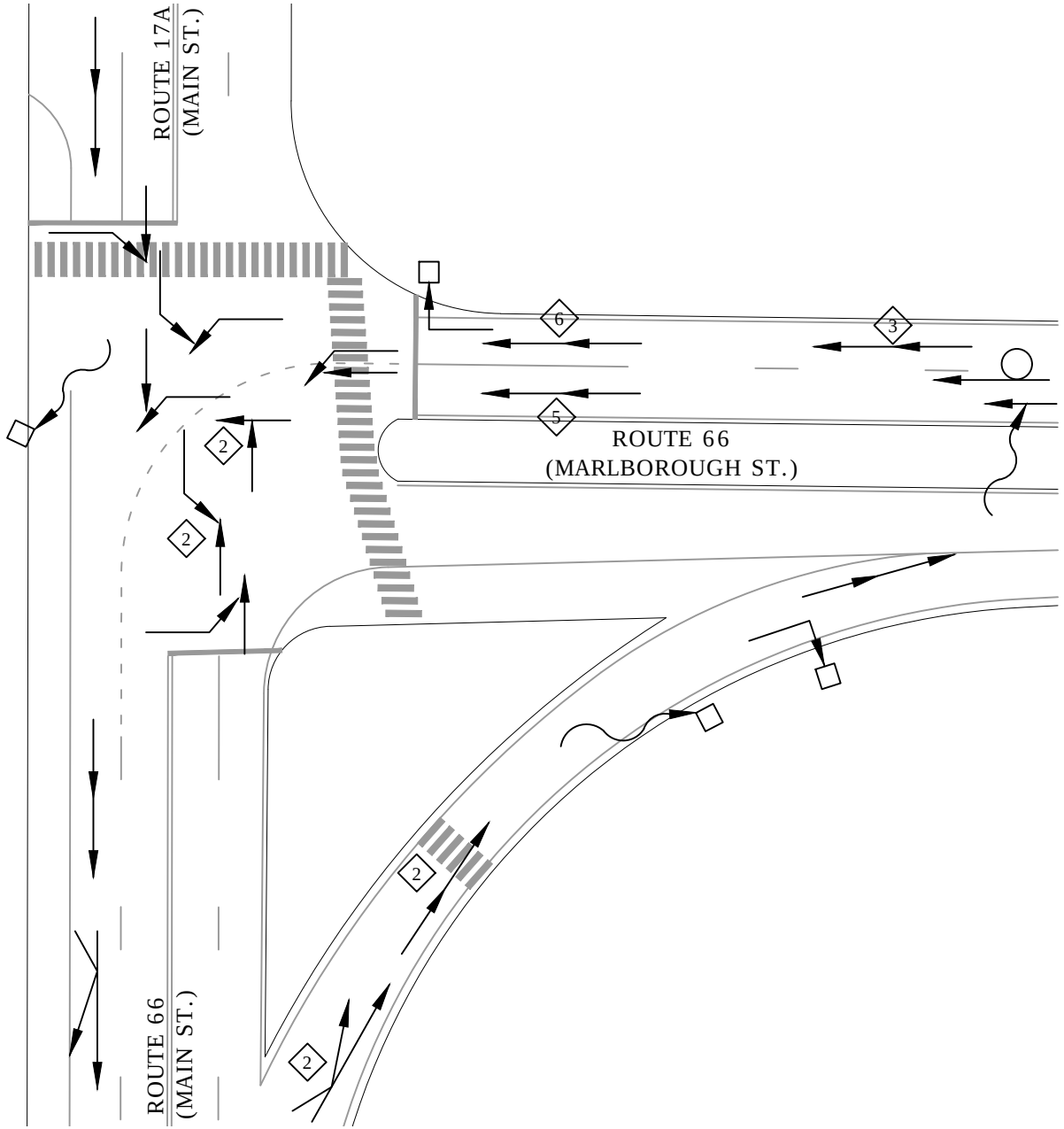
EAST HAMPTON



LEGEND

VOLUMES: AM (PM)

Route 66 Corridor Study	
FIGURE 2-6	
2020 CORRIDOR CONDITIONS TRAFFIC VOLUMES	
Not To Scale	Tighe&Bond



TOTAL
37 COLLISIONS
0 WITH INJURIES
0 FATALITY

LEGEND

- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY
- REAR END
- ANGLE
- SIDESWIPE
- OUT OF CONTROL
- FIXED OBJECT
- OVERTURN/JACKKNIFE
- # NUMBER OF COLLISIONS

Route 66 Corridor Study

FIGURE 2-11

VEHICLE COLLISION DIAGRAM:
ROUTE 66 (MARLBOROUGH ST.) AT ROUTE 17A

Not To Scale

Tighe&Bond

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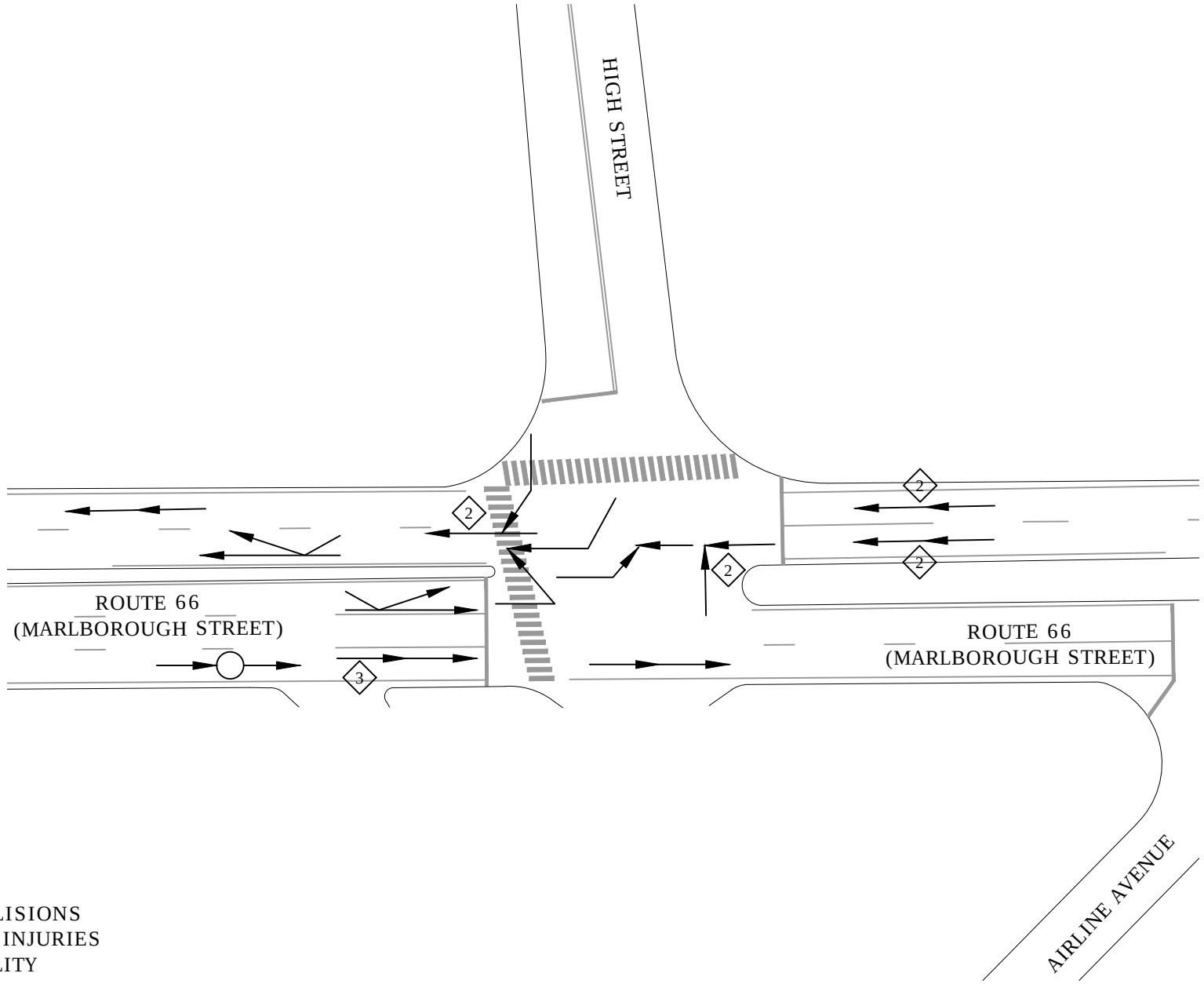

TOTAL
18 COLLISIONS
1 WITH INJURIES
0 FATALITY

LEGEND

- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY
- REAR END
- ANGLE
- SIDESWIPE
- OUT OF CONTROL
- # NUMBER OF COLLISIONS

Route 66 Corridor Study

FIGURE 2-12

VEHICLE COLLISION DIAGRAM:
ROUTE 66 (MARLBOROUGH ST.) AT HIGH ST.

Not To Scale

Tighe&Bond

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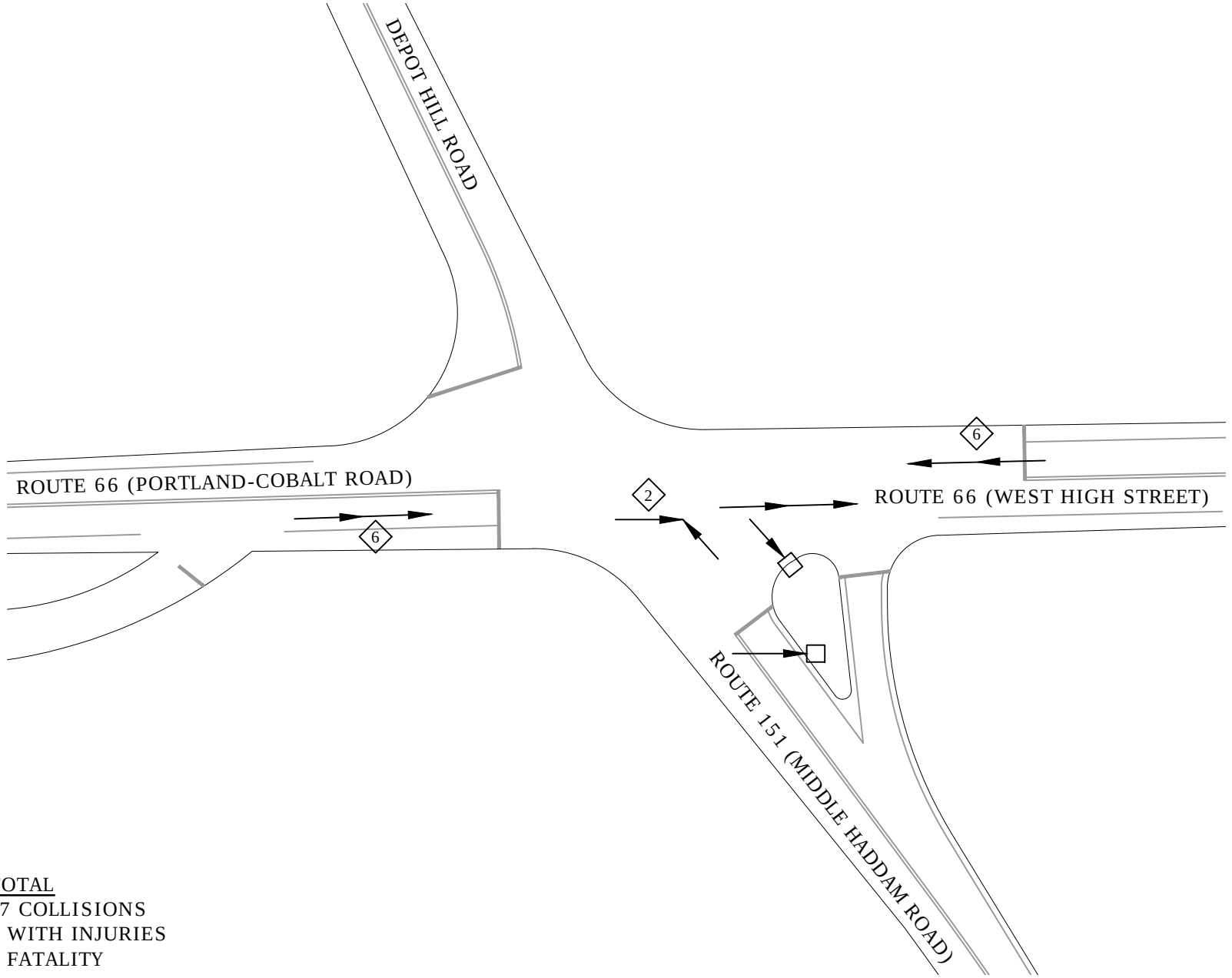

TOTAL
17 COLLISIONS
0 WITH INJURIES
0 FATALITY

LEGEND

- FATAL ACCIDENT
- PERSONAL INJURY
- PROPERTY DAMAGE ONLY
- REAR END
- ANGLE
- FIXED OBJECT
- # NUMBER OF COLLISIONS

Route 66 Corridor Study

FIGURE 2-13

VEHICLE COLLISION DIAGRAM:
ROUTE 66 (WEST HIGH ST.) AT ROUTE 151

Not To Scale

Tighe&Bond

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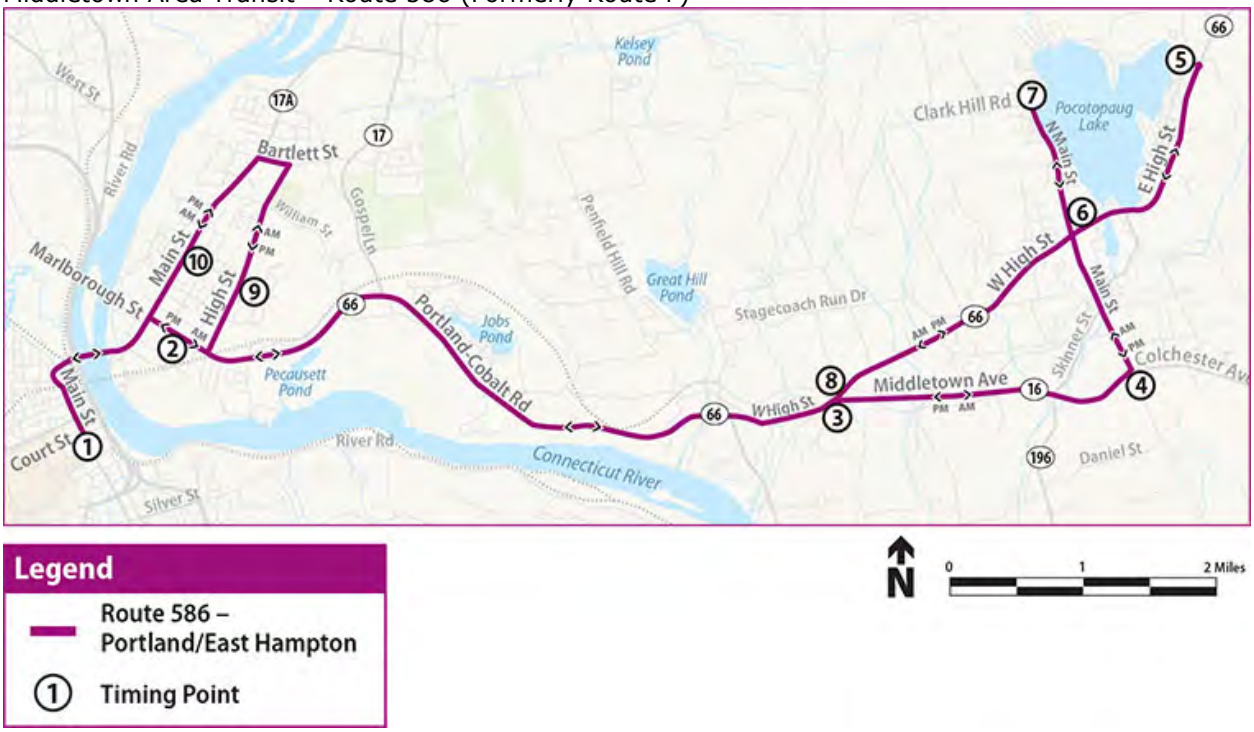
FIGURE 2-14
Middletown Area Transit – Route 586 (Formerly Route F)



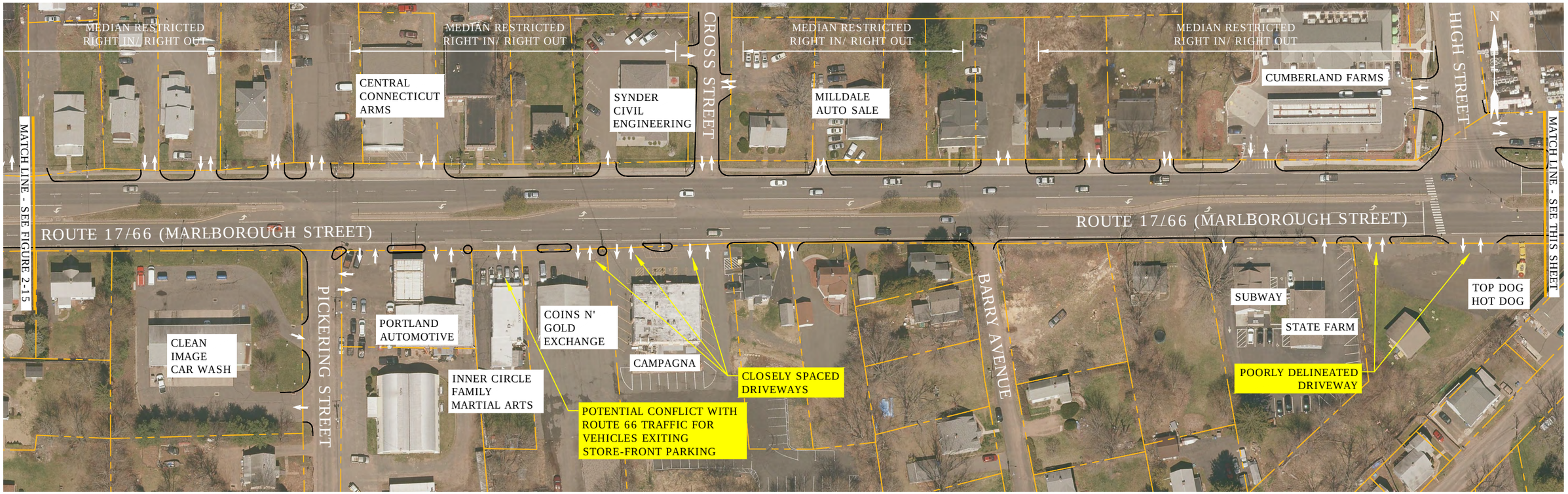
Route 66 Corridor Study

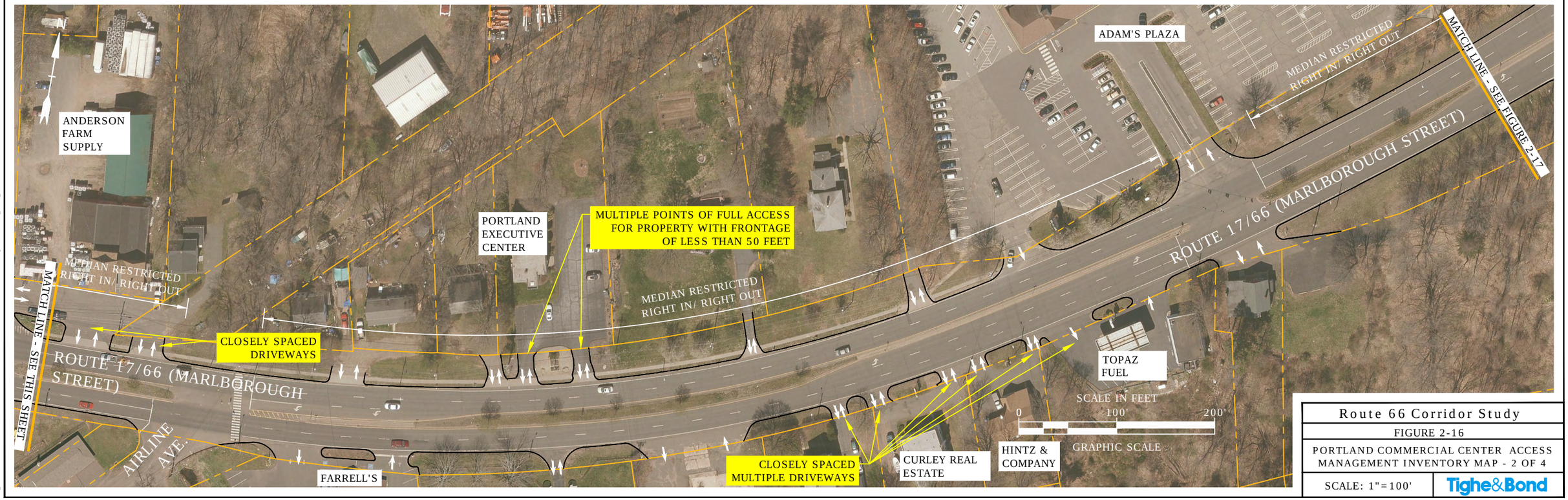
FIGURE 2-15

PORTLAND COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 1 OF 4

SCALE: 1"=100'

Tighe&Bond





Route 66 Corridor Study	
FIGURE 2-16	
PORTLAND COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 2 OF 4	
SCALE: 1"=100'	Tighe&Bond

Aug 14, 2018-10:12am Plotted By: MStoutz
Tighe & Bond, Inc. J:\LL5001 LCRVCOG\001 Route 66 Study\Drawing_Figures\AutoCAD\Xref\XR-L5001 PORTLAND BASE.dwg

Route 66 Corridor Study

FIGURE 2-17

PORTLAND COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 3 OF 4

SCALE: 1"=100'

Tighe&Bond

Aug 14, 2018-10:12am Plotted By: MStoutz
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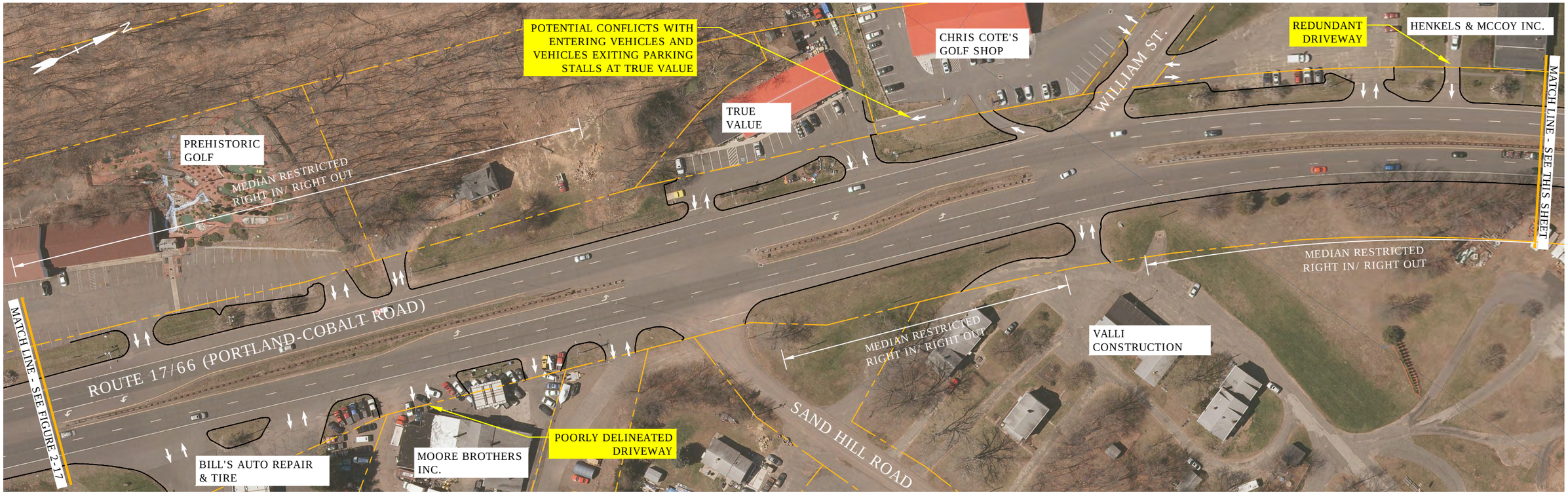

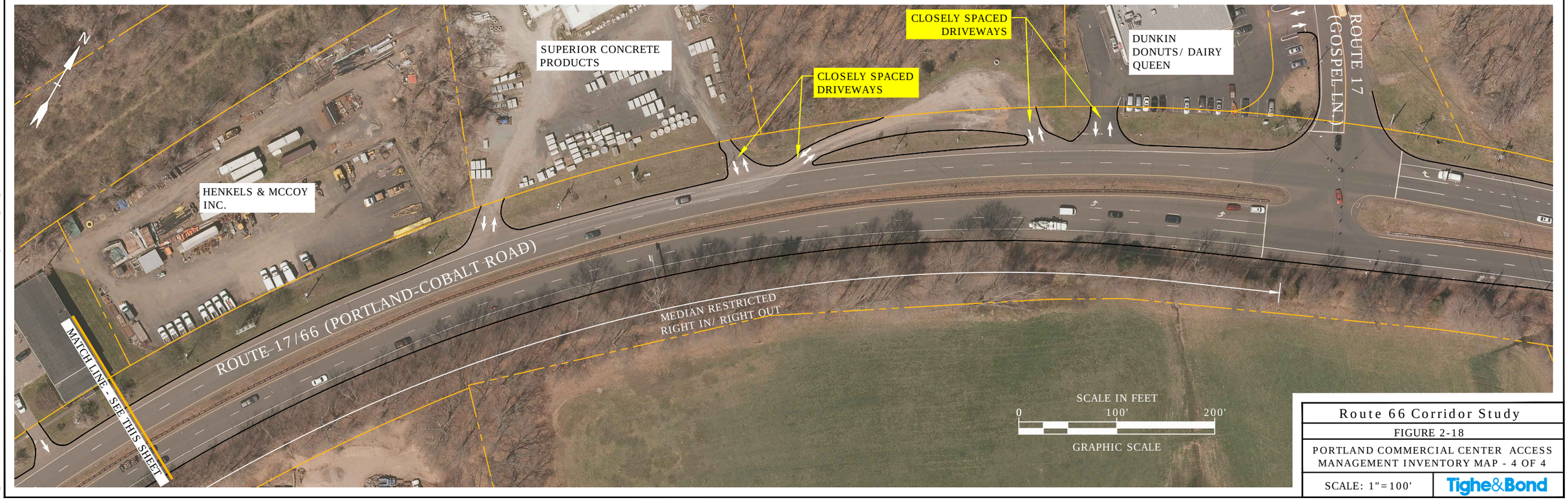

Route 66 Corridor Study	
FIGURE 2-18	
PORTLAND COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 4 OF 4	
SCALE: 1"=100'	Tighe&Bond

Route 66 Corridor Study

FIGURE 2-19

EAST HAMPTON COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 1 OF 3

SCALE: 1"=100'

Tighe&Bond

Route 66 Corridor Study

FIGURE 2-20

EAST HAMPTON COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 2 OF 3

SCALE: 1"=100'

Tighe&Bond

Route 66 Corridor Study	
FIGURE 2-21	
EAST HAMPTON COMMERCIAL CENTER ACCESS MANAGEMENT INVENTORY MAP - 3 OF 3	
SCALE: 1"=100'	Tighe&Bond

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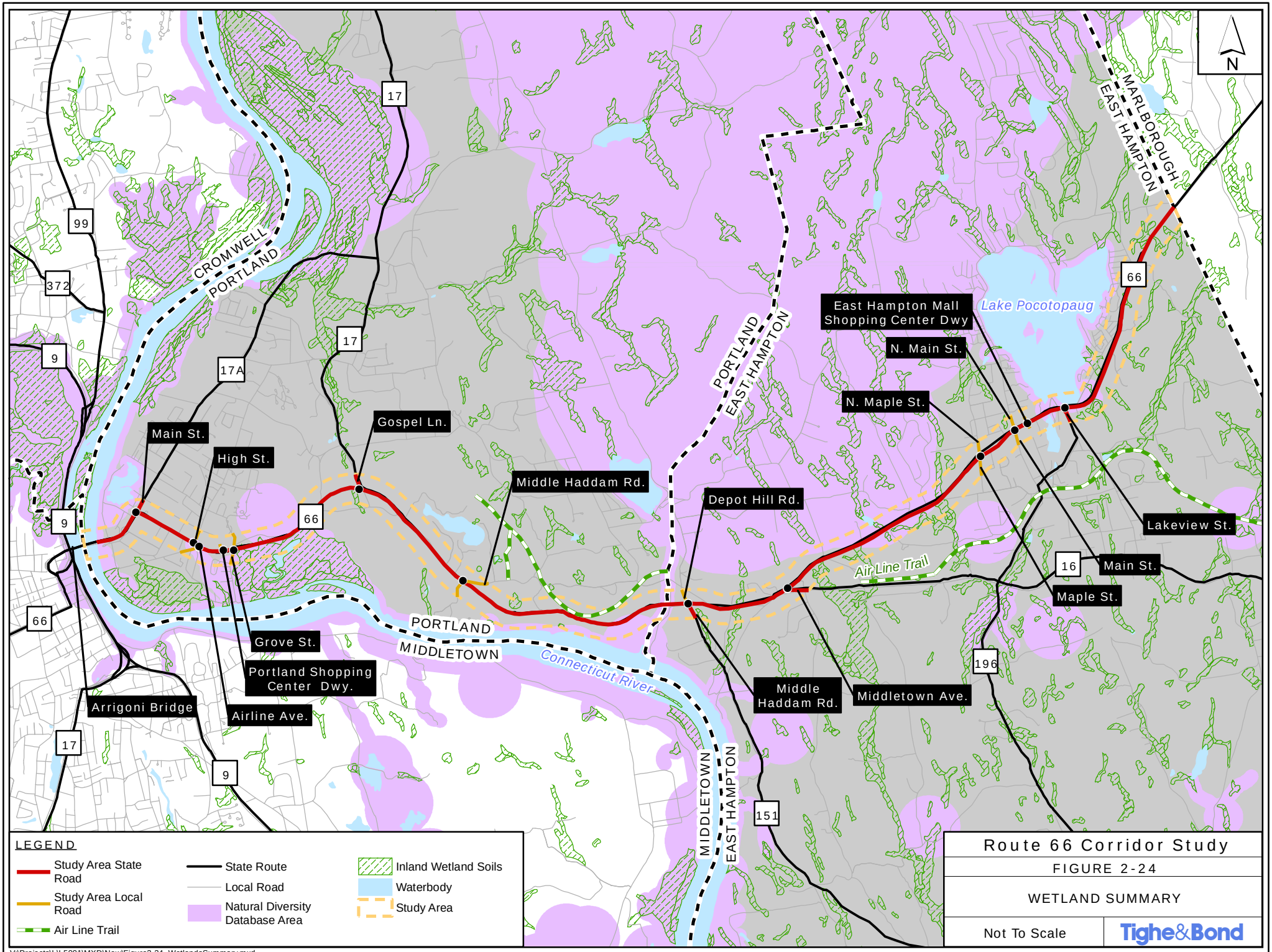

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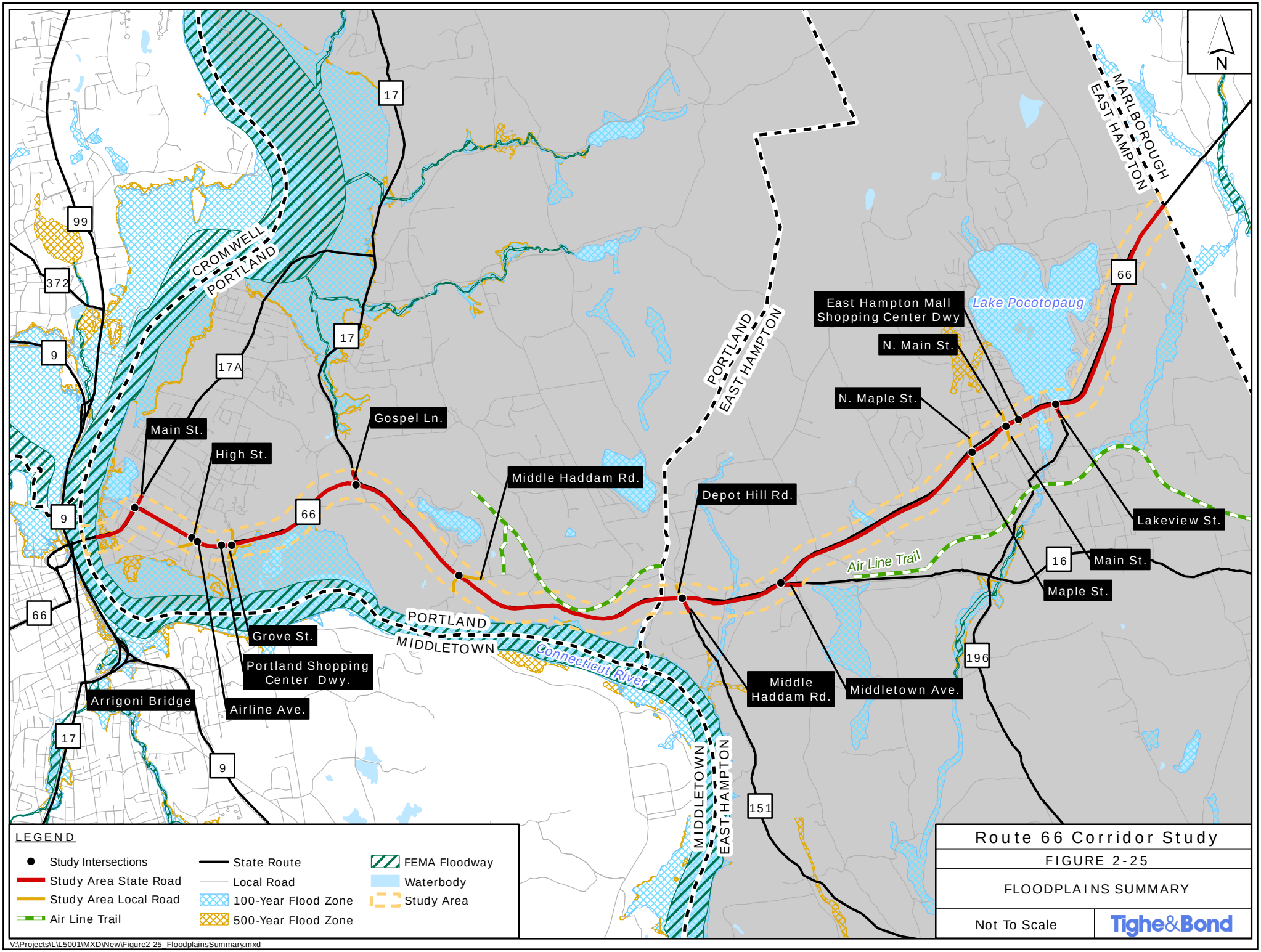

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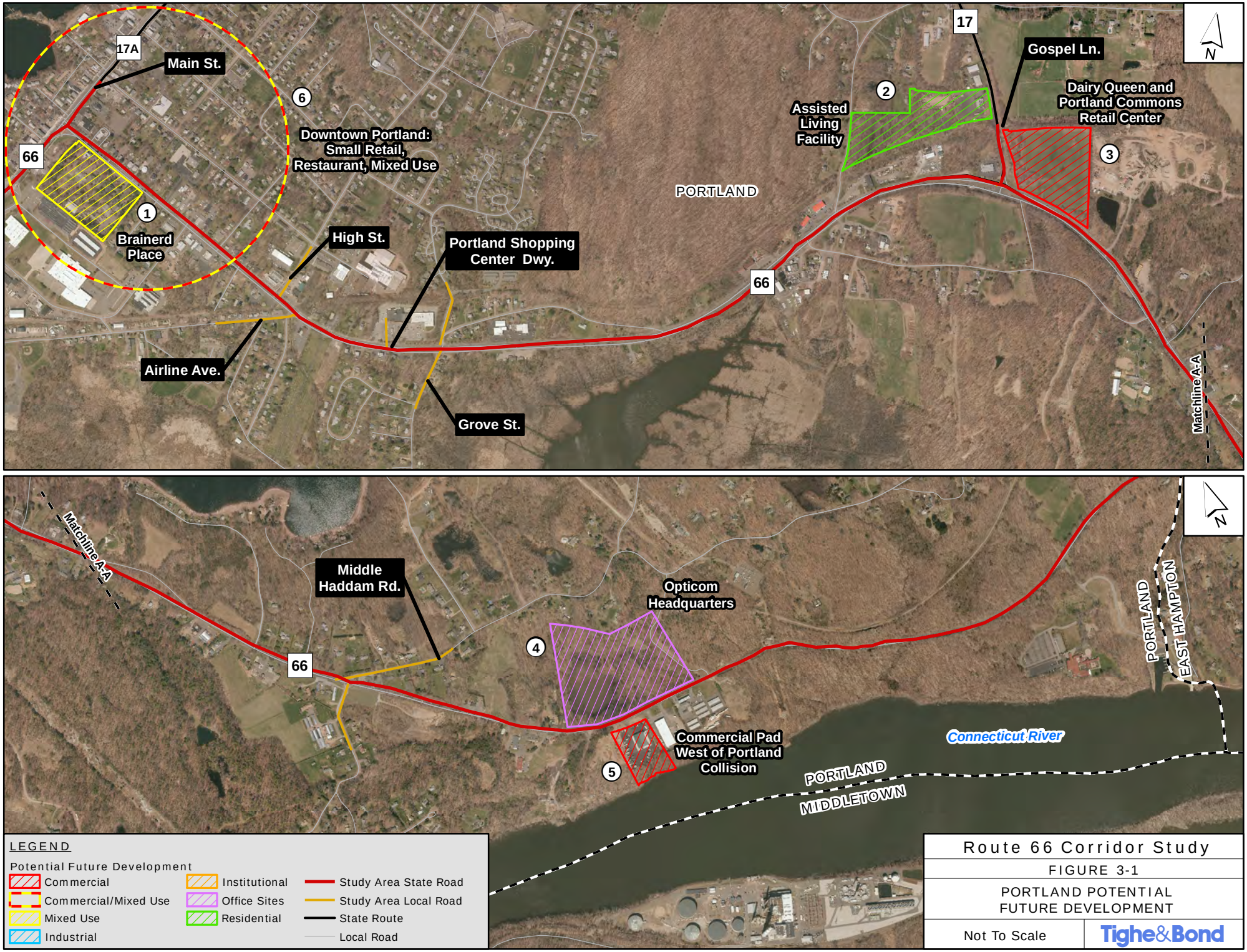

Route 66 Corridor Study

FIGURE 3-1

PORTLAND POTENTIAL
FUTURE DEVELOPMENT

Not To Scale

Tighe&Bond

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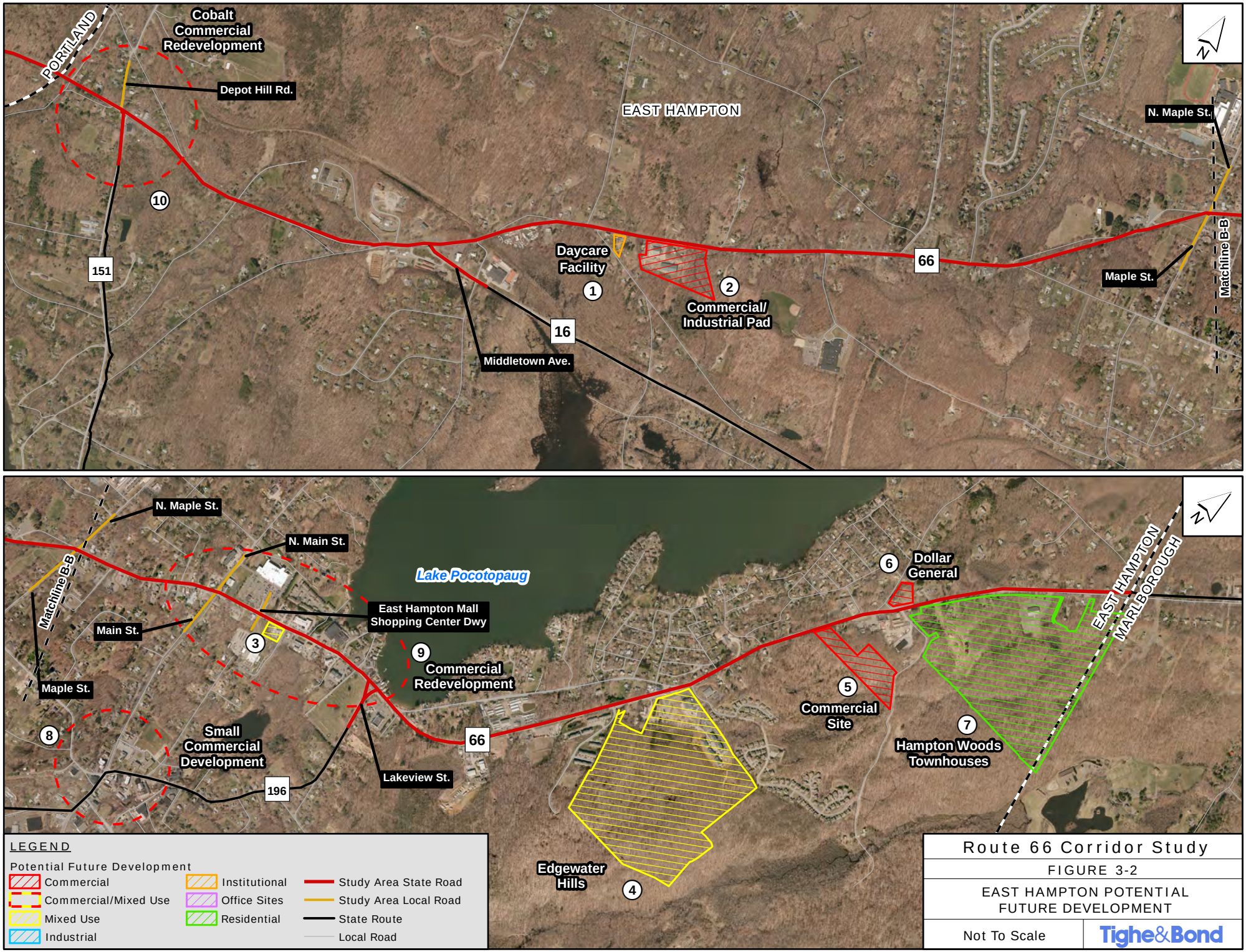

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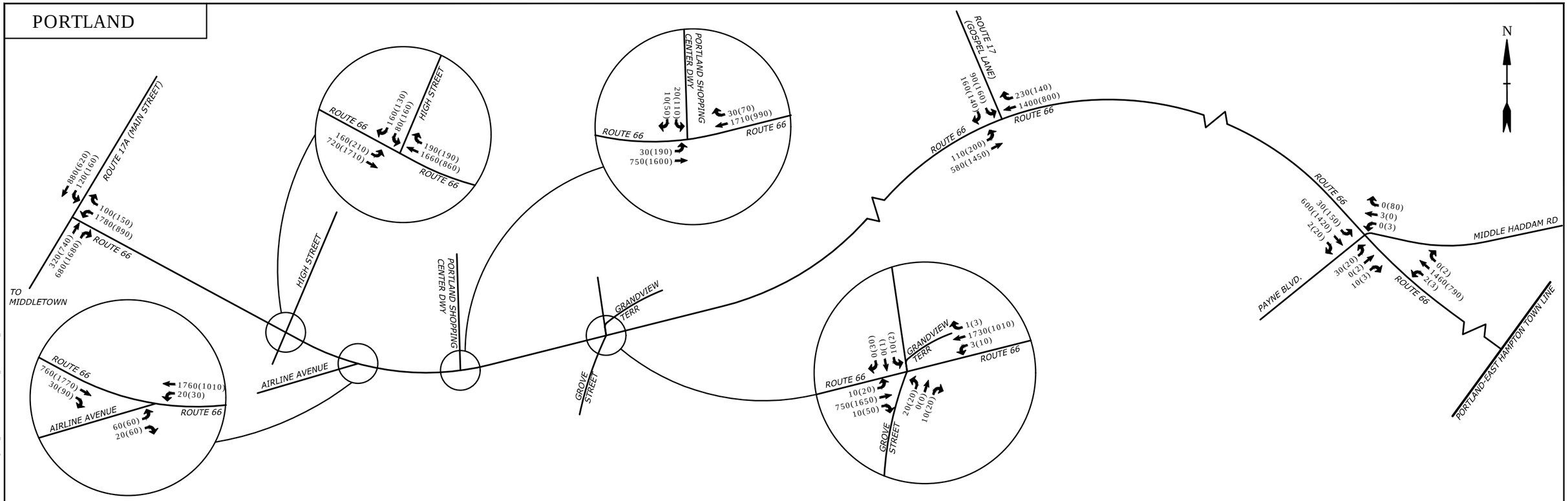
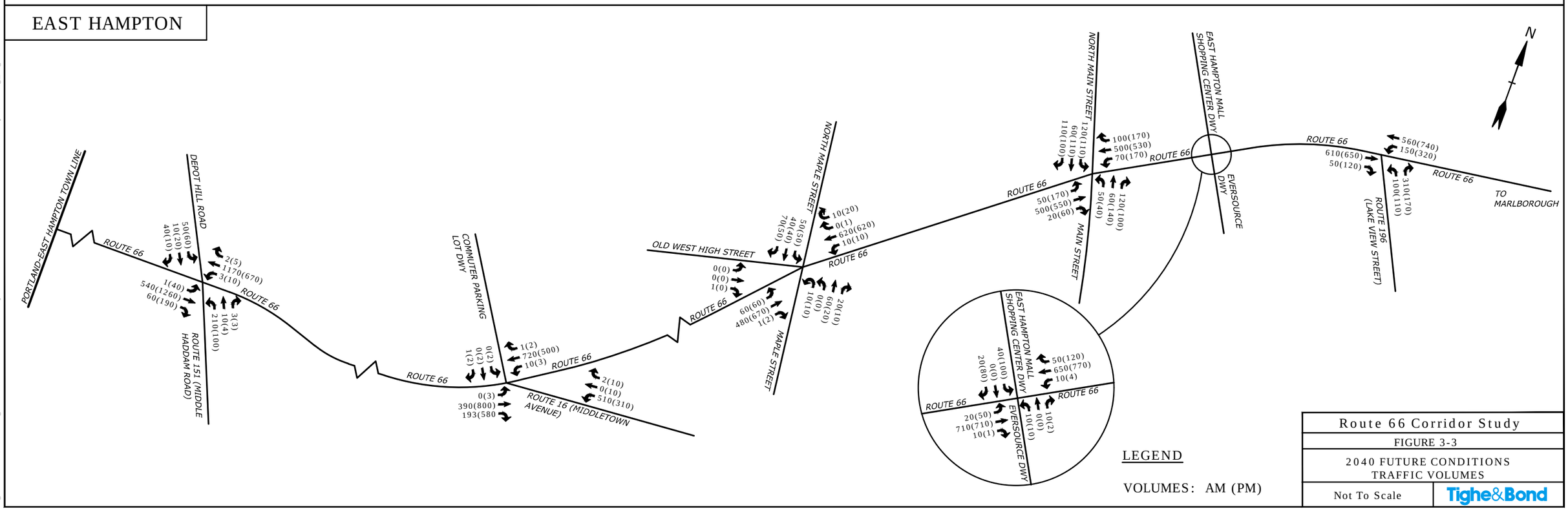
PORTLAND



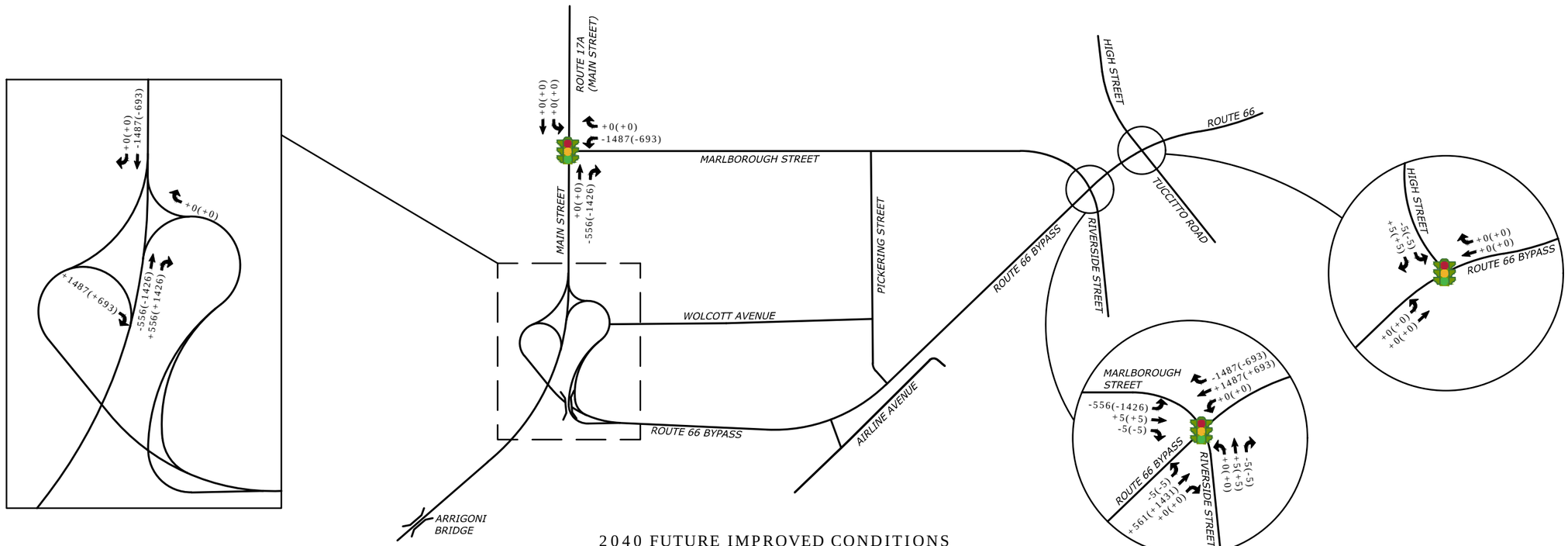
EAST HAMPTON



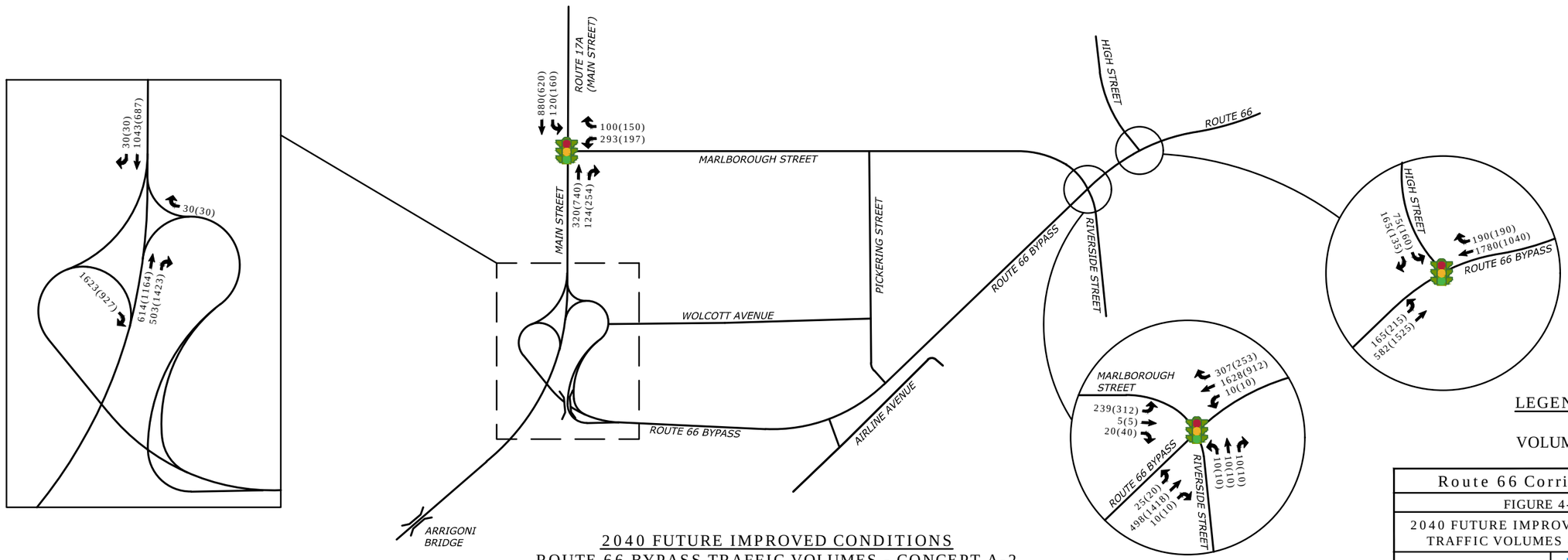
LEGEND

VOLUMES: AM (PM)

Route 66 Corridor Study	
FIGURE 3-3	
2040 FUTURE CONDITIONS TRAFFIC VOLUMES	
Not To Scale	Tighe&Bond



2040 FUTURE IMPROVED CONDITIONS
ROUTE 66 BYPASS RE-ROUTED TRAFFIC VOLUMES - CONCEPT A-2

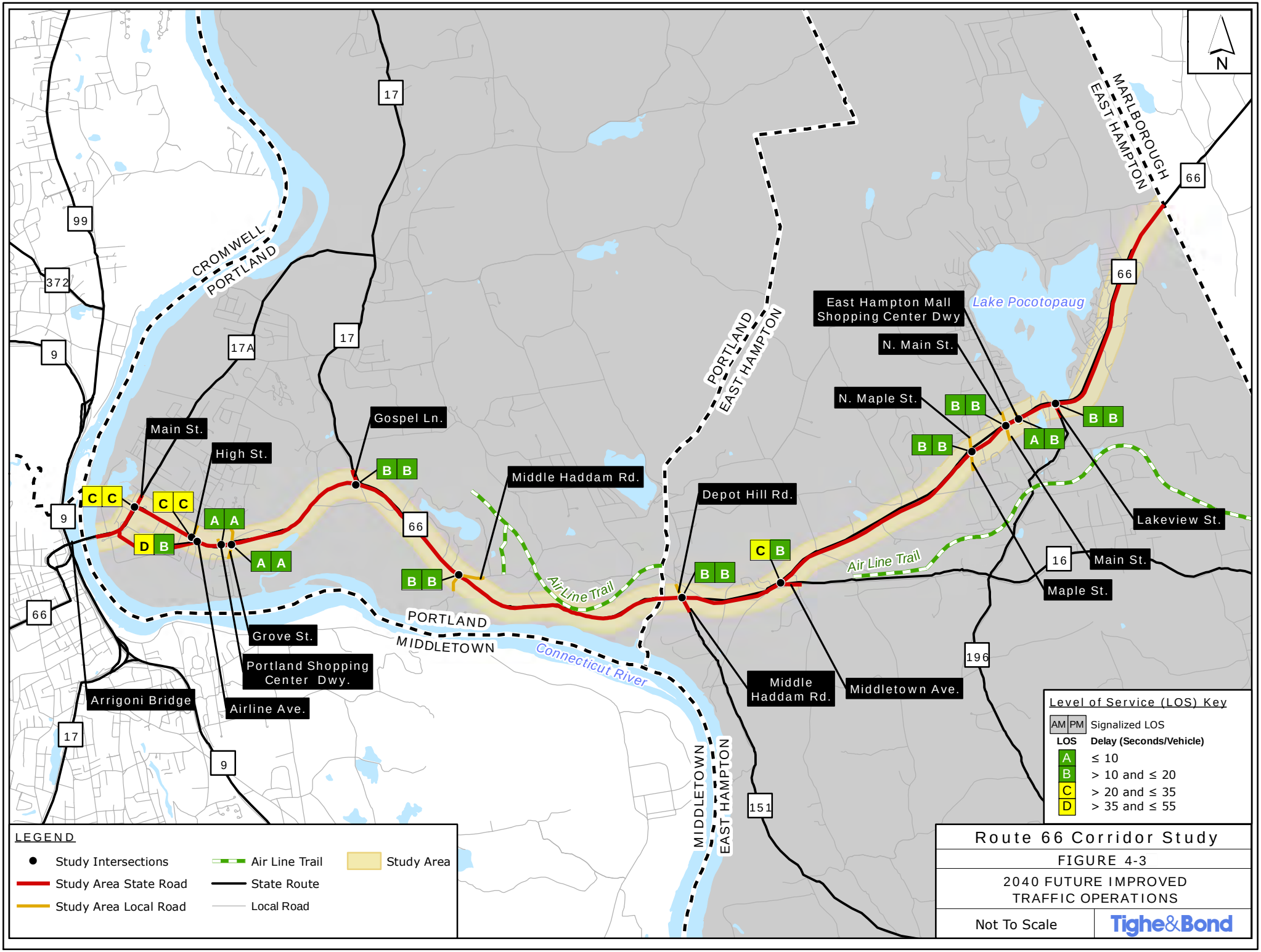


2040 FUTURE IMPROVED CONDITIONS
ROUTE 66 BYPASS TRAFFIC VOLUMES - CONCEPT A-2

LEGEND

VOLUMES: AM (PM)

Route 66 Corridor Study	
FIGURE 4-2	
2040 FUTURE IMPROVED CONDITIONS TRAFFIC VOLUMES - CONCEPT A-2	
Not To Scale	Tighe&Bond



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APPENDIX B
Tables

TABLE 2-1
Study Area Intersections Traffic Control Devices

Intersection
Route 66 (Marlborough Street) at Route 17A (Main Street) [1, 2]
Route 66 (Marlborough Street) at High Street [2, 3, 4]
Route 66 (Marlborough Street) at Airline Avenue [2, 3, 4]
Route 66 (Marlborough Street) at Portland Shopping Center Driveway [3, 5]
Route 66 (Marlborough Street) at Grove Street / Grandview Terrace [3, 5]
Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane) [5]
Route 66 (Portland-Cobalt Road) at Middle Haddam Road / Payne Boulevard [5]
Route 66 (Portland-Cobalt Road) at Route 151 (Middle Haddam Road) / Depot Hill Road [2]
Route 66 (West High Street) at Route 16 (Middletown Avenue) / Park & Ride Driveway [5]
Route 66 (West High Street) at Maple Street / North Maple Street / Old West High Street [5]
Route 66 (West High Street / East High Street) at Main Street / North Main Street [2, 6]
Route 66 (East High Street) at East Hampton Shopping Center / Eversource Driveway [2, 6]
Route 66 (East High Street) at Route 196 (Lakeview Street) [2]

1 - Intersections operating under a time-based coordination system on Route 17A
2 - Intersections include an exclusive pedestrian phase
3 - Intersections operating under a time-based coordination system on the west end of Route 66
4 - Intersections operate under one traffic signal controller in a cluster intersection configuration
5 - Intersections include a concurrent pedestrian phase
6 - Intersections operating under a time-based coordination system on the east end of Route 66

TABLE 2-2
2018 Existing Weekday Average Daily Traffic Volumes Summary

Location	Weekday ADT	Morning Peak Hour				Afternoon Peak Hour			
		Vehicles Per Hour	Dist.		"K" Factor	Vehicles Per Hour	Dist.		"K" Factor
Southwest of Silver Street	32,840	2,125	56%	WB	6.47%	2,755	64%	EB	8.39%
East of Route 17A (Main Street)	24,690	1,830	64%	WB	7.41%	2,085	64%	EB	8.45%
West of Pickering Street	23,960	1,845	66%	WB	7.70%	2,015	63%	EB	8.41%
West of Grandview Terrace	22,055	1,705	68%	WB	7.73%	1,730	53%	WB	7.84%
West of Route 17 (Gospel Lane)	20,540	1,660	69%	WB	8.08%	1,920	73%	EB	9.35%
East of Route 17 (Gospel Lane)	21,510	1,665	68%	WB	7.74%	1,855	65%	EB	8.62%
Portland/ East Hampton Town Line	17,830	1,545	71%	WB	8.67%	1,515	67%	EB	8.50%
East of Route 151 (Middle Haddam Road)	15,830	1,285	69%	WB	8.12%	1,440	67%	EB	9.10%
East of Route 16 (Middletown Avenue)	10,185	830	68%	WB	8.15%	910	62%	EB	8.93%
East of Barton Hill Road	10,835	915	57%	WB	8.44%	995	53%	EB	9.18%
East of Main Street	12,815	945	57%	EB	7.37%	1,105	51%	EB	8.62%
West of Route 196 (Lakeview Street)	15,030	1,090	57%	EB	7.25%	1,370	57%	WB	9.12%
Near Paul and Sandy's Too	13,430	1,095	58%	EB	8.15%	1,245	57%	WB	9.27%
East Hampton/ Marlborough Town Line	11,370	885	63%	EB	7.78%	1,010	59%	WB	8.88%

TABLE 2-3
2018 Existing Saturday Average Daily Traffic Volumes Summary

Location	Saturday ADT	Saturday Peak Hour			
		Vehicles Per Hour	Dist.		"K" Factor
Route 66					
Southwest of Silver Street	28,625	2,218	58%	EB	7.75%
East of Route 17A (Main Street)	22,145	1,746	53%	EB	7.88%
West of Pickering Street	21,140	1,582	52%	EB	7.48%
West of Grandview Terrace	20,007	1,640	52%	EB	8.20%
West of Route 17 (Gospel Lane)	12,000	1,593	53%	EB	13.28%
East of Route 17 (Gospel Lane)	19,480	1,093	83%	WB	5.61%
Portland/ East Hampton Town Line	17,245	1,380	52%	EB	8.00%
East of Route 151 (Middle Haddam Road)	15,255	1,201	53%	EB	7.87%
East of Route 16 (Middletown Avenue)	9,685	711	54%	WB	7.34%
East of Barton Hill Road	10,350	822	52%	WB	7.94%
East of Main Street	12,870	1,058	54%	EB	8.22%
West of Route 196 (Lakeview Street)	13,020	1,124	50%	EB	8.63%
Near Paul and Sandy's Too	12,645	1,033	51%	WB	8.17%
East Hampton/ Marlborough Town Line	10,570	871	50%	EB	8.24%

TABLE 2-4
Travel Speed Observations (MPH)

Location	Posted Speed Limit	Average Speed		85th Percentile Speed	
		EB	WB	EB	WB
Southwest of Silver Street	35	38	39	44	44
East of Route 17A (Main Street)	35	47	40	52	44
West of Pickering Street	35	41	45	47	52
West of Grandview Terrace	45	57	54	63	59
West of Route 17 (Gospel Lane)	45	54	54	60	59
East of Route 17 (Gospel Lane)	45	56	53	63	58
Portland/ East Hampton Town Line	35	46	48	52	52
East of Route 151 (Middle Haddam Road)	35	36	44	46	50
East of Route 16 (Middletown Avenue)	45	41	38	47	45
East of Barton Hill Road	45	49	49	54	53
East of Main Street	30	30	30	36	34
West of Route 196 (Lakeview Street)	30	40	39	44	43
Near Paul and Sandy's Too	45	46	46	51	51
East Hampton/ Marlborough Town Line	45	49	47	54	52

Red Text indicates 85th Percentile Speed exceeds Posted Speed Limit ≥ 10mph

TABLE 2-5
Intersection Operation Summary - 2020 Corridor Conditions - LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	v/c	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	v/c
Traffic Signal - Route 66 at Route 17A (Main Street)							
Overall		**B**	**18.1**	**0.85**	**B**	**17.8**	**0.86**
Route 66	WB	B	19.8	0.85	C	20.7	0.73
Route 66	NB	C	27.2	0.37	D	39.2	0.83
Route 17A	SB	C	24.9	0.62	B	10.6	0.28
Traffic Signal - Route 66 (Marlborough Street) at High Street							
Overall		**A**	**7.3**	**0.67**	**B**	**10.6**	**0.68**
Route 66	EBL	A	6.1	0.38	A	4.2	0.25
	EBT	A	7.7	0.23	B	11.7	0.61
Route 66	WB	A	4.7	0.67	A	2.7	0.40
High Street	SB	C	25.9	0.60	D	36.6	0.68
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue							
Overall		**A**	**6.3**	**0.62**	**A**	**5.0**	**0.67**
Route 66	EB	A	3.9	0.25	A	4.9	0.67
Route 66	WBL	A	1.2	0.04	A	1.7	0.08
	WBT	A	6.4	0.62	A	3.3	0.39
Airline Avenue	NB	C	25.7	0.27	C	20.3	0.31
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway							
Overall		**A**	**5.2**	**0.45**	**B**	**11.2**	**0.48**
Route 66	EBL	A	1.4	0.07	A	8.6	0.28
	EBTR	A	0.8	0.16	B	11.5	0.47
Route 66	WBTR	A	6.7	0.45	A	7.2	0.37
Portland Shopping Center	SBL	C	32.3	0.04	D	37.7	0.48
Driveway	SBR	C	22.3	0.02	B	10.8	0.18
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace							
Overall		**A**	**3.6**	**0.48**	**A**	**2.7**	**0.48**
Route 66	EBL	A	0.6	0.01	A	0.7	0.03
	EBT	A	2.0	0.19	A	2.0	0.48
Route 66	WBL	A	1.7	0.00	A	1.8	0.03
	WBT	A	4.1	0.48	A	3.6	0.27
Grove Street	NBT	A	1.4	0.15	A	1.5	0.14
Grandview Terrace	SBT	D	35.3	0.05	B	19.3	0.19
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)							
Overall		**B**	**11.7**	**0.62**	**B**	**12.4**	**0.60**
Route 66	EBL	D	36.5	0.45	C	34.8	0.48
	EBTR	A	3.1	0.17	A	5.5	0.48
Route 66	WBT	B	13.3	0.62	B	15.1	0.39
	WBR	A	2.6	0.25	A	3.4	0.16
Route 17 (Gospel Lane)	SBL	C	33.1	0.40	D	42.1	0.60
	SBR	B	10.3	0.40	B	10.1	0.31
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard							
Overall		**A**	**9.7**	**0.76**	**B**	**12.0**	**0.82**
Route 66	EBL	A	1.9	0.07	A	2.6	0.21
	EBTR	A	3.3	0.30	B	14.6	0.82
Route 66	WBL	A	1.5	0.00	A	2.0	0.01
	WBTR	B	12.5	0.76	A	8.4	0.49
Payne Boulevard	NB	A	1.6	0.15	D	39.6	0.16
Middle Haddam Road	SB	D	43.7	0.02	A	9.7	0.31
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd							
Overall		**C**	**26.6**	**0.88**	**C**	**22.0**	**0.92**
Route 66	EB	A	8.7	0.40	C	24.1	0.92
Route 66	WB	C	24.6	0.88	A	5.6	0.41
Route 151 (Middle Haddam	NBLT	E	74.1	0.82	E	69.5	0.58
Road)	NBR	A	0.0	0.01	A	0.0	0.02
Depot Hill Road	SB	D	45.3	0.42	E	65.9	0.58

TABLE 2-5
Intersection Operation Summary - 2020 Corridor Conditions - LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	v/c	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	v/c
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway							
Overall		**C**	**26.2**	**0.89**	**B**	**13.4**	**0.70**
Route 66	EBLT	B	14.0	0.43	B	15.6	0.70
	EBR	A	2.5	0.28	A	2.5	0.45
Route 66	WBL	A	9.0	0.01	A	7.7	0.01
	WBTR	C	26.8	0.84	B	10.6	0.42
Route 16 (Middletown Ave.)	NBLT	D	45.8	0.89	C	33.3	0.70
	NBR	A	0.0	0.00	A	0.0	0.01
Park & Ride Driveway	SB	A	0.0	0.00	B	17.3	0.01
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street							
Overall		**B**	**15.4**	**0.61**	**B**	**10.1**	**0.54**
Route 66	EB	B	12.7	0.55	A	9.0	0.54
Route 66	WB	B	13.5	0.61	A	7.7	0.45
Main Street	NB	C	24.6	0.28	C	21.7	0.13
North Main Street	SB	C	28.5	0.45	C	25.1	0.36
Old West High Street	SEB	C	29.0	0.00	0	0.0	0.00
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street							
Overall		**B**	**18.2**	**0.56**	**C**	**21.7**	**0.72**
Route 66	EBL	A	6.3	0.08	A	8.9	0.32
	EBTR	B	14.2	0.42	B	19.3	0.52
Route 66	WBL	A	7.1	0.10	A	5.5	0.29
	WBTR	B	18.3	0.47	B	18.9	0.62
Main Street	NBL	C	29.0	0.17	C	26.1	0.13
	NBTR	C	20.2	0.56	D	41.4	0.72
North Main Street	SBL	C	32.1	0.34	C	29.1	0.30
	SBTR	C	22.6	0.50	C	33.8	0.56
Traffic Signal - Route 66 (East High St.) at East Hampton Mall Shopping Center Dwy/Eversource Dwy							
Overall		**A**	**9.0**	**0.41**	**B**	**13.9**	**0.61**
Route 66	EBL	A	3.7	0.03	A	5.0	0.12
	EBT	A	9.0	0.41	B	10.2	0.42
Route 66	WBL	A	2.0	0.02	A	3.2	0.01
	WBT	A	6.0	0.41	B	12.7	0.61
Eversource Driveway	NBT	D	40.3	0.13	C	33.3	0.03
East Hampton Mall	SBT	D	45.1	0.30	D	48.9	0.56
Shopping Center Driveway	SBR	A	0.7	0.09	A	9.8	0.28
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)							
Overall		**B**	**13.4**	**0.75**	**B**	**15.8**	**0.80**
Route 66	EB	C	22.6	0.75	C	29.0	0.80
Route 66	WBL	A	4.7	0.24	A	8.0	0.48
	WBTR	A	5.2	0.38	A	4.9	0.42
Route 196 (Lake View	NBL	C	26.9	0.27	C	31.1	0.33
Street)	NBR	A	8.8	0.53	A	9.1	0.38

TABLE 2-6
Intersection Operational Summary – 2020 Corridor Conditions – Queues

	Lane Use	Available Storage	Weekday Morning Peak Hour Avg. Queues	Weekday Morning Peak Hour Design Queues	Weekday Afternoon Peak Hour Avg. Queues	Weekday Afternoon Peak Hour Design Queues
Traffic Signal - Route 66 at Route 17A (Main Street)						
Route 66	WB	>750	355	444	181	196
Route 66	NB	>1000	65	101	167	#252
Route 17A	SB	510	132	186	56	100
Traffic Signal - Route 66 (Marlborough Street) at High Street						
Route 66	EBL	225	9	m25	12	m21
	EBT	>1000	44	88	193	m318
Route 66	WBT	150	31	67	0	25
High Street	SB	>500	49	106	91	151
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue						
Route 66	EB	145	21	33	56	68
Route 66	WBL	175	1	m3	1	m3
	WBT	>500	190	71	23	39
Airline Avenue	NB	>500	20	52	24	60
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway						
Route 66	EBL	350	1	6	35	m76
	EBTR	>500	0	35	211	387
Route 66	WBTR	370	0	437	101	173
Portland Shopping Center	SBL	155	3	15	54	98
Driveway	SBR	155	0	8	0	27
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace						
Route 66	EBL	125	1	0	1	m1
	EBTR	370	22	35	127	55
Route 66	WBL	150	0	1	1	3
	WBTR	>500	95	217	41	99
Grove Street	NB	>500	0	0	0	0
Grandview Terrace	SB	>500	3	15	1	25
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)						
Route 66	EBL	200	32	75	68	134
	EBT	>500	21	42	98	175
Route 66	WBT	>750	138	268	95	152
	WBR	200	0	33	0	29
Route 17 (Gospel Lane)	SBL	>500	35	81	69	126
	SBR	100	0	43	0	38
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard						
Route 66	EBL	175	2	5	11	20
	EBTR	>1500	58	142	343	#1002
Route 66	WBL	300	0	1	0	2
	WBTR	>2000	307	#922	156	247
Payne Boulevard	NB	>500	0	0	9	34
Middle Haddam Road	SB	>500	2	11	0	24
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd						
Route 66	EB	>2500	142	193	612	#1244
Route 66	WB	>1500	584	789	114	201
Route 151 (Middle	NBLT	>500	150	#270	53	102
Haddam Road)	NBR	65	0	0	0	0
Depot Hill Road	SB	>500	49	102	50	100

TABLE 2-6

Intersection Operational Summary – 2020 Corridor Conditions – Queues

			Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
	Lane Use	**Available Storage**	**Avg. Queues**	**Design Queues**	**Avg. Queues**	**Design Queues**
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway						
Route 66	EBLT	>750	86	133	139	321
	EBR	250	0	26	0	38
Route 66	WBL	125	1	6	0	4
	WBTR	>500	216	318	70	165
Route 16 (Middletown	NBLT	>750	167	#450	66	194
Avenue)	NBR	100	0	0	0	0
Park & Ride Driveway	SB	75	0	0	1	11
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street						
Route 66	EB	>500	74	251	99	205
Route 66	WB	>750	96	312	80	163
Main Street	NB	>500	0	0	0	0
North Main Street	SB	>500	30	108	24	82
Old West High Street	SEB	>500	0	5	0	0
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street						
Route 66	EBL	275	7	21	28	64
	EBTR	>1000	140	251	181	348
Route 66	WBL	225	16	25	25	m20
	WBTR	485	245	359	282	#480
Main Street	NBL	225	16	40	14	33
	NBTR	>500	27	77	85	140
North Main Street	SBL	175	51	90	48	81
	SBTR	>500	33	91	76	136
Traffic Signal - Route 66 (East High Street) at East Hampton Mall Shopping Center Dwy/Eversource Dwy						
Route 66	EBL	225	2	m11	7	m19
	EBTR	485	135	369	126	292
Route 66	WBL	125	1	4	1	3
	WBTR	>1000	79	224	228	422
Eversource Driveway	NB	260	11	32	4	16
East Hampton Mall	SBL	140	24	56	62	109
Shopping Center Driveway	SBR	140	0	0	0	37
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)						
Route 66	EB	>1000	143	280	216	#479
Route 66	WBL	250	10	28	27	82
	WBTR	>500	50	108	74	153
Route 196 (Lake View St.)	NBL	170	23	69	36	80
	NBR	>500	0	59	0	46

TABLE 2-7
Study Area Signalized Intersection Operational Summary – 2020 Optimized Corridor Conditions – LOS

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Morning Peak Hour v/c	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour v/c
Traffic Signal - Route 66 at Route 17A (Main Street)							
Overall		**B**	**17.4**	**0.87**	**B**	**17.9**	**0.86**
Route 66	WB	B	19.1	0.87	C	29.6	0.74
Route 66	NB	C	29.3	0.42	C	29.5	0.68
Route 17A	SB	C	22.4	0.59	B	10.3	0.28
Traffic Signal - Route 66 (Marlborough Street) at High Street							
Overall		**A**	**6.4**	**0.67**	**B**	**11.9**	**0.67**
Route 66	EBL	A	6.4	0.38	A	4.2	0.25
	EBT	A	7.5	0.22	B	12.2	0.61
Route 66	WB	A	3.6	0.67	A	6.0	0.41
High Street	SB	C	24.2	0.59	D	35.3	0.67
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue							
Overall		**A**	**10.0**	**0.62**	**A**	**8.3**	**0.67**
Route 66	EB	A	3.7	0.25	A	5.1	0.67
Route 66	WBL	A	1.5	0.04	A	7.2	0.08
	WBT	B	11.9	0.62	B	12.4	0.39
Airline Avenue	NB	C	25.9	0.27	C	20.4	0.31
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway							
Overall		**A**	**6.4**	**0.45**	**A**	**8.9**	**0.48**
Route 66	EBL	A	4.1	0.07	A	3.8	0.28
	EBTR	A	3.1	0.16	A	3.1	0.47
Route 66	WBTR	A	7.5	0.45	B	14.9	0.37
Portland Shopping Center	SBL	C	32.3	0.04	D	37.9	0.48
Driveway	SBR	C	22.3	0.02	B	10.7	0.18
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace							
Overall		**A**	**3.2**	**0.48**	**A**	**7.1**	**0.48**
Route 66	EBL	A	0.6	0.01	A	2.7	0.03
	EBT	A	0.6	0.19	A	8.9	0.48
Route 66	WBL	A	1.7	0.00	A	1.8	0.03
	WBT	A	4.1	0.48	A	3.6	0.27
Grove Street	NBT	A	1.4	0.15	A	1.5	0.14
Grandview Terrace	SBT	D	35.3	0.05	B	19.3	0.19
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)							
Overall		**B**	**13.4**	**0.75**	**B**	**10.9**	**0.50**
Route 66	EBL	C	27.7	0.41	C	27.0	0.50
	EBTR	A	3.7	0.18	A	5.9	0.49
Route 66	WBT	B	17.9	0.75	B	15.0	0.46
	WBR	A	3.3	0.29	A	4.2	0.19
Route 17 (Gospel Lane)	SBL	C	23.5	0.35	C	26.1	0.48
	SBR	A	8.2	0.36	A	7.4	0.27
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard							
Overall		**B**	**10.0**	**0.75**	**B**	**12.7**	**0.84**
Route 66	EBL	A	2.1	0.07	A	2.7	0.22
	EBTR	A	3.4	0.29	B	15.6	0.84
Route 66	WBL	A	1.5	0.00	A	2.0	0.01
	WBTR	B	13.0	0.75	A	9.0	0.51
Payne Boulevard	NB	A	1.0	0.12	D	36.8	0.15
Middle Haddam Road	SB	C	34.7	0.02	A	7.2	0.29
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd							
Overall		**C**	**31.2**	**0.95**	**C**	**22.5**	**0.93**
Route 66	EB	B	10.9	0.43	C	26.6	0.93
Route 66	WB	D	36.6	0.95	A	6.2	0.41
Route 151 (Middle Haddam	NBLT	D	55.0	0.78	D	54.8	0.56
Road)	NBR	A	0.0	0.01	A	0.0	0.01
Depot Hill Road	SB	C	25.6	0.33	D	46.6	0.50

TABLE 2-7
Study Area Signalized Intersection Operational Summary – 2020 Optimized Corridor Conditions – LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	v/c	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	v/c
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway							
Overall		**C**	**27.2**	**0.88**	**B**	**13.0**	**0.72**
Route 66	EBLT	B	15.8	0.44	B	15.2	0.70
	EBR	A	3.1	0.29	A	2.6	0.46
Route 66	WBL	B	11.5	0.01	A	7.3	0.01
	WBTR	C	31.3	0.86	B	10.2	0.43
Route 16 (Middletown Ave.)	NBLT	D	41.3	0.88	C	32.0	0.72
	NBR	A	0.0	0.00	A	0.0	0.01
Park & Ride Driveway	SB	A	0.0	0.00	B	13.7	0.01
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street							
Overall		**B**	**14.7**	**0.56**	**B**	**10.3**	**0.56**
Route 66	EB	B	12.3	0.50	A	9.8	0.56
Route 66	WB	B	13.4	0.56	A	8.3	0.47
Main Street	NB	C	21.7	0.28	B	17.4	0.13
North Main Street	SB	C	25.4	0.45	C	21.1	0.36
Old West High Street	SEB	C	22.0	0.00	0	0.0	0.00
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street							
Overall		**B**	**14.8**	**0.51**	**B**	**18.9**	**0.68**
Route 66	EBL	A	6.6	0.09	B	10.0	0.38
	EBTR	B	15.5	0.46	C	20.2	0.58
Route 66	WBL	A	3.3	0.11	A	6.2	0.33
	WBTR	B	12.2	0.51	B	15.6	0.68
Main Street	NBL	C	22.8	0.14	C	20.8	0.11
	NBTR	B	15.9	0.50	C	33.4	0.66
North Main Street	SBL	C	26.1	0.33	C	23.9	0.30
	SBTR	B	17.5	0.46	C	24.1	0.46
Traffic Signal - Route 66 (East High St.) at East Hampton Mall Shopping Center Dwy/Eversource Dwy							
Overall		**A**	**8.5**	**0.40**	**B**	**12.2**	**0.59**
Route 66	EBL	A	3.7	0.03	A	4.3	0.11
	EBT	A	8.5	0.40	A	8.2	0.41
Route 66	WBL	A	2.3	0.02	A	3.5	0.01
	WBT	A	6.2	0.40	B	12.4	0.59
Eversource Driveway	NBT	C	32.9	0.12	C	27.1	0.03
East Hampton Mall	SBT	D	36.3	0.26	D	39.5	0.51
Shopping Center Driveway	SBR	A	0.5	0.07	A	6.4	0.25
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)							
Overall		**B**	**12.6**	**0.75**	**B**	**13.5**	**0.78**
Route 66	EB	C	20.8	0.75	C	23.1	0.78
Route 66	WBL	A	4.9	0.26	A	9.2	0.55
	WBTR	A	5.3	0.39	A	4.9	0.44
Route 196 (Lake View	NBL	C	23.5	0.27	C	25.8	0.30
Street)	NBR	A	8.4	0.53	A	8.1	0.35

TABLE 2-8

Study Area Signalized Intersection Operational Summary – 2020 Optimized Corridor Conditions – Queues

	Lane Use	Available Storage	Weekday Morning Peak Hour Avg. Queues	Weekday Morning Peak Hour Design Queues	Weekday Afternoon Peak Hour Avg. Queues	Weekday Afternoon Peak Hour Design Queues
Traffic Signal - Route 66 at Route 17A (Main Street)						
Route 66	WB	>750	394	357	213	150
Route 66	NB	>1000	67	105	155	214
Route 17A	SB	510	128	178	55	98
Traffic Signal - Route 66 (Marlborough Street) at High Street						
Route 66	EBL	225	9	m25	12	m21
	EBT	>1000	43	88	193	m334
Route 66	WBT	150	11	40	53	59
High Street	SB	>500	44	101	88	148
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue						
Route 66	EB	145	21	33	55	68
Route 66	WBL	175	4	m0	2	m17
	WBT	>500	313	2	53	196
Airline Avenue	NB	>500	20	52	24	60
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway						
Route 66	EBL	350	1	0	9	m31
	EBTR	>500	0	130	43	110
Route 66	WBTR	370	0	455	154	242
Portland Shopping Center	SBL	155	3	15	54	98
Driveway	SBR	155	0	8	0	27
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace						
Route 66	EBL	125	0	1	3	m4
	EBTR	370	5	10	270	357
Route 66	WBL	150	0	1	1	3
	WBTR	>500	95	217	41	99
Grove Street	NB	>500	0	0	0	0
Grandview Terrace	SB	>500	3	15	1	25
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)						
Route 66	EBL	200	23	60	44	99
	EBT	>500	20	41	84	160
Route 66	WBT	>750	131	#280	76	131
	WBR	200	0	34	0	29
Route 17 (Gospel Lane)	SBL	>500	25	61	44	88
	SBR	100	0	36	0	30
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard						
Route 66	EBL	175	1	5	11	21
	EBTR	>1500	0	148	343	#977
Route 66	WBL	300	0	1	0	2
	WBTR	>2000	0	#848	156	250
Payne Boulevard	NB	>500	0	0	9	32
Middle Haddam Road	SB	>500	1	10	0	19
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd						
Route 66	EB	>2500	121	231	577	#1067
Route 66	WB	>1500	494	#923	108	198
Route 151 (Middle	NBLT	>500	102	171	39	82
Haddam Road)	NBR	65	0	0	0	0
Depot Hill Road	SB	>500	29	67	36	80

TABLE 2-8

Study Area Signalized Intersection Operational Summary – 2020 Optimized Corridor Conditions – Queues

			Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway						
Route 66	EBLT	>750	97	155	135	265
	EBR	250	0	32	0	36
Route 66	WBL	125	1	7	0	4
	WBTR	>500	245	#385	68	134
Route 16 (Middletown	NBLT	>750	183	#352	62	#161
Avenue)	NBR	100	0	0	0	0
Park & Ride Driveway	SB	75	0	0	1	8
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street						
Route 66	EB	>500	72	233	99	209
Route 66	WB	>750	92	#306	80	164
Main Street	NB	>500	0	0	0	0
North Main Street	SB	>500	30	86	26	60
Old West High Street	SEB	>500	0	4	0	0
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street						
Route 66	EBL	275	7	19	31	55
	EBTR	>1000	136	227	195	286
Route 66	WBL	225	9	6	8	m42
	WBTR	485	162	302	233	182
Main Street	NBL	225	13	34	10	30
	NBTR	>500	22	68	78	126
North Main Street	SBL	175	40	77	35	72
	SBTR	>500	24	76	47	118
Traffic Signal - Route 66 (East High Street) at East Hampton Mall Shopping Center Dwy/Eversource Dwy						
Route 66	EBL	225	1	m10	7	m12
	EBTR	485	69	353	112	215
Route 66	WBL	125	1	4	1	3
	WBTR	>1000	78	225	216	416
Eversource Driveway	NB	260	9	27	3	13
East Hampton Mall	SBL	140	20	49	51	94
Shopping Center Driveway	SBR	140	0	0	0	26
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)						
Route 66	EB	>1000	132	228	179	#349
Route 66	WBL	250	10	23	27	59
	WBTR	>500	50	89	73	123
Route 196 (Lake View St.)	NBL	170	21	59	30	68
	NBR	>500	0	54	0	42

TABLE 2-9

Route 66 Collisions – Type

Collision Type	Number of Collisions				% of Total Collisions
	2015	2016	2017	Total	
Rear-End	76	86	73	235	51.80%
Angle	21	34	23	78	17.20%
Fixed Object	21	16	23	60	13.20%
Sideswipe, Same Direction	9	9	8	26	5.70%
Animal	2	9	7	18	4.00%
Other Non-Fixed Object	4	3	2	9	2.00%
Overturn/Rollover	0	3	3	6	1.30%
Other Non-Collision	3	2	1	6	1.30%
Head-On	2	0	2	4	0.90%
Sideswipe, Opposite Direction	2	2	0	4	0.90%
Bicycle	1	2	0	3	0.70%
Backing	0	2	1	3	0.70%
Pedestrian	0	1	0	1	0.20%
Other	0	0	1	1	0.20%
Jacknife	0	0	0	0	0.00%
Not Applicable	0	0	0	0	0.00%
TOTAL	143	168	144	454	100%

TABLE 2-10

Route 66 Collisions – Severity

Severity	Number of Collisions				% of Total Collisions
	2015	2016	2017	Total	
Property Damage Only (PDO)	140	163	139	442	96.90%
Injury	2	4	4	10	2.20%
Fatal	1	2	1	4	0.90%
TOTAL	143	169	144	456	100%

TABLE 2-11

Route 66 Collisions – Study Area Intersection Summary

Study Area Intersection	Number of Collisions 2015	2016	2017	Total	% of Total Collisions
Route 66 at Route 17A (Main Street)	6	19	12	37	8.1%
Route 66 at High Street	4	4	10	18	4.0%
Route 66 at Airline Avenue	5	6	2	13	2.9%
Route 66 at Portland Shopping Center Driveway	4	2	5	11	2.4%
Route 66 at Grove Street/ Grandview Terrace	4	6	5	15	3.3%
Route 66 at Route 17 (Gospel Lane)	4	1	3	8	1.8%
Route 66 at Middle Haddam Road/ Payne	2	7	1	10	2.2%
Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road	10	3	4	17	3.7%
Route 66 at Route 16 (Middletown Avenue)	1	6	3	10	2.2%
Route 66 at Maple Street/ North Maple Street	3	7	3	13	2.9%
Route 66 at Main Street/ North Main Street	4	9	4	17	3.7%
Route 66 at East Hampton Mall Shopping Center	5	7	3	15	3.3%
Route 66 at Route 196 (Lake View Street)	2	2	6	10	2.2%
TOTAL	54	79	61	194	43%

TABLE 2-12
Pedestrians and Bicyclists Collisions Summary

Date	Type	Location	Contributing Factor	Injury
9/4/2015	Bicycle	Route 66 at Arrigoni Bridge (EB approach)	Unknown	Possible Injury
3/27/2016	Bicycle	Route 66 at Maple Street	Unknown	Suspected Minor Injury
5/25/2016	Bicycle	Route 66 at Mallard Cove	Unsafe Use of Highway By Bicyclist	None
9/4/2016	Pedestrian	Route 66 at North Main Street	Work Zone	Suspected Serious Injury

TABLE 2-13

Portland RSA Safety Issues and Recommended Improvements

Safety Issues	Recommended Improvements	Implementation
There is overgrown vegetation at the northeast corner of the intersection blocking the pedestrian push button and the town's welcome sign	Trim overgrown vegetation at the intersection of Main Street and Route 66 to increase visibility	Short-Term
Vehicles entering the Village Center area from the Arrigoni Bridge travel fast because of the curve and downhill slope of the bridge	Coordinate with neighboring towns to share radar speed control signs to enforce vehicle speeds on the Arrigoni Bridge; Potential parking police cruiser on the triangular channelizing island at the intersection to reduce vehicle speeds entering the Village Center area	Short-Term
	Evaluate feasibility of installing traffic signal near the Arrigoni Bridge ramp	Long-Range
Vehicles traveling north have a hard time turning left into Quarry Heights because the signal doesn't have a dedicated green arrow; The southbound lane also blocks this driveway due to the location of the stop bar; Emergency vehicle access is a challenge	Move the stop bar further back before the entrance to Quarry Heights for southbound traffic; Consider adjusting traffic signal to include a green arrow phase for vehicles turning left into Quarry Heights	Medium-Term
The crosswalk at the Arrigoni Bridge and Lower Main Street is located on a curve and slope and has limited visibility for both pedestrians and motorists	Install advanced warning signs ahead of crosswalks	Short-Term
	Realign crosswalk at Lower Main Street near the Arrigoni Bridge to improve visibility; Evaluate feasibility of a pedestrian bridge near Arrigoni Bridge	Long-Range
Numerous driveways along Main Street contribute to conflicting turning movements and traffic flow	Evaluate developing access management plan to consolidate commercial driveways on Main Street and Route 66	Long-Range
Pedestrian signals for Main Street crosswalk are not ADA compliant and there are no pedestrian signals for Route 66 crosswalk at the intersection	Upgrade all pedestrian crossings to be ADA compliant including tactile warning strips and pedestrian countdown and audible signals; Potential pedestrian signals and push buttons for Route 66 crossings at the intersection	Medium-Term

TABLE 2-14

Intersection ADA Compliant and Non-ADA Compliant Pedestrian Facilities Summary

Intersection	Leg	Accessible Curb Ramp	Decectable Warning Pad	Crosswalk	Accessible Pushbutton	Audible Pedestrian Signal	Countdown Pedestrian Signal
Route 66 at Route 17A (Main Street)	North	✔	✔	✔	✔	✔	✔
	South						
	East	✔	✔	✔			
Route 66 at High Street	North			✔	✔	✔	✔
	East						
	West			✔	✔	✔	✔
Route 66 at Airline Avenue	South						
	East			✔	✔	✔	✔
	West						
Route 66 at Portland Shopping Center Driveway	North						
	East						
	West						
Route 66 at Grove Street/ Grandview Terrace	North						
	South						
	East						
	West						
Route 66 at Route 17 (Gospel Lane)	North						
	East						
	West						
Route 66 at Middle Haddam Road/ Payne Boulevard	North						
	South						
	East						
	West						
Route 66 at Route 151 (Middle Haddam Road)/ Depot Hill Road	North						
	South						
	East						
	West						
Route 66 at Route 16 (Middletown Avenue)	South						
	East						
	West						
Route 66 at Maple Street/ North Maple Street/ Old W High Street	North			✔			
	South						
	East			✔	✔		✔
	West						
	Northwest						
Route 66 at Main Street/ North Main Street	North	✔	✔	✔	✔	✔	✔
	South	✔	✔	✔	✔	✔	✔
	East	✔	✔	✔	✔	✔	✔
	West	✔	✔	✔	✔	✔	✔
Route 66 at East Hampton Mall Shopping Center	North						
	South						
	East						
	West	✔	✔	✔	✔		✔
Route 66 at Route 196 (Lakeview Street)	South	✔	✔	✔	✔		✔
	East	✔	✔	✔	✔		✔
	West	✔	✔	✔	✔		✔

TABLE 2-15

Middletown Area Transit – Route F – Boardings and Alightings Summary

Bus Stop	Weekday (Average)			Saturday		
	Boardings	Alightings	Total	Boardings	Alightings	Total
Downtown Terminal (Departure)	17.0	11.3	28.3	5	2	7
Marlborough Street	2.3	6.3	8.7	0	1	1
Route 16/Route 66	1.0	0.3	1.3	0	0	0
Food Bag - Route 16	2.7	1.7	4.3	1	0	1
Clark Hill Road/North Main Street	0.3	5.3	5.7	1	3	4
Route 16/Route 66	1.7	0.7	2.3	0	1	1
Greystone Manor	0.3	0.3	0.7	0	0	0
Portland Convalescent	0.7	0.0	0.7	0	0	0
Total	26	26	52	7	7	14

TABLE 3-1

Potential Future Development Parcels Summary

Area	Parcel	Location	Potential Development	Potential Completion Year
		Town of Portland		
1	Brainerd Place	Route 66 at Main Street	240-unit Apartment; 100,000 sf Commercial/Office	2023
2	Assisted Living Facility	Route 66 between Gospel Lane and William Street	120-bed Assisted Living or Light Industrial	2021
3	Portland Commons	Route 66 at Gospel Lane	102,655 sf Retail/Restaurant	2029
4	Opticom Headquarters	1600 Portland Cobalt Road	8,000 sf Office Buildings	2022
5	Commercial Site	Route 66 west of Portland Collision	Auto-related Use	2023
6	Downtown Portland	Downtown Portland (other than Brainerd Place)	Small Retail, Restaurant, Mixed-Use Development	N/A
		Town of East Hampton		
1	207 West High Street	207 West High Street	8,000 sf Daycare Facility	2019
2	201 West High Street	201 West High Street	18,000 sf Commercial/Industrial PAD	2020
3	East Hampton Town Hall Redevelopment	Town Hall Site	Commercial or Mixed-Use Redevelopment	2020
4	Edgewater Hills	Route 66 between Laurel Ridge and Lake Vista	250 Residential Units; 80,000 sf Retail/Office	2028
5	Future Commercial Site	Route 66 next to Lakeside Automotive	Commercial PAD	2022
6	Dollar General	197 East High Street	7,500 sf Retail	2019
7	Hampton Woods	Route 66 just n/o Edgewater Hills	253-unit Townhouses	2028
8	Historical Village Center Area	Main Street s/o Route 66	Small Commercial	N/A
9	Downtown East Hampton	Downtown East Hampton	Small Infill or Redevelopment	N/A
10	Cobalt Development	Route 66 at Route 151	Commercial Redevelopment	N/A

Table 3-2
Peak Hour Bi-Directional Traffic Volume Growth

Location	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
	2020 Corridor	2040 Future	Approx. Change Net Vol.	%	2020 Corridor	2040 Future	Approx. Change Net Vol.	%
Route 17A								
Northeast of Route 66	930	1420	490	52.7%	1159	1670	511	44.1%
Route 66								
Southwest of Route 17A (Main Street)	2685	3660	975	36.3%	3018	3930	912	30.2%
Between Route 17A (Main Street) & High Street	1841	2690	849	46.1%	2098	2895	797	38.0%
Between High Street & Airline Avenue	1804	2630	827	45.8%	2194	2925	732	33.3%
Between Airline Avenue & Portland Shopping Center Driveway	1779	2530	752	42.3%	2143	2850	708	33.0%
Between Portland Shopping Center Driveway & Grove Street	1768	2515	747	42.3%	2106	2775	670	31.8%
Between Grove Street & Route 17 (Gospel Lane)	1648	2375	727	44.1%	2007	2643	636	31.7%
Between Route 17 (Gospel Lane) & Middle Haddam Road (W Junction)	1596	2216	621	38.9%	1959	2365	407	20.8%
Between Middle Haddam Road (W Junction) & Route 151 (Middle Haddam Road)/ Depot Hill Road	1516	2047	531	35.0%	1728	2096	368	21.3%
Between Route 151 (Middle Haddam Road)/ Depot Hill Road & Route 16 (Middletown Avenue)	1399	1830	431	30.8%	1608	2102	494	30.7%
Between Route 16 (Middletown Avenue) & Maple Street/ North Maple Street	898	1187	289	32.2%	1043	1365	322	30.8%
Between Maple Street/ North Maple Street & Main Street/ North Main Street	913	1210	298	32.6%	1086	1415	330	30.4%
Between North Maple Street & Main Street/ North Main Street & East Hampton Mall Shopping Center Dwy	1077	1415	338	31.4%	1263	1626	363	28.8%
Between East Hampton Mall Shopping Center Dwy & Route 196 (Lake View Street)	1072	1395	323	30.1%	1302	1663	362	27.8%
East of Route 196 (Lake View Street)	1258	1630	372	29.6%	1454	1880	426	29.3%

TABLE 3-3
Historic Average Daily Traffic(Volume & Average Annual Percent Change)

	Year										
Location	2003	AAPC	2006	AAPC	2009	AAPC	2012	AAPC	2015	AAPC	2018
Rte. 66 SW of Silver St.	33,200	0.4%	33,600	-1.2%	32,400	-5.5%	27,300	2.2%	29,100	4.1%	32,842
Rte. 66 SE of Rte. 17A	25,800	-3.6%	23,100	-1.3%	22,200	-6.9%	17,900	8.4%	22,800	2.7%	24,685
Rte. 66 West of Rte. 17	20,800	-0.8%	20,300	-3.2%	18,400	-6.2%	15,200	7.5%	18,900	2.8%	20,540
Rte. 66 East of Rte. 17	21,100	-1.1%	20,400	-1.3%	19,600	-3.9%	17,400	--	*	--	21,510
Rte. 66 NW of Murphy Rd.	*	--	*	--	*	--	17,100	-1.8%	16,200	--	*
Rte. 66 at Portland Town Line	18,400	-0.5%	18,100	-0.9%	17,600	-3.7%	15,700	2.5%	16,900	1.8%	17,825
Rte. 66 East of Rte. 151	16,200	0.2%	16,300	-0.6%	16,000	-4.4%	14,000	3.5%	15,500	0.7%	15,830
Rte. 66 SW of Rte. 16	15,900	2.3%	17,000	-1.2%	16,400	-2.3%	15,300	1.7%	16,100	--	*
Rte. 66 NE of Middletown Ave.	9,400	2.1%	10,000	-1.7%	9,500	-2.9%	8,700	--	*	--	10,185
Rte. 66 NE of Barton Hill Rd.	9,900	2.9%	10,800	-2.9%	9,900	-2.4%	9,200	3.2%	10,100	2.4%	10,835
Rte. 66 SW of Main St.	10,600	-1.3%	10,200	1.0%	10,500	-1.9%	9,900	4.2%	11,200	-1.1%	10,835
Rte. 66 NE of Main St.	13,500	-2.0%	12,700	0.8%	13,000	-1.8%	12,300	1.3%	12,800	0.0%	12,815
Rte. 66 West of Rte. 196	11,600	0.0%	11,600	2.0%	12,300	-2.2%	11,500	6.0%	13,700	3.1%	15,030
Rte. 66 East of Rte. 196 (Connector)	13,100	1.8%	13,800	-0.2%	13,700	-3.0%	12,500	2.3%	13,400	0.1%	13,430
Rte. 66 East of Old Marlborough Rd. (W Jct)	12,100	1.9%	12,800	0.8%	13100	-3.7%	11,700	1.7%	12,300	3.0%	13,430
Average		0.2%		-0.7%		-3.6%		3.3%		1.8%	

* Volume data not collected at this location during this year

TABLE 3-4

Historic Average Daily Traffic Growth Summary

Location	Annual Average Percent Change (AAPC)				
	2003-2018	2006-2018	2009-2018	2012-2018	2015-2018
Rte. 66 SW of Silver St.	-0.1%	-0.2%	0.2%	3.1%	4.1%
Rte. 66 SE of Rte. 17A	-0.3%	0.6%	1.2%	5.5%	2.7%
Rte. 66 West of Rte. 17	-0.1%	0.1%	1.2%	5.1%	2.8%
Rte. 66 East of Rte. 17	0.1%	0.4%	1.0%	3.6%	-
Rte. 66 NW of Murphy Rd.	-	-	-	-	-
Rte. 66 at Portland Town Line	-0.2%	-0.1%	0.1%	2.1%	1.8%
Rte. 66 East of Rte. 151	-0.2%	-0.2%	-0.1%	2.1%	0.7%
Rte. 66 SW of Rte. 16		-	-	-	-
Rte. 66 NE of Middletown Ave.	0.5%	0.2%	0.8%	2.7%	-
Rte. 66 NE of Barton Hill Rd.	0.6%	0.0%	1.0%	2.8%	2.4%
Rte. 66 SW of Main St.	0.1%	0.5%	0.3%	1.5%	-1.1%
Rte. 66 NE of Main St.	-0.3%	0.1%	-0.2%	0.7%	0.0%
Rte. 66 West of Rte. 196	1.7%	2.2%	2.3%	4.6%	3.1%
Rte. 66 East of Rte. 196 (Connector)	0.2%	-0.2%	-0.2%	1.2%	0.1%
Rte. 66 East of Old Marlborough Rd. (W Jct)	0.7%	0.4%	0.3%	2.3%	3.0%
Average	0.2%	0.3%	0.6%	2.9%	1.8%

- Volume data not available for the comparison

Table 3-5
Study Area Signalized Intersection Operational Summary – 2040 Future – LOS

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Morning Peak Hour v/c	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour v/c
Traffic Signal - Route 66 at Route 17A (Main Street)							
Overall		**E**	**75.6**	**1.25**	**D**	**47.3**	**1.13**
Route 66	WB	E	72.4	1.12	B	15.1	0.76
Route 66	NB	C	27.8	0.42	D	51.4	0.94
Route 17A	SB	F	147.8	1.25	C	26.4	0.78
Traffic Signal - Route 66 (Marlborough Street) at High Street							
Overall		**D**	**39.1**	**1.08**	**D**	**40.5**	**1.00**
Route 66	EBL	B	18.2	0.54	A	6.5	0.52
	EBT	B	10.8	0.42	E	66.0	1.00
Route 66	WB	D	53.5	1.08	A	6.6	0.62
High Street	SB	C	26.8	0.69	D	37.9	0.76
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue							
Overall		**D**	**39.2**	**0.99**	**D**	**43.6**	**1.11**
Route 66	EB	A	4.1	0.45	E	66.2	1.11
Route 66	WBL	A	3.9	0.04	A	1.3	0.07
	WBT	E	55.9	0.99	A	6.0	0.60
Airline Avenue	NB	C	26.6	0.32	B	17.4	0.35
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway							
Overall		**A**	**9.3**	**0.64**	**B**	**14.6**	**0.61**
Route 66	EBL	A	6.0	0.13	A	7.9	0.45
	EBTR	A	3.8	0.26	B	16.6	0.61
Route 66	WBTR	B	11.3	0.64	B	10.4	0.54
Portland Shopping Center	SBL	C	33.7	0.12	D	37.6	0.47
Dwy.	SBR	B	18.5	0.06	B	10.6	0.19
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace							
Overall		**A**	**4.9**	**0.67**	**A**	**3.4**	**0.62**
Route 66	EBL	A	0.7	0.05	A	1.1	0.05
	EBT	A	0.6	0.29	A	2.7	0.62
Route 66	WBL	A	1.7	0.01	A	2.0	0.04
	WBT	A	6.7	0.67	A	4.3	0.38
Grove Street	NBT	A	1.6	0.16	A	2.4	0.21
Grandview Terrace	SBT	D	35.7	0.08	B	18.5	0.23
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)							
Overall		**C**	**20.6**	**0.93**	**B**	**14.3**	**0.67**
Route 66	EBL	D	39.7	0.58	D	41.7	0.65
	EBTR	A	3.7	0.27	A	7.1	0.61
Route 66	WBT	C	28.9	0.93	B	17.2	0.52
	WBR	A	3.5	0.30	A	3.3	0.19
Route 17 (Gospel Lane)	SBL	D	36.6	0.48	D	45.4	0.67
	SBR	B	11.0	0.52	A	9.4	0.42
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard							
Overall		**D**	**40.4**	**1.06**	**C**	**34.4**	**1.04**
Route 66	EBL	A	5.3	0.22	A	4.2	0.36
	EBTR	A	4.2	0.42	D	50.6	1.04
Route 66	WBL	A	1.5	0.00	A	2.3	0.02
	WBTR	E	57.1	1.06	B	12.1	0.66
Payne Boulevard	NB	A	5.0	0.24	D	43.4	0.25
Middle Haddam Road	SB	D	43.3	0.02	B	17.3	0.43
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd							
Overall		**E**	**63.3**	**1.18**	**F**	**99.2**	**1.26**
Route 66	EB	B	11.3	0.56	F	144.4	1.26
Route 66	WB	E	69.8	1.08	A	9.5	0.57
Route 151 (Middle Haddam	NBLT	F	164.5	1.18	E	76.0	0.72
Road)	NBR	A	0.0	0.01	A	0.0	0.01
Depot Hill Road	SB	E	78.6	0.80	E	62.5	0.59

Table 3-5
Study Area Signalized Intersection Operational Summary – 2040 Future – LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	v/c	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	v/c
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway							
Overall		**E**	**65.5**	**1.33**	**C**	**20.1**	**0.86**
Route 66	EBLT	B	13.5	0.49	C	24.6	0.85
	EBR	A	2.2	0.33	A	2.9	0.54
Route 66	WBL	A	8.3	0.03	A	8.3	0.02
	WBTR	C	30.3	0.90	B	13.4	0.53
Route 16 (Middletown Ave.)	NBLT	F	189.7	1.33	D	51.3	0.86
	NBR	A	0.0	0.00	A	0.1	0.02
Park & Ride Driveway	SB	A	0.0	0.00	B	19.3	0.01
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street							
Overall		**C**	**21.7**	**0.75**	**B**	**14.6**	**0.72**
Route 66	EB	B	18.7	0.73	B	13.9	0.72
Route 66	WB	B	18.7	0.75	A	9.9	0.59
Main Street	NB	C	29.5	0.33	C	25.3	0.16
North Main Street	SB	D	39.6	0.66	D	37.5	0.60
Old West High Street	SEB	C	34.0	0.01	0	0.0	0.00
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street							
Overall		**C**	**21.6**	**0.69**	**D**	**35.5**	**0.97**
Route 66	EBL	A	7.9	0.15	C	28.9	0.68
	EBTR	B	19.7	0.59	D	35.6	0.82
Route 66	WBL	A	5.6	0.18	B	17.7	0.57
	WBTR	C	22.3	0.69	D	42.0	0.97
Main Street	NBL	C	28.1	0.21	C	23.2	0.14
	NBTR	C	24.4	0.66	D	43.1	0.77
North Main Street	SBL	C	30.6	0.37	C	25.7	0.30
	SBTR	C	24.8	0.53	C	31.7	0.54
Traffic Signal - Route 66 (East High St.) at East Hampton Mall Shopping Center Dwy/Eversource Dwy							
Overall		**B**	**10.2**	**0.54**	**B**	**17.1**	**0.76**
Route 66	EBL	A	3.5	0.04	A	6.0	0.17
	EBT	B	10.3	0.54	B	13.3	0.55
Route 66	WBL	A	2.1	0.02	A	3.2	0.01
	WBT	A	7.7	0.54	B	17.6	0.76
Eversource Driveway	NBT	D	40.6	0.15	C	34.2	0.07
East Hampton Mall	SBT	D	45.2	0.31	D	48.8	0.55
Shopping Center Driveway	SBR	A	0.8	0.09	B	10.3	0.29
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)							
Overall		**B**	**16.9**	**0.86**	**D**	**44.3**	**1.13**
Route 66	EB	C	29.5	0.86	F	99.8	1.13
Route 66	WBL	A	6.4	0.37	B	18.4	0.64
	WBTR	A	6.0	0.47	A	7.5	0.60
Route 196 (Lake View St.)	NBL	C	32.2	0.39	C	34.5	0.45
	NBR	A	9.6	0.62	A	9.1	0.46

TABLE 3-6

Study Area Signalized Intersection Operational Summary – 2040 Future – Queues

	Lane Use	Available Storage	Weekday Morning Peak Hour Avg. Queues	Weekday Morning Peak Hour Design Queues	Weekday Afternoon Peak Hour Avg. Queues	Weekday Afternoon Peak Hour Design Queues
Traffic Signal - Route 66 at Route 17A (Main Street)						
Route 66	WB	>750	~613	m#552	253	41
Route 66	NB	>1000	75	114	197	#308
Route 17A	SB	510	~350	#470	142	#328
Traffic Signal - Route 66 (Marlborough Street) at High Street						
Route 66	EBL	225	23	m82	26	m33
	EBT	>1000	87	m160	~438	m#543
Route 66	WBT	150	~553	m#689	24	#80
High Street	SB	>500	64	129	118	184
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue						
Route 66	EB	145	27	37	~563	m#693
Route 66	WBL	175	1	m5	0	m1
	WBT	975	424	#735	21	#32
Airline Avenue	NB	>500	29	64	28	67
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway						
Route 66	EBL	350	1	m21	46	m51
	EBTR	>500	0	186	424	m431
Route 66	WBTR	370	0	599	172	305
Portland Shopping Center	SBL	155	10	31	53	96
Driveway	SBR	155	0	14	0	28
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace						
Route 66	EBL	125	1	m0	1	m3
	EBTR	370	2	4	3	152
Route 66	WBL	150	0	1	1	3
	WBTR	>500	182	440	64	155
Grove Street	NB	>500	0	0	0	1
Grandview Terrace	SB	>500	5	21	1	28
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)						
Route 66	EBL	200	49	103	97	#197
	EBT	>500	35	68	155	270
Route 66	WBT	>750	297	#556	147	225
	WBR	200	5	45	0	32
Route 17 (Gospel Lane)	SBL	>500	40	88	80	141
	SBR	100	0	51	0	47
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard						
Route 66	EBL	175	3	6	14	29
	EBTR	>1500	95	227	~971	#1469
Route 66	WBL	300	0	1	0	2
	WBTR	>2000	~1258	#1475	254	437
Payne Boulevard	NB	>500	0	8	12	41
Middle Haddam Road	SB	>500	2	11	2	48
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd						
Route 66	EB	>2500	247	327	~1591	#2030
Route 66	WB	>1500	~1233	#1442	220	400
Route 151 (Middle	NBLT	>500	~247	#404	86	149
Haddam Road)	NBR	65	0	0	0	0
Depot Hill Road	SB	>500	74	#175	70	128

TABLE 3-6
Study Area Signalized Intersection Operational Summary – 2040 Future – Queues

	Lane Use	Available Storage	Weekday Morning Peak Hour Avg. Queues	Weekday Morning Peak Hour Design Queues	Weekday Afternoon Peak Hour Avg. Queues	Weekday Afternoon Peak Hour Design Queues
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway						
Route 66	EBLT	>750	127	189	330	507
	EBR	250	0	30	0	42
Route 66	WBL	125	2	9	1	4
	WBTR	>500	329	481	156	236
Route 16 (Middletown	NBLT	>750	~402	#625	164	#324
Avenue)	NBR	100	0	0	0	0
Park & Ride Driveway	SB	75	0	0	2	11
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street						
Route 66	EB	>500	154	#474	183	401
Route 66	WB	>750	186	#551	139	285
Main Street	NB	>500	41	92	16	40
North Main Street	SB	>500	77	157	59	112
Old West High Street	SEB	>500	0	5	0	0
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street						
Route 66	EBL	275	10	28	47	128
	EBTR	>1000	217	405	315	#678
Route 66	WBL	225	24	m6	13	m52
	WBTR	485	374	#544	406	#801
Main Street	NBL	225	24	49	17	37
	NBTR	>500	44	98	115	172
North Main Street	SBL	175	64	103	54	86
	SBTR	>500	53	117	101	165
Traffic Signal - Route 66 (East High Street) at East Hampton Mall Shopping Center Dwy/Eversource Dwy						
Route 66	EBL	225	4	m7	5	m21
	EBTR	485	233	402	180	m467
Route 66	WBL	125	1	4	1	3
	WBTR	>1000	123	352	348	#732
Eversource Driveway	NB	260	12	35	7	23
East Hampton Mall	SBL	140	25	56	60	107
Shopping Center Dwy.	SBR	140	0	0	0	38
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)						
Route 66	EB	>1000	239	#486	~443	#710
Route 66	WBL	250	15	39	72	173
	WBTR	>500	77	171	125	264
Route 196 (Lake View St.)	NBL	170	43	87	50	96
	NBR	>500	0	66	0	50

TABLE 3-7
Study Area Signalized Intersection Operational Summary – 2040 Future Optimized – LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	v/c	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	v/c
Traffic Signal - Route 66 at Route 17A (Main Street)							
Overall		**E**	**65.9**	**1.21**	**D**	**46.6**	**1.13**
Route 66	WB	D	52.4	1.02	C	24.3	0.78
Route 66	NB	D	53.3	0.63	C	32.6	0.78
Route 17A	SB	F	139.3	1.21	C	28.3	0.81
Traffic Signal - Route 66 (Marlborough Street) at High Street							
Overall		**C**	**28.3**	**1.03**	**C**	**28.1**	**0.93**
Route 66	EBL	C	25.3	0.58	A	9.8	0.52
	EBT	B	13.8	0.40	D	42.4	0.93
Route 66	WB	C	32.8	1.03	A	3.4	0.58
High Street	SB	D	40.0	0.74	D	46.7	0.76
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue							
Overall		**C**	**33.8**	**0.94**	**C**	**32.1**	**1.03**
Route 66	EB	A	4.7	0.42	C	33.8	1.03
Route 66	WBL	A	6.0	0.04	A	8.7	0.07
	WBT	D	47.2	0.94	C	30.2	0.55
Airline Avenue	NB	C	33.3	0.31	C	24.8	0.35
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway							
Overall		**A**	**8.8**	**0.66**	**A**	**9.3**	**0.62**
Route 66	EBL	A	4.0	0.14	A	8.0	0.44
	EBTR	A	0.2	0.26	A	3.2	0.62
Route 66	WBTR	B	12.1	0.66	B	14.4	0.53
Portland Shopping Center	SBL	D	44.5	0.14	D	49.7	0.54
Dwy.	SBR	C	23.1	0.07	B	12.7	0.21
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace							
Overall		**A**	**5.4**	**0.65**	**A**	**9.2**	**0.62**
Route 66	EBL	A	2.9	0.05	A	2.5	0.05
	EBT	A	4.7	0.28	B	12.3	0.62
Route 66	WBL	A	1.3	0.01	A	1.7	0.05
	WBT	A	5.5	0.65	A	3.8	0.38
Grove Street	NBT	A	2.6	0.20	A	6.2	0.26
Grandview Terrace	SBT	D	46.2	0.10	C	22.9	0.27
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)							
Overall		**C**	**20.6**	**0.93**	**B**	**14.3**	**0.67**
Route 66	EBL	D	39.7	0.58	D	41.7	0.65
	EBTR	A	3.7	0.27	A	7.1	0.61
Route 66	WBT	C	28.9	0.93	B	17.2	0.52
	WBR	A	3.5	0.30	A	3.3	0.19
Route 17 (Gospel Lane)	SBL	D	36.6	0.48	D	45.4	0.67
	SBR	B	11.0	0.52	A	9.4	0.42
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard							
Overall		**D**	**37.6**	**1.05**	**C**	**31.1**	**1.03**
Route 66	EBL	A	5.9	0.24	A	3.9	0.35
	EBTR	A	4.0	0.42	D	46.0	1.03
Route 66	WBL	A	1.5	0.00	A	2.3	0.02
	WBTR	D	53.1	1.05	B	11.2	0.65
Payne Boulevard	NB	A	4.8	0.24	D	47.6	0.28
Middle Haddam Road	SB	D	45.7	0.02	A	7.0	0.36
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd							
Overall		**E**	**63.3**	**1.18**	**F**	**99.2**	**1.26**
Route 66	EB	B	11.3	0.56	F	144.4	1.26
Route 66	WB	E	69.8	1.08	A	9.5	0.57
Route 151 (Middle Haddam	NBLT	F	164.5	1.18	E	76.0	0.72
Road)	NBR	A	0.0	0.01	A	0.0	0.01
Depot Hill Road	SB	E	78.6	0.80	E	62.5	0.59

TABLE 3-7
Study Area Signalized Intersection Operational Summary – 2040 Future Optimized – LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	v/c	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	v/c
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway							
Overall		**D**	**50.3**	**1.09**	**C**	**20.3**	**0.85**
Route 66	EBLT	C	20.0	0.54	C	25.4	0.85
	EBR	A	3.0	0.35	A	2.9	0.54
Route 66	WBL	B	13.4	0.03	A	9.0	0.02
	WBTR	D	54.9	0.99	B	13.9	0.53
Route 16 (Middletown Ave.)	NBLT	F	92.8	1.09	D	49.7	0.85
	NBR	A	0.0	0.00	A	0.1	0.02
Park & Ride Driveway	SB	A	0.0	0.00	B	19.3	0.01
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street							
Overall		**C**	**21.7**	**0.75**	**B**	**14.6**	**0.72**
Route 66	EB	B	18.7	0.73	B	13.9	0.72
Route 66	WB	B	18.7	0.75	A	9.9	0.59
Main Street	NB	C	29.5	0.33	C	25.3	0.16
North Main Street	SB	D	39.6	0.66	D	37.5	0.60
Old West High Street	SEB	C	34.0	0.01	0	0.0	0.00
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street							
Overall		**C**	**21.6**	**0.69**	**D**	**35.5**	**0.97**
Route 66	EBL	A	7.9	0.15	C	28.9	0.68
	EBTR	B	19.7	0.59	D	35.6	0.82
Route 66	WBL	A	5.6	0.18	B	17.7	0.57
	WBTR	C	22.3	0.69	D	42.0	0.97
Main Street	NBL	C	28.1	0.21	C	23.2	0.14
	NBTR	C	24.4	0.66	D	43.1	0.77
North Main Street	SBL	C	30.6	0.37	C	25.7	0.30
	SBTR	C	24.8	0.53	C	31.7	0.54
Traffic Signal - Route 66 (East High St.) at East Hampton Mall Shopping Center Dwy/Eversource Dwy							
Overall		**B**	**10.2**	**0.54**	**B**	**17.1**	**0.76**
Route 66	EBL	A	3.5	0.04	A	6.0	0.17
	EBT	B	10.3	0.54	B	13.3	0.55
Route 66	WBL	A	2.1	0.02	A	3.2	0.01
	WBT	A	7.7	0.54	B	17.6	0.76
Eversource Driveway	NBT	D	40.6	0.15	C	34.2	0.07
East Hampton Mall	SBT	D	45.2	0.31	D	48.8	0.55
Shopping Center Driveway	SBR	A	0.8	0.09	B	10.3	0.29
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)							
Overall		**B**	**16.9**	**0.86**	**C**	**22.3**	**0.91**
Route 66	EB	C	29.5	0.86	C	33.7	0.91
Route 66	WBL	A	6.4	0.37	C	31.3	0.78
	WBTR	A	6.0	0.47	A	5.6	0.57
Route 196 (Lake View St.)	NBL	C	32.2	0.39	D	45.9	0.57
	NBR	A	9.6	0.62	B	11.6	0.52

TABLE 3-8

Study Area Signalized Intersection Operational Summary – 2040 Future Optimized – Queues

			Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Route 66 at Route 17A (Main Street)						
Route 66	WB	>750	~839	#977	226	260
Route 66	NB	>1000	130	181	183	249
Route 17A	SB	510	~523	#484	139	#317
Traffic Signal - Route 66 (Marlborough Street) at High Street						
Route 66	EBL	225	50	118	37	72
	EBT	>1000	133	222	514	#854
Route 66	WBT	150	~725	m#902	12	16
High Street	SB	>500	106	182	159	237
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue						
Route 66	EB	145	35	45	~688	m#918
Route 66	WBL	175	5	m8	0	m11
	WBT	975	591	#849	374	445
Airline Avenue	NB	>500	39	80	44	92
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway						
Route 66	EBL	350	0	m8	1	m24
	EBTR	>500	1	1	2	m38
Route 66	WBTR	370	333	583	187	305
Portland Shopping Center	SBL	155	13	36	68	117
Driveway	SBR	155	0	16	0	32
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace						
Route 66	EBL	125	1	9	2	m4
	EBTR	370	40	206	376	616
Route 66	WBL	150	0	1	1	3
	WBTR	>500	182	422	64	152
Grove Street	NB	>500	0	1	0	9
Grandview Terrace	SB	>500	7	25	2	32
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)						
Route 66	EBL	200	49	103	97	#197
	EBT	>500	35	68	155	270
Route 66	WBT	>750	297	#556	147	225
	WBR	200	5	45	0	32
Route 17 (Gospel Lane)	SBL	>500	40	88	80	141
	SBR	100	0	51	0	47
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard						
Route 66	EBL	175	3	6	14	27
	EBTR	>1500	95	224	~1012	#1499
Route 66	WBL	300	0	1	0	2
	WBTR	>2000	~1303	#1514	254	422
Payne Boulevard	NB	>500	0	7	13	43
Middle Haddam Road	SB	>500	2	11	0	18
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd						
Route 66	EB	>2500	247	327	~1591	#2030
Route 66	WB	>1500	~1233	#1442	220	400
Route 151 (Middle	NBLT	>500	~247	#404	86	149
Haddam Road)	NBR	65	0	0	0	0
Depot Hill Road	SB	>500	74	#175	70	128

TABLE 3-8

Study Area Signalized Intersection Operational Summary – 2040 Future Optimized – Queues

			Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway						
Route 66	EBLT	>750	172	254	351	532
	EBR	250	0	39	0	44
Route 66	WBL	125	3	12	1	5
	WBTR	>500	445	#681	166	249
Route 16 (Middletown	NBLT	>750	~374	#554	170	#323
Avenue)	NBR	100	0	0	0	0
Park & Ride Driveway	SB	75	0	0	2	11
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street						
Route 66	EB	>500	154	#474	183	401
Route 66	WB	>750	186	#551	139	285
Main Street	NB	>500	0	0	0	0
North Main Street	SB	>500	77	157	59	112
Old West High Street	SEB	>500	0	5	0	0
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street						
Route 66	EBL	275	10	28	47	128
	EBTR	>1000	217	405	315	#678
Route 66	WBL	225	24	m6	13	m52
	WBTR	485	374	#544	406	#801
Main Street	NBL	225	24	49	17	37
	NBTR	>500	44	98	115	172
North Main Street	SBL	175	64	103	54	86
	SBTR	>500	53	117	101	165
Traffic Signal - Route 66 (East High Street) at East Hampton Mall Shopping Center Dwy/Eversource Dwy						
Route 66	EBL	225	4	m7	5	m21
	EBTR	485	233	402	180	m467
Route 66	WBL	125	1	4	1	3
	WBTR	>1000	123	352	348	#732
Eversource Driveway	NB	260	12	35	7	23
East Hampton Mall	SBL	140	25	56	60	107
Shopping Center Dwy.	SBR	140	0	0	0	38
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)						
Route 66	EB	>1000	239	#486	336	#581
Route 66	WBL	250	15	39	98	#227
	WBTR	>500	77	171	115	179
Route 196 (Lake View St.)	NBL	170	43	87	56	#121
	NBR	>500	0	66	0	56

TABLE 4-1
Intersection Operation Summary - 2040 Future Improved - LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	V/C	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	V/C
Concept A-1 & Concept A-2 (Route 66 Bypass)							
Traffic Signal - Route 66 at Route 17A (Main Street)							
Overall		**C**	**22.5**	**0.87**	**C**	**28**	**1.09**
Route 66	WBL	D	50.4	0.87	D	49.4	1.09
	WBR	A	7.3	0.27	A	9.0	0.54
Route 66	NB	C	27.1	0.76	D	39.9	0.48
Route 17A	SBL	A	5.6	0.22	D	35.7	0.40
	SBT	B	15.0	0.79	A	6.2	0.82
Concept A-1 (Route 66 Bypass - Roundabout Alternative)							
Roundabout - Route 66 at Marlborough St, High St & Riverside St							
Overall		**A**	**16.4**	**0.97**	**A**	**4.3**	**0.79**
Route 66	EB	A	2.1	0.28	A	8.1	0.12
Route 66	WB	C	22.5	0.97	A	4.7	0.65
Airline Avenue	NB	A	2.0	0.01	A	4.8	0.16
High Street	SB	A	5.1	0.22	A	2.8	0.79
Marlborough Street	SEB	A	4.8	0.28	A	3.1	0.26
Concept A-2 (Route 66 Bypass - Signal Alternative)							
Traffic Signal - Route 66 at Marlborough St & Riverside St							
Overall		**C**	**27.8**	**0.87**	**C**	**21.8**	**0.97**
Route 66	EB	B	13.0	0.87	C	34.2	0.78
Route 66	WB	C	29.8	0.27	A	3.2	0.43
Riverside Street	NB	D	40.6	0.76	D	37.0	0.97
Marlborough Street	SBL	D	42.8	0.22	C	34.1	0.72
	SBTR	C	24.3	0.79	B	17.2	0.48
Traffic Signal - Route 66 at High St							
Overall		**D**	**38.9**	**1.02**	**B**	**16.2**	**0.86**
Route 66	EBL	D	52.2	0.63	D	46.6	0.85
	EBT	A	2.7	0.27	A	4.7	0.77
Route 66	WBT	D	53.2	1.02	B	18.2	0.65
	WBR	A	6.2	0.23	A	5.0	0.24
High Street	SB	D	37.4	0.76	D	53.5	0.86
Concept A-3 (Main Street at Marlborough Street Improvements)							
Traffic Signal - Route 66 at Route 17A (Main St)							
Overall		**D**	**40.2**	**1.09**	D	**41.9**	**0.85**
Route 66	WB	E	60.7	1.09	B	19.8	0.85
Route 66	NB	C	33.0	0.54	C	27.3	0.68
Route 17A	SBL	C	23.6	0.40	B	16.6	0.49
	SBT	C	31.6	0.82	B	13.0	0.37
Concept G (Route 66 at Route 151 Intersection Widening)							
Traffic Signal - Route 66 at Route 151/Depot Hill Rd							
Overall		**C**	**21.1**	**0.83**	**B**	**12.0**	**0.68**
Route 66	EBL	C	34.0	0.01	C	29.8	0.28
	EBTR	B	12.4	0.41	B	10.2	0.68
Route 66	WBL	C	34.0	0.03	C	25.9	0.07
	WBTR	C	20.2	0.79	A	6.9	0.33
Route 151	NB	D	50.5	0.83	D	43.5	0.64
Depot Hill Road	SB	B	17.8	0.30	C	31.8	0.49

TABLE 4-1
Intersection Operation Summary - 2040 Future Improved - LOS

	Lane Use	Weekday Morning Peak Hour LOS	Avg. Delay (s/veh)	V/C	Weekday Afternoon Peak Hour LOS	Avg. Delay (s/veh)	V/C
Concept H (Route 66 at Route 16 Intersection Improvements)							
Traffic Signal - Route 66 at Route 16/Park & Ride Dwy							
Overall		**C**	**24.2**	**0.93**	**B**	**14.6**	**0.81**
Route 66	EBLT	B	12.5	0.50	B	19.7	0.81
	EBR	A	2.5	0.34	A	2.8	0.53
Route 66	WBL	A	8.3	0.03	A	6.7	0.01
	WBTR	C	34.4	0.93	B	10.2	0.51
Route 16	NBLT	D	37.9	0.81	C	30.1	0.63
	NBLTR	C	23.5	0.71	C	29.7	0.63
Park & Ride Dwy	SB	A	0.0	0.0	B	14.2	0.02

TR and LT denote shared "through-right" and shared "left-through" lanes

TABLE 4-2
Intersection Operation Summary - 2040 Future Improved Conditions - Queues

	Lane Use	Available Storage	Weekday Morning Peak Hour Avg. Queues	Weekday Morning Peak Hour Design Queues	Weekday Afternoon Peak Hour Avg. Queues	Weekday Afternoon Peak Hour Design Queues
Concept A-1 & Concept A-2 (Route 66 Bypass)						
Traffic Signal - Route 66 at Route 17A (Main Street)						
Route 66	WBL	580	106	#229	99	m140
	WBR	580	0	33	2	m15
Route 66	NB	>1000	134	270	501	#825
Route 17A	SBL	75	15	31	42	#144
	SBT	510	204	#385	124	185
Concept A-1 (Route 66 Bypass - Roundabout Alternative)						
Roundabout - Route 66 at Marlborough St, High St & Riverside St						
Route 66	EB	>1000	--	22	--	251
Route 66	WB	>1000	--	647	--	134
Airline Avenue	NB	>500	--	1	--	15
High Street	SB	>500	--	29	--	11
Marlborough Street	SEB	>1000	--	30	--	204
Concept A-2 (Route 66 Bypass - Signal Alternative)						
Traffic Signal - Route 66 at Marlborough St & Riverside St						
Route 66	EB	>1000	97	**134**	430	#612
Route 66	WB	>1000	~125	m#92	27	27
Riverside Street	NB	>500	12	42	12	42
Marlborough Street	SBL	210	64	105	65	117
	SBTR	>1000	3	30	5	m20
Traffic Signal - Route 66 at High St						
Route 66	EBL	150	107	m#173	146	m163
	EBT	150	50	42	96	m71
Route 66	WBT	>1000	~577	#757	234	303
	WBR	100	29	63	53	36
High Street	SB	>1000	86	#201	156	#303
Concept A-3 (Main Street at Marlborough Street Improvements)						
Traffic Signal - Route 66 at Route 17A (Main St)						
Route 66	WB	>750	~605	m#540	255 58	234
Route 66	NB	>1000	122	280	172	80
Route 17A	SBL	75	45	85	44	139
	SBT	510	220	296	100	139
Concept G (Route 66 at Route 151 Intersection Widening)						
Traffic Signal - Route 66 at Route 151/Depot Hill Rd						
Route 66	EBL	50	0	5	12	42
	EBTR	>2500	90	158	143	#401
Route 66	WBL	250	1	9	3	17
	WBTR	>1500	239	#436	46	112
Route 151	NB	>500	100	#241	33	#113
Depot Hill Road	SB	>500	25	70	25	#82

TABLE 4-2
Intersection Operation Summary - 2040 Future Improved Conditions - Queues

	Lane Use	Available Storage	Weekday Morning Peak Hour Avg. Queues	Weekday Morning Peak Hour Design Queues	Weekday Afternoon Peak Hour Avg. Queues	Weekday Afternoon Peak Hour Design Queues
Concept H (Route 66 at Route 16 Intersection Improvements)						
Traffic Signal - Route 66 at Route 16/Park & Ride Dwy						
Route 66	EBLT	>750	99	168	185	#475
	EBR	250	0	31	0	41
Route 66	WBL	125	2	9	0	4
	WBTR	>500	256	#478	87	194
Route 16	NBLT	150	96	#201	52	106
	NBLTR	>1000	63	#141	51	105
Park & Ride Dwy	SB	75	0	0	1	8

m: Volume for 95th percentile queue is metered by upstream signal.
#: 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
TR and LT denote shared "through-right" and shared "left-through" lanes

TABLE 4-3
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh) - Weekday Morning Peak Hour

	Lane Use	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved Concept A-1	2040 Improved Concept A-2	2040 Improved Concept A-3	2040 Improved Concept G	2040 Improved Concept H
Traffic Signal - Route 66 at Route 17A (Main Street)										
Overall		**B / 18.1**	**B / 17.4**	**E / 75.6**	**E / 65.9**	**C / 22.5**	**C / 22.5**	**D / 40.2**	-- / --	-- / --
	WB	B / 19.8	B / 19.1	E / 72.4	D / 52.4	-- / --	-- / --	E / 60.7	-- / --	-- / --
Route 66	WBL	-- / --	-- / --	-- / --	-- / --	D / 50.4	D / 50.4	-- / --	-- / --	-- / --
	WBR	-- / --	-- / --	-- / --	-- / --	A / 7.3	A / 7.3	-- / --	-- / --	-- / --
	NB	C / 27.2	C / 29.3	C / 27.8	D / 53.3	C / 27.1	C / 27.1	C / 33.0	-- / --	-- / --
Route 66	NBR	A / 0.7	A / 0.7	A / 1.1	A / 1.1	-- / --	-- / --	-- / --	-- / --	-- / --
	SB	C / 24.9	C / 22.4	F / 147.8	F / 139.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17A	SBL	-- / --	-- / --	-- / --	-- / --	A / 5.6	A / 5.6	C / 23.6	-- / --	-- / --
	SBT	-- / --	-- / --	-- / --	-- / --	B / 15.0	B / 15.0	C / 31.6	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at High Street										
Overall		**A / 7.3**	**A / 6.4**	**D / 39.1**	**C / 28.3**	**See Results on Next Page**	**See Results on Next Page**	-- / --	-- / --	-- / --
Route 66	EBL	A / 6.1	A / 6.4	B / 18.2	C / 25.3			-- / --	-- / --	-- / --
	EBT	A / 7.7	A / 7.5	B / 10.8	B / 13.8			-- / --	-- / --	-- / --
Route 66	WB	A / 4.7	A / 3.6	D / 53.5	C / 32.8			-- / --	-- / --	-- / --
High Street	SB	C / 25.9	C / 24.2	C / 26.8	D / 40.0			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue										
Overall		**A / 6.3**	**A / 10.0**	**D / 39.2**	**C / 33.8**	**See Results on Next Page**	**See Results on Next Page**	-- / --	-- / --	-- / --
Route 66	EB	A / 3.9	A / 3.7	A / 4.1	A / 4.7			-- / --	-- / --	-- / --
Route 66	WBL	A / 1.2	A / 1.5	A / 3.9	A / 6.0			-- / --	-- / --	-- / --
	WBT	A / 6.4	B / 11.9	E / 55.9	D / 47.2			-- / --	-- / --	-- / --
Airline Avenue	NB	C / 25.7	C / 25.9	C / 26.6	C / 33.3			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway										
Overall		**A / 5.2**	**A / 6.4**	**A / 9.3**	**A / 8.8**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 1.4	A / 4.1	A / 6.0	A / 4.0	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	A / 0.8	A / 3.1	A / 3.8	A / 0.2	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBTR	A / 6.7	A / 7.5	B / 11.3	B / 12.1	-- / --	-- / --	-- / --	-- / --	-- / --
Portland Shopping Center	SBL	C / 32.3	C / 32.3	C / 33.7	D / 44.5	-- / --	-- / --	-- / --	-- / --	-- / --
Driveway	SBR	C / 22.3	C / 22.3	B / 18.5	C / 23.1	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace										
Overall		**A / 3.6**	**A / 3.2**	**A / 4.9**	**A / 5.4**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 0.6	A / 0.6	A / 0.7	A / 2.9	-- / --	-- / --	-- / --	-- / --	-- / --
	EBT	A / 2.0	A / 0.6	A / 0.6	A / 4.7	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 1.7	A / 1.7	A / 1.7	A / 1.3	-- / --	-- / --	-- / --	-- / --	-- / --
	WBT	A / 4.1	A / 4.1	A / 6.7	A / 5.5	-- / --	-- / --	-- / --	-- / --	-- / --
Grove Street	NBT	A / 1.4	A / 1.4	A / 1.6	A / 2.6	-- / --	-- / --	-- / --	-- / --	-- / --
Grandview Terrace	SBT	D / 35.3	D / 35.3	D / 35.7	D / 46.2	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)										
Overall		**B / 11.7**	**B / 13.4**	**C / 20.6**	**C / 20.6**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	D / 36.5	C / 27.7	D / 39.7	D / 39.7	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	A / 3.1	A / 3.7	A / 3.7	A / 3.7	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBT	B / 13.3	B / 17.9	C / 28.9	C / 28.9	-- / --	-- / --	-- / --	-- / --	-- / --
	WBR	A / 2.6	A / 3.3	A / 3.5	A / 3.5	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17 (Gospel Lane)	SBL	C / 33.1	C / 23.5	D / 36.6	D / 36.6	-- / --	-- / --	-- / --	-- / --	-- / --
	SBR	B / 10.3	A / 8.2	B / 11.0	B / 11.0	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard										
Overall		**A / 9.7**	**B / 10.0**	**D / 40.4**	**D / 37.6**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 1.9	A / 2.1	A / 5.3	A / 5.9	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	A / 3.3	A / 3.4	A / 4.2	A / 4.0	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 1.5	A / 1.5	A / 1.5	A / 1.5	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	B / 12.5	B / 13.0	E / 57.1	D / 53.1	-- / --	-- / --	-- / --	-- / --	-- / --
Payne Boulevard	NB	A / 1.6	A / 1.0	A / 5.0	A / 4.8	-- / --	-- / --	-- / --	-- / --	-- / --
Middle Haddam Road	SB	D / 43.7	C / 34.7	D / 43.3	D / 45.7	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd										
Overall		**C / 26.6**	**C / 31.2**	**E / 63.3**	**E / 63.3**	-- / --	-- / --	-- / --	**C / 21.1**	-- / --
	EB	A / 8.7	B / 10.9	B / 11.3	B / 11.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 34.0	-- / --
	EBTR	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	B / 12.4	-- / --
	WB	C / 24.6	D / 36.6	E / 69.8	E / 69.8	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 34.0	-- / --
	WBTR	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 20.2	-- / --
	NBLT	E / 74.1	D / 55.0	F / 164.5	F / 164.5	-- / --	-- / --	-- / --	-- / --	-- / --
Route 151 (Middle Haddem Road)	NBR	A / 0.0	A / 0.0	A / 0.0	A / 0.0	-- / --	-- / --	-- / --	-- / --	-- / --
	NB	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	D / 50.5	-- / --
Depot Hill Road	SB	D / 45.3	C / 25.6	E / 78.6	E / 78.6	-- / --	-- / --	-- / --	B / 17.8	-- / --
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway										
Overall		**C / 26.2**	**C / 27.2**	**E / 65.5**	**D / 50.3**	-- / --	-- / --	-- / --	-- / --	**C / 24.2**
Route 66	EBLT	B / 14.0	B / 15.8	B / 13.5	C / 20.0	-- / --	-- / --	-- / --	-- / --	B / 12.5
	EBR	A / 2.5	A / 3.1	A / 2.2	A / 3.0	-- / --	-- / --	-- / --	-- / --	A / 2.5
Route 66	WBL	A / 9.0	B / 11.5	A / 8.3	B / 13.4	-- / --	-- / --	-- / --	-- / --	A / 8.3
	WBTR	C / 26.8	C / 31.3	C / 30.3	D / 54.9	-- / --	-- / --	-- / --	-- / --	C / 34.4
	NBLT	D / 45.8	D / 41.3	F / 189.7	F / 92.8	-- / --	-- / --	-- / --	-- / --	-- / --
	NBR	A / 0.0	A / 0.0	A / 0.0	A / 0.0	-- / --	-- / --	-- / --	-- / --	-- / --
Route 16 (Middletown Avenue)	NBL	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	D / 37.9
	NBLTR	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 23.5
Park & Ride Driveway	SB	A / 0.0	A / 0.0	A / 0.0	A / 0.0	-- / --	-- / --	-- / --	-- / --	A / 0.0
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street										
Overall		**B / 15.4**	**B / 14.7**	**C / 21.7**	**C / 21.7**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EB	B / 12.7	B / 12.3	B / 18.7	B / 18.7	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WB	B / 13.5	B / 13.4	B / 18.7	B / 18.7	-- / --	-- / --	-- / --	-- / --	-- / --
Main Street	NB	C / 24.6	C / 21.7	C / 29.5	C / 29.5	-- / --	-- / --	-- / --	-- / --	-- / --
North Main Street	SB	C / 28.5	C / 25.4	D / 39.6	D / 39.6	-- / --	-- / --	-- / --	-- / --	-- / --
Old West High Street	SEB	C / 29.0	C / 22.0	C / 34.0	C / 34.0	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street										
Overall		**B / 18.2**	**B / 14.8**	**C / 21.6**	**C / 21.6**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 6.3	A / 6.6	A / 7.9	A / 7.9	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	B / 14.2	B / 15.5	B / 19.7	B / 19.7	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 7.1	A / 3.3	A / 5.6	A / 5.6	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	B / 18.3	B / 12.2	C / 22.3	C / 22.3	-- / --	-- / --	-- / --	-- / --	-- / --
Main Street	NBL	C / 29.0	C / 22.8	C / 28.1	C / 28.1	-- / --	-- / --	-- / --	-- / --	-- / --
	NBTR	C / 20.2	B / 15.9	C / 24.4	C / 24.4	-- / --	-- / --	-- / --	-- / --	-- / --
North Main Street	SBL	C / 32.1	C / 26.1	C / 30.6	C / 30.6	-- / --	-- / --	-- / --	-- / --	-- / --
	SBTR	C / 22.6	B / 17.5	C / 24.8	C / 24.8	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High St.) at East Hampton Mall Shopping Center Dwy/Eversource Dwy										
Overall		**A / 9.0**	**A / 8.5**	**B / 10.2**	**B / 10.2**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 3.7	A / 3.7	A / 3.5	A / 3.5	-- / --	-- / --	-- / --	-- / --	-- / --
	EBT	A / 9.0	A / 8.5	B / 10.3	B / 10.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 2.0	A / 2.3	A / 2.1	A / 2.1	-- / --	-- / --	-- / --	-- / --	-- / --
	WBT	A / 6.0	A / 6.2	A / 7.7	A / 7.7	-- / --	-- / --	-- / --	-- / --	-- / --
Eversource Driveway	NBT	D / 40.3	C / 32.9	D / 40.6	D / 40.6	-- / --	-- / --	-- / --	-- / --	-- / --
East Hampton Mall Shopping	SBT	D / 45.1	D / 36.3	D / 45.2	D / 45.2	-	-	-	-	-
Center Dwy.	SBR	A / 0.7	A / 0.5	A / 0.8	A / 0.8	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)										
Overall		**B / 13.4**	**B / 12.6**	**B / 16.9**	**B / 16.9**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EB	C / 22.6	C / 20.8	C / 29.5	C / 29.5	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 4.7	A / 4.9	A / 6.4	A / 6.4	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	A / 5.2	A / 5.3	A / 6.0	A / 6.0	-- / --	-- / --	-- / --	-- / --	-- / --
Route 196 (Lake View St.)	NBL	C / 26.9	C / 23.5	C / 32.2	C / 32.2	-- / --	-- / --	-- / --	-- / --	-- / --
	NBR	A / 8.8	A / 8.4	A / 9.6	A / 9.6	-- / --	-- / --	-- / --	-- / --	-- / --

TABLE 4-3
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh) - Weekday Morning Peak Hour

	Lane Use	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved				
						Concept A-1	Concept A-2	Concept A-3	Concept G	Concept H
Concept A-1 (Roundabout)- Route 66 at Marlborough Street, High Street & Riverside Street										
Overall		-- / --	-- / --	-- / --	-- / --	A / 16.4	-- / --	-- / --	-- / --	-- / --
Route 66	EB	-- / --	-- / --	-- / --	-- / --	A / 2.1	-- / --	-- / --	-- / --	-- / --
Route 66	WB	-- / --	-- / --	-- / --	-- / --	C / 22.5	-- / --	-- / --	-- / --	-- / --
Riverside Street	NB	-- / --	-- / --	-- / --	-- / --	A / 2.0	-- / --	-- / --	-- / --	-- / --
High Street	SB	-- / --	-- / --	-- / --	-- / --	A / 5.1	-- / --	-- / --	-- / --	-- / --
Marlborough Street	SEB	-- / --	-- / --	-- / --	-- / --	A / 4.8	-- / --	-- / --	-- / --	-- / --
Concept A-2 (Traffic Signal) - Route 66 at Marlborough Street & Riverside Street										
Overall		-- / --	-- / --	-- / --	-- / --	-- / --	**C / 27.8**	-- / --	-- / --	-- / --
Route 66	EB	-- / --	-- / --	-- / --	-- / --	-- / --	B / 13.0	-- / --	-- / --	-- / --
Route 66	WB	-- / --	-- / --	-- / --	-- / --	-- / --	C / 29.8	-- / --	-- / --	-- / --
Riverside Street	NB	-- / --	-- / --	-- / --	-- / --	-- / --	D / 40.6	-- / --	-- / --	-- / --
Marlborough Street	SBL	-- / --	-- / --	-- / --	-- / --	-- / --	D / 42.8	-- / --	-- / --	-- / --
	SBTR	-- / --	-- / --	-- / --	-- / --	-- / --	C / 24.3	-- / --	-- / --	-- / --
Concept A-2 (Traffic Signal) - Route 66 at High Street										
Overall		-- / --	-- / --	-- / --	-- / --	-- / --	**D / 38.9**	-- / --	-- / --	-- / --
Route 66	EBL	-- / --	-- / --	-- / --	-- / --	-- / --	D / 52.2	-- / --	-- / --	-- / --
	EBT	-- / --	-- / --	-- / --	-- / --	-- / --	A / 2.7	-- / --	-- / --	-- / --
Route 66	WBT	-- / --	-- / --	-- / --	-- / --	-- / --	D / 53.2	-- / --	-- / --	-- / --
	WBR	-- / --	-- / --	-- / --	-- / --	-- / --	A / 6.2	-- / --	-- / --	-- / --
High Street	SB	-- / --	-- / --	-- / --	-- / --	-- / --	D / 37.4	-- / --	-- / --	-- / --

TR and LT denote shared "through-right" and shared "left-through" lanes

TABLE 4-3
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh) - Weekday Afternoon Peak Hour

	Lane Use	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved Concept A-1	2040 Improved Concept A-2	2040 Improved Concept A-3	2040 Improved Concept G	2040 Improved Concept H
Traffic Signal - Route 66 at Route 17A (Main Street)										
Overall		**B / 17.8**	**B / 17.9**	**D / 47.3**	**D / 46.6**	**C / 28.4**	**C / 28.4**	**D / 41.9**	-- / --	-- / --
	WB	C / 20.7	C / 29.6	B / 15.1	C / 24.3	-- / --	-- / --	B / 19.8	-- / --	-- / --
Route 66	WBL	-- / --	-- / --	-- / --	-- / --	D / 49.4	D / 49.4	-- / --	-- / --	-- / --
	WBR	-- / --	-- / --	-- / --	-- / --	A / 9.0	A / 9.0	-- / --	-- / --	-- / --
	NB	D / 39.2	C / 29.5	D / 51.4	C / 32.6	D / 39.9	D / 39.9	C / 27.3	-- / --	-- / --
Route 66	NBR	A / 7.6	A / 7.6	E / 75.0	E / 75.0	-- / --	-- / --	-- / --	-- / --	-- / --
	SB	B / 10.6	B / 10.3	C / 26.4	C / 28.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17A	SBL	-- / --	-- / --	-- / --	-- / --	D / 35.7	D / 35.7	B / 16.6	-- / --	-- / --
	SBT	-- / --	-- / --	-- / --	-- / --	A / 6.2	A / 6.2	B / 13.0	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at High Street										
Overall		**B / 10.6**	**B / 11.9**	**D / 40.5**	**C / 28.1**			-- / --	-- / --	-- / --
Route 66	EBL	A / 4.2	A / 4.2	A / 6.5	A / 9.8	**See Results on Next Page**	**See Results on Next Page**	-- / --	-- / --	-- / --
	EBT	B / 11.7	B / 12.2	E / 66.0	D / 42.4			-- / --	-- / --	-- / --
Route 66	WB	A / 2.7	A / 6.0	A / 6.6	A / 3.4			-- / --	-- / --	-- / --
High Street	SB	D / 36.6	D / 35.3	D / 37.9	D / 46.7			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue										
Overall		**A / 5.0**	**A / 8.3**	**D / 43.6**	**C / 32.1**			-- / --	-- / --	-- / --
Route 66	EB	A / 4.9	A / 5.1	E / 66.2	C / 33.8	**See Results on Next Page**	**See Results on Next Page**	-- / --	-- / --	-- / --
Route 66	WBL	A / 1.7	A / 7.2	A / 1.3	A / 8.7			-- / --	-- / --	-- / --
	WBT	A / 3.3	B / 12.4	A / 6.0	C / 30.2			-- / --	-- / --	-- / --
Airline Avenue	NB	C / 20.3	C / 20.4	B / 17.4	C / 24.8			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway										
Overall		**B / 11.2**	**A / 8.9**	**B / 14.6**	**A / 9.3**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 8.6	A / 3.8	A / 7.9	A / 8.0	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	B / 11.5	A / 3.1	B / 16.6	A / 3.2	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBTR	A / 7.2	B / 14.9	B / 10.4	B / 14.4	-- / --	-- / --	-- / --	-- / --	-- / --
Portland Shopping Center	SBL	D / 37.7	D / 37.9	D / 37.6	D / 49.7	-- / --	-- / --	-- / --	-- / --	-- / --
Driveway	SBR	B / 10.8	B / 10.7	B / 10.6	B / 12.7	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace										
Overall		**A / 2.7**	**A / 7.1**	**A / 3.4**	**A / 9.2**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 0.7	A / 2.7	A / 1.1	A / 2.5	-- / --	-- / --	-- / --	-- / --	-- / --
	EBT	A / 2.0	A / 8.9	A / 2.7	B / 12.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 1.8	A / 1.8	A / 2.0	A / 1.7	-- / --	-- / --	-- / --	-- / --	-- / --
	WBT	A / 3.6	A / 3.6	A / 4.3	A / 3.8	-- / --	-- / --	-- / --	-- / --	-- / --
Grove Street	NBT	A / 1.5	A / 1.5	A / 2.4	A / 6.2	-- / --	-- / --	-- / --	-- / --	-- / --
Grandview Terrace	SBT	B / 19.3	B / 19.3	B / 18.5	C / 22.9	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)										
Overall		**B / 12.4**	**B / 10.9**	**B / 14.3**	**B / 14.3**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	C / 34.8	C / 27.0	D / 41.7	D / 41.7	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	A / 5.5	A / 5.9	A / 7.1	A / 7.1	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBT	B / 15.1	B / 15.0	B / 17.2	B / 17.2	-- / --	-- / --	-- / --	-- / --	-- / --
	WBR	A / 3.4	A / 4.2	A / 3.3	A / 3.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17 (Gospel Lane)	SBL	D / 42.1	C / 26.1	D / 45.4	D / 45.4	-- / --	-- / --	-- / --	-- / --	-- / --
	SBR	B / 10.1	A / 7.4	A / 9.4	A / 9.4	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard										
Overall		**B / 12.0**	**B / 12.7**	**C / 34.4**	**C / 31.1**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 2.6	A / 2.7	A / 4.2	A / 3.9	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	B / 14.6	B / 15.6	D / 50.6	D / 46.0	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 2.0	A / 2.0	A / 2.3	A / 2.3	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	A / 8.4	A / 9.0	B / 12.1	B / 11.2	-- / --	-- / --	-- / --	-- / --	-- / --
Payne Boulevard	NB	D / 39.6	D / 36.8	D / 43.4	D / 47.6	-- / --	-- / --	-- / --	-- / --	-- / --
Middle Haddam Road	SB	A / 9.7	A / 7.2	B / 17.3	A / 7.0	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd										
Overall		**C / 22.0**	**C / 22.5**	**F / 99.2**	**F / 99.2**	-- / --	-- / --	-- / --	**B / 12.0**	-- / --
	EB	C / 24.1	C / 26.6	F / 144.4	F / 144.4	-- / --	-- / --	-- / --	-- / --	-- / --
	EBL	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 29.8	-- / --
Route 66	EBTR	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	B / 10.2	-- / --
	WB	A / 5.6	A / 6.2	A / 9.5	A / 9.5	-- / --	-- / --	-- / --	-- / --	-- / --
	WBL	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 25.9	-- / --
Route 66	WBTR	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	A / 6.9	-- / --
	NBLT	E / 69.5	D / 54.8	E / 76.0	E / 76.0	-- / --	-- / --	-- / --	-- / --	-- / --
Route 151 (Middle Haddam Road)	NBR	A / 0.0	A / 0.0	A / 0.0	A / 0.0	-- / --	-- / --	-- / --	-- / --	-- / --
	NB	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	D / 43.5	-- / --
Depot Hill Road	SB	E / 65.9	D / 46.6	E / 62.5	E / 62.5	-- / --	-- / --	-- / --	C 31.8	-- / --
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway										
Overall		**B / 13.4**	**B / 13.0**	**C / 20.1**	**C / 20.3**	-- / --	-- / --	-- / --	-- / --	**B / 14.6**
Route 66	EBLT	B / 15.6	B / 15.2	C / 24.6	C / 25.4	-- / --	-- / --	-- / --	-- / --	B / 19.7
	EBR	A / 2.5	A / 2.6	A / 2.9	A / 2.9	-- / --	-- / --	-- / --	-- / --	A / 2.8
Route 66	WBL	A / 7.7	A / 7.3	A / 8.3	A / 9.0	-- / --	-- / --	-- / --	-- / --	A / 6.7
	WBTR	B / 10.6	B / 10.2	B / 13.4	B / 13.9	-- / --	-- / --	-- / --	-- / --	B / 10.2
	NBLT	C / 33.3	C / 32.0	D / 51.3	D / 49.7	-- / --	-- / --	-- / --	-- / --	-- / --
Route 16 (Middletown Avenue)	NBR	A / 0.0	A / 0.0	A / 0.1	A / 0.1	-- / --	-- / --	-- / --	-- / --	-- / --
	NBL	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 30.1
	NBLTR	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	C / 29.7
Park & Ride Driveway	SB	B / 17.3	B / 13.7	B / 19.3	B / 19.3	-- / --	-- / --	-- / --	-- / --	B / 14.2
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street										
Overall		**B / 10.1**	**B / 10.3**	**B / 14.6**	**B / 14.6**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EB	A / 9.0	A / 9.8	B / 13.9	B / 13.9	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WB	A / 7.7	A / 8.3	A / 9.9	A / 9.9	-- / --	-- / --	-- / --	-- / --	-- / --
Main Street	NB	C / 21.7	B / 17.4	C / 25.3	C / 25.3	-- / --	-- / --	-- / --	-- / --	-- / --
North Main Street	SB	C / 25.1	C / 21.1	D / 37.5	D / 37.5	-	-	-	-	-
Old West High Street	SEB	0 / 0.0	0 / 0.0	0 / 0.0	0 / 0.0	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street										
Overall		**C / 21.7**	**B / 18.9**	**D / 35.5**	**D / 35.5**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 8.9	B / 10.0	C / 28.9	C / 28.9	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	B / 19.3	C / 20.2	D / 35.6	D / 35.6	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 5.5	A / 6.2	B / 17.7	B / 17.7	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	B / 18.9	B / 15.6	D / 42.0	D / 42.0	-- / --	-- / --	-- / --	-- / --	-- / --
Main Street	NBL	C / 26.1	C / 20.8	C / 23.2	C / 23.2	-- / --	-- / --	-- / --	-- / --	-- / --
	NBTR	D / 41.4	C / 33.4	D / 43.1	D / 43.1	-- / --	-- / --	-- / --	-- / --	-- / --
North Main Street	SBL	C / 29.1	C / 23.9	C / 25.7	C / 25.7	-- / --	-- / --	-- / --	-- / --	-- / --
	SBTR	C / 33.8	C / 24.1	C / 31.7	C / 31.7	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High St.) at East Hampton Mall Shopping Center Dwy/Eversource Dwy										
Overall		**B / 13.9**	**B / 12.2**	**B / 17.1**	**B / 17.1**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	A / 5.0	A / 4.3	A / 6.0	A / 6.0	-- / --	-- / --	-- / --	-- / --	-- / --
	EBT	B / 10.2	A / 8.2	B / 13.3	B / 13.3	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 3.2	A / 3.5	A / 3.2	A / 3.2	-- / --	-- / --	-- / --	-- / --	-- / --
	WBT	B / 12.7	B / 12.4	B / 17.6	B / 17.6	-- / --	-- / --	-- / --	-- / --	-- / --
Eversource Driveway	NBT	C / 33.3	C / 27.1	C / 34.2	C / 34.2	-- / --	-- / --	-- / --	-- / --	-- / --
East Hampton Mall Shopping	SBT	D / 48.9	D / 39.5	D / 48.8	D / 48.8	-	-	-	-	-
Center Dwy.	SBR	A / 9.8	A / 6.4	B / 10.3	B / 10.3	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)										
Overall		**B / 15.8**	**B / 13.5**	**D / 44.3**	**C / 22.3**	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EB	C / 29.0	C / 23.1	F / 99.8	C / 33.7	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	A / 8.0	A / 9.2	B / 18.4	C / 31.3	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	A / 4.9	A / 4.9	A / 7.5	A / 5.6	-- / --	-- / --	-- / --	-- / --	-- / --
Route 196 (Lake View St.)	NBL	C / 31.1	C / 25.8	C / 34.5	D / 45.9	-- / --	-- / --	-- / --	-- / --	-- / --
	NBR	A / 9.1	A / 8.1	A / 9.1	B / 11.6	-- / --	-- / --	-- / --	-- / --	-- / --

TABLE 4-3
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh) - Weekday Afternoon Peak Hour

	Lane Use	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved				
						Concept A-1	Concept A-2	Concept A-3	Concept G	Concept H
Roundabout (Concept A-1) - Route 66 at Marlborough Street, High Street & Riverside Street										
Overall		-- / --	-- / --	-- / --	-- / --	A / 4.3	-- / --	-- / --	-- / --	-- / --
Route 66	EB	-- / --	-- / --	-- / --	-- / --	A / 8.1	-- / --	-- / --	-- / --	-- / --
Route 66	WB	-- / --	-- / --	-- / --	-- / --	A / 4.7	-- / --	-- / --	-- / --	-- / --
Riverside Street	NB	-- / --	-- / --	-- / --	-- / --	A / 4.8	-- / --	-- / --	-- / --	-- / --
High Street	SB	-- / --	-- / --	-- / --	-- / --	A / 2.8	-- / --	-- / --	-- / --	-- / --
Marlborough Street	SEB	-- / --	-- / --	-- / --	-- / --	A / 3.1	-- / --	-- / --	-- / --	-- / --
Traffic Signal (Concept A-2) - Route 66 at Marlborough Street & Riverside Street										
Overall		-- / --	-- / --	-- / --	-- / --	-- / --	**C / 21.8**	-- / --	-- / --	-- / --
Route 66	EB	-- / --	-- / --	-- / --	-- / --	-- / --	C / 34.2	-- / --	-- / --	-- / --
Route 66	WB	-- / --	-- / --	-- / --	-- / --	-- / --	A / 3.2	-- / --	-- / --	-- / --
Riverside Street	NB	-- / --	-- / --	-- / --	-- / --	-- / --	D / 37.0	-- / --	-- / --	-- / --
Marlborough Street	SBL	-- / --	-- / --	-- / --	-- / --	-- / --	C / 34.1	-- / --	-- / --	-- / --
	SBTR	-- / --	-- / --	-- / --	-- / --	-- / --	B / 17.2	-- / --	-- / --	-- / --
Traffic Signal (Concept A-2) - Route 66 at High Street										
Overall		-- / --	-- / --	-- / --	-- / --	-- / --	**B / 16.2**	-- / --	-- / --	-- / --
Route 66	EBL	-- / --	-- / --	-- / --	-- / --	-- / --	D / 46.6	-- / --	-- / --	-- / --
	EBTR	-- / --	-- / --	-- / --	-- / --	-- / --	A / 4.7	-- / --	-- / --	-- / --
Route 66	WBT	-- / --	-- / --	-- / --	-- / --	-- / --	B / 18.2	-- / --	-- / --	-- / --
	WBR	-- / --	-- / --	-- / --	-- / --	-- / --	A / 5.0	-- / --	-- / --	-- / --
High Street	SB	-- / --	-- / --	-- / --	-- / --	-- / --	D / 53.5	-- / --	-- / --	-- / --

TR and LT denote shared "through-right" and shared "left-through" lanes

TABLE 4-4
Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet) - Weekday Morning Peak Hour

	Lane Use	Available Storage	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved				
							Concept A-1	Concept A-2	Concept A-3	Concept G	Concept H
Traffic Signal - Route 66 at Route 17A (Main Street)											
	WB	>750	355 / 444	394 / 357	~613 / m#552	~839 / #977	-- / --	-- / --	~605 / m#540	-- / --	-- / --
Route 66	WBL	580	-- / --	-- / --	-- / --	-- / --	106 / #229	106 / #229	-- / --	-- / --	-- / --
	WBR	580	-- / --	-- / --	-- / --	-- / --	0 / 33	0 / 33	-- / --	-- / --	-- / --
Route 66	NB	>1000	65 / 101	67 / 105	75 / 114	130 / 181	134 / 270	134 / 270	122 / 280	-- / --	-- / --
	SB	510	132 / 186	128 / 178	~350 / #470	~523 / #484	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17A	SBL	75	-- / --	-- / --	-- / --	-- / --	15 / 31	15 / 31	45 / 85	-- / --	-- / --
	SBT	510	-- / --	-- / --	-- / --	-- / --	204 / #385	204 / #385	220 / 296	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at High Street											
Route 66	EBL	225	9 / m25	9 / m25	23 / m82	50 / 118	See Results Below	See Results Below	-- / --	-- / --	-- / --
	EBT	>1000	44 / 88	43 / 88	87 / m160	133 / 222			-- / --	-- / --	-- / --
Route 66	WBT	150	31 / 67	11 / 40	~553 / m#689	~725 / m#902			-- / --	-- / --	-- / --
High Street	SB	>500	49 / 106	44 / 101	64 / 129	106 / 182			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue											
Route 66	EB	145	21 / 33	21 / 33	27 / 37	35 / 45			-- / --	-- / --	-- / --
Route 66	WBL	175	1 / m3	4 / m0	1 / m5	5 / m8	See Results Below	See Results Below	-- / --	-- / --	-- / --
	WBT	>500	190 / 71	313 / 2	424 / #735	591 / #849			-- / --	-- / --	-- / --
Airline Avenue	NB	>500	20 / 52	20 / 52	29 / 64	39 / 80			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway											
Route 66	EBL	350	1 / 6	1 / 0	1 / m21	0 / m8	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	>500	0 / 35	0 / 130	0 / 186	1 / 1	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBTR	370	0 / 437	0 / 455	0 / 599	333 / 583	-- / --	-- / --	-- / --	-- / --	-- / --
Portland Shopping Center Dwy.	SBL	155	3 / 15	3 / 15	10 / 31	13 / 36	-- / --	-- / --	-- / --	-- / --	-- / --
	SBR	155	0 / 8	0 / 8	0 / 14	0 / 16	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace											
Route 66	EBL	125	1 / 0	0 / 1	1 / m0	1 / 9	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	370	22 / 35	5 / 10	2 / 4	40 / 206	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	150	0 / 1	0 / 1	0 / 1	0 / 1	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>500	95 / 217	95 / 217	182 / 440	182 / 422	-- / --	-- / --	-- / --	-- / --	-- / --
Grove Street	NB	>500	0 / 0	0 / 0	0 / 0	0 / 1	-- / --	-- / --	-- / --	-- / --	-- / --
Grandview Terrace	SB	>500	3 / 15	3 / 15	5 / 21	7 / 25	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)											
Route 66	EBL	200	32 / 75	23 / 60	49 / 103	49 / 103	-- / --	-- / --	-- / --	-- / --	-- / --
	EBT	>500	21 / 42	20 / 41	35 / 68	35 / 68	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBT	>750	138 / 268	131 / #280	297 / #556	297 / #556	-- / --	-- / --	-- / --	-- / --	-- / --
	WBR	200	0 / 33	0 / 34	5 / 45	5 / 45	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17	SBL	>500	35 / 81	25 / 61	40 / 88	40 / 88	-- / --	-- / --	-- / --	-- / --	-- / --
	SBR	100	0 / 43	0 / 36	0 / 51	0 / 51	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard											
Route 66	EBL	175	2 / 5	1 / 5	3 / 6	3 / 6	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	>1500	58 / 142	0 / 148	95 / 227	95 / 224	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	300	0 / 1	0 / 1	0 / 1	0 / 1	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>2000	307 / #922	0 / #848	~1258 / #1475	~1303 / #1514	-- / --	-- / --	-- / --	-- / --	-- / --
Payne Boulevard	NB	>500	0 / 0	0 / 0	0 / 8	0 / 7	-- / --	-- / --	-- / --	-- / --	-- / --
Middle Haddam Road	SB	>500	2 / 11	1 / 10	2 / 11	2 / 11	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd											
	EB	>2500	142 / 193	121 / 231	247 / 327	247 / 327	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	50	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	0 / 5	-- / --
	EBTR	>2500	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	90 / 158	-- / --
	WB	>1500	584 / 789	494 / #923	~1233 / #1442	~1233 / #1442	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	250	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	1 / 9	-- / --
	WBTR	>1500	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	239 / #436	-- / --
	NBLT	>500	150 / #270	102 / 171	~247 / #404	~247 / #404	-- / --	-- / --	-- / --	-- / --	-- / --
Route 151 (Middle Haddam Road)	NBR	65	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
	NB	>500	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	100 / #241	-- / --
Depot Hill Road	SB	>500	49 / 102	29 / 67	74 / #175	74 / #175	-- / --	-- / --	-- / --	25 / 70	-- / --
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway											
Route 66	EBLT	>750	86 / 133	97 / 155	127 / 189	172 / 254	-- / --	-- / --	-- / --	-- / --	99 / 168
	EBR	250	0 / 26	0 / 32	0 / 30	0 / 39	-- / --	-- / --	-- / --	-- / --	0 / 31
Route 66	WBL	125	1 / 6	1 / 7	2 / 9	3 / 12	-- / --	-- / --	-- / --	-- / --	2 / 9
	WBTR	>500	216 / 318	245 / #385	329 / 481	445 / #681	-- / --	-- / --	-- / --	-- / --	256 / #478
	NBLT	>750	167 / #450	183 / #352	~402 / #625	~374 / #554	-- / --	-- / --	-- / --	-- / --	-- / --
	NBR	100	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
Route 16	NBL	150	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	96 / #201
	NB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	63 / #141
Park & Ride Driveway	SB	75	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	0 / 0
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street											
Route 66	EB	>500	74 / 251	72 / 233	154 / #474	154 / #474	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WB	>750	96 / 312	92 / #306	186 / #551	186 / #551	-- / --	-- / --	-- / --	-- / --	-- / --
Maple Street	NB	>500	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
North Maple Street	SB	>500	30 / 108	30 / 86	77 / 157	77 / 157	-- / --	-- / --	-- / --	-- / --	-- / --
Old West High Street	SEB	>500	0 / 5	0 / 4	0 / 5	0 / 5	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street											
Route 66	EBL	275	7 / 21	7 / 19	10 / 28	10 / 28	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	>1000	140 / 251	136 / 227	217 / 405	217 / 405	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	225	16 / 25	9 / 6	24 / m6	24 / m6	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	485	245 / 359	162 / 302	374 / #544	374 / #544	-- / --	-- / --	-- / --	-- / --	-- / --
Main Street	NBL	225	16 / 40	13 / 34	24 / 49	24 / 49	-- / --	-- / --	-- / --	-- / --	-- / --
	NBTR	>500	27 / 77	22 / 68	44 / 98	44 / 98	-- / --	-- / --	-- / --	-- / --	-- / --
North Main Street	SBL	175	51 / 90	40 / 77	64 / 103	64 / 103	-- / --	-- / --	-- / --	-- / --	-- / --
	SBTR	>500	33 / 91	24 / 76	53 / 117	53 / 117	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High Street) at East Hampton Mall Shopping Center Dwy/Eversource Dwy											
Route 66	EBL	225	2 / m11	1 / m10	4 / m7	4 / m7	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	485	135 / 369	69 / 353	233 / 402	233 / 402	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	125	1 / 4	1 / 4	1 / 4	1 / 4	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>1000	79 / 224	78 / 225	123 / 352	123 / 352	-- / --	-- / --	-- / --	-- / --	-- / --
Eversource Driveway	NB	260	11 / 32	9 / 27	12 / 35	12 / 35	-- / --	-- / --	-- / --	-- / --	-- / --
East Hampton Mall Shopping	SBL	140	24 / 56	20 / 49	25 / 56	25 / 56	-- / --	-- / --	-- / --	-- / --	-- / --
Center Dwy	SBR	140	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)											
Route 66	EB	>1000	143 / 280	132 / 228	239 / #486	239 / #486	-- / --	-- / --	-- / --	-- / --	-- / --
	WBL	250	10 / 28	10 / 23	15 / 39	15 / 39	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBTR	>500	50 / 108	50 / 89	77 / 171	77 / 171	-- / --	-- / --	-- / --	-- / --	-- / --
	NBL	170	23 / 69	21 / 59	43 / 87	43 / 87	-- / --	-- / --	-- / --	-- / --	-- / --
Route 196 (Lake View St.)	NBR	>500	0 / 59	0 / 54	0 / 66	0 / 66	-- / --	-- / --	-- / --	-- / --	-- / --

TABLE 4-4
Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet) - Weekday Morning Peak Hour

	Lane Use	Available Storage	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved				
							Concept A-1	Concept A-2	Concept A-3	Concept G	Concept H
Concept A-1 (Roundabout)- Route 66 at Marlborough Street, High Street & Riverside Street											
Route 66	EB	>1000	-- / --	-- / --	-- / --	-- / --	-- / 22	-- / --	-- / --	-- / --	-- / --
Route 66	WB	>1000	-- / --	-- / --	-- / --	-- / --	-- / 647	-- / --	-- / --	-- / --	-- / --
Riverside Street	NB	>500	-- / --	-- / --	-- / --	-- / --	-- / 1	-- / --	-- / --	-- / --	-- / --
High Street	SB	>500	-- / --	-- / --	-- / --	-- / --	-- / 29	-- / --	-- / --	-- / --	-- / --
Marlborough Street	SEB	>1000	-- / --	-- / --	-- / --	-- / --	-- / 30	-- / --	-- / --	-- / --	-- / --
Concept A-2 (Traffic Signal) - Route 66 at Marlborough Street & Riverside Street											
Route 66	EB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	97 / 134	-- / --	-- / --	-- / --
Route 66	WB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	~125 / m#92	-- / --	-- / --	-- / --
Riverside Street	NB	>500	-- / --	-- / --	-- / --	-- / --	-- / --	12 / 42	-- / --	-- / --	-- / --
Marlborough Street	SBL	210	-- / --	-- / --	-- / --	-- / --	-- / --	64 / 105	-- / --	-- / --	-- / --
	SBTR	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	3 / 30	-- / --	-- / --	-- / --
Concept A-2 (Traffic Signal) - Route 66 at High Street											
Route 66	EBL	150	-- / --	-- / --	-- / --	-- / --	-- / --	107 / m#173	-- / --	-- / --	-- / --
	EBT	150	-- / --	-- / --	-- / --	-- / --	-- / --	50 /42	-- / --	-- / --	-- / --
Route 66	WBT	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	~577 / #757	-- / --	-- / --	-- / --
	WBR	100	-- / --	-- / --	-- / --	-- / --	-- / --	29 / 63	-- / --	-- / --	-- / --
High Street	SB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	86 / #201	-- / --	-- / --	-- / --

m: Volume for 95th percentile queue is metered by upstream signal.
#: 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
TR and LT denote shared "through-right" and shared "left-through" lanes

TABLE 4-4
Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet) - Weekday Afternoon Peak Hour

	Lane Use	Available Storage	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved				
							Concept A-1	Concept A-2	Concept A-3	Concept G	Concept H
Traffic Signal - Route 66 at Route 17A (Main Street)											
	WB	>750	181 / 196	213 / 150	253 / 41	226 / 260	-- / --	-- / --	255 58	-- / --	-- / --
Route 66	WBL	580	-- / --	-- / --	-- / --	-- / --	99 / m140	99 / m140	-- / --	-- / --	-- / --
	WBR	580	-- / --	-- / --	-- / --	-- / --	2 / m15	2 / m15	-- / --	-- / --	-- / --
Route 66	NB	>1000	167 / #252	155 / 214	197 / #308	183 / 249	501 / #825	501 / #825	172 / 234	-- / --	-- / --
	SB	510	56 / 100	55 / 98	142 / #328	139 / #317	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17A	SBL	75	-- / --	-- / --	-- / --	-- / --	42 / #144	42 / #144	44 / 80	-- / --	-- / --
	SBT	510	-- / --	-- / --	-- / --	-- / --	124 / 185	124 / 185	100 / 139	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at High Street											
Route 66	EBL	225	12 / m21	12 / m21	26 / m33	37 / 72			-- / --	-- / --	-- / --
	EBT	>1000	193 / m318	193 / m334	~438 / m#543	514 / #854	**See Results Below**	**See Results Below**	-- / --	-- / --	-- / --
Route 66	WBT	150	0 / 25	53 / 59	24 / #80	12 / 16			-- / --	-- / --	-- / --
High Street	SB	>500	91 / 151	88 / 148	118 / 184	159 / 237			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Airline Avenue											
Route 66	EB	145	56 / 68	55 / 68	~563 / m#693	~688 / m#918			-- / --	-- / --	-- / --
Route 66	WBL	175	1 / m3	2 / m17	0 / m1	0 / m11	**See Results Below**	**See Results Below**	-- / --	-- / --	-- / --
	WBT	>500	23 / 39	53 / 196	21 / #32	374 / 445			-- / --	-- / --	-- / --
Airline Avenue	NB	>500	24 / 60	24 / 60	28 / 67	44 / 92			-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough Street) at Portland Shopping Center Driveway											
Route 66	EBL	350	35 / m76	9 / m31	46 / m51	1 / m24	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	>500	211 / 387	43 / 110	424 / m431	2 / m38	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBTR	370	101 / 173	154 / 242	172 / 305	187 / 305	-- / --	-- / --	-- / --	-- / --	-- / --
Portland Shopping Center Dwy.	SBL	155	54 / 98	54 / 98	53 / 96	68 / 117	-- / --	-- / --	-- / --	-- / --	-- / --
	SBR	155	0 / 27	0 / 27	0 / 28	0 / 32	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Marlborough St/Portland-Cobalt Rd) at Grove Street/ Grandview Terrace											
Route 66	EBL	125	1 / m1	3 / m4	1 / m3	2 / m4	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	370	127 / 55	270 / 357	3 / 152	376 / 616	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	150	1 / 3	1 / 3	1 / 3	1 / 3	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>500	41 / 99	41 / 99	64 / 155	64 / 152	-- / --	-- / --	-- / --	-- / --	-- / --
Grove Street	NB	>500	0 / 0	0 / 0	0 / 1	0 / 9	-- / --	-- / --	-- / --	-- / --	-- / --
Grandview Terrace	SB	>500	1 / 25	1 / 25	1 / 28	2 / 32	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Route 17 (Gospel Lane)											
Route 66	EBL	200	68 / 134	44 / 99	97 / #197	97 / #197	-- / --	-- / --	-- / --	-- / --	-- / --
	EBT	>500	98 / 175	84 / 160	155 / 270	155 / 270	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBT	>750	95 / 152	76 / 131	147 / 225	147 / 225	-- / --	-- / --	-- / --	-- / --	-- / --
	WBR	200	0 / 29	0 / 29	0 / 32	0 / 32	-- / --	-- / --	-- / --	-- / --	-- / --
Route 17	SBL	>500	69 / 126	44 / 88	80 / 141	80 / 141	-- / --	-- / --	-- / --	-- / --	-- / --
	SBR	100	0 / 38	0 / 30	0 / 47	0 / 47	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Road) at Middle Haddam Road/Payne Boulevard											
Route 66	EBL	175	11 / 20	11 / 21	14 / 29	14 / 27	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	>1500	343 / #1002	343 / #977	~971 / #1469	~1012 / #1499	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	300	0 / 2	0 / 2	0 / 2	0 / 2	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>2000	156 / 247	156 / 250	254 / 437	254 / 422	-- / --	-- / --	-- / --	-- / --	-- / --
Payne Boulevard	NB	>500	9 / 34	9 / 32	12 / 41	13 / 43	-- / --	-- / --	-- / --	-- / --	-- / --
Middle Haddam Road	SB	>500	0 / 24	0 / 19	2 / 48	0 / 18	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (Portland-Cobalt Rd/West High St) at Rte. 151 (Middle Haddam Rd)/Depot Hill Rd											
	EB	>2500	612 / #1244	577 / #1067	~1591 / #2030	~1591 / #2030	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	EBL	50	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	12 / 42	-- / --
	EBTR	>2500	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	143 / #401	-- / --
	WB	>1500	114 / 201	108 / 198	220 / 400	220 / 400	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	250	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	3 / 17	-- / --
	WBTR	>1500	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	46 / 112	-- / --
	NBLT	>500	53 / 102	39 / 82	86 / 149	86 / 149	-- / --	-- / --	-- / --	-- / --	-- / --
Middle Haddam Road	NBR	65	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
	NB	>500	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	33 / #113	-- / --
Depot Hill Road	SB	>500	50 / 100	36 / 80	70 / 128	70 / 128	-- / --	-- / --	-- / --	25 / #82	-- / --
Traffic Signal - Route 66 (West High Street) at Route 16 (Middletown Avenue)/Park & Ride Driveway											
Route 66	EBLT	>750	139 / 321	135 / 265	330 / 507	351 / 532	-- / --	-- / --	-- / --	-- / --	185 / #475
	EBR	250	0 / 38	0 / 36	0 / 42	0 / 44	-- / --	-- / --	-- / --	-- / --	0 / 41
Route 66	WBL	125	0 / 4	0 / 4	1 / 4	1 / 5	-- / --	-- / --	-- / --	-- / --	0 / 4
	WBTR	>500	70 / 165	68 / 134	156 / 236	166 / 249	-- / --	-- / --	-- / --	-- / --	87 / 194
	NBLT	>750	66 / 194	62 / #161	164 / #324	170 / #323	-- / --	-- / --	-- / --	-- / --	-- / --
Route 16	NBR	100	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
	NBL	150	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	52 / 106
	NB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	-- / --	51 / 105
Park & Ride Driveway	SB	75	1 / 11	1 / 8	2 / 11	2 / 11	-- / --	-- / --	-- / --	-- / --	1 / 8
Traffic Signal - Route 66 (West High Street) at Maple Street/North Maple Street/Old West High Street											
Route 66	EB	>500	99 / 205	99 / 209	183 / 401	183 / 401	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WB	>750	80 / 163	80 / 164	139 / 285	139 / 285	-- / --	-- / --	-- / --	-- / --	-- / --
Maple Street	NB	>500	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
North Maple Street	SB	>500	24 / 82	26 / 60	59 / 112	59 / 112	-- / --	-- / --	-- / --	-- / --	-- / --
Old West High Street	SEB	>500	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East Main St/West Main St) at Main Street/North Main Street											
Route 66	EBL	275	28 / 64	31 / 55	47 / 128	47 / 128	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	>1000	181 / 348	195 / 286	315 / #678	315 / #678	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	225	25 / m20	8 / m42	13 / m52	13 / m52	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	485	282 / #480	233 / 182	406 / #801	406 / #801	-- / --	-- / --	-- / --	-- / --	-- / --
Main Street	NBL	225	14 / 33	10 / 30	17 / 37	17 / 37	-- / --	-- / --	-- / --	-- / --	-- / --
	NBTR	>500	85 / 140	78 / 126	115 / 172	115 / 172	-- / --	-- / --	-- / --	-- / --	-- / --
North Main Street	SBL	175	48 / 81	35 / 72	54 / 86	54 / 86	-- / --	-- / --	-- / --	-- / --	-- / --
	SBTR	>500	76 / 136	47 / 118	101 / 165	101 / 165	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High Street) at East Hampton Mall Shopping Center Dwy/Eversource Dwy											
Route 66	EBL	225	7 / m19	7 / m12	5 / m21	5 / m21	-- / --	-- / --	-- / --	-- / --	-- / --
	EBTR	485	126 / 292	112 / 215	180 / m467	180 / m467	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	125	1 / 3	1 / 3	1 / 3	1 / 3	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>1000	228 / 422	216 / 416	348 / #732	348 / #732	-- / --	-- / --	-- / --	-- / --	-- / --
Eversource Driveway	NB	260	4 / 16	3 / 13	7 / 23	7 / 23	-- / --	-- / --	-- / --	-- / --	-- / --
East Hampton Mall Shopping	SBL	140	62 / 109	51 / 94	60 / 107	60 / 107	-- / --	-- / --	-- / --	-- / --	-- / --
Center Dwy	SBR	140	0 / 37	0 / 26	0 / 38	0 / 38	-- / --	-- / --	-- / --	-- / --	-- / --
Traffic Signal - Route 66 (East High Street) at Route 196 (Lake View Street)											
Route 66	EB	>1000	216 / #479	179 / #349	~443 / #710	336 / #581	-- / --	-- / --	-- / --	-- / --	-- / --
Route 66	WBL	250	27 / 82	27 / 59	72 / 173	98 / #227	-- / --	-- / --	-- / --	-- / --	-- / --
	WBTR	>500	74 / 153	73 / 123	125 / 264	115 / 179	-- / --	-- / --	-- / --	-- / --	-- / --
Route 196 (Lake View St.)	NBL	170	36 / 80	30 / 68	50 / 96	56 / #121	-- / --	-- / --	-- / --	-- / --	-- / --
	NBR	>500	0 / 46	0 / 42	0 / 50	0 / 56	-- / --	-- / --	-- / --	-- / --	-- / --

TABLE 4-4
Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet) - Weekday Afternoon Peak Hour

	Lane Use	Available Storage	2020 Corridor	2020 Optimized	2040 Future	2040 Optimized	2040 Improved				
							Concept A-1	Concept A-2	Concept A-3	Concept G	Concept H
Concept Improvements											
Concept A-1 (Roundabout)- Route 66 at Marlborough Street, High Street & Riverside Street											
Route 66	EB	>1000	-- / --	-- / --	-- / --	-- / --	-- / 251	-- / --	-- / --	-- / --	-- / --
Route 66	WB	>1000	-- / --	-- / --	-- / --	-- / --	-- / 134	-- / --	-- / --	-- / --	-- / --
Riverside Street	NB	>500	-- / --	-- / --	-- / --	-- / --	-- / 15	-- / --	-- / --	-- / --	-- / --
High Street	SB	>500	-- / --	-- / --	-- / --	-- / --	-- / 11	-- / --	-- / --	-- / --	-- / --
Marlborough Street	SEB	>1000	-- / --	-- / --	-- / --	-- / --	-- / 204	-- / --	-- / --	-- / --	-- / --
Concept A-2 (Traffic Signal) - Route 66 at Marlborough Street & Riverside Street											
Route 66	EB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	430 / #612	-- / --	-- / --	-- / --
Route 66	WB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	27 / 27	-- / --	-- / --	-- / --
Riverside Street	NB	>500	-- / --	-- / --	-- / --	-- / --	-- / --	12 / 42	-- / --	-- / --	-- / --
Marlborough Street	SBL	210	-- / --	-- / --	-- / --	-- / --	-- / --	65 / 117	-- / --	-- / --	-- / --
	SBTR	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	5 / m20	-- / --	-- / --	-- / --
Concept A-2 (Traffic Signal) - Route 66 at High Street											
Route 66	EBL	150	-- / --	-- / --	-- / --	-- / --	-- / --	146 / m163	-- / --	-- / --	-- / --
	EBT	150	-- / --	-- / --	-- / --	-- / --	-- / --	96 / m71	-- / --	-- / --	-- / --
Route 66	WBT	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	234 / 303	-- / --	-- / --	-- / --
	WBR	100	-- / --	-- / --	-- / --	-- / --	-- / --	53 / 36	-- / --	-- / --	-- / --
High Street	SB	>1000	-- / --	-- / --	-- / --	-- / --	-- / --	156 / #303	-- / --	-- / --	-- / --

m: Volume for 95th percentile queue is metered by upstream signal.
#: 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
TR and LT denote shared "through-right" and shared "left-through" lanes

APPENDIX C

Concept Improvement Plans

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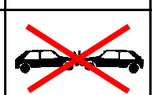
Route 66 Concept Improvement Alternatives

Location	Issues	Concept	Concept Description	Cost	Right of Way Impact	Operations	Safety	Multimodal Improvements
Route 66 - Arrigoni Bridge to Airline Avenue	High traffic volumes and operating speeds cause capacity and safety concerns; Lack of "Complete Street" environment in Portland Village Center	**Concept A-1: Route 66 Bypass (Alternative 1)**	Construct Route 66 bypass utilizing railroad ROW and the southern section of Pickering Street corridor. Construct a modern five-leg roundabout at Route 66 bypass, High Street, Airline Avenue and Tuccitto Road. Implement complete streets design elements to reduce the number of travel lanes and emphasize alternative travel modes on Marlborough Street and Main Street.	**$$$$$**					
		Concept A-2: Route 66 Bypass (Alternative 2)	Construct Route 66 bypass utilizing railroad ROW and the southern section of Pickering Street corridor. Realign High Street, Airline Avenue, Riverside Street, and Tuccitto Road at Route 66 bypass to create two new signalized intersections. Implement complete streets design elements to reduce the number of travel lanes and emphasize alternative travel modes on Marlborough Street and Main Street.	**$$$$$**					
		Concept A-3: Main Street at Marlborough Street Intersection Improvements	Brainerd Place Approved Off-Site Improvements - Minor roadway widening and restriping along Main Street southbound approach to provide a dedicated southbound left-turn lane. Reduce the curve radius and lane width of the existing northbound channelized right-turn lane to reduce right-turning travel speeds. Shift the crosswalk on the east leg further from the intersection to provide a shorter crossing with straight alignment and refuge area on the median island. Install pedestrian signals and pushbuttons. Install traffic signal at Brainerd Driveway on Marlborough Street. Provide right-in only driveway for Brainerd Place along Main Street north of Gulf gas station.	**Implemented by Others**					
Route 66 Pedestrian Mobility Improvements	Lack of sidewalk along the south side of Route 66 and ADA compliant pedestrian infrastructures at signalized intersections	**Concept B**	Provide pedestrian signal upgrade between Main Street and Grove Street along Marlborough Street. Install crosswalk on Airline Ave, Portland Shopping Center Driveway, and Grandview Terrace intersections. Install sidewalk along the south side of Route 66.	**$**					
Multi-Modal Mobility Enhancements	Incomplete multi-modal travel modes accessibility in Portland	**Concept C**	Various bicycle route alternatives from Airline Avenue to Arrigoni Bridge in Portland to improve safety and mobility for cyclists. Extend Air Line Trail from YMCA Camp Ingersoll to Airline Avenue. Provide roadside separated 10-12-ft two-way multi-use path adjacent to Route 66 from Williams Street Extension to Airline Avenue.	**$$$**					
Route 66 Eastbound Merge Lane Area	Insufficient Route 66 eastbound merge lane causes safety concerns	**Concept D**	Improve Route 66 eastbound merging operations near Portland Gulf Gas Station by providing sufficient merge length, signage and pavement markings based on MUTCD guidelines. Install dedicated left-turn lane on Route 66 eastbound direction at Camp Ingersoll entrance.	**$**					
Route 66 at Portland Citgo & Opticom Driveways	Heavy left-turn traffic blocking through traffic on Route 66 at major business driveways	**Concept E**	Provide dedicated left-turn lane on Route 66 at Citgo driveway and future Opticom Headquarters driveway, respectively.	**$**					

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Route 66 Concept Improvement Alternatives

Location	Issues	Concept	Concept Description	Cost	Right of Way Impact	Operations	Safety	Multimodal Improvements
Route 66 at the Ledges Area	Existing sightline restrictions due to reversed horizontal curves and insuffcient clear zone	**Concept F**	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.	**$$**				
Route 66 at Route 151 and Depot Hill Road	Heavy through traffic causes capacity issues and significant queues on Route 66 approaches; Lack of infrastructures for alternative travel modes	**Concept G**	Widen Route 66 to provide one dedicated left-turn lane, one through lane, and one shared through-right lane at the intersection in each direction and sufficient extension of receiving lanes and merge lane in each direction. Provide shared bike lane and sidewalk on Depot Hill Road extending to the existing Air Line Trail to the north. Provide sidewalks, crosswalks and pedestrian signals at the intersection.	**$$**				
Route 66 at Route 16	Future capacity issues for Route 16 northbound traffic approaching intersection	**Concept H**	Convert the existing Route 16 northbound shared left-through lane to dedicated left-turn lane. Convert the existing Route 16 right-turn lane to shared left-through-right turn lane. Provide two westbound receiving lanes.	**$**				
Route 66 at Childs Road	Heavy left-turn traffic blocking through traffic on Route 66 at Childs Road during school arrival and dismissal peak hours	**Concept I**	Provide westbound left-turn pocket on Route 66 at Childs Road. Install school zone speed limit signage. Remove existing crosswalk on Route 66.	**$**				
Route 66 at East Hampton Commercial District	Existing sidewalk gap along the northbound side of Route 66; Lack of pedestrian crossing on Route 66 between far spaced signalized intersections; Dense driveways cause safety concerns	**Concept J**	Modify left-turn storage into McDonald's driveway and Eversource driveway. Consider converting the current full access driveways to one entrance only and one exit only at Walgreens Plaza driveway locations. Install sidewalk along the north side of Route 66. Install mid-block crosswalk and Rectangular Rapid Flash Beacon (RRFB) on Route 66 to the west of West Point Road. Install crosswalk on the north leg at the intersection of Route 66 and West Point Road.	**$$**				
Route 66 at Paul's & Sandy's Too	Existing vechicle speeding issues and lack of pedestrian facilities cause safety concerns	**Concept K**	Install speed radar and reduced speed limit sign. Install mid-block crosswalk in vicinity of the entrance. Install sidewalks along both sides of Route 66 and connect to East Hampton Commercial Center to the west and Edgewater Hill & new East Hampton Town Hall to the east. Consider altering the one-way driveway access at the southern driveways. Add dedicated left-turn pocket on Route 66 eastbound direction at the proposed entrance-only driveway.	**$$**				
Route 66 at Edgewater Hill Driveway	Skewed intersection geometry at Old Marlborough Road; Lack of sidewalks along Route 66 in the vicinity of the proposed Edgewater Hill Development and new Town Hall	**Concept L-1**	Install a stop sign at Edgewater Hill Driveway intersection as part of the Edgewater Hill Development. Realign Old Marlborough Road at Route 66.	**$$$**				
		Concept L-2	Construct a single lane modern roundabout at Edgewater Hill Driveway and Route 66. Realign Old Marborough Road at Route 66.	**$$$**				

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Route 66 Concept Improvement Alternatives

Location	Issues	Concept	Concept Description	Cost	Right of Way Impact	Operations	Safety	Multimodal Improvements
Route 66 at Lake Drive	Skewed intersection geometry at Lake Drive; Poor intersection visibility	**Concept M**	Realign Lake Drive opposite to Arrow Fence Driveway at Route 66.	**$$**				
Transit Improvements	Lack of designated bus stops, shelters and signs along the existing MAT Route 586 in the study area	**Concept N**	Maintain existing bus flag-down serivce and supplement with designated bus stops and bus amenities at Quarry Heights, Brainerd Place, and Adam's Market in Portland, as well as at Stop & Shop Plaza, Edgewater Hills & New East Hampton Town Hall, and Hampton Woods in East Hampton.	**$**				
Access Management	Dense and poorly delineated driveaways in the commercial areas of both Towns	**Concept AM**	Various commercial driveway access management recommendations in Portland Village Center area and East Hampton Commercial Center area, respectively.	**$**				

LEGEND

Significant Right-of-Way impact

Improves Intersection Traffic Operation

Convert intersection to a roundabout

Improve safety for pedestrians and vehicles

Improve access to pedestrian/bicyclist facilities and encourage their uses

Improve access to pedestrian facilities and encourage their uses

CONCEPT SUMMARY

- ✚ MITIGATES CAPACITY ISSUES
- ✚ CREATES COMPLETE STREET IN PORTLAND TOWN CENTER
- ✚ IMPROVES SAFETY WITH ROUNDABOUT
- − CHALLENGING RAMP DESIGN
- − SIGNIFICANT PROPERTY IMPACTS
- − HIGH COST

INSTALL MULTI-LANE ROUNDABOUT ON THE PROPOSED ROUTE 66 BYPASS AT RE-ALIGNED HIGH STREET, MARLBOROUGH STREET AND TUCCITTO ROAD INTERSECTION

REFER TO FIGURE 3 FOR MARLBOROUGH STREET IMPROVEMENTS

2040 FUTURE: D D
2040 IMPROVED: A A
PM LOS
AM LOS

2040 FUTURE: E D
2040 IMPROVED: C C
PM LOS
AM LOS

SB: (1,000) [780]
NB: (420) [890]
WB: (393) [347]
WB: (337) [283]
WB: (1,970) [1,230]
EB: (244) [414]
EB: (264) [357]
EB: (657) [1,680]
SB: (1,073) [717]
NB: (644) [1,194]
WB: (1,653) [957]
EB: (533) [1,453]

UPGRADE EXISTING TRAFFIC SIGNAL

REMOVE CHANNALIZED RIGHT-TURN LANE

BRAINERD PLACE (FUTURE DEVELOPMENT)

REFER TO FIGURE 4 FOR ALTERNATIVE MAIN STREET CROSS-SECTION

CLOSE RIVERSIDE STREET AND INSTALL CUL-DE-SAC

PROVIDE RETAINING WALL AS REQUIRED

MAIN STREET
MARLBOROUGH STREET
SILVER STREET
PERRY AVENUE
PICKERING STREET
HIGH STREET
RIVERSIDE STREET
TUCCITTO ROAD
WOLCOTT AVENUE
AIRLINE AVENUE
LOWER MAIN STREET

17A
66
17

A
A
B
B

RE-ALIGNED ROUTE 66 (B-B)

LEGEND:

PEAK-HOUR TRAFFIC VOLUMES: (AM) [PM]

SCALE IN FEET
0 250' 500'
GRAPHIC SCALE

Route 66 Corridor Study
FIGURE 1
CONCEPT A-1 - ROUTE 66 BYPASS ROUNDABOUT ALTERNATIVE
SCALE: 1"=250'
Tighe&Bond

N

17A

MAIN STREET

SB: (1,000) [780]

NB: (420) [890]

CONCEPT SUMMARY

- ⊕ MITIGATES CAPACITY ISSUES
- ⊕ CREATES COMPLETE STREET IN PORTLAND TOWN CENTER
- ⊖ REDUCED EFFICIENCY WITH NEW CLOSELY SPACED SIGNALS
- ⊖ CHALLENGING RAMP DESIGN
- ⊖ SIGNIFICANT PROPERTY IMPACTS
- ⊖ HIGH COST

INSTALL NEW TRAFFIC SIGNALS ON ROUTE 66 BYPASS AT RE-ALIGNED HIGH STREET INTERSECTION AND REALIGNED MARBOROUGH STREET INTERSECTION AND PROVIDE CLUSTER OPERATION ON THE SAME TRAFFIC CONTROLLER

REFER TO FIGURE 3 FOR MARLBOROUGH STREET IMPROVEMENTS

UPGRADE EXISTING TRAFFIC SIGNAL

WB: (393) [347]

MARLBOROUGH STREET

WB: (337) [283]

EB: (244) [414]

EB: (264) [357]

HIGH STREET

2040 FUTURE: E D

2040 IMPROVED: C C

PM LOS
AM LOS

2040 FUTURE: D D

2040 IMPROVED: C B

PM LOS
AM LOS

WB: (1,970) [1,230]

EB: (657) [1,680]

CLOSE TUCCITTO ROAD AND INSTALL CUL-DE-SAC

REMOVE CHANNALIZED RIGHT-TURN LANE

BRAINERD PLACE (FUTURE DEVELOPMENT)

PERRY AVENUE

PICKERING STREET

2040 FUTURE: D D

2040 IMPROVED: C C

PM LOS
AM LOS

SILVER STREET

A

A

REFER TO FIGURE 4 FOR ALTERNATIVE MAIN STREET CROSS-SECTION

SB: (1,073) [717]

NB: (644) [1,194]

B

66

B

RIVERSIDE STREET

TUCCITTO ROAD

WOLCOTT AVENUE

RE-ALIGNED ROUTE 66 (B-B)

MAIN STREET (A-A)

WB: (1,653) [957]

AIRLINE AVENUE

17

EB: (533) [1,453]

LOWER MAIN STREET

PROVIDE RETAINING WALL AS REQUIRED

LEGEND:

PEAK-HOUR TRAFFIC VOLUMES: (AM) [PM]

SCALE IN FEET

0 250' 500'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 2

CONCEPT A-2 - ROUTE 66 BYPASS SIGNAL ALTERNATIVE

SCALE: 1"=250'

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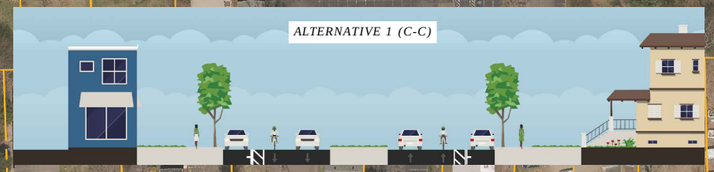
Sep 01, 2020-9:27am Plotted By: MStoutz
Tighe & Bond, Inc. J:\L\L5001 LCRVCOG\001 Route 66 Study\Drawing_Figures\AutoCAD\Sheet\Concepts\L5001-001-A-2_Route 66 Bypass

CONCEPT SUMMARY

- INTEGRATE ALTERNATIVE TRAVEL MODES
- IMPROVE SAFETY FOR ALL USERS
- PROVIDES ON-STREET PARKING
- MAINTAINS EXISTING RESTRICTIVE DRIVEWAY ACCESS WITH RAISED MEDIAN



MARLBOROUGH STREET

CROSS STREET

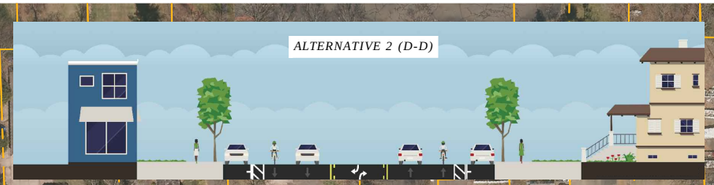
PERRY AVENUE

PICKERING STREET

BRAINERD PLACE
(FUTURE DEVELOPMENT)

CONCEPT SUMMARY

- INTEGRATE ALTERNATIVE TRAVEL MODES
- IMPROVE SAFETY FOR ALL USERS
- PROVIDES ON-STREET PARKING
- PROVIDES FULL DRIVEWAY ACCESS WITH CENTER TWO-WAY LEFT-TURN LANE



MARLBOROUGH STREET

CROSS STREET

PERRY AVENUE

PICKERING STREET

BRAINERD PLACE
(FUTURE DEVELOPMENT)

SCALE IN FEET

0 150' 300'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 3

CONCEPT A-1 & A-2 - MARLBOROUGH STREET IMPROVEMENTS

SCALE: 1"=150'

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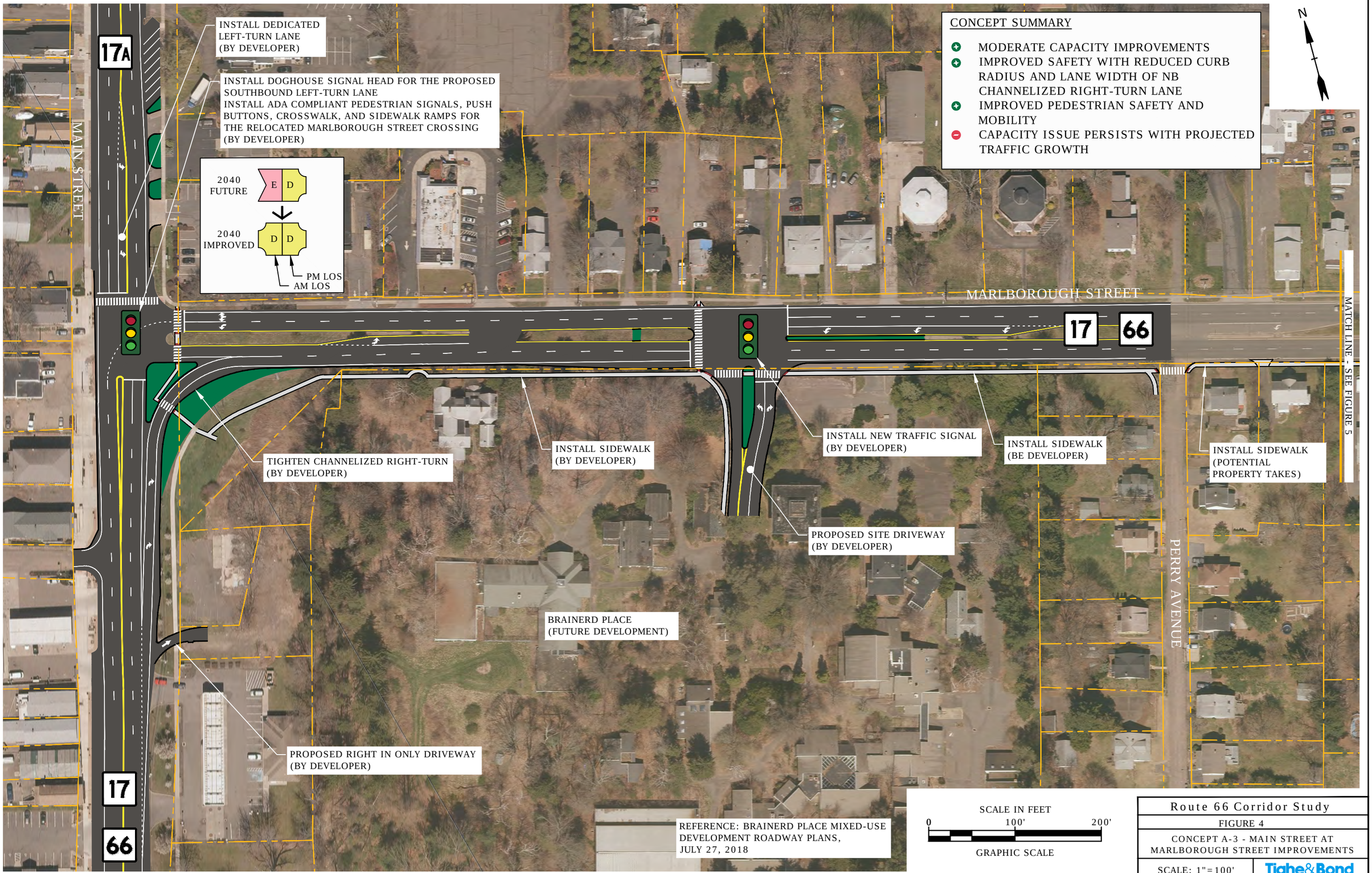

Route 66 Corridor Study

FIGURE 4

CONCEPT A-3 - MAIN STREET AT MARLBOROUGH STREET IMPROVEMENTS

SCALE: 1"=100'

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CONCEPT SUMMARY

- IMPROVED PEDESTRIAN SAFETY AND MOBILITY
- IMPLEMENTS ACCESS MANAGEMENT
- MINOR PROPERTY IMPACTS

N

CROSS STREET

HIGH STREET

INSTALL TACTILE WARNING STRIPS ON EXISITING SIDEWALK RAMPS

MATCH LINE - SEE FIGURE 6

MARLBOROUGH STREET

66

17

MATCH LINE - SEE FIGURE 4

PICKERING STREET

INSTALL SIDEWALK (POTENTIAL PROPERTY TAKES) (TYP.)

INSTALL CONCRETE DRIVEWAY APRON (TYP.)

BARRY AVE

INSTALL ADA COMPLIANT SIDEWALK RAMP AND CROSSWALK

INSTALL ADA COMPLIANT PEDESTRIAN SIGNALS, PUSH BUTTONS, CROSSWALK AND SIDEWALK RAMPS ON SOUTH LEG

AIRLINE AVENUE

PULL METAL BEAM GUIDERAIL BACK TO CREATE SPACE FOR PEDESTRIAN SIGNAL AND SIDEWALK RAMP INSTALLATION

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 5

CONCEPT B - PORTLAND PEDESTRIAN MOBILITY IMPROVEMENTS - 1 OF 2

SCALE: 1"=100'

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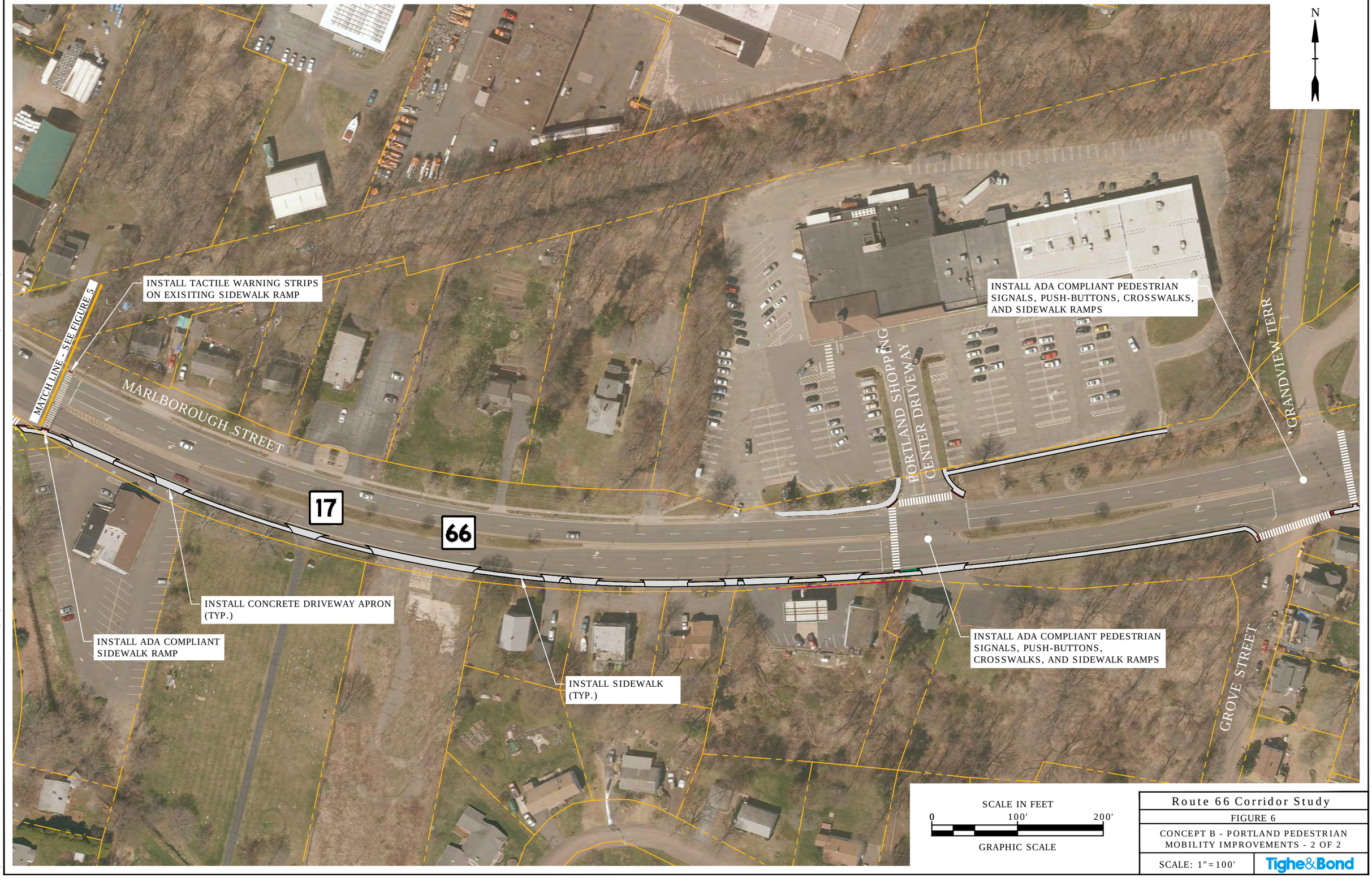
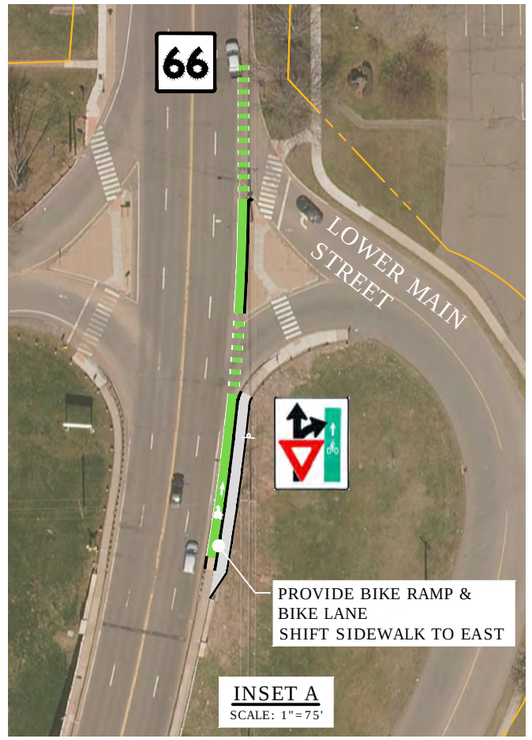


SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study	
FIGURE 6	
CONCEPT B - PORTLAND PEDESTRIAN MOBILITY IMPROVEMENTS - 2 OF 2	
SCALE: 1"=100'	Tighe&Bond



INSET A
SCALE: 1"=75'

INSET B
NO SCALE

SCALE IN FEET
0 300' 600'
GRAPHIC SCALE

Route 66 Corridor Study
FIGURE 7
CONCEPT C - MULTI MODAL MOBILITY ENHANCEMENTS - 1 OF 3
SCALE: AS SHOWN
Tighe&Bond

CONCEPT SUMMARY

- INTEGRATES MULTIMODAL TRAVEL MODES
- IMPROVES MOBILITY AND SAFETY FOR ALL USERS
- REQUIRES CURRENTLY UNAVAILABLE PRIVATE PROPERTY (ALTERNATIVE 1)
- ON-ROAD PATH CHANGES AIR LINE TRAIL CHARACTER (ALTERNATIVE 2)

HIGH STREET

MATCH LINE A-A, SEE FIGURE 7

JOHNSON FARMS ROAD

ALTERNATIVE 1
TRAIL CROSSING SIGNAGE & CROSSWALK
REFER TO FIGURE 9 FOR TYPICAL AIR LINE TRAIL ROAD CROSSING DETAIL

ALTERNATIVE 2
UTILIZE GRANDVIEW TERRACE FOR SHARED BIKE LANE

ALTERNATIVE 1
POTENTIAL AIR LINE TRAIL EXTENSION

GRANDVIEW TERRACE

MATCH LINE B-B, THIS SHEET

A

A

66

PORTLAND-COBALT ROAD

ALTERNATIVE 2
INSTALL 10-FT SEPARATED MULTI-USE PATH

ALTERNATIVE 2
TYPICAL CROSS SECTION (A-A)

N

TRAIL CROSSING SIGNAGE & CROSSWALK
REFER TO FIGURE 9 FOR TYPICAL AIR LINE TRAIL ROAD CROSSING DETAIL

ALTERNATIVE 2
INSTALL RETAINING WALL FOR MULTI-USE PATH

WILLIAMS STREET EXT.

AIR LINE TRAIL EXTENSION
(VERBAL PERMISSION RECEIVED FROM PROPERTY OWNERS)

17

TRAIL CROSSING SIGNAGE & CROSSWALK
REFER TO FIGURE 9 FOR TYPICAL AIR LINE TRAIL ROAD CROSSING DETAIL

PORTLAND-COBALT ROAD

66

GOSPEL LANE

MATCH LINE B-B, THIS SHEET

MATCH LINE C-C, FIGURE 9

ALTERNATIVE 2
INSTALL SHARED BIKE LANE & SIDEWALK

N

SCALE IN FEET
0 300' 600'
GRAPHIC SCALE

LEGEND:
- Confirmed Future Air Line Trail Extension
- Unconfirmed Future Air Line Trail Extension
- Separated Multi-Use Path
- Shared Bike Lane

Route 66 Corridor Study	
FIGURE 8	
CONCEPT C - MULTI MODAL MOBILITY ENHANCEMENTS - 2 OF 3	
SCALE: 1"=300'	Tighe&Bond

LEGEND:
Existing Air Line Trail
Confirmed Future Air Line Trail Extension

AIR LINE TRAIL EXTENSION
(GOSPEL LANE TO CAMP INGERSOLL SEGEMENT
CURRENTLY UNDER STUDY)

MATCH LINE C-C, FIGURE 8

EXTEND AIR LINE TRAIL WEST FROM EXISTING
AIR LINE TRAIL TERMINUS
AT YMCA CAMP INGERSOLL, PORTLAND

YMCA CAMP INGERSOLL

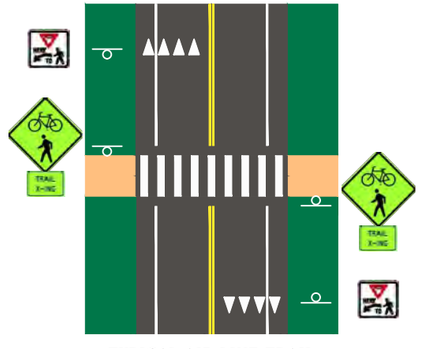
EXISTING AIR LINE TRAIL

N

SCALE IN FEET
0 300' 600'
GRAPHIC SCALE

SCALE: 1"=100'

MAIN STREET AIR LINE TRAIL CROSSING
EAST HAMPTON VILLAGE CENTER
(NORTH OF WALNUT AVENUE)



TYPICAL AIR LINE TRAIL
ROAD CROSSING DETAIL

Route 66 Corridor Study	
FIGURE 9	
CONCEPT C - MULTI MODAL MOBILITY ENHANCEMENTS - 3 OF 3	
SCALE: AS SHOWN	Tighe&Bond

CONCEPT SUMMARY

- IMPROVES SAFETY WITH SUFFICIENT MERGE LANE
- IMPROVES CAPACITY WITH DEDICATED LEFT-TURN LANE ON ROUTE 66 AT CAMP INGERSOLL ROAD

N

CAMP INGERSOLL ROAD

GULF GAS STATION

INSTALL LANE MERGE SIGN
1200' IN ADVANCE OF MERGE

PORTLAND-COBALT ROAD

66

INSTALL LANE REDUCTION ARROW

INSTALL LANE
REDUCTION ARROW

REMOVE EXISTING
LANE MERGE SIGN

REMOVE GRASS MEDIAN &
INSTALL LEFT-TURN POCKET

SAND HILL ROAD

SCALE IN FEET
0 150' 300'
GRAPHIC SCALE

Route 66 Corridor Study	
FIGURE 10	
CONCEPT D - ROUTE 66 EASTBOUND MERGE LANE AREA	
SCALE: 1"=150'	Tighe&Bond

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CONCEPT SUMMARY

- IMPROVES CAPACITY WITH DEDICATED LEFT-TURN LANE ON ROUTE 66 AT CITGO DIRVEWAY AND FUTURE OPTICOM DRIVEWAY
- IMPROVES SAFETY WITH ACCESS MODIFICATION TO REDUCE POTENTIAL VEHICULAR CONFLICTS
- LEFT-TURN LANES MAKE EGRESS MORE DIFFICULT

N

OPTICOM HEADQUARTERS
(FUTURE DEVELOPMENT)

PORTLAND-COBALT ROAD

66

CITGO

WIDEN AS REQUIRED FOR
LEFT-TURN POCKETS

CONSIDER CONVERSION
TO ENTRANCE ONLY

CONSIDER CONVERSION
TO EXIT ONLY

AXELROD TIRE

SCALE IN FEET

0 80' 160'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 11

CONCEPT E - LEFT-TURN POCKETS AT CITGO AND OPTICOM DRIVEWAYS

SCALE: 1"=80'

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CONCEPT SUMMARY

- INCREASES ROADSIDE CLEAR SPACE TO IMPROVE SAFETY AND SIGHT DISTANCE
- ENCROACHMENT PERMIT REQUIRED FOR ROCK BLASTING AND TREE CLEARING

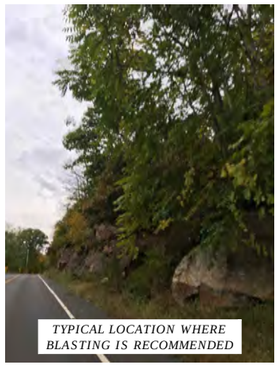
PORTLAND-COBALT ROAD

PROVIDE 10' OF CLEAR SPACE FROM THE NORTH SIDE EDGE OF ROAD

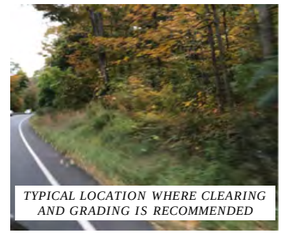
MATCH LINE - SEE THIS SHEET

66

N



TYPICAL LOCATION WHERE BLASTING IS RECOMMENDED



TYPICAL LOCATION WHERE CLEARING AND GRADING IS RECOMMENDED

MATCH LINE - SEE THIS SHEET

66

PROVIDE 6' OF CLEAR SPACE FROM THE SOUTH SIDE EDGE OF ROAD

PORTLAND - EAST HAMPTON TOWN LINE

GRIST MILL LANE

PORTLAND-COBALT ROAD

N

Route 66 Corridor Study	
FIGURE 12	
CONCEPT F - THE "LEDGES" AREA	
SCALE: NTS	Tighe&Bond

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CONCEPT SUMMARY

- MITIGATES CAPACITY ISSUES
- IMPROVES PEDESTRIAN AND BICYCLE MOBILITY AND SAFETY

N

INSTALL SIDEWALK ON EAST SIDE OF DEPOT HILL ROAD AND EXTEND TO AIR LINE TRAIL

AIR LINE TRAIL

OLD MIDDLETOWN ROAD

DEPOT HILL ROAD

GRIST MILL LANE

INSTALL SHARED LANE MARKING (TYP.)

INSTALL ADA COMPLIANT PEDESTRIAN SIGNALS, PUSH-BUTTONS, CROSSWALKS, AND SIDEWALK RAMPS ON NORTH, SOUTH, AND EAST LEGS

INSTALL LANE MERGE SIGN

UPGRADE EXISTING TRAFFIC SIGNAL

NARROW EXISTING DRIVEWAY

INSTALL SIDEWALK ON NORTH SIDE OF ROUTE 66 AND EXTEND WEST TO GRIST MILL LANE

WIDEN TO PROVIDE TWO TRAVEL LANES IN EACH DIRECTION AND ONE WESTBOUND DEDICATED LEFT-TURN LANE

PORTLAND-COBALT ROAD

NARROW EXISTING DRIVEWAY

66

CONSOLIDATE REDUNDANT DRIVEWAYS

INSTALL LANE MERGE SIGN

OLD DEPOT HILL ROAD

OAKUM DOCK ROAD

WIDEN TO PROVIDE TWO TRAVEL LANES IN EACH DIRECTION AND ONE EASTBOUND DEDICATED LEFT-TURN LANE

CLOSE OLD DEPOT HILL ROAD

INSTALL SIDEWALK (TYP.)

MIDDLE HADDAM ROAD

REMOVE CHANNELIZED RIGHT TURN LANE AND IMPLEMENT SHARED NORTHBOUND APPROACH

NARROW EXISTING DRIVEWAY

151

2040 FUTURE — E F

2040 IMPROVED — C B

PM LOS
AM LOS

SCALE IN FEET
0 150' 300'
GRAPHIC SCALE

Route 66 Corridor Study	
FIGURE 13	
CONCEPT G - ROUTE 66 AT ROUTE 151 INTERSECTION WIDENING	
SCALE: 1"=150'	Tighe&Bond

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CONCEPT SUMMARY

- MITIGATES SIDE STREET CAPACITY ISSUES
- POTENTIAL MINOR PROPERTY IMPACTS

WIDEN AS NECESSARY TO PROVIDE ADDITIONAL RECEIVING LANE AND SUFFICIENT MERGE LANE

INSTALL LANE MERGE SIGN

WEST HIGH STREET

66

LONG HILL ROAD

WIDEN AS NECESSARY TO PROVIDE A DEDICATED LEFT-TURN LANE AND A SHARED TRAVEL LANE

MIDDLETOWN AVENUE

16

2040 FUTURE: E C

2040 IMPROVED: C B

PM LOS
AM LOS

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 14

CONCEPT H - ROUTE 66 AT ROUTE 16 INTERSECTION IMPROVEMENTS

SCALE: 1"=100'

Tighe&Bond

CONCEPT SUMMARY

- INCREASES CAPACITY AND SAFETY WITH DEDICATED LEFT-TURN LANE ON ROUTE 66 AT CHILDS ROAD
- IMPROVES SAFETY WITH SPEED ENFORCEMENT
- POTENTIAL MINOR PROPERTY IMPACTS

N

SCHOOL ZONE
SEE NOTE 1

REMOVE EXISTING CROSSWALK

WEST HIGH STREET

END SCHOOL ZONE

ONLY

SCHOOL
SPEED LIMIT 25
MON-FRI

SCHOOL
SPEED LIMIT 25

66

END SCHOOL ZONE

WIDEN AS NECESSARY

PROVIDE DEDICATED LEFT-TURN LANE

CHILDS ROAD

NOTE:
1. OSTA APPROVAL REQUIRED FOR SCHOOL ZONE DESIGNATION. SCHOOL ZONE MAY BE APPROVED ON STATE HIGHWAY THAT IS ADJACENT SCHOOL PROPERTY OR SUFFICIENTLY CLOSE TO SCHOOL PROPERTY.

SCALE IN FEET
0 100' 200'
GRAPHIC SCALE

Route 66 Corridor Study
FIGURE 15
CONCEPT I - EAST HAMPTON MIDDLE SCHOOL DRIVEWAY
SCALE: 1"=100'
Tighe&Bond

CONCEPT SUMMARY

- ⊕ INCREASES CAPACITY FOR ROUTE 66 LEFT-TURN LANE AT MCDONALD'S DRIVEWAY
- ⊕ IMPROVES SAFETY WITH ACCESS MODIFICATION TO REDUCE VEHICULAR CONFLICTS
- ⊕ IMPROVES PEDESTRIAN MOBILITY AND SAFETY
- ⊖ POTENTIAL MINOR PROPERTY IMPACTS

N

MCDONALD'S

BROOKS PLAZA

INSTALL CONCRETE DRIVEWAY APRON

CONSIDER EXIT ONLY DRIVEWAY ACCESS

CONSIDER ENTRANCE ONLY DRIVEWAY ACCESS

EAST HAMPTON MALL SHOPPING CENTER DRIVEWAY

100' LEFT-TURN STORAGE

75' LEFT-TURN STORAGE

EAST HIGH STREET

66

MATCH LINE A-A - SEE FIGURE 17

EVERSOURCE DRIVEWAY

SCALE IN FEET

0 50' 100'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 16

CONCEPT J - EAST HAMPTON COMMERCIAL DISTRICT IMPROVEMENTS - 1 OF 3

SCALE: 1"=50'

Tighe&Bond

CONCEPT SUMMARY

- IMPROVES PEDESTRIAN MOBILITY AND SAFETY
- IMPROVES SAFETY WITH ACCESS MODIFICATION TO REDUCE POTENTIAL VEHICULAR/PEDESTRIAN CONFLICTS
- MINOR PROPERTY IMPACTS

AMERICAN DISTILLING INC.

WEST POINT ROAD

INSTALL CONCRETE DRIVEWAY APRON (TYP.)

INSTALL ADA COMPLIANT CROSSWALK AND SIDEWALK RAMPS

INFILL CONCRETE SIDEWALK (TYP.)

MATCH LINE A-A - SEE SHEET 16

EAST HIGH STREET

66

MATCH LINE B-B - SEE FIGURE 18

INSTALL CONCRETE DRIVEWAY APRON (TYP.)

CONSIDER CLOSING EXISTING DRIVEWAY

INSTALL ADA COMPLIANT SIDEWALK RAMPS, CROSSWALK AND RECTANGULAR RAPID FLASH BEACON (RRFB)

N

SCALE IN FEET

0 50' 100'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 17

CONCEPT J - EAST HAMPTON COMMERCIAL DISTRICT IMPROVEMENTS - 2 OF 3

SCALE: 1"=50'

Tighe&Bond

CONCEPT SUMMARY

- IMPROVES PEDESTRIAN MOBILITY AND SAFETY
- MINOR PROPERTY IMPACTS

N

LAKE POCOTOPAUG

WEST POINT ROAD

INSTALL ADA COMPLIANT CROSSWALK AND SIDEWALK RAMPS

INSTALL CONCRETE DRIVEWAY APRON (TYP.)

INFILL CONCRETE SIDEWALK

MATCH LINE B-B - SEE FIGURE 17

LAKEVIEW STREET

66

196

SCALE IN FEET

0 50' 100'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 18

CONCEPT J - EAST HAMPTON COMMERCIAL DISTRICT IMPROVEMENTS - 3 OF 3

SCALE: 1"=50'

Tighe&Bond

CONCEPT SUMMARY

- REDUCES VEHICLE TRAVEL SPEEDS WITH LANDSCAPED MEDIAN AND SPEED ENFORCEMENT
- PROVIDES MID-BLOCK CROSSWALK WITH REFUGE AREA ON THE MEDIAN ISLAND TO IMPROVE PEDESTRIAN SAFETY AND MOBILITY
- IMPROVES SAFETY WITH ACCESS MODIFICATOIN TO REDUCE POTENTIAL VEHICLE/PEDESTRIAN CONFLICTS
- MINOR PROPERTY IMPACTS

CONSIDER CONVERSION TO EXIT ONLY

CONSIDER CONVERSION TO ENTER ONLY

PAUL'S & SANDY'S TOO

PROVIDE FULL-ACCESS NORTH DRIVEWAY

INSTALL LANDSCAPED MEDIAN

REPLACE EXISTING 30 MPH SPEED LIMIT AHEAD SIGN WITH 30 MPH SPEED LIMIT SIGN
RELOCATE EXISTING 30 MPH SPEED LIMIT AHEAD SIGN EAST OF LAUREL ROAD (REFER TO FIGURE 21)

EAST HIGH STREET

PROPOSED SIDEWALK CONNECTION TO EAST HAMPTON TOWN CENTER

INSTALL SIDEWALK (TYP.)

REPLACE EXISTING 45 MPH SPEED LIMIT SIGN WITH 30 MPH SPEED LIMIT SIGN

PAUL'S & SANDY'S TOO

PROPOSED SIDEWALK CONNECTION TO EDGEWATER HILL DEVELOPMENT

SCALE IN FEET

0 75' 150'

GRAPHIC SCALE

Route 66 Corridor Study	
FIGURE 19	
CONCEPT K - PAUL'S & SANDY'S TOO SAFETY IMPROVEMENTS	
SCALE: 1"=75'	Tighe&Bond

CONCEPT SUMMARY

- ⊕ IMPROVES INTERSECTION GEOMETRY AND SITE DISTANCES
- ⊕ IMPROVES SAFETY AND REDUCE VEHICLE TRAVEL SPEEDS WITH SPEED ENFORCEMENT
- ⊖ POTENTIAL PROPERTY IMPACTS

TENNYSON ROAD

OLD MARLBOROUGH ROAD

RE-ALIGN OLD MARLBOROUGH ROAD

INSTALL 30 MPH SPEED LIMIT AHEAD SIGN

INSTALL 30 MPH SPEED LIMIT SIGN

EAST HIGH STREET

INSTALL 45 MPH SPEED LIMIT SIGN

LAUREL RIDGE

INSTALL SIDEWALK (TYP.)

EXTEND SIDEWALK WEST TO PAUL'S AND SANDY'S TOO

EDGEWATER HILL DEVELOPMENT

EDGEWATER HILL DRIVEWAY

EDGEWATER HILL DRIVEWAY IMPROVEMENTS (BY DEVELOPER)

STOP

66

SCALE IN FEET

0 50' 100'

GRAPHIC SCALE

Route 66 Corridor Study	
FIGURE 20	
CONCEPT L-1 - ROUTE 66 AT EDGEWATER HILL DRIVEWAY IMPROVEMENTS	
SCALE: 1"=50'	Tighe&Bond

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CONCEPT SUMMARY

- ⊕ REDUCES VEHICLE TRAVEL SPEEDS WITH ROUNDABOUT INSTALLATION
- ⊕ PROVIDES GATEWAY AND IMPROVES AESTHETICS
- ⊖ IMPROVES PEDESTRIAN MOBILITY AND SAFETY
- ⊖ MODERATE PROPERTY IMPACTS

OLD MARLBOROUGH ROAD

RE-ALIGN OLD MARLBOROUGH ROAD

EAST HIGH STREET

66

YIELD

YIELD

YIELD

EXTEND SIDEWALKS WEST TO PAUL'S AND SANDY'S TOO

EXTEND SIDEWALK EAST TO LAUREL RIDGE

INSTALL SIDEWALK (TYP.)

INSTALL SINGLE-LANE MODERN ROUNDABOUT

EDGEWATER HILL DRIVEWAY

EDGEWATER HILL DEVELOPMENT

N

SCALE IN FEET

0 50' 100'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 21

CONCEPT L-2 - ROUTE 66 AT EDGEWATER HILL DRIVEWAY ROUNDABOUT

SCALE: 1"=50'

Tighe&Bond

CONCEPT SUMMARY

- IMPROVES INTERSECTION GEOMETRY AND SITE DISTANCES
- IMPROVES INTERSECTION VISIBILITY
- MINOR PROPERTY IMPACTS

N

LAKE DRIVE

DOLLAR GENERAL

RE-ALIGN LAKE DRIVE

RE-ALIGN DRIVEWAY

STOP

EAST HIGH STREET

66

INSTALL STREET LIGHT ON EXISTING UTILITY POLE

ARROW FENCE

BEAR SWAMP ROAD

SCALE IN FEET

0 50' 100'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 22

CONCEPT M - ROUTE 66 AT LAKE DRIVE RE-ALIGNMENT

SCALE: 1"=50'

Tighe&Bond

CONCEPT SUMMARY

- IMPROVED TRANSIT ACCESS AND AMENITIES.

QUARRY HEIGHTS

PROPOSED BUS STOP WITH BUS SHELTER AT QUARRY HEIGHTS

17A

MAIN STREET

17

66

BRAINERD PLACE (FUTURE DEVELOPMENT)

MARLBOROUGH STREET

17

66

PROVIDE BUS STOP WITH BUS SHELTER AT BRAINERD PLACE

N

PROVIDE BUS STOP WITH BUS SHELTER AT PORTLAND SHOPPING CENTER

PORTLAND SHOPPING CENTER DRIVEWAY

MARLBOROUGH STREET

GROVE STREET

17

66

N

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 23

CONCEPT N - TRANSIT SYSTEM IMPROVEMENTS - 1 OF 2

SCALE: 1"=100'

Tighe&Bond

CONCEPT SUMMARY

- IMPROVED TRANSIT ACCESS AND AMENITIES.

STOP & SHOP

PROVIDE BUS STOP WITH BUS SHELTER AT EAST HAMPTON MALL SHOPPING CENTER

NORTH MAIN STREET

EAST HIGH STREET

66

LAKEVIEW STREET

N

OLD MARLBOROUGH ROAD

EAST HIGH STREET

66

LAUREL RIDGE

EDGEWATER HILL DRIVEWAY

PROPOSED BUS STOP WITH BUS SHELTER AT EDGEWATER HILL DEVELOPMENT

EDGEWATER HILL DEVELOPMENT

N

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 24

CONCEPT N - TRANSIT SYSTEM IMPROVEMENTS - 2 OF 2

SCALE: 1"=100'

Tighe&Bond

N

17A

WALGREENS

BURGER KING

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MARLBOROUGH STREET

17

66

MATCH LINE - SEE FIGURE 26

PERRY AVENUE

SILVER STREET

MAIN STREET

HESS
GAS
STATION

WHITE
DOG CAFE

VICTORIAN
INSPIRATIONS

PROVIDE PARCEL
INTERCONNECTION

BUD'S CAFE

DUNKIN'
DONUTS

GULF GAS
STATION

BRAINERD PLACE
(FUTURE DEVELOPMENT)

INSTALL RAISED MEDIAN TO
DELINEATE RIGHT IN /
RIGHT OUT DRIVEWAY

IMPROVE DRIVEWAY ALIGNMENT TO
PROHIBIT LEFT-TURN VIOLATION

LEGEND:

EXISTING ACCESS

POTENTIAL FUTURE IMPROVEMENTS

SCALE IN FEET
0 100' 200'
GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 25

CONCEPT AM - PORTLAND ACCESS
MANAGEMENT IMPROVEMENTS - 1 OF 4

SCALE: 1"=100'

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MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

CENTRAL
CONNECTICUT
ARMS

SYNDER
CIVIL
ENGINEERING

CROSS STREET

MILLDALE
AUTO SALE

CUMBERLAND FARMS

HIGH STREET

N

CONSIDER CLOSING
EXISTING DRIVEWAYS

MATCH LINE - SEE FIGURE 25

66 17

MARLBOROUGH STREET

MATCH LINE - SEE THIS SHEET

PICKERING STREET

PORTLAND
AUTOMOTIVE

COINS N'
GOLD
EXCHANGE

CAMPAGNA

NARROW EXISTING
DRIVEWAY

BARRY AVENUE

SUBWAY

TOP DOG
HOT DOG

STATE FARM

CLEAN
IMAGE
CAR WASH

INNER CIRCLE
FAMILY
MARTIAL ARTS

CONSIDER CLOSING
EXISTING DRIVEWAY

PROVIDE PARCEL
INTERCONNECTION

N

ADAM'S PLAZA

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MATCH LINE - SEE FIGURE 27

ANDERSON
FARM
SUPPLY

PORTLAND
EXECUTIVE
CENTER

CONSIDER CLOSING CLOSE
EXISTING DRIVEWAY

CONSTRUCT MEDIAN TO
NARROW EXISTING DRIVEWAYS

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

CONSIDER CLOSING
EXISTING DRIVEWAY

EXTEND MEDIAN TO NARROW
EXISTING DRIVEWAY

MEDIAN RESTRICTED
RIGHT IN/ RIGHT OUT

MATCH LINE - SEE THIS SHEET

MARLBOROUGH STREET

66 17

AIRLINE
AVE.

FARRELL'S

CONSIDER CLOSING
EXISTING DRIVEWAYS

HINTZ &
COMPANY

CURLEY REAL
ESTATE

TOPAZ
FUEL

LEGEND:

EXISTING ACCESS

POTENTIAL FUTURE IMPROVEMENTS

SCALE IN FEET
0 100' 200'
GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 26

CONCEPT AM - PORTLAND ACCESS
MANAGEMENT IMPROVEMENTS - 2 OF 4

SCALE: 1"=100'

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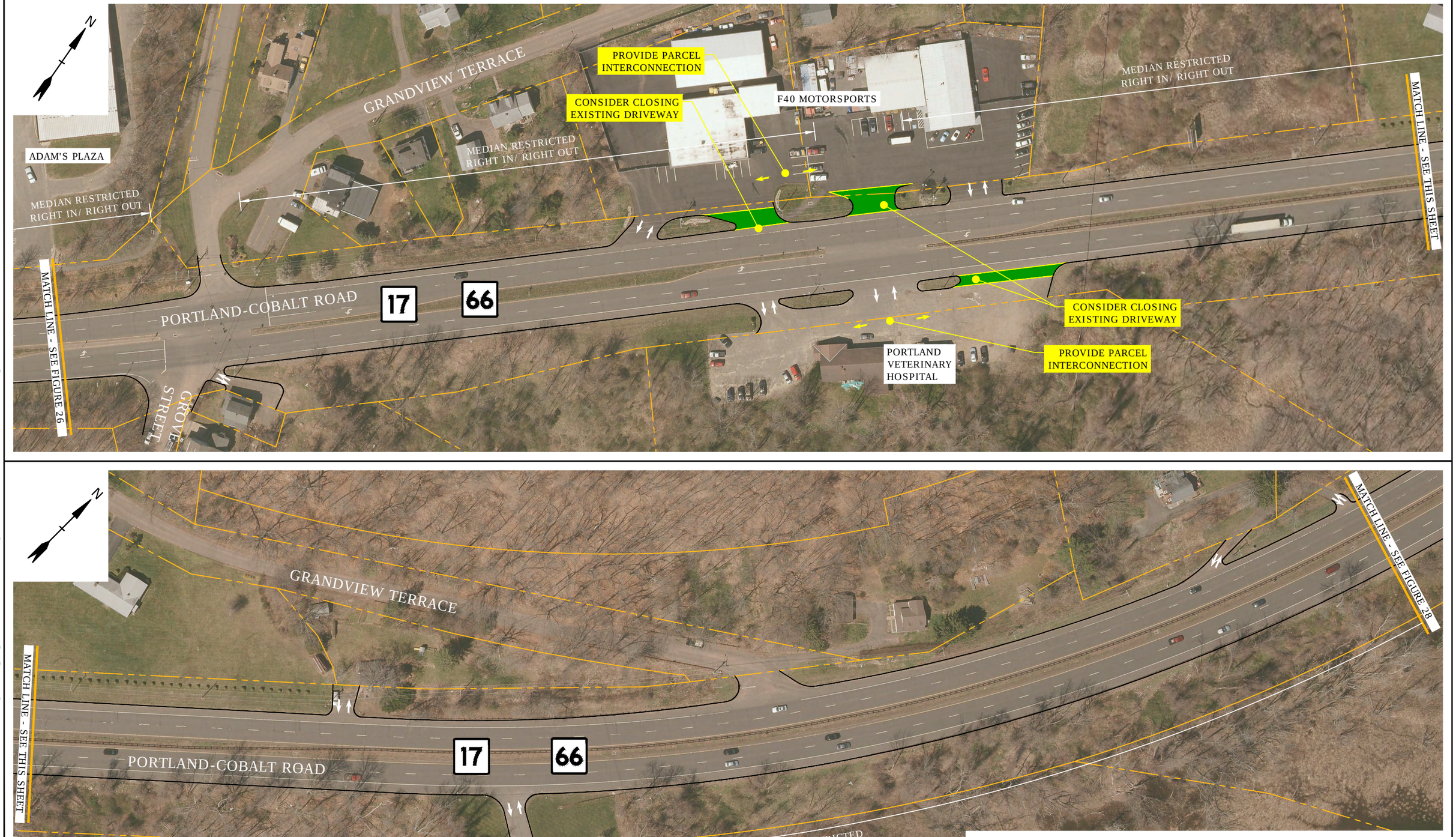


LEGEND:

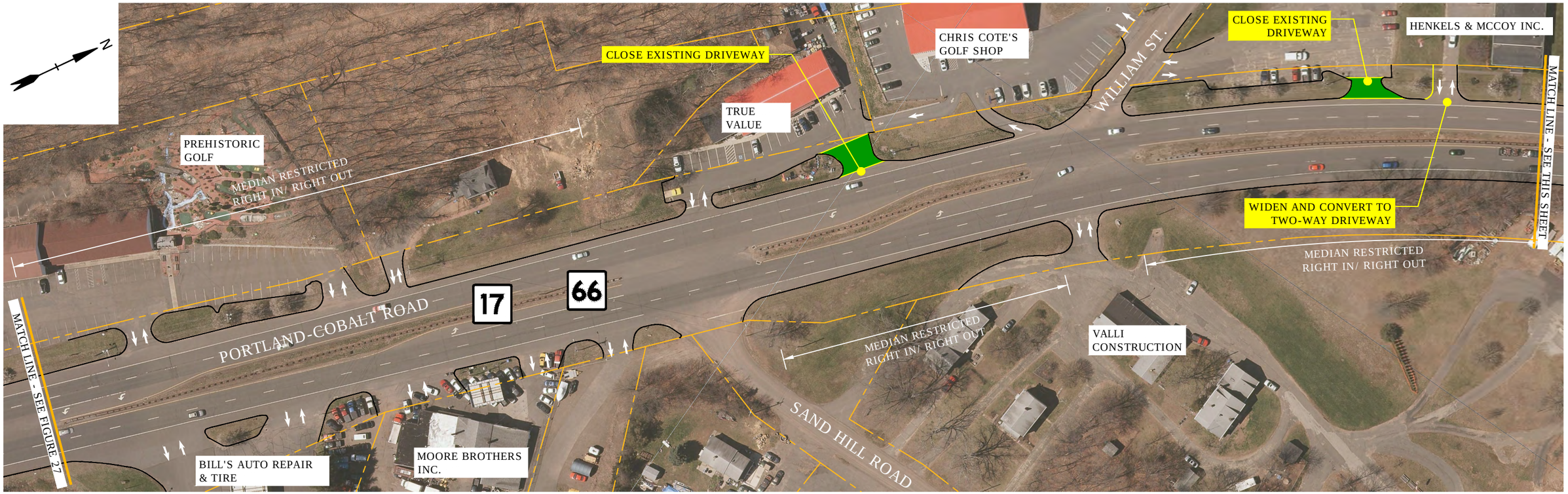
- EXISTING ACCESS
- POTENTIAL FUTURE IMPROVEMENTS

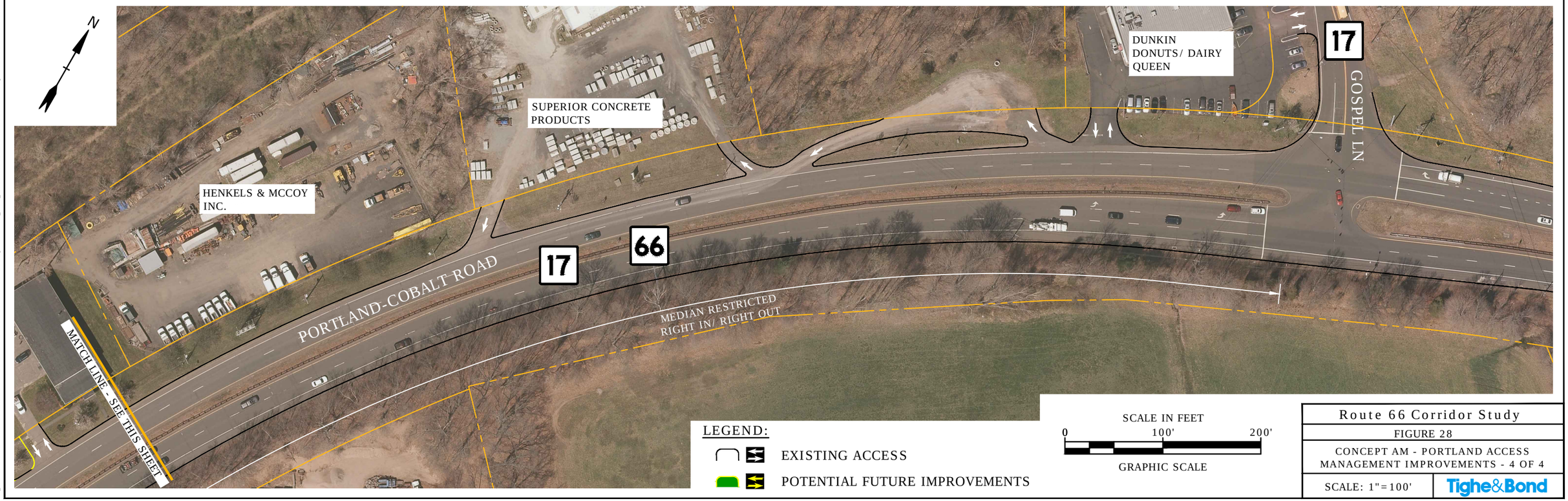
SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study	
FIGURE 27	
CONCEPT AM - PORTLAND ACCESS MANAGEMENT IMPROVEMENTS - 3 OF 4	
SCALE: 1"=100'	Tighe&Bond





LEGEND:

EXISTING ACCESS

POTENTIAL FUTURE IMPROVEMENTS

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 28

CONCEPT AM - PORTLAND ACCESS MANAGEMENT IMPROVEMENTS - 4 OF 4

SCALE: 1"=100'

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N

NORTH MAPLE STREET

LAUREL GLEN DRIVE

MATCH LINE - SEE FIGURE 30

CONSIDER CLOSING
EXISTING DRIVEWAY

CONSIDER CLOSING
EXISTING DRIVEWAY

HAIR
TRENDS
SALON

MIDDLETOWN
PLATE GLASS

H20 EQUIPMENT CO.

LUCKY
GOAT
BUTCHER
SHOP

SALON
FERRARA

H&R BLOCK

EAST HAMPTON
CHIROPRACTIC

CHATHAM
DENTAL CARE

BURT REALTY

OLD WEST HIGH STREET

WEST HIGH STREET

CARL GUILD &
ASSOCIATES

ST. PATRICK
CHURCH

MAPLE STREET

GOV. BILL ONEILL DRIVE

SUPER SHINE
CAR WASH

66

LEGEND:

EXISTING ACCESS

POTENTIAL FUTURE IMPROVEMENTS

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 29

CONCEPT AM - EAST HAMPTON ACCESS MANAGEMENT IMPROVEMENTS - 1 OF 3

SCALE: 1"=100'

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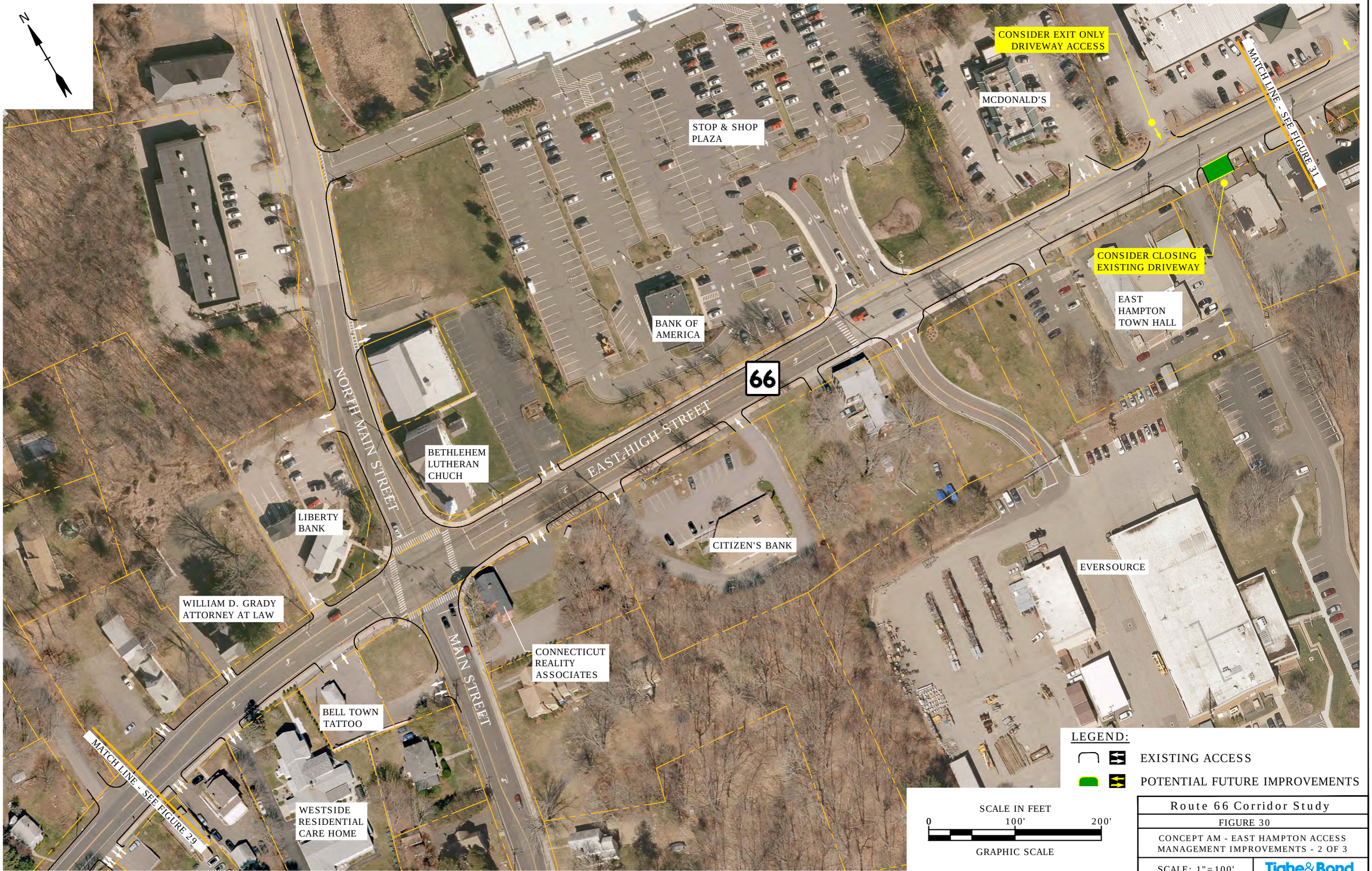

LEGEND:

EXISTING ACCESS

POTENTIAL FUTURE IMPROVEMENTS

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 30

CONCEPT AM - EAST HAMPTON ACCESS MANAGEMENT IMPROVEMENTS - 2 OF 3

SCALE: 1"=100'

Tighe&Bond

N

WEST POINT ROAD

WEST POINT ROAD

66

196

AMERICAN DISTILLING AND MANUFACTURING

ISLAND COFFEE TRADERS

CVS

SAVINGS INSTITUTE BANK & TRUST

CHATHAM SPIRITS & FINE WINE

CONSOLIDATE AND CREATE DEFINED TWO-WAY DRIVEWAY

CONSIDER CLOSING EXISTING DRIVEWAY

CONSIDER ENTRANCE ONLY DRIVEWAY ACCESS

BELLTOWN SMOKE SHOP

EAST HIGH STREET

42 EAST HIGH STREET COMMERCIAL BUILDING

CLASSIC AUTO

BROOKS PLAZA

SUBWAY

LAKEVIEW STREET

MATCH LINE - SEE FIGURE 30

HEATHER'S JEWELRY

THE HEADLINERS FAMILY SALON

CITGO

LAKE SHORE PACKAGE STORE

GOVERNOR'S TAVERN

LEGEND:

EXISTING ACCESS

POTENTIAL FUTURE IMPROVEMENTS

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

Route 66 Corridor Study

FIGURE 31

CONCEPT AM - EAST HAMPTON ACCESS MANAGEMENT IMPROVEMENTS - 3 OF 3

SCALE: 1"=100'

Tighe&Bond

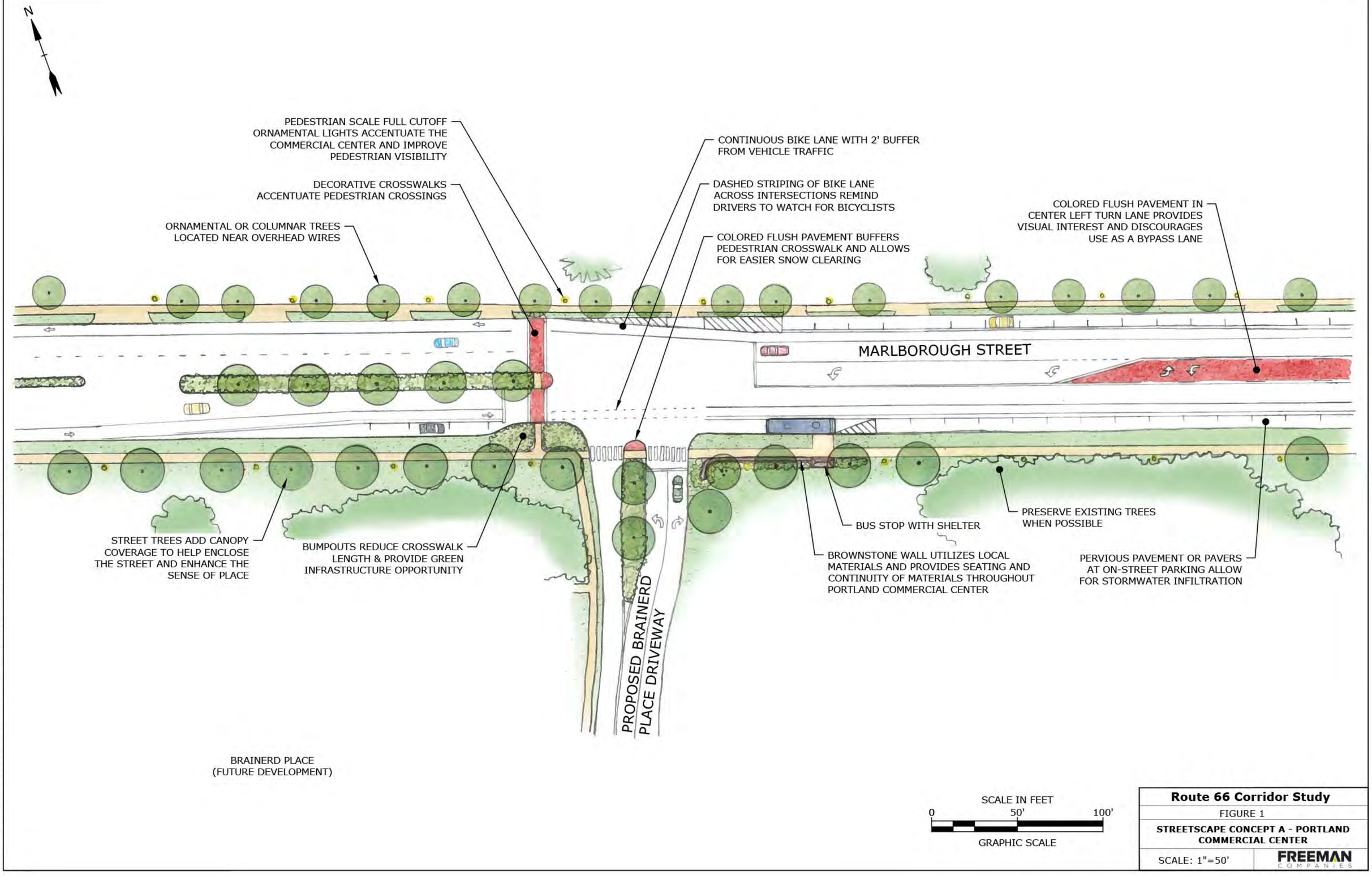

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FIGURE 1

STREETSCAPE CONCEPT A - PORTLAND COMMERCIAL CENTER

SCALE: 1"=50'

FREEMAN COMPANIES

N

DEPOT HILL ROAD

PRESERVE EXISTING TREES TO PROVIDE SHADE AND REDUCE THE SCALE OF THE STREET

PEDESTRIAN SCALE FULL CUTOFF ORNAMENTAL LIGHTS ACCENTUATE THE COMMERCIAL CENTER AND IMPROVE PEDESTRIAN VISIBILITY

ORNAMENTAL OR COLUMNAR TREES LOCATED NEAR OVERHEAD WIRES

BACK OF WALK PLANTINGS SEPARATE PEDESTRIANS FROM PARKING, REDUCE IMPERVIOUS AREA, AND PROVIDE OPPORTUNITY FOR STORMWATER INFILTRATION

COLORED FLUSH PAVEMENT PROVIDES VISUAL INTEREST

DECORATIVE CROSSWALKS ACCENTUATE PEDESTRIAN CROSSINGS

PORTLAND-COBALT ROAD

OLD DEPOT HILL ROAD

PLANTINGS, COBALT CENTER SIGNAGE, AND LOCALLY SOURCED FIELDSTONE WALLS SIGNIFY THE VILLAGE CENTER

STREET TREES ADD CANOPY COVERAGE AND SENSE OF PLACE

MIDDLE HADDAM ROAD

RECONFIGURED; ORGANIZED PARKING PROVIDES GREEN SPACE AND OPPORTUNITIES FOR AMENITIES SUCH AS PICNIC AREAS

SCALE IN FEET
0 50' 100'
GRAPHIC SCALE

Route 66 Corridor Study

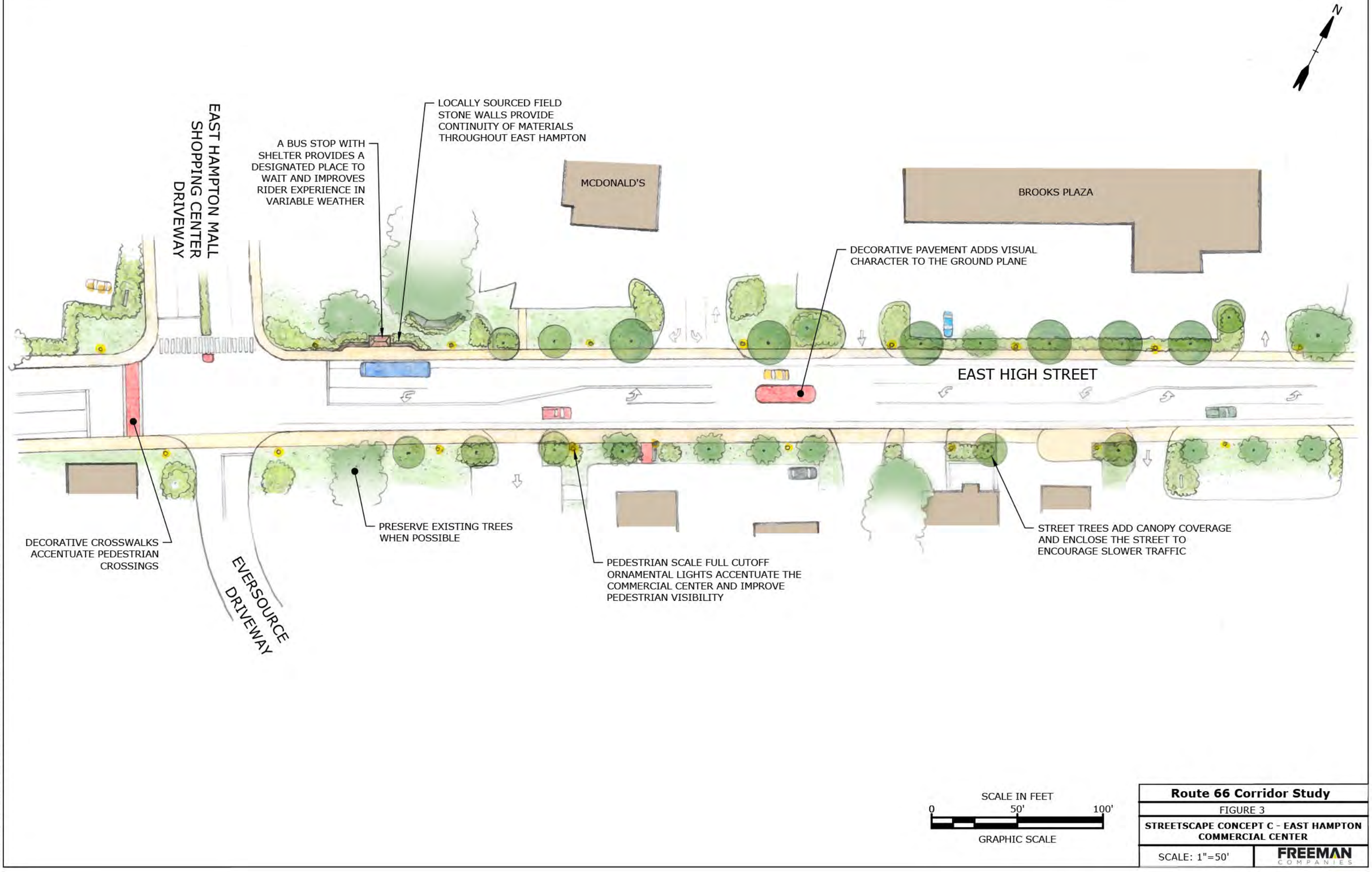
FIGURE 2

STREETSCAPE CONCEPT B - COBALT CENTER

SCALE: 1"=50'

FREEMAN COMPANIES

Sep 15, 2020-2:00pm Plotted By: KMontgomery
Freeman Companies, LLC R:\2017\2017-0520 Rte. 66 Corridor\DWG\Cobalt Center - Road Widening - landscape concept.dwg



Route 66 Corridor Study

FIGURE 3

STREETSCAPE CONCEPT C - EAST HAMPTON COMMERCIAL CENTER

SCALE: 1"=50'

FREEMAN COMPANIES