6

Alternatives Screening Process

6.1 Introduction

This chapter describes the alternatives screening process used to develop the corridor study recommendations detailed later in Chapter 7. The first section describes the process of developing a comprehensive list of potential transportation improvement ideas. The second section describes the first-level technical assessment of the alternatives. Each alternative was evaluated with respect to its ability to address transportation demand, its social and environmental impacts and its constructability. Based on this evaluation, alternatives were retained for further study, eliminated or combined with other alternatives. The final section describes further development and analysis of the alternatives that survived the first level screening and preparation of conceptual engineering plans.

6.2 Alternatives Identification / Initial Evaluation Process

Based on the deficiencies identified and summarized in Chapter 5, a set of preliminary improvement alternatives were developed to address safety, geometric and operational deficiencies identified along the study corridor and the local street network. The improvements range in scope from the near term, actions which could be implemented within 5 years, the medium term which are envisioned within a 5 to 10 year timeframe, and the long term, which will take longer than 10 years to complete.

This preliminary list of improvement alternatives was presented to the Route 8 Stakeholder Group (SG) for input, comments and suggested additions in May 2009. Based on their feedback, an amended set of alternatives was carried forward onto the first-level screening evaluation.

Evaluation criteria used to evaluate the improvements in the first-level screening process were also discussed and agreed upon with the Stakeholder Group. The initial screening of transportation improvement alternatives involved understanding each alternative's potential traffic demand, operational effects, socio-economic and

environmental impacts, and constructability. The alternatives retained after completion of the first level screening were then further developed and evaluated by the study team in a second level screening.

Initial Screening Criteria

The following sections describe the criteria used to assess the performance of the various alternatives. Initial review of the alternatives was more qualitative in nature, but evolved into a more quantitative assessment through the screening process.

Congestion

The analysis of deficiencies and needs revealed moderate congestion during peak hours along the Route 8 study corridor and key local roadways under the 2008 Existing Conditions with additional delay under the 2030 Future Conditions. Alternatives that reduce congestion in the overall study area can:

- Reduce Vehicle Delays
- Reduce Local Street Impacts (Queues)
- Improve Emergency Vehicle Access and Mobility
- Improve Local Access
- Improve Air Quality

Safety

The deficiency and needs analysis also revealed several areas with safety deficiencies along the Route 8 study corridor and local roadways. Improvements should be made to bring current operating and design standards into compliance. Finally, the physical integrity of the roadways and structural infrastructure must be maintained and improved where deficient.

This objective can be measured based on each alternative's ability to:

- Address High Crash Locations
- Address Geometric Deficiencies
- Improve Driver Expectations

Mode Diversification/Ridesharing

The Route 8 study corridor is well served by bus routes and Metro-North Railroad service. The Naugatuck River Greenway Project will enhance pedestrian and bicycle friendly transportation for a small portion of the study area. However, there is great opportunity to improve mode diversification in the corridor. The number of public transportation modes as well as providers available may be increased. The

coordination between the existing transit services may be improved. Pedestrian and bicycle transportation may be enhanced. Intelligent Transportation Systems (ITS) may also be incorporated into the overall transportation network for the Route 8 corridor. This objective can be evaluated based on the following factors:

- Mode Type Availability
- Traffic Demand Shifts to Non-Automobile Modes
- ITS Components
- Transportation Demand Management (TDM) Strategies

Environmental Sensitivity

The Naugatuck River runs alongside the Route 8 study area. Wetlands are prevalent throughout the study corridor. Proposing solutions to transportation issues that do not pose a threat to the vital environmental components of the area are an important factor in the evaluation and screening of alternatives. It is important to minimize the impact to the natural environment by carefully assessing the proposed physical alterations to Route 8 or other study roadways, increasing the travel efficiency of other modes of transportation, and finding a balance of the environmental impacts so as to not overburden one environmental aspect versus another. The following issues were examined to test the environmental sensitivity of each improvement alternative:

- Land use/right-of-way
- Wetlands and water resources
- Wildlife/endangered species
- Cultural resources
- Section 4(f)and Section 6(f) lands
- Socio-economic/environmental justice
- Air/noise
- Hazardous/contaminated risk
- Farmland

Engineering Feasibility

Each alternative was assessed for its feasibility from an engineering and constructability standpoint. Alternatives deemed infeasible from an engineering standpoint were dismissed prior to undergoing further evaluation.

Economic Development – Local & Regional

The economic sustainability of the region is contingent upon the efficiency and maintenance of the transportation system in place in the region. The transportation system should not only support the current direction and pace of development, but also the projected direction and pace envisioned by the local Towns and Chambers of

Commerce. The recommended alternatives should maintain existing community and business connections, activity and access. The alternatives should also address the need for improved access to areas of planned future development. Review of the alternatives considered:

- Impact on Businesses
- Access to Planned Areas of Growth

Local Connectivity/Access

The Route 8 Study corridor directly connects the towns of Waterbury, Naugatuck, Beacon Falls, and Seymour, and indirectly connects the surrounding area to I-84 to the north and I-95 to the south. The connectivity of the study area as well as the ease of access to the various existing business districts within the study area directly impact the economic sustainability of the region as well as the retention and attraction of residents. Excessive congestion, safety hazards or difficult way finding may deter patrons and new businesses from utilizing the area. Alternatives were assessed on how connectivity/access to the local communities is maintained or enhanced.

Consistency with Local Master Plans and Regional Master Plans

The Route 8 Interchanges 22-30 Deficiencies/Needs Study was a collaborative effort between stakeholder groups, CT DOT and the consultant team. It is, therefore, important to consider the transportation and land use visions and objectives already in place for study area communities. Additionally, stakeholder feedback on the evaluation and screening of alternatives were considered throughout the process.

Initial Screening Results

Each preliminary alternative was evaluated for its effectiveness in addressing the study's goals and objectives. Numerical scoring of benefits and impacts (ranging from -1 to 1) was used to assist in this process. Details of the initial alternatives and the first level screening analysis are provided in Technical Memorandum #2 – Screening Analysis of Alternatives. The alternatives that were retained for further study after the first level screening analysis were subject to further review, refinement and analysis summarized below.

6.3 Alternatives Refinement and Second Level Screening

The next step in the alternative evaluation/screening process was to further develop the alternatives that appeared to offer the most potential after completion of the first level screening and conduct a second level screening.

Second Level Screening Criteria

The refined alternatives were reviewed based on additional engineering, transportation, and environmental criteria described in the following sections.

Conceptual Engineering

The improvement strategies that survived the first level screening were developed into more detailed conceptual design plans. Intersection and interchange lane configurations were reviewed in conjunction with the traffic data provided by CTDOT for the design year to ensure operational and safety objectives were met. Additional on-site studies were conducted to field review and identify physical and environmental design constraints. A preliminary order of magnitude construction cost estimate was prepared for each of the alternatives. Construction costs were based on linear foot or per mile costs, reflecting the geometric detail available at this stage, and estimated from historical unit cost data provided by CTDOT.

Transportation Evaluation

Using traffic forecasts for the study area by CTDOT (and new model output for the various alternatives), the impacts of the transportation strategies under consideration for affected locations were identified and analyzed. Updated ramp and intersection operational analyses were conducted for each relevant strategy for the 2030 design year. Using the morning and evening peak hour networks, locations expected to be significantly impacted by each alternative were identified and re-analyzed using HCS or Synchro software.

Environmental Review

As part of this more detailed refinement of the alternatives, additional review was completed to evaluate and compare potential environmental impacts for each alternative. The environmental constraints identified and mapped in earlier tasks were overlaid with the proposed alternatives to determine impacts in each of the environmental review categories. In this way, each alternative's relative impacts could be compared. The environmental impact analysis focused on the following categories of impacts:

- Noise
- Air Quality
- Wetlands and Surface Water Sources
- Groundwater Resources
- Endangered Species
- Farmland Soils
- Cultural Resources
- Section 4(F) and Section 6(F) Lands

- Hazardous Materials
- Socioeconomic Environment/Environmental Justice

Draft alternative concepts plans were presented to the Route 8 Stakeholder Group (SG) for input and comments in November 2009. These alternatives were also presented at a public informational meeting to solicit further feedback.

Second Level Screening Results

The second level screening analyses and the input from the study Stakeholder Group, affected regional planning agencies and municipalities, and the general public (see Technical Memorandum #2) formed the basis for the study's recommendations presented in Chapter 7.

7

Recommendations

Previous chapters of this report summarized the existing and future transportation deficiencies and needs within the Route 8 study area and the analyses used to identify and screen the alternatives to address these deficiencies and needs. These analyses, combined with input from the Stakeholder Group, local officials and the public, led to the recommended improvements presented in this chapter along with a financial plan. The recommended plan identifies transportation improvements that may be accomplished in the near term (1-5 years), medium term (5-10 years) and in a longer time frame (greater than 10 years).

7.1 Study Goals and Objectives

The study recommendations address the underlying issues and objectives of the Route 8 Corridor Deficiencies/Needs Study as follows:

- **Preserve the capacity of Route 8.** The recommended improvements for the Route 8 interchanges include changes to ramp merges and diverges and weave sections within the corridor to preserve the capacity of the mainline.
- **Address each interchange's unique operating conditions and placement in the overall system**. The recommendations include study opportunities to improve safety conditions within the interchanges and to eliminate and/or consolidate traffic movements through them while maintaining access to the local communities and major attractions.
- **Enhance arterial street system operations.** The tight geometry of the interchanges and proximity of adjacent intersections constrain operations and potentially affect safety along both the arterial street system and Route 8. The recommended improvements include modifications in circulation, traffic control at signalized intersections, roadway geometry, and elimination of some ramp movements to enhance arterial street system operations.
- **Provide for future growth.** The Route 8 system is tremendously important to provide access to existing and developing land uses. The recommended improvements are designed to keep options for development open and accommodate of growth in traffic flows, both regionally and locally.

7.2 Description of Proposed Corridor Recommendations

Based on the second level screening analysis presented in Chapter 6, a number of improvements are recommended for Route 8 interchanges and nearby intersections and roadways.

Seymour - Interchange 22

The near term improvements identified for Interchange 22 include construction of a splitter island on Wakeley Street to discourage the left turns onto Bank Street and installation of a multi-way stop at the intersection of Route 8 NB-Off ramp at Wakeley Street. The right lane on the northbound approach of Route 67 would be restriped as a right-turn only lane (for turns onto the Route 8 southbound on-ramp and southbound Wakeley Street. These near term improvements are identified on Figure 7-1.

Figure 7-2 (sheets 1 through 3) presents the long term improvements identified for this location. The recommended improvements include: relocation of the existing Route 8 NB-Off Ramp from Wakeley Street to align directly across from Bank Street; the widening of Route 67 to a four-lane cross-section from Bank Street through the Exit 22 northbound ramps; and reconstruction of Wakeley Street between the existing off-ramp location and Bank Street to allow one-way northbound travel from Bank Street to Wakeley Street.

Seymour - Local Intersections

Figure 7-3 depicts the recommended near-term improvements at the Route 115 and Route 313. Pavement marking improvements along Route 313 EB and the portion of roadway where Route 313 and Route 115 coincide are proposed. An advance warning sign with flashers is proposed along the NB stretch of the Route 313/Route 115 roadway. Flashing sign control is also recommended for the southern intersection of Route 115 and Route 313, providing a flashing red control for Route 313 and flashing yellow control for NB/SB Route 115.

Figure 7-4 identifies a longer-term improvement for this location that involves the replacement of the railroad bridge over Route 313 which would allow for improving the overall geometry at this location. This alternative was developed in response to comments received from the Town of Seymour and appears to be a viable long-term option should improvements along the railroad corridor or when/if the railroad bridge requires replacement.

Figure 7-5 presents the medium-term improvements for the intersection of Route 313 at Derby Avenue. Under this improvement concept, Derby Avenue is widened to provide an exclusive NB left turn lane.

Figure 7-6 presents the identified near-term improvements for the intersection of Route 313 at Pearl Street. The recommended improvement calls for upgrading the existing traffic control signal and improving pedestrian access through the intersection. Curbs are proposed to be widened to conform to ADA standards and enhance pedestrian safety. On-street parking would be provided for the Pearl Street NB and SB approaches and the Route 313 EB approach. This intersection is under local jurisdiction.

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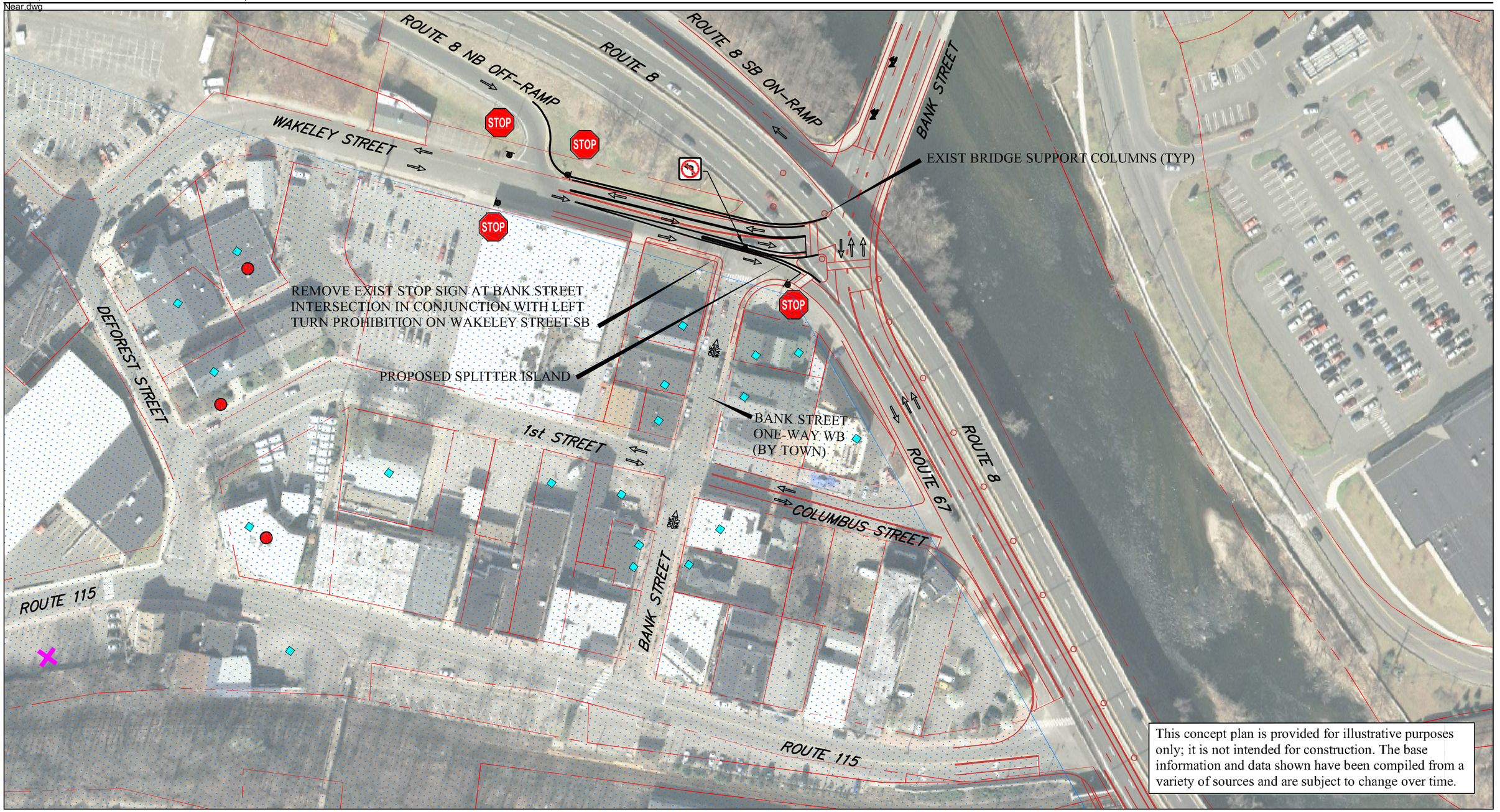

0 50 100 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 67 DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 1 FT MIN
ISLAND WIDTH = 4 FT

LEGEND:
- EXISTING SURFACE FEATURES (MARKINGS, CURB BRIDGE COLUMNS ETC.,)
- RIGHT-OF-WAY
- HISTORIC PROPERTIES
- COMMUNITY FACILITIES
- LEACHATE WASTE
- HISTORIC DISTRICT

Vanasse Hangen Brustlin, Inc.

Seymour November 2010
Interchange 22

Route 67/Wakeley Street
Near Term Alternative

FIGURE 7-1

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This concept plan is provided for illustrative purposes only; it is not intended for construction. The base information and data shown have been compiled from a variety of sources and are subject to change over time.

0 50 100 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 67 DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 4 FT

LEGEND:
- EXISTING SURFACE FEATURES (MARKINGS, CURB BRIDGE COLUMNS ETC.,)
- RIGHT-OF-WAY
- HISTORIC PROPERTIES
- COMMUNITY FACILITIES
- LEACHATE WASTE
- HISTORIC DISTRICT

Vanasse Hangen Brustlin, Inc.

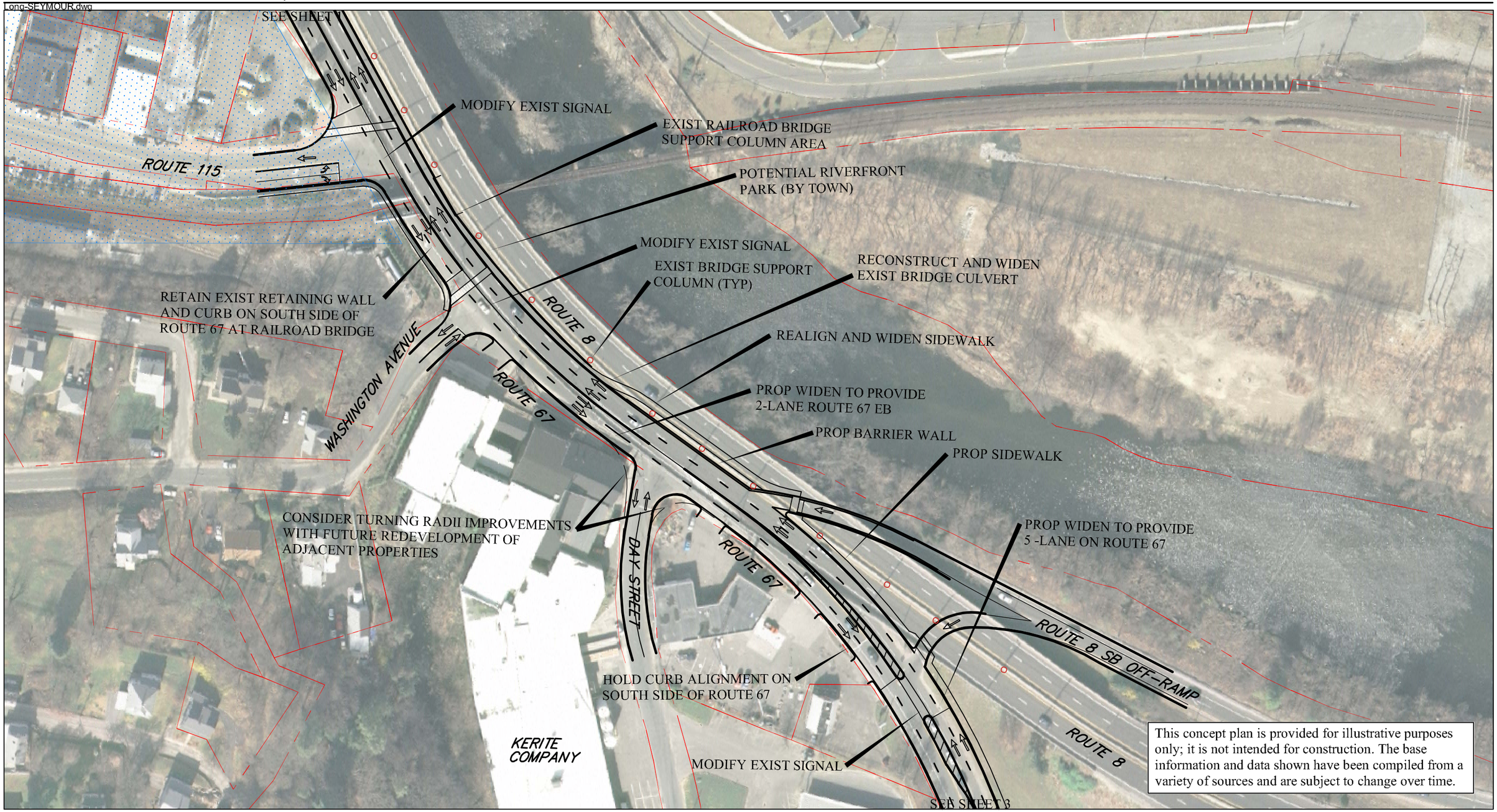
Seymour
Interchange 22

July 2010

Route 67/Route 8 NB Off-Ramp
Long Term Alternative (1 of 3)

FIGURE 7-2

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC22-wakeley Long-SEYMOUR.dwg



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CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 67 DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 1 FT
SIDEWALK WIDTH = 6 FT

LEGEND:
EXISTING SURFACE FEATURES (MARKINGS, CURB BRIDGE COLUMNS ETC.,)
RIGHT-OF-WAY
HISTORIC DISTRICT

Vanasse Hangen Brustlin, Inc.

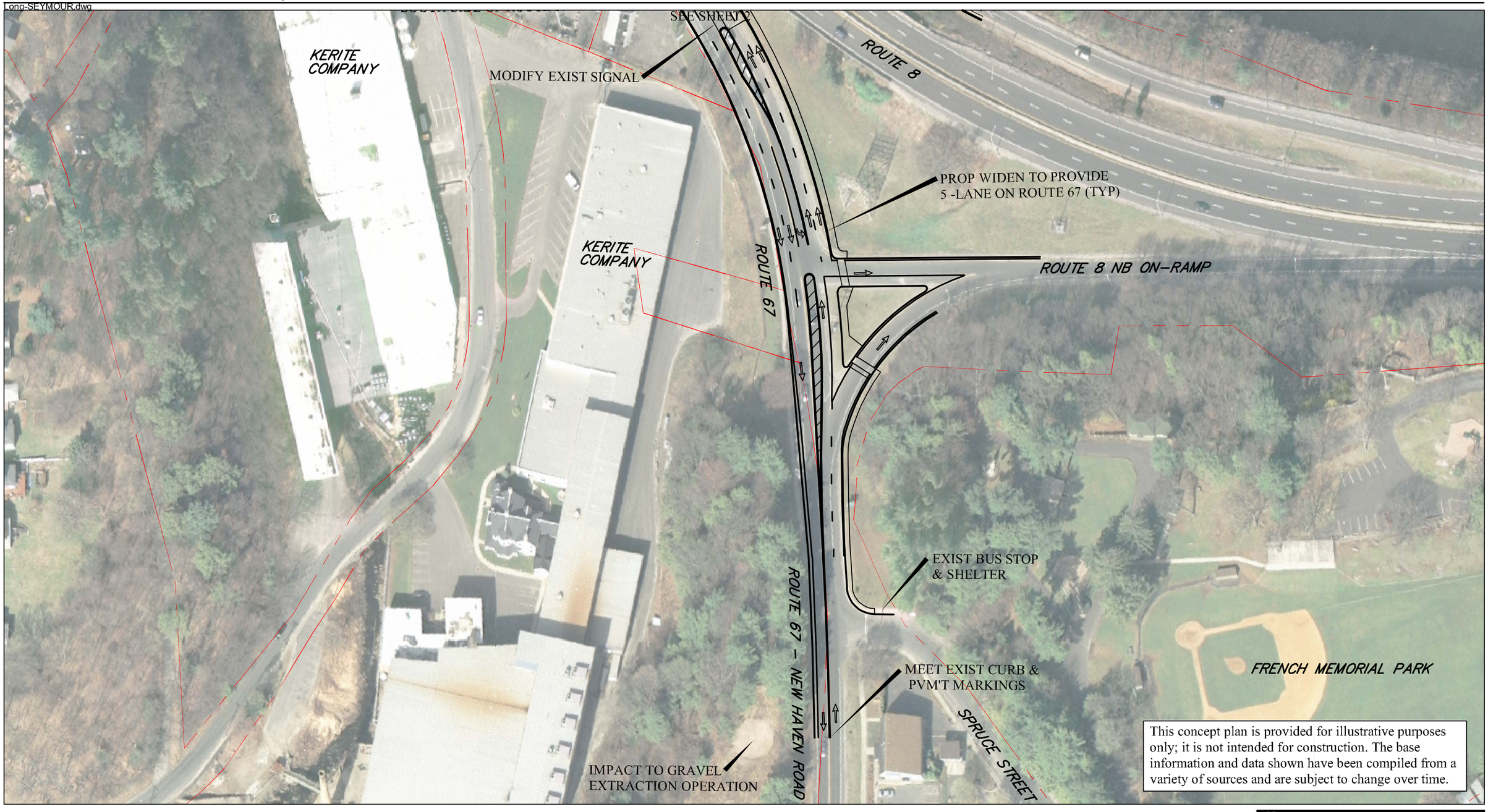
Seymour
Interchange 22

July 2010

Route 67/Downtown
Long Term Alternative (2 of 3)

FIGURE 7-2

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC22-wakeley Long-SEYMOUR.dwg



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CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 67 DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 1 FT
SIDEWALK WIDTH = 6 FT
LEFT TURN LANE WIDTH - 10 FT

LEGEND:
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

Seymour July 2010
Interchange 22

Route 67/Route 8 NB On-Ramp
Long Term Alternative (3 of 3)

FIGURE 7-2

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0 40 80 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 115 DESIGN CRITERIA:
DESIGN SPEED = 35 MPH
LANE WIDTH = 11 FT
SHOULDER WIDTH = 4 FT

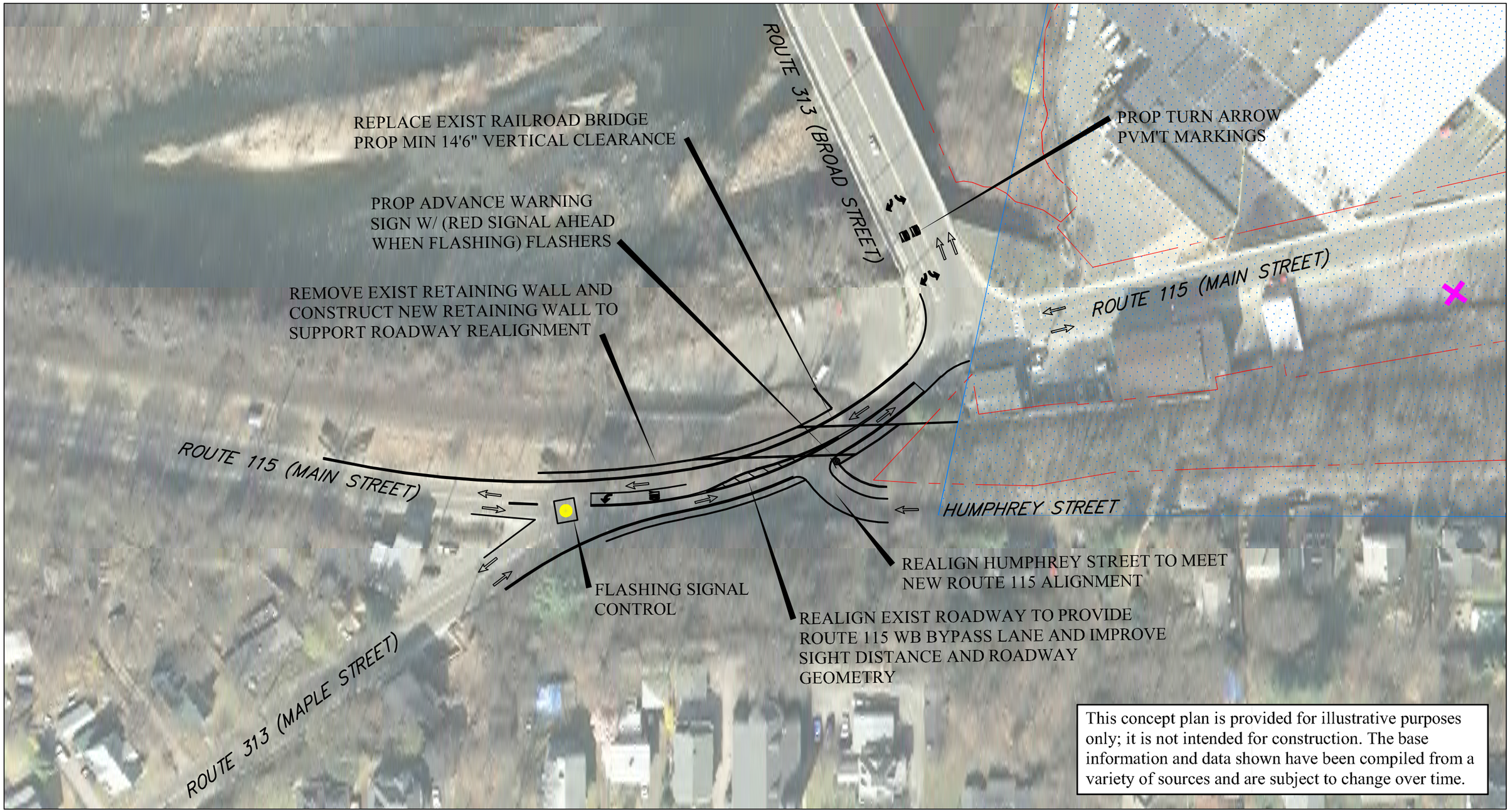
LEGEND:
RIGHT-OF-WAY
LEACHATE WASTE
HISTORIC DISTRICT

Vanasse Hangen Brustlin, Inc.

Seymour December 2010

Route 115 at Route 313
Near Term Alternative

FIGURE 7-3



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0 40 80 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 115 DESIGN CRITERIA:
DESIGN SPEED = 35 MPH
LANE WIDTH = 11 FT
SHOULDER WIDTH = 4 FT

LEGEND:
RIGHT-OF-WAY
LEACHATE WASTE
HISTORIC DISTRICT

Vanasse Hangen Brustlin, Inc.

Seymour March 2011

Route 115 at Route 313
Long Term Alternative

FIGURE 7-4

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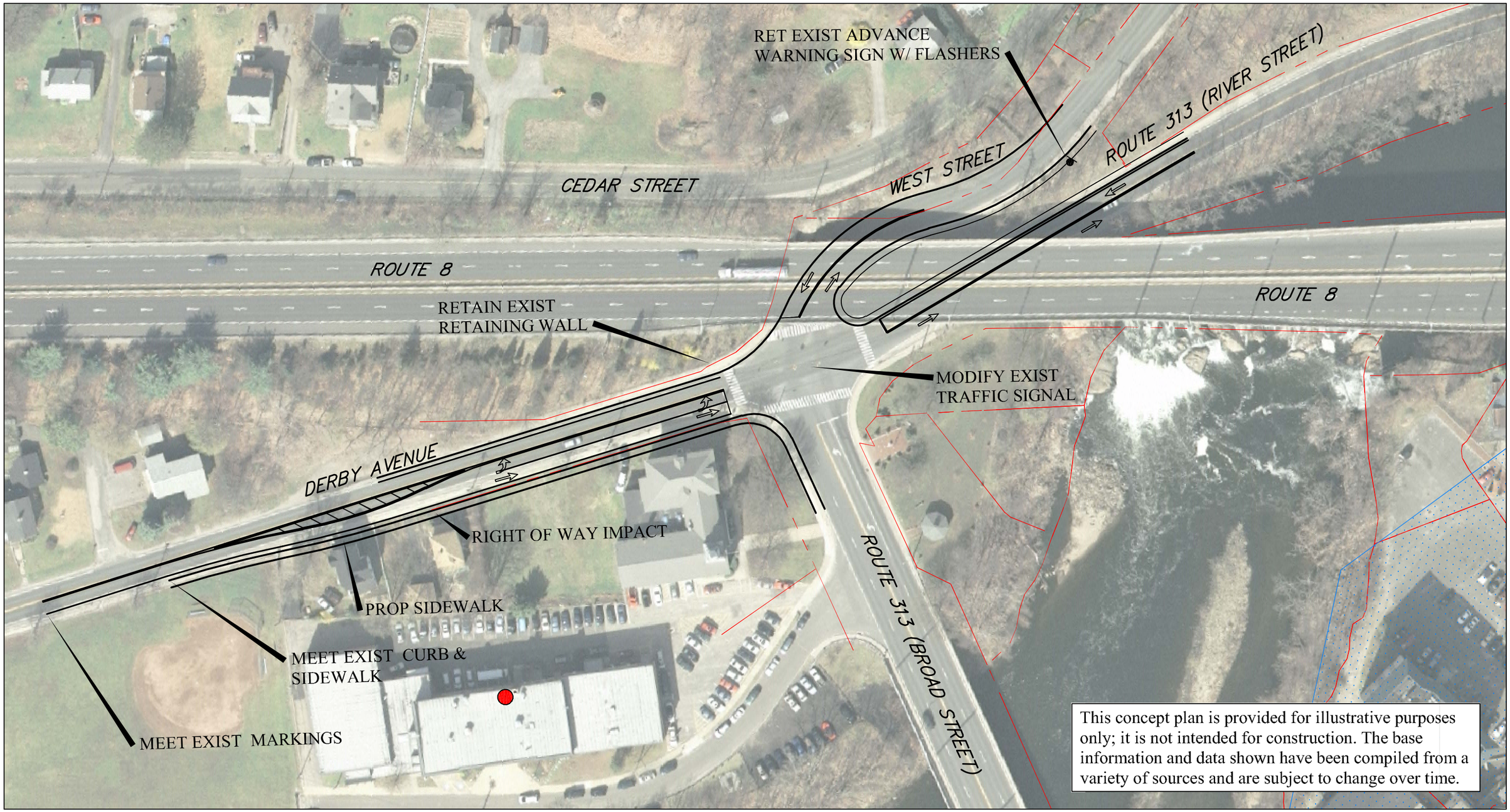

0 40 80 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

DERBY AVENUE DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 4 FT
SIDEWALK WIDTH = 6 FT
LEFT TURN LANE LENGTH = 300 FT
LEFT TURN LANE WIDTH = 10 FT

LEGEND:
RIGHT-OF-WAY
COMMUNITY FACILITIES
HISTORIC DISTRICT

Vanasse Hangen Brustlin, Inc.

Seymour July 2010

Derby Avenue at Route 313/West Street
Medium Term Alternative

FIGURE 7-5

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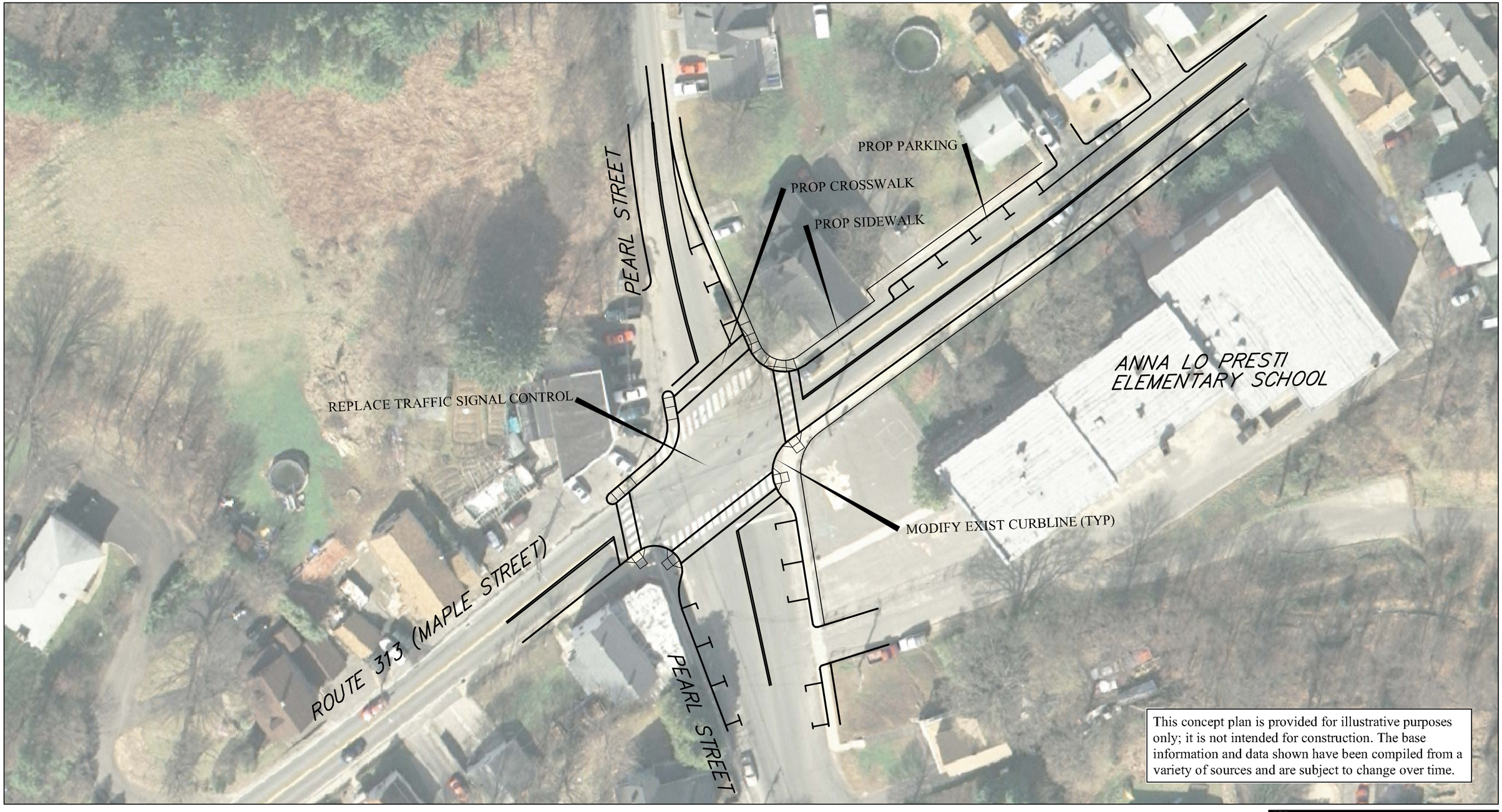

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0 25 50 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 313 DESIGN CRITERIA:
LANE WIDTH = 13 FT
SIDEWALK WIDTH = 6 FT
CROSSWALK WIDTH = 8 FT

PEARL STREET DESIGN CRITERIA:
LANE WIDTH = 11 FT
SIDEWALK WIDTH = 6 FT
CROSSWALK WIDTH = 8 FT

Vanasse Hangen Brustlin, Inc.

Seymour November 2010

Route 313 at Pearl Street
Near Term Alternative

FIGURE 7-6

Figure 7-7 presents the identified medium-term improvements at Interchange 23. Minor widening of the shoulder is recommended to extend the NB Off-ramp deceleration lane.

No other improvements are recommended as part of this study in Beacon Falls.

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0 50 100 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

DECELERATION LANE DESIGN CRITERIA:
LANE WIDTH = 12 FT
SHOULDER WIDTH = 12 FT
EXIST RAMP LENGTH = 1220 FT
EXIST DECEL LENGTH = 140 FT
95th PERCENTILE QUEUE* = 96 FT
REQUIRED DECEL LENGTH = 240 FT
PROP DECEL EXTENSION = 100 FT

* QUEUE LENGTH IS BASED ON PROJECTED VOLUME FOR THE DESIGN YEAR 2030. SHOULD THIS ALTERNATIVE BE ADVANCED TO DESIGN AND CONSTRUCTION, THE DESIGNER SHALL OBTAIN UPDATED TRAFFIC VOLUME INFORMATION AND RE-EVALUATE QUEUE LENGTH BASED ON UPDATED COUNT DATA AND RE-FORECASTED DESIGN YEAR PROJECTED VOLUME

LEGEND:
RIGHT-OF-WAY
LEACHATE WASTE

Vanasse Hangen Brustlin, Inc.

Beacon Falls July 2010
Interchange 23

Route 8 NB Off-Ramp to S. Main Street
Medium Term Alternative

FIGURE 7-7

Naugatuck - Interchange 25

Figure 7-8 presents the recommended medium-term improvement alternative at Interchange 25 that involves the minor widening of the shoulder to extend the NB Off-ramp deceleration lane to Cross Street.

Figure 7-9 presents the recommended medium-term improvements at the intersection of Route 8 Exit 25 ramps and Cross Street and the nearby Cotton Hollow Road intersection. The improvements include construction of a roundabout at the intersection and installation of a raised-median on Cross Street to the southbound ramps. Additionally, the informal parking area along the SB off-ramp is proposed to be closed. Minor geometric and access management improvements are also proposed at the Cross Street/Cotton Hollow Road intersection. Based on comments received from the Borough of Naugatuck during the study process, the plan includes the planned connections of the Naugatuck Greenway between the Naugatuck River to the west and the Blue Line Trail and the park-and-ride lot at Cotton Hollow Road to the south and east, respectively.

Naugatuck - Interchange 26

Figures 7-10 presents the recommended medium-term improvements to the off-ramp at Interchange 26. Minor widening of the shoulder to extend the NB off-ramp deceleration lane to Route 63 is proposed at this location.

Figure 7-11 presents the long-term recommended improvement identified for the intersection of S. Main Street/Route 63 at the NB Exit 26 off-ramp. As identified on Figure 7-11, relocating the ramp terminus to the south along Route 63 to form a new T-intersection and the installation of a new traffic signal is recommended. This improvement simplifies the existing ramp intersection and allows it to operate at an acceptable level of service in the future without the widening of the Route 63 bridge. Should the gas station site be redeveloped in the future, the Borough of Naugatuck should pursue further access management improvements at this location.

Naugatuck - Interchange 27

Several long-term improvement alternatives were explored for the intersection of Maple Street and the Route 8 SB off-ramp/NB on-ramp. The recommended plan (see Figure 7-12) calls for realignment of Oak Street is to a location approximately 50 feet east along Maple Street and widening the Route 8 SB off-ramp (on structure) to provide an exclusive left-turn lane and a shared use path providing for non-motorized access between the intersection and Linden Park along the Naugatuck River.

Figure 7-13 presents the recommended closing of the Route 8 NB off-ramp to North Main Street as a long-term improvement. This option eliminates the short weave area and allows for the continuation of the on-ramp. While this improvement would provide traffic benefits in the near-term, there was not strong local sentiment for advancing the strategy as an early action.

Figure 7-14 presents the final long-term recommended improvement at Interchange 27 that proposes to close the Route 8 SB on-ramp from North Main Street. A barrier wall is proposed to delineate the closure of the weave area and travel way for the off-ramp and a shared use path is incorporated into the plan alongside the overpass bridge structure from Linden Park to Maple Street. The provision of the path along the segment of the corridor is a recommendation of the previously completed Naugatuck Greenway Plan.

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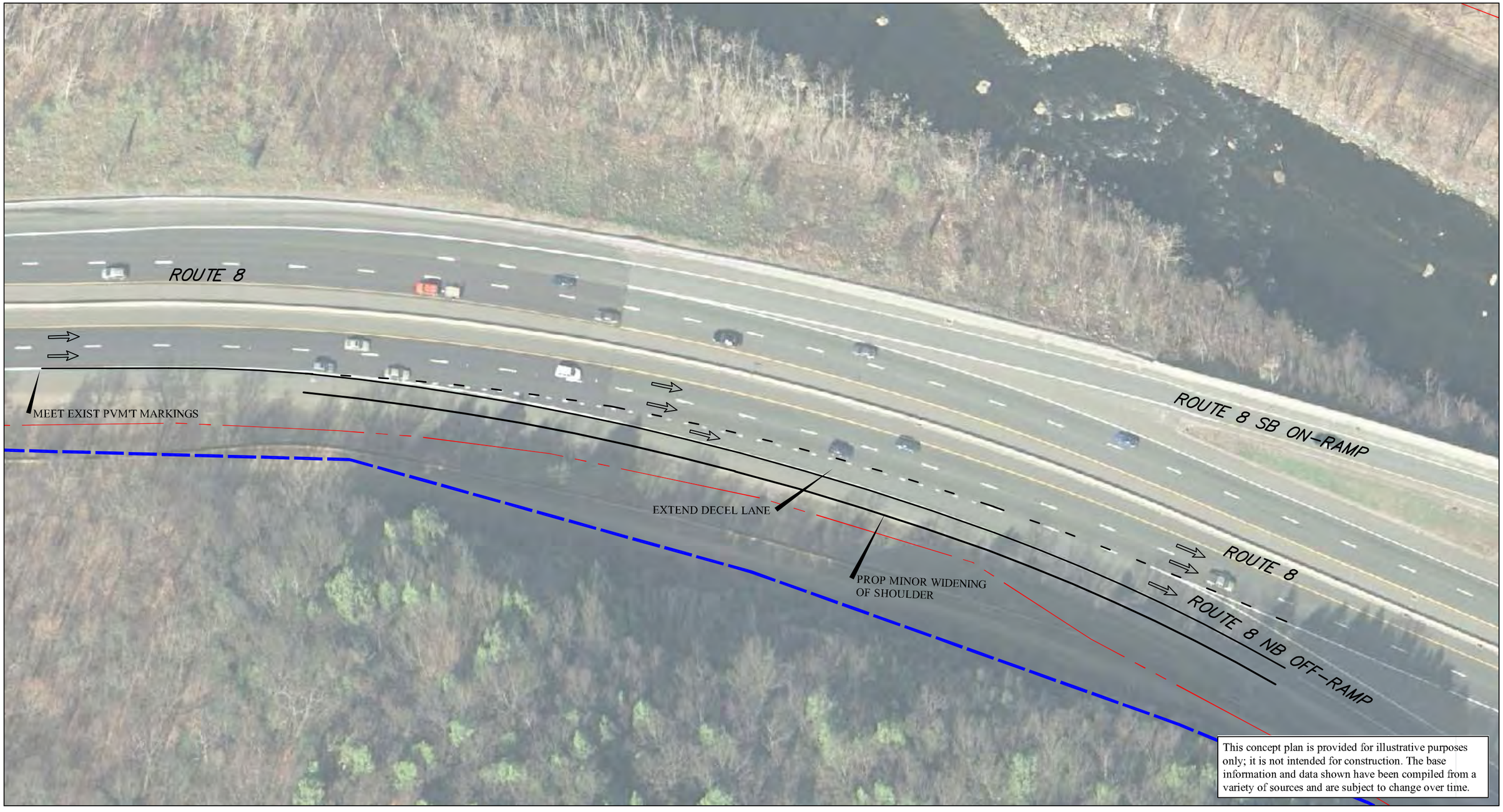

This concept plan is provided for illustrative purposes only; it is not intended for construction. The base information and data shown have been compiled from a variety of sources and are subject to change over time.

0 30 60 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

DECELERATION LANE DESIGN CRITERIA:
LANE WIDTH = 12 FT
SHOULDER WIDTH = 12 FT
EXIST RAMP LENGTH = 940 FT
EXIST DECEL LENGTH = 220 FT
95th PERCENTILE QUEUE* = 337 FT
REQUIRED DECEL LENGTH = 240 FT
PROP DECEL EXTENSION = 50 FT

* QUEUE LENGTH IS BASED ON PROJECTED VOLUME FOR THE DESIGN YEAR 2030. SHOULD THIS ALTERNATIVE BE ADVANCED TO DESIGN AND CONSTRUCTION, THE DESIGNER SHALL OBTAIN UPDATED TRAFFIC VOLUME INFORMATION AND RE-EVALUATE QUEUE LENGTH BASED ON UPDATED COUNT DATA AND RE-FORECASTED DESIGN YEAR PROJECTED VOLUME

LEGEND:
BLUE LINE TRAIL
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

Naugatuck July 2010
Interchange 25

Route 8 NB Off-Ramp to Cross Street
Medium Term Alternative

FIGURE 7-8

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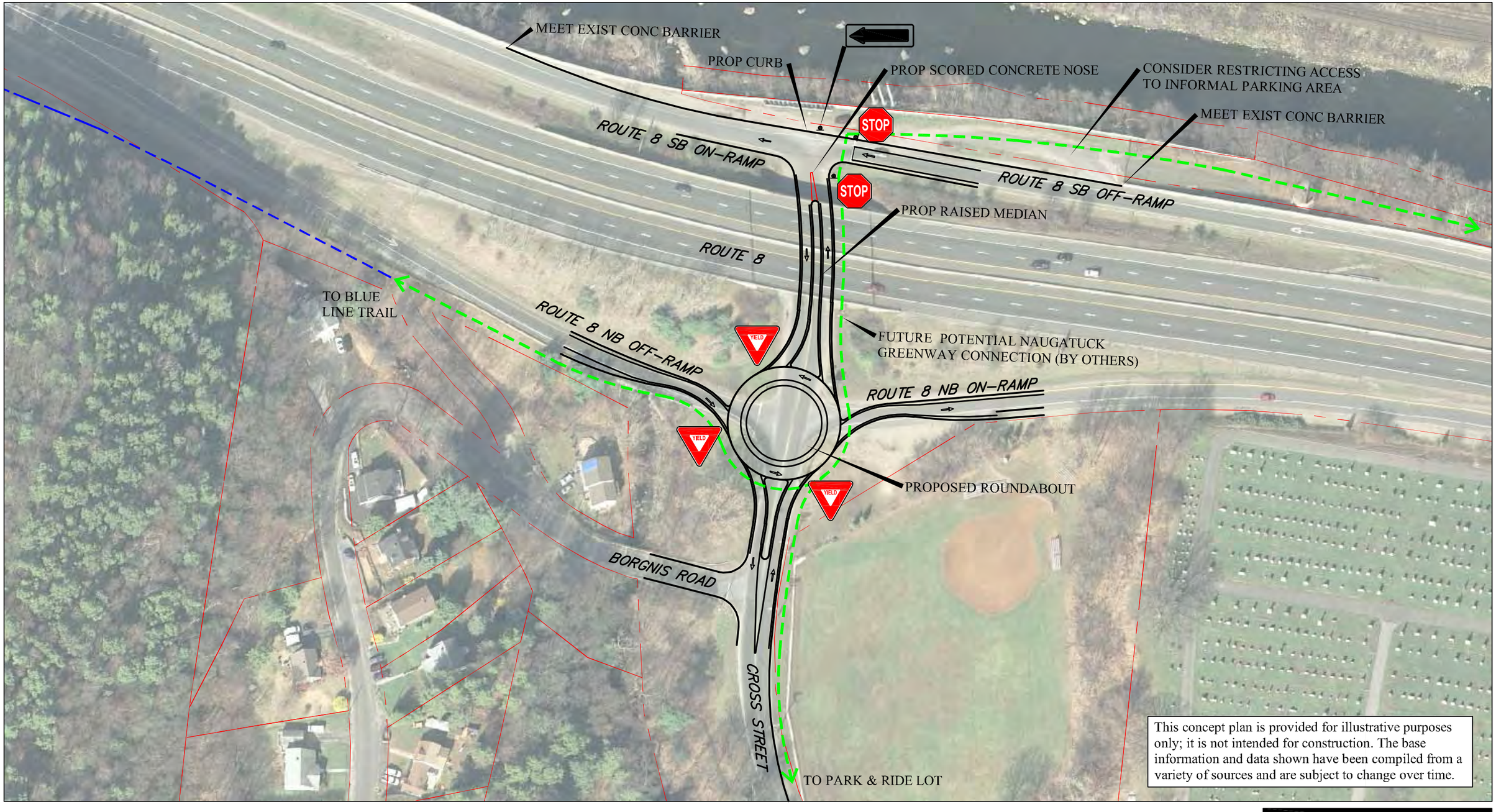

0 50 100 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUNDABOUT DESIGN CRITERIA:
DESIGN SPEED = 15 MPH
CIRCULATING LANES: 14 FT
NUMBER OF LANES IN ROUNDABOUT: 1
DIAMETER OF CIRCLE: 120'

LEGEND:
BLUE LINE TRAIL
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

Naugatuck
Interchange 25

July 2010

Route 8 Ramps at Cross Street
Medium Term Alternative

FIGURE 7-9 (Sheet 1 of 2)

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Cotton Hollow rd.dwg

0 25 50 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

LEGEND:
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

Naugatuck November 2010
Interchange 25

Cross Street at Cotton Hollow Road
Near/Medium Term Alternative

FIGURE 7-9 (Sheet 2 of 2)

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC26.dwg

0 30 60 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

DECELERATION LANE DESIGN CRITERIA:
LANE WIDTH = 12 FT
SHOULDER WIDTH = 12 FT
EXIST RAMP LENGTH = 705 FT
EXIST DECEL LENGTH = 290 FT
95th PERCENTILE QUEUE* = 541 FT
REQUIRED DECEL LENGTH = 350 FT
PROP DECEL EXTENSION = 60 FT

* QUEUE LENGTH IS BASED ON PROJECTED VOLUME FOR THE DESIGN YEAR 2030. SHOULD THIS ALTERNATIVE BE ADVANCED TO DESIGN AND CONSTRUCTION, THE DESIGNER SHALL OBTAIN UPDATED TRAFFIC VOLUME INFORMATION AND RE-EVALUATE QUEUE LENGTH BASED ON UPDATED COUNT DATA AND RE-FORECASTED DESIGN YEAR PROJECTED VOLUME

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

Vanasse Hangen Brustlin, Inc.

Naugatuck
Interchange 26

July 2010

Route 8 NB Off-Ramp to Route 63
Medium Term Alternative

FIGURE 7-10

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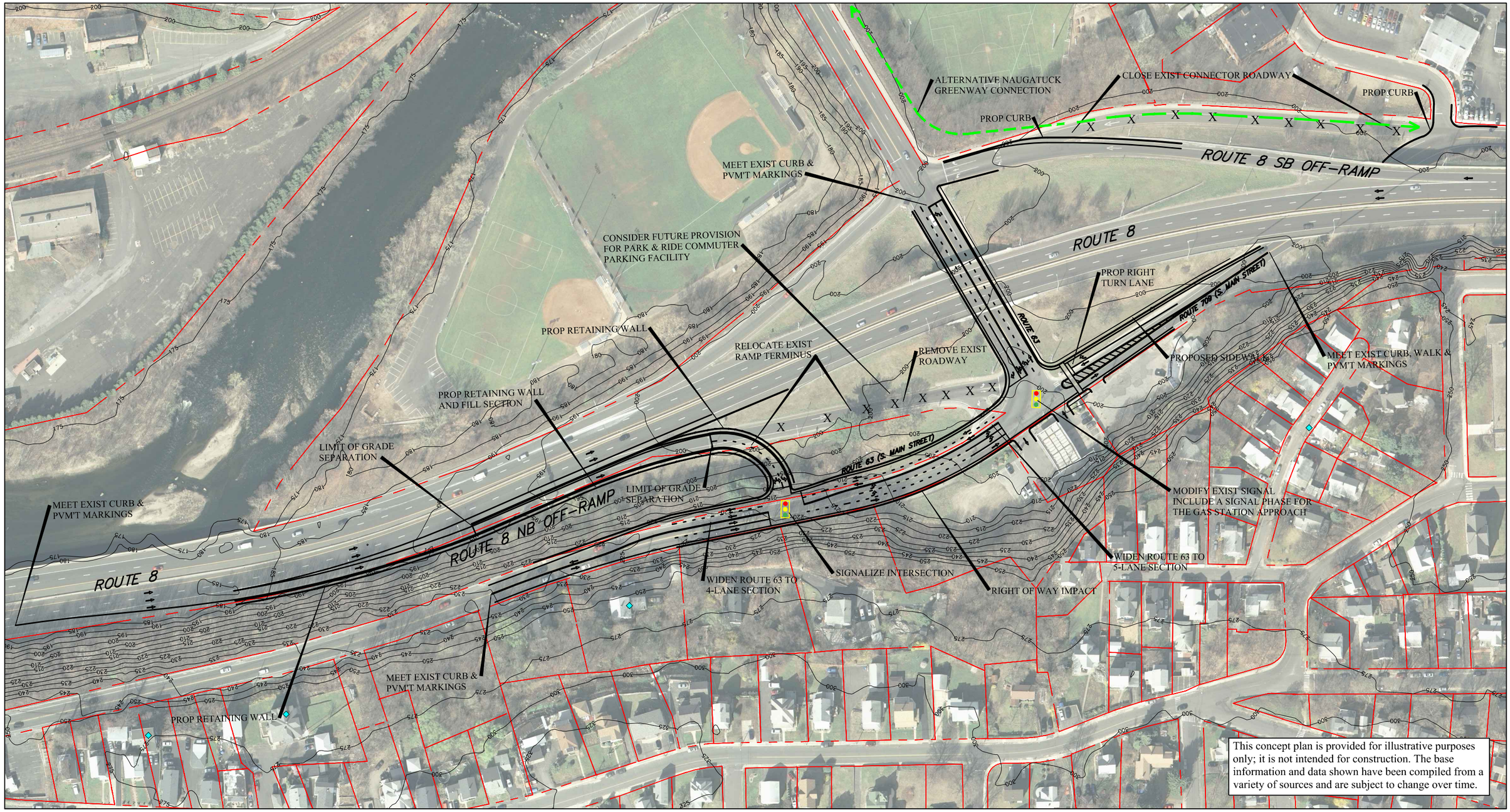


This concept plan is provided for illustrative purposes only; it is not intended for construction. The base information and data shown have been compiled from a variety of sources and are subject to change over time.

0 75 150 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 8 NB OFF-RAMP DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 2 FT
ELEVATION DIFFERENCE BASED ON CONTOUR DATA = 20 FT
MAX GRADE = 5%
95th PERCENTILE QUEUE* = 541 FT
PROP DECEL LENGTH = 350 FT

SOUTH MAIN STREET DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 2 FT
LEFT TURN LANE WIDTH = 10 FT

ROUTE 8 DESIGN CRITERIA:
LANE WIDTH = 12 FT
RIGHT SHOULDER WIDTH = 10 FT

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

* QUEUE LENGTH IS BASED ON PROJECTED VOLUME FOR THE DESIGN YEAR 2030. SHOULD THIS ALTERNATIVE BE ADVANCED TO DESIGN AND CONSTRUCTION, THE DESIGNER SHALL OBTAIN UPDATED TRAFFIC VOLUME INFORMATION AND RE-EVALUATE QUEUE LENGTH BASED ON UPDATED COUNT DATA AND RE-FORECASTED DESIGN YEAR PROJECTED VOLUME

Vanasse Hangen Brustlin, Inc.

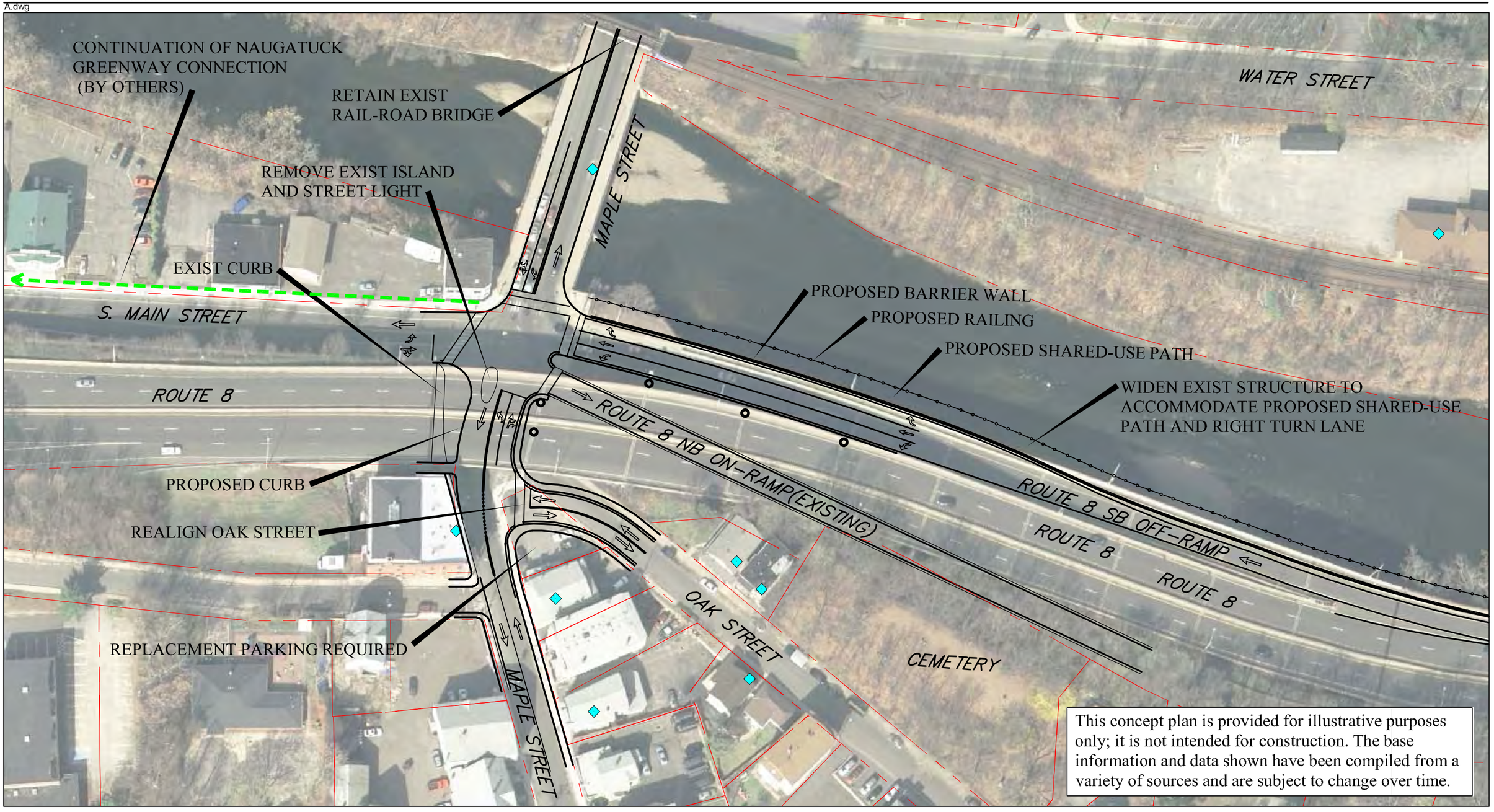
Naugatuck Interchange 26

November 2010

Route 8 NB Off-Ramp/Route 63/
South Main Street
Long Term Alternative

FIGURE 7-11

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC27-ALT A.dwg



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0 40 80 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

OAK STREET DESIGN CRITERIA:
DESIGN SPEED = 20 MPH
LANE WIDTH = 12 FT
SHOULDER WIDTH = 2 FT

MAPLE STREET DESIGN CRITERIA:
EASTBOUND LANE WIDTH = 11 FT
WESTBOUND LANE WIDTH = 13 FT
SHOULDER WIDTH = 2 - 4 FT
LEFT TURN LANE WIDTH = 10 FT
SIDEWALK WIDTH = 6 FT MIN.
SHARED USE PATH WIDTH = 14 FT MIN.

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

Vanasse Hangen Brustlin, Inc.

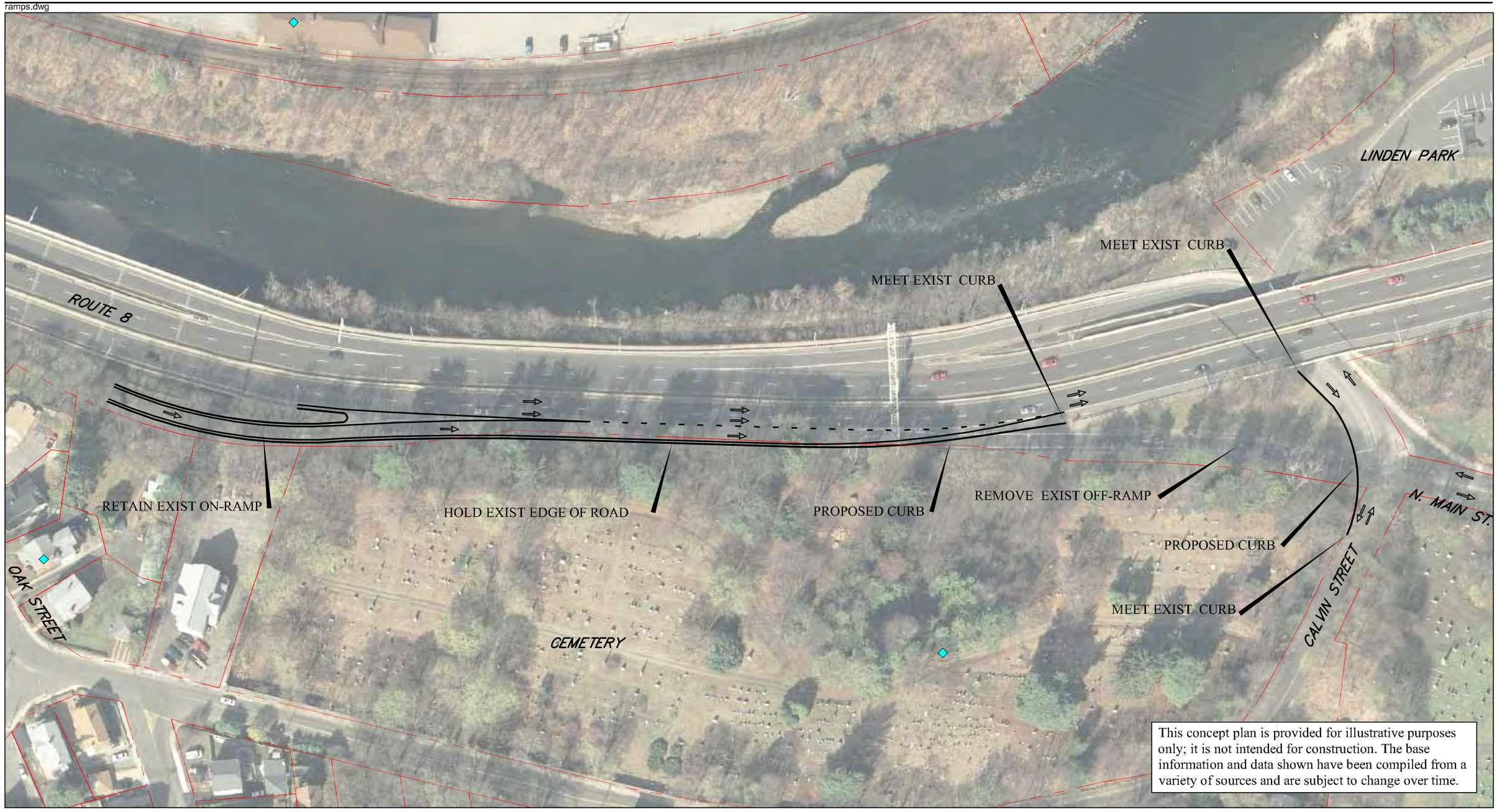
Naugatuck July 2010

Interchange 27

Route 8 Ramps/Maple Street
Long Term Alternative

FIGURE 7-12

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC27-nb ramps.dwg



0 50 100 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

RAMP DESIGN CRITERIA
DESIGN SPEED = 45 MPH
RAMP WIDTH = 26 FT
SHOULDER WIDTH = 4 - 12 FT
ACCELERATION LANE = 350 FT
LANE MERGE TAPER = 350 FT

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

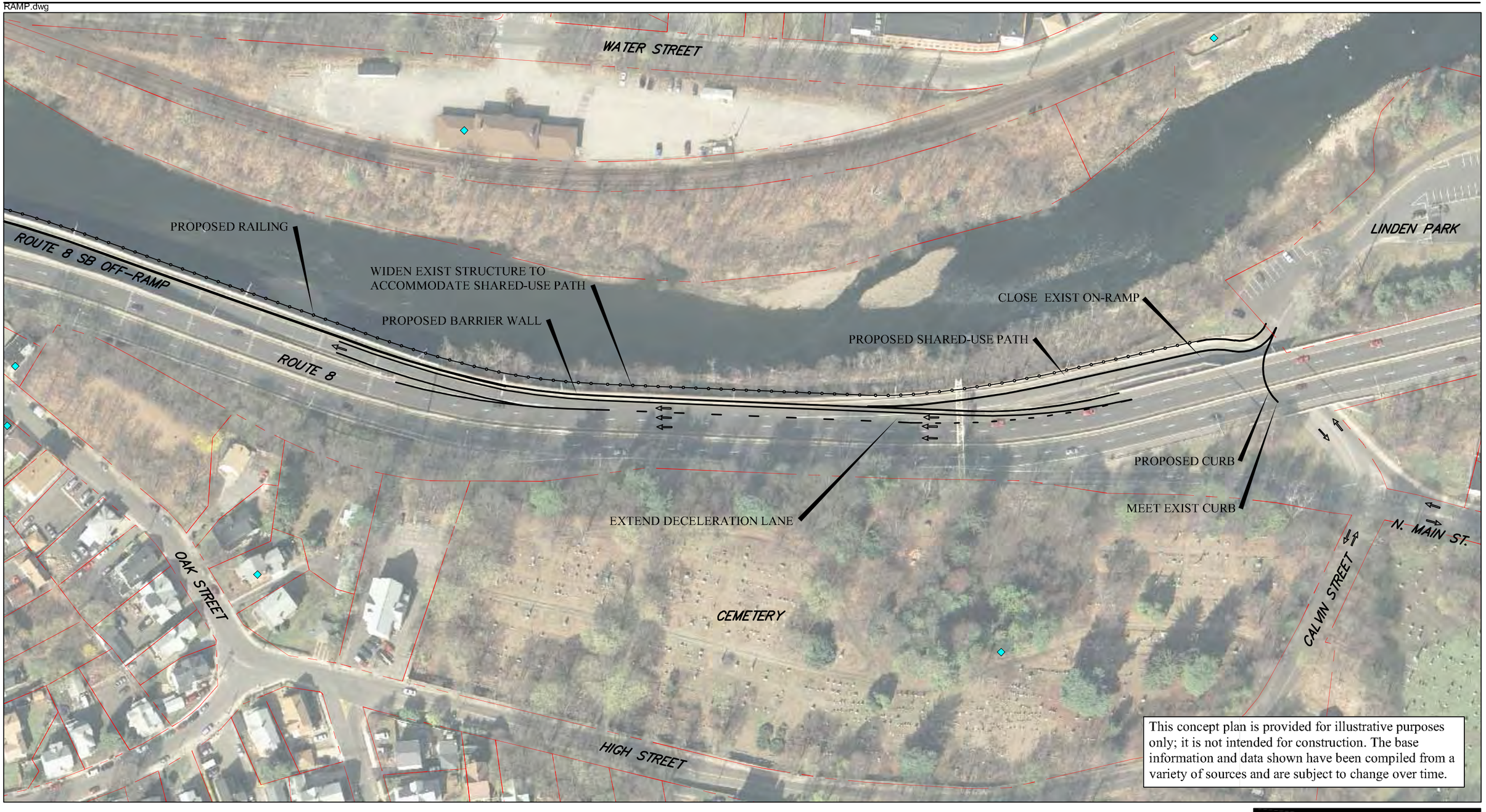
Vanasse Hangen Brustlin, Inc.

Naugatuck July 2010
Interchange 27

Route 8 NB Off-Ramp/N. Main Street
Long Term Alternative

FIGURE 7-13

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC27-SB RAMP.dwg



0 60 120 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

SHARED-USE PATH DESIGN CRITERIA
PATHWAY WIDTH = 14 FT

RAMP DESIGN CRITERIA
DESIGN SPEED = 45 MPH
RAMP WIDTH = 20 FT
LANE WIDTH - 12 -14 FT
SHOULDER WIDTH = 2-4 FT
DECELERATION LANE = 520 FT
LANE MERGE TAPER = 220 FT

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

Vanasse Hangen Brustlin, Inc.

Naugatuck
Interchange 27

July 2010

Route 8 SB Ramps
Long Term Alternative

FIGURE 7-14

Figure 7-15 depicts the proposed medium-term improvement at Interchange 28 to provide a minor widening of the shoulder to extend the NB off-ramp deceleration lane to North Main Street.

Figure 7-16 presents the recommended long-term improvements at Interchange 28 and the adjacent local roadway network. Under this action, the Route 8 NB off-ramp is proposed to be widened to provide an additional EB through lane. The SB North Main Street approach is proposed to be widened to provide exclusive left-turn, through, and right turn lanes at the Route 8 ramps, and an exclusive left turn lane at SR 723 (Golden Court). The plan calls for minor realignment of City Hill Street along SR 723 towards Route 68 and the widening of SR 723 to provide a five-lane cross section with exclusive left-turn, through, and right turn lanes at both the North Main Street and Route 68 approaches. North of Route 68, SR 723 (Golden Court) is proposed to be widened to provide exclusive left-turn and right-turn lanes at North Main Street and an exclusive left-turn and shared through/right-turn lanes at Route 68. A new traffic signal is proposed at the SR 723 (Golden Court) intersection with North Main Street. The plan also shows the addition of a left-turn lane to the Route 8 southbound on-ramp on the northbound approach of North Main Street. This part of the proposed improvement is only needed if the proposed closure of the Route 8 southbound on-ramp from North Main Street at Interchange 27 is implemented (as described previously).

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0 30 60 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

DECELERATION LANE DESIGN CRITERIA:
LANE WIDTH = 12 FT
SHOULDER WIDTH = 12 FT
EXIST RAMP LENGTH = 1150 FT
EXIST DECEL LENGTH = 150 FT
95th PERCENTILE QUEUE* = 627 FT
REQUIRED DECEL LENGTH = 350 FT
PROP DECEL EXTENSION = 200 FT

* QUEUE LENGTH IS BASED ON PROJECTED VOLUME FOR THE DESIGN YEAR 2030. SHOULD THIS ALTERNATIVE BE ADVANCED TO DESIGN AND CONSTRUCTION, THE DESIGNER SHALL OBTAIN UPDATED TRAFFIC VOLUME INFORMATION AND RE-EVALUATE QUEUE LENGTH BASED ON UPDATED COUNT DATA AND RE-FORECASTED DESIGN YEAR PROJECTED VOLUME

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

Vanasse Hangen Brustlin, Inc.

Naugatuck
Interchange 28

July 2010

Route 8 NB Off-Ramp to N. Main St.
Medium Term Alternative

FIGURE 7-15

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC28Reconfig.dwg

0 60 120 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 68 (PROSPECT STREET) DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 2 FT
SIDEWALK WIDTH = 6 FT
LENGTH OF WB RIGHT TURN LANE = 100 FT

UNION CITY STREET DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 2 FT
SIDEWALK WIDTH = 6 FT
LENGTH OF EB LEFT TURN LANE = 200 FT
LENGTH OF WB LEFT TURN LANE = 100 FT

SR 710 (NORTH MAIN STREET) DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 2 FT
SIDEWALK WIDTH = 6 FT
LENGTH OF LEFT TURN LANE = 100 FT
LENGTH OF RIGHT TURN LANE = 100 FT

ROUTE 8 NB OFF-RAMP DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 2 FT
LENGTH OF LEFT TURN LANE = 100 FT
LENGTH OF RIGHT TURN LANE = 100 FT

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

Vanasse Hangen Brustlin, Inc.

Naugatuck
Interchange 28

July 2010

Rte. 8 Ramps/N. Main St./Union City St.
Long Term Alternative

FIGURE 7-16

Waterbury - Interchange 29

Figure 7-17 depicts medium- to long-term improvements at the intersection of the Route 8 northbound ramps with South Main Street. Under this proposal, the entrance to the northbound on-ramp from South Main Street northbound is proposed to be realigned to eliminate the offset with the off-ramp approach and South Main Street southbound is proposed to be modified to provide an exclusive left-turn lane and a through/right turn lane at Sheridan Drive. In addition, minor widening to South Main Street in the southbound direction is proposed to be widened to provide an exclusive left-turn lane and two through lanes while Sheridan Drive is proposed to provide an exclusive left-turn lane and a shared through/right-turn lane. Under this plan, the commercial driveways on the west side of South Main Street are consolidated and placed under signal control at the intersection of Sheridan Drive.

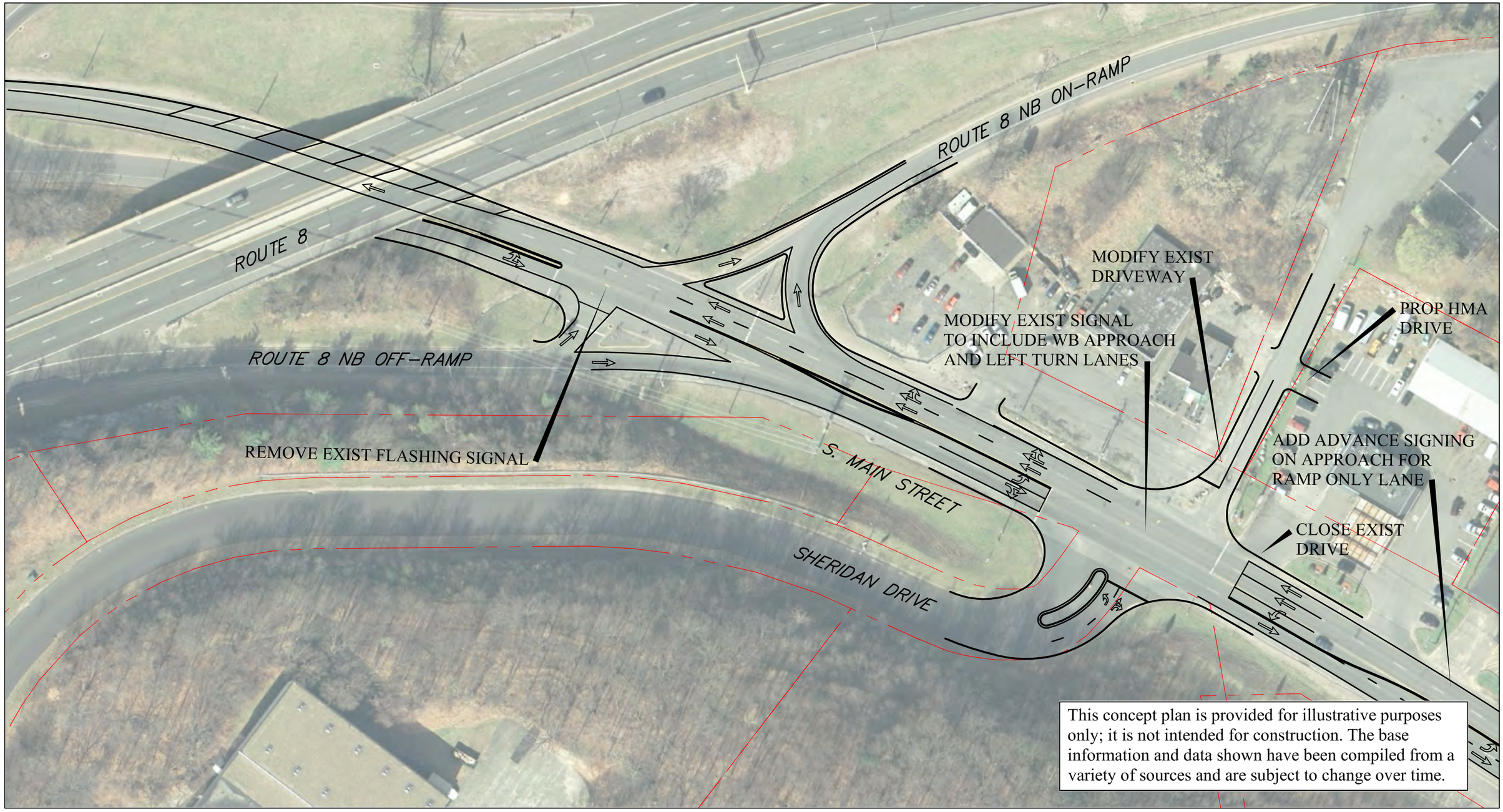
Figure 7-18 (sheets 1 through 3) present the recommended long-term improvements at Interchange 29. Under this plan, the existing weaving lane is widened to accommodate the installation of a concrete median barrier and is restricted to local traffic only with elimination of the southbound weaving section to Route 8. (Access to Route 8 SB is maintained at the current location of the off-ramp). To accommodate the relocation of the on-ramp, the Route 8 bridge over the SB Exit Ramp #69 will need to be widened.

The future alignment of the Naugatuck Greenway as a separate shared-use path along the southbound side of Route 8 is also depicted on Figure 7-18.

Waterbury – Local Intersections

Figure 7-19 depicts the medium to long-term recommended improvement plan for the intersection of South Main Street at Platts Mill Road. Under this action, the existing median located on Platts Mill Road is removed and the northbound inside lane of South Main Street is proposed to be restriped to provide a continuous left turn lane.

\\MAWATR\dept\T\TS\TD\SIGNALS\41488-ConDOT\IC29.dwg



0 40 80 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 8 NB ON-RAMP DESIGN CRITERIA:
LANE WIDTH = 22 FT
SHOULDER WIDTH = 2 FT

SOUT MAIN STREET DESIGN CRITERIA:
LANE WIDTH = 12 FT
SHOULDER WIDTH = 4 FT MIN.
LEFT TURN LANE WIDTH = 10 FT

LEGEND:
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

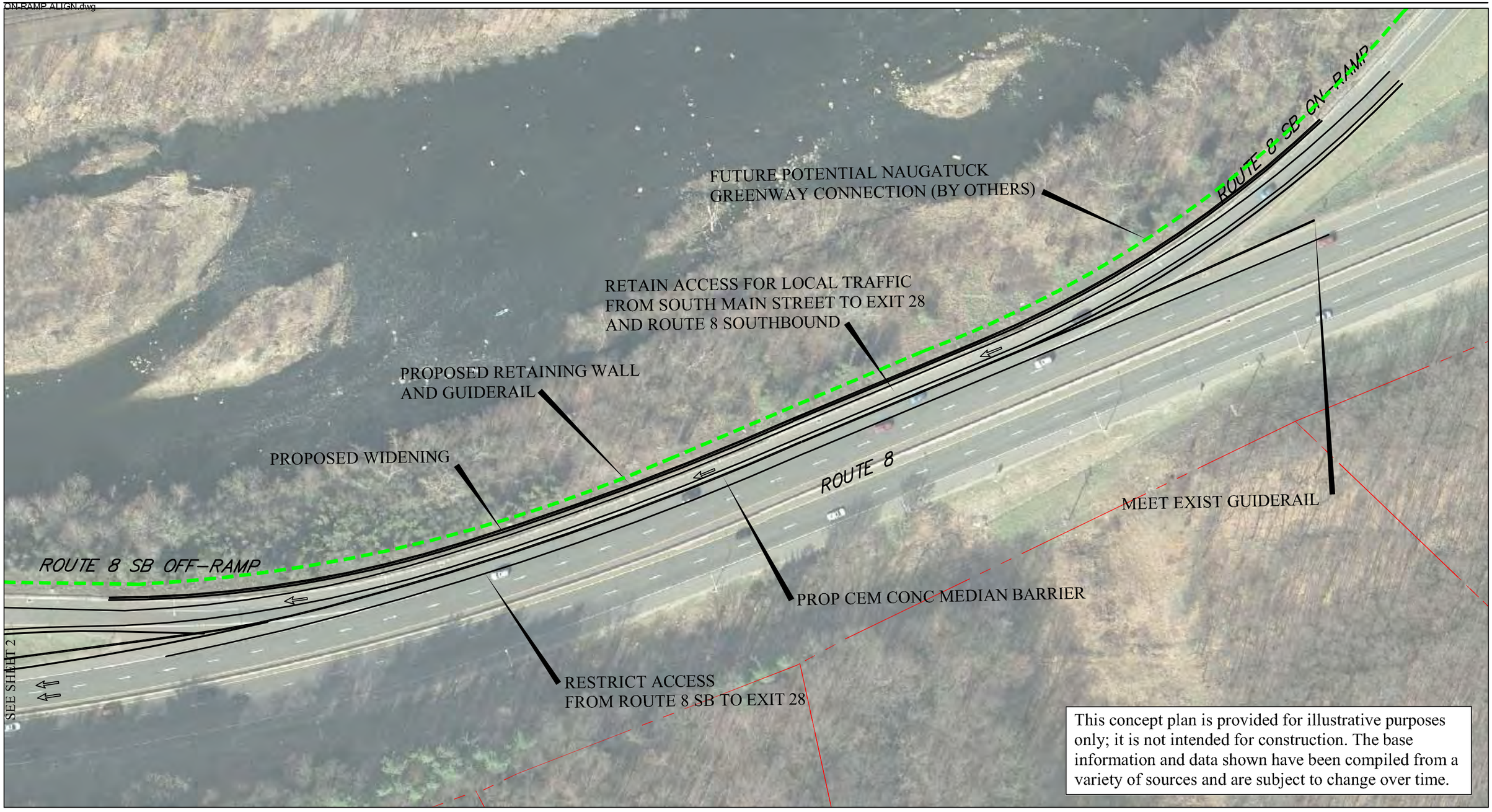
Waterbury
Interchange 29

March 2011

Route 8 NB Ramps/South Main Street
Medium/Long Term Alternative

FIGURE 7-17

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC29-NEW ON-RAMP ALIGN.dwg



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0 40 80 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 8 ON-RAMP DESIGN CRITERIA:
LANE WIDTH = 14 FT
RIGHT SHOULDER WIDTH = 8 - 10 FT
LEFT SHOULDER WIDTH = 4 FT

ROUTE 8 DESIGN CRITERIA:
LANE WIDTH = 12 FT
RIGHT SHOULDER WIDTH = 10 FT

S. MAIN STREET LOCAL ACCESS DESIGN CRITERIA:
LANE WIDTH = 11 FT
LEFT SHOULDER WIDTH = 4 FT
RIGHT SHOULDER WIDTH = 4 FT

LEGEND:
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

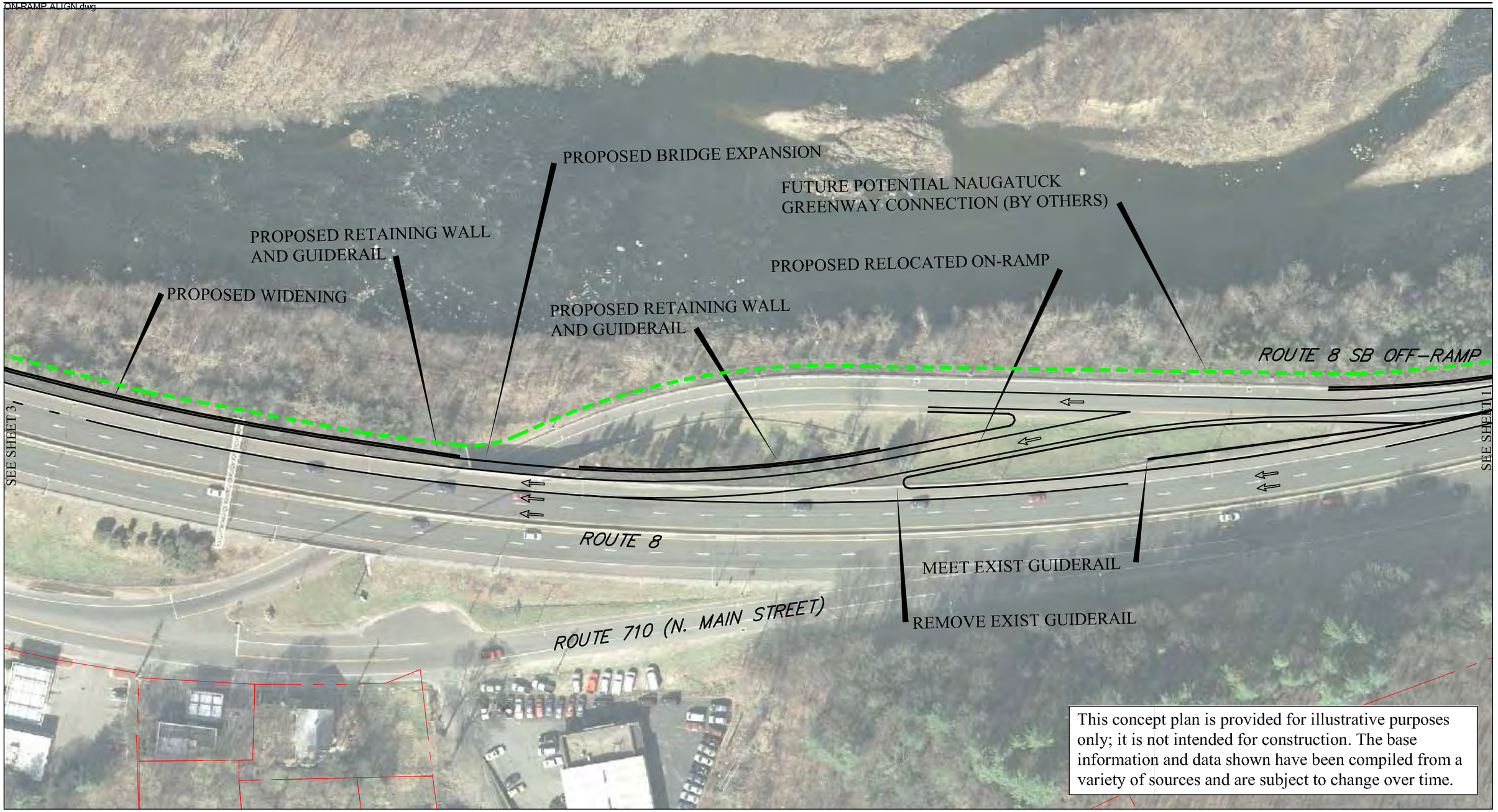
Waterbury
Interchange 29

July 2010

Route 8 SB Ramps
Long Term Alternative (1 of 3)

FIGURE 7-18

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC29-NEW ON-RAMP ALIGN.dwg



0 40 80 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 8 ON-RAMP DESIGN CRITERIA:
LANE WIDTH = 14 FT
RIGHT SHOULDER WIDTH = 8 - 10 FT
LEFT SHOULDER WIDTH = 4 FT

ROUTE 8 DESIGN CRITERIA:
LANE WIDTH = 12 FT
RIGHT SHOULDER WIDTH = 10 FT

S. MAIN STREET LOCAL ACCESS DESIGN CRITERIA:
LANE WIDTH = 11 FT
LEFT SHOULDER WIDTH = 4 FT
RIGHT SHOULDER WIDTH = 4 FT

LEGEND:
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

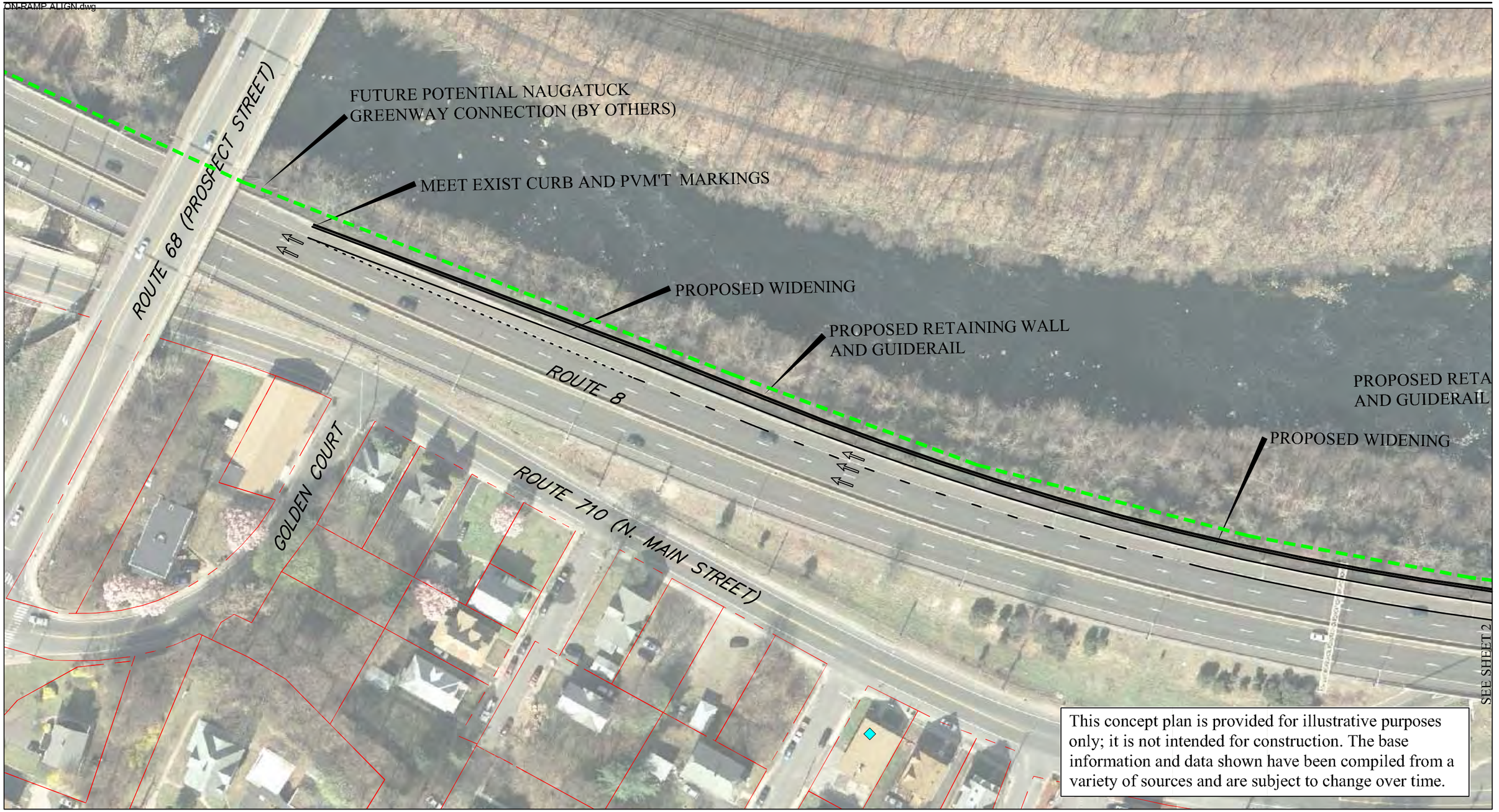
Waterbury
Interchange 29

July 2010

Route 8 SB Ramps/N. Main Street
Long Term Alternative (2 of 3)

FIGURE 7-18

\\Vhb\homedir\Watertown\TS\SIGNALS\41488-ConDOT\IC29-NEW ON-RAMP ALIGN.dwg



0 40 80 Feet

Route 8 Deficiencies/Needs Study
State Project 124-164

ROUTE 8 ON-RAMP DESIGN CRITERIA:
LANE WIDTH = 14 FT
RIGHT SHOULDER WIDTH = 8 - 10 FT
LEFT SHOULDER WIDTH = 4 FT

ROUTE 8 DESIGN CRITERIA:
LANE WIDTH = 12 FT
RIGHT SHOULDER WIDTH = 10 FT

S. MAIN STREET LOCAL ACCESS DESIGN CRITERIA:
LANE WIDTH = 11 FT
LEFT SHOULDER WIDTH = 4 FT
RIGHT SHOULDER WIDTH = 4 FT

LEGEND:
RIGHT-OF-WAY
HISTORIC PROPERTIES

Vanasse Hangen Brustlin, Inc.

Waterbury
Interchange 29

July 2010

Route 8 SB Ramps
Long Term Alternatives (3 of 3)

FIGURE 7-18

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RETAIN EXIST PARK AND RIDE LOT

SOUTH MAIN STREET

CLOSE EXIST DRIVE

CONTINUOUS LEFT TURN LANE

CLOSE EXIST DRIVE

PLATTS MILL ROAD

MEET EXIST CURB & PVM'T MARKINGS

REMOVE EXIST MEDIAN

FUTURE POTENTIAL NAUGATUCK GREENWAY CONNECTION (BY OTHERS)

POTENTIAL IMPACT TO EXIST SIGNAL

MEET EXIST CURB & PVM'T MARKINGS

0 40 80 Feet

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Route 8 Deficiencies/Needs Study
State Project 124-164

SOUTH MAIN STREET DESIGN CRITERIA:
LANE WIDTH = 11 FT
SHOULDER WIDTH = 4 FT

PLATTSS MILL ROAD DESIGN CRITERIA:
LANE WIDTH = 12 FT
SHOULDER WIDTH = 2 FT
MEDIAN WIDTH = 10 FT

LEGEND:
RIGHT-OF-WAY

Vanasse Hangen Brustlin, Inc.

Waterbury
Interchange 29

March 2011

South Main Street at Platts Mill Road
Medium/Long Term Alternative

FIGURE 7-19

Mainline Improvements - Capacity

Traffic demand along the Route 8 corridor within the study area is projected to increase by approximately 25 percent between 2008 and 2030. As identified in Chapter 4, with the anticipated growth in corridor demands, six of the nine southbound segments between Exits 22 and 28 are expected to operate at LOS E or F during the morning peak hour. In addition, under the 2030 traffic conditions, six of the nine northbound segments along Route 8 are expected to operate at LOS F during the evening peak hour.

As a result, it will be necessary to consider reducing regional traffic demands or increasing the capacity of the overall corridor in areas where deficient LOS exists in order to maintain acceptable operating conditions in 2030.

As part of the Waterbury and New Canaan Branch Lines Needs and Feasibility Study, CTDOT is exploring the feasibility of transit service improvements in the region, and specifically along the Waterbury branch. Should future transit utilization in the study area increase as a result of the recommendations of this study or other strategies to reduce automobile dependency be effective in the region, the projected growth in travel demands along the Route 8 corridor could be mitigated and, thus, the need for mainline improvements eliminated.

Increasing capacity in the long-term would involve widening the corridor to accommodate the addition of a third travel lane in each direction. Table 7-1 presents the level of service analysis for the mainline sections under the 2030 future conditions with the existing two-lane cross section and with a three-lane cross section. All mainline deficiencies are mitigated with the added travel lane and the corridor would operate at LOS D or better during all projected 2030 conditions.

Further, investigation of widening of Route 8 from 4 to 6 lanes is beyond the scope of this particular corridor study; however, this study does recommend that travel demands be monitored along the corridor to determine if additional study of these improvements is warranted in the future. Should the widening of Route 8 be given serious consideration, it would likely require an Environmental Impact Study (EIS) due to the large investment required and the significant impacts of construction.

Table 7-1
Mainline LOS Analysis (2030 Future Conditions): Existing and Widened Cross Sections

	2030 Conditions with Existing Cross Section				2030 Conditions with 3-Lane Cross Section			
	Northbound		Southbound		Northbound		Southbound	
Segment	Density*	LOS	Density	LOS	Density	LOS	Density	LOS
Exit 22 to Exit 23								
AM	15.1	B	>45	F	10.1	A	24.4	C
PM	>45	F	20.9	C	24.6	C	13.9	B
Exit 23 to Exit 24								
AM	13.4	B	38.0	E	8.9	A	20.7	C
PM	40.0	E	17.7	B	21.7	C	11.8	B
Exit 24 to Exit 25								
AM	16.7	B	>45	F	11.2	B	26.2	D
PM	>45	F	24.1	C	25.7	C	15.9	B
Exit 25 to Exit 26								
AM	17.3	B	>45	F	11.5	B	23.3	C
PM	>45	F	25.7	C	23.6	C	16.7	B
Exit 26 to Exit 27								
AM	19.6	C	37.1	E	13.1	B	21.1	C
PM	>45	F	25.7	C	23.4	C	16.7	B
Exit 27 to Exit 28								
AM	23.1	C	>45	F	15.3	B	22.9	C
PM	>45	F	35.1	E	25.9	C	19.5	C
Exit 28 to Exit 29								
AM	25.8	C	26.0	C	16.8	B	16.5	B
PM	>45	F	27.2	D	24.2	C	17.1	B
Exit 29 to Exit 30 (2 Lane Portion)								
AM	22.3	C	29.2	D	14.5	B	17.9	B
PM	39.9	E	30.0	D	20.7	C	18.2	C

* Number of vehicles per lane per mile

Mainline Improvements – Shoulder Treatments

As discussed in Chapter 2, the construction of Route 8 expressway occurred over a period of approximately 35 years from the late 1950's to the early 1980's. The original construction of the mainline and interchange elements of the highway were designed to the standards and anticipated traffic volumes of the time. These standards have evolved over time and travel demands have increased significantly; as a result, the highway now has several geometric and safety deficiencies. Geometric deficiencies increase the potential for safety problems and, therefore the mainline and all of the interchanges were evaluated with regard to their conformance to current design standards.

Both the right and left shoulders were reviewed and evaluated in the field for compliance with today's geometric guidelines. Generally, the right shoulder width along the corridor was found to meet design guidelines, with only isolated areas that could be considered sub-standard. However, the left shoulder width was observed to be non-compliant in several locations. Typically, the non-compliant left shoulder

width was observed on existing bridge structures with a varying width of 2 to 6 feet. Based on the field review completed as part of this study, approximately 3,000 linear feet of right shoulder and 12,000 linear feet of left shoulder along the corridor do not meet today's recommended standards.

Mainline Improvements – Speed Control

Speed control is an issue along several segments of the Route 8 corridor. Excessive speed for the design or conditions of the roadway are frequently cited as contributing factors in run-off-road and fixed object accidents along the mainline. The frequency of ramp diverges and merges combined with higher than posted operating speeds can also create unsafe operating conditions.

As discussed previously in Chapter 2, weather plays a particularly important role in travel conditions along the corridor. Approximately 35 percent of the reported accidents in the study area within the three-year period occurred under wet road surface conditions. This statistic is 14 percent higher than for the entire stretch of Route 8 and measurably more than similar facilities in the state.

Finally, there are three horizontal curves located on bridge structures on the elevated section of the expressway through the Seymour business district (the Exit 22 area) that appear to be non-compliant for a 60 mph design speed. Record plans of 1962 indicate that the design speed in this area is in fact 50 mph even though the current posted speed limit is 55 mph.

Recommendations to improve safety along the mainline of Route 8 include:

- Installation of Reduced Speed Limit Ahead (W3-5) signs on the northbound and southbound approaches to Exit 22;

- Adding additional Speed Limit (R2-1) signs with red or orange flags (retroreflective sheeting) in advance of Exit 22 in each direction indicating a 45 mph speed zone; and

- Replacing the existing 50 mph (Speed Limit signs through the interchange area with 45 mph signs (6 locations total).

In addition, to improve weather information and advisories for the traveling public along the Route 8 corridor, it is recommended that the two weather sensors that were previously removed from the Exit 22 interchange area be replaced and that these sensors and the two existing sensors be linked to two new variable message signs that advise "Slippery Conditions Possible", "Slippery Conditions, Use Caution", or a variable speed limit, when conditions warrant.

7.3 Summary of Recommendations

Tables 7-2, 7-3, and 7-4, respectively, present near term (0-5 years), medium term (5-10 years), and long term (greater than 10 years) improvements. These tables provide the location and a description of each improvement, the estimated cost, and projected traffic and socio-economic impacts. The tables also identify which MPO is responsible for the area in which each improvement is located.

Several near-term improvements are recommended in Seymour (VCOG) with a total estimated cost of $905,000. No near term improvements are recommended in the COGCNV region (Beacon Falls, Naugatuck, and Waterbury). The set of medium term improvements (Table 7-3) have an estimated cost of $4,165,000. One improvement project with a cost of $390,000 is in the VCOG region and five improvement projects with a cost of $3,775,000 are in COGCNV region.

The long-term recommendations include ten (10) individual improvement projects estimated to cost $79,135,000. Two projects are located in VCOG and estimated to cost $10,415,000. The remaining eight long-term improvements are located in COGCNV and estimated to cost $68,720,000.

In addition, shoulder improvements are recommended throughout the corridor to bring the shoulders up to current design standards to improve safety and operations. The recommended shoulder treatments are estimated to cost $126,280,000. The total estimated cost of all long-term improvements is $205,415,000. Detailed cost estimates for each location are included in Appendix A. Section 7.4 discusses possible financing of the recommended improvements.

Table 7-2
Route 8 Deficiencies/Needs Study
Recommended Near Term Improvements

Region/Municipality/Location	Description of Improvement	Figure No.	Construction Cost Estimate	Traffic Operations	Land Use/Right-of-Way Impacts	Socioeconomic/ Environmental Impacts
VALLEY COUNCIL OF GOVERNMENTS (VCOG)						
SEYMOUR						
Interchange 22	Splitter island on Wakeley Street	Figure 7-1	$160,000	LOS B or better	None	None
Route 115 at Route 313	Pavement markings where Rtes. 115 and 313 overlap Advance warning sign with flashers just north of Humphrey Street Flashing sign control	Figure 7-3	$40,000	LOS C or better	None	None
Route 313 at Pearl St.	New traffic signal Bump outs on Pearl St. approaches On-street parking for EB, SB and WB approaches	Figure 7-6	$530,000	LOS D or better	Possible minor sidewalk impact on one residential property	Potentially historic residence impacted by sidewalk improvements
Route 8 Mainline	Speed Control and ITS Improvements	N/A	$175,000	N/A	None	None
TOTAL VCOG			$905,000			
TOTAL NEAR TERM			$905,000			

Table 7-3
Route 8 Deficiencies/Needs Study
Recommended Medium Term Improvements

Region/Municipality/Location	Description of Improvement	Figure No.	Construction Cost Estimate	Traffic Operations	Land Use/Right-of-Way Impacts	Socioeconomic/ Environmental Impacts
VALLEY COUNCIL OF GOVERNMENTS (VCOG)						
SEYMOUR						
Route 313 at Derby Avenue/West Street	Exclusive Derby Ave. NB left-turn lane	Figure 7-5	$390,000	LOS C or better	Takes one residential property	None
TOTAL VCOG			$390,000			
COUNCIL OF GOVERNMENTS OF CENTRAL NAUGATUCK VALLEY (COGCNV)						
BEACON FALLS Interchange 23	Extend NB off-ramp deceleration lane	Figure 7-7	$20,000	Mitigates geometric deficiency	None	None
NAUGATUCK Interchange 25	Extend NB off-ramp deceleration lane	Figure 7-8	$20,000	Reduces excessive queuing on off-ramp approach to Cross St.	None	None
Interchange 25	Install roundabout at Cross St./NB ramps intersection Install raised median on Cross St. Close informal parking area along SB off-ramp Geometric and access management improvements at Cotton Hollow Road	Figure 7-9	$1,030,000	LOS A AM and PM Improved circulation	Elimination of access to pull-out along the Naugatuck River	Beneficial impacts to air quality and noise; Construction period impacts in floodplain
Interchange 26	Extend NB off-ramp deceleration lane to Route 63	Figure 7-10	$80,000	Mitigates geometric deficiency and excessive queuing at Route 63 intersection	None	None
Interchange 28	Extend NB off-ramp deceleration lane to N. Main St.	Figure 7-15	$2,625,000	Mitigates geometric deficiency	None	None
TOTAL COGCNV			$3,775,000			
TOTAL MEDIUM TERM			$4,165,000			

Table 7-4
Route 8 Deficiencies/Needs Study
Recommended Long Term Improvements

Region/Municipality/Location	Description of Improvement	Figure No.	Construction Cost Estimate	Traffic Operations	Land Use/Right-of-Way Impacts	Socioeconomic/ Environmental Impacts
VALLEY COUNCIL OF GOVERNMENTS (VCOG)						
SEYMOUR Interchange 22	Widen Route 67 to 4 lanes between Bank Street and Route 8 NB on-ramp Relocate NB off-ramp to Bank Street Reconstruct Wakeley Street and designate as one-way SB	Figure 7-2	$6,405,000	LOS B or better intersection operation; Reduce impacts on NB off-ramp from excessive queuing	May require partial taking of Kerite property; Adverse impacts to rail siding; Potential impact to VFW property	Construction period impacts on river; Potential adverse impact on business; Potential adverse impact on access to emergency response complex
Route 115 at Route 313	Replace Rte. 313 bridge over the railroad to improve roadway geometry Install flashing signal at Routes 115 and 313 Install advance warning sign with red signal ahead flashers	Figure 7-4	$4,010,000	LOS B or better in AM/ LOS D or better in PM	None	Replacement of bridge may trigger impact to an historic resource
TOTAL VCOG			$10,415,000			
COUNCIL OF GOVERNMENTS OF CENTRAL NAUGATUCK VALLEY (COGCNV)						
NAUGATUCK Interchange 26	Relocate NB off-ramp terminus south along Route 63 (South Main Street) to form a signalized T-type intersection Widen South Main Street to four and five lanes from south of NB off-ramp to north of Route 63 bridge Modify existing signal at S. Main St. and Route 63 bridge Close existing connector road to SB off-ramp	Figure 7-11	$4,560,000	Simplify existing intersection: acceptable LOS AM/PM New intersection: LOS C AM/LOS E PM	Minor strip taking and signal easement	Construction period impacts to floodplain and the community; Minor noise, air quality and visual impacts

Table 7-4 (cont.)
Route 8 Deficiencies/Needs Study
Recommended Long Term Improvements

Region/Municipality/Location	Description of Improvement	Figure No.	Construction Cost Estimate	Traffic Operations	Land Use/Right-of-Way Impacts	Socioeconomic/ Environmental Impacts
Interchange 27	Widen SB off-ramp to provide LT lane at Maple Street and shared use path along the Naugatuck River Realign Oak Street at Maple Street	Figure 7-12	$31,590,000	SB off-ramp at Maple Street: LOS B AM/LOS D PM	Partial taking of one commercial property parking lot	Construction impacts on floodplain; Potential indirect impact to historic properties
	Close NB off-ramp to N. Main Street	Figure 7-13	$520,000	Eliminates short weave area	May reduce access to nearby land uses	No adverse impacts; Reduces paved surfaces
	Close SB on-ramp from N. Main Street Widen structure to accommodate shared-use path	Figure 7-14	$10,220,000	Eliminates geometrically and operationally deficient weave	None	No long term adverse impacts; Construction may impact floodplain
Interchange 28	Widen Union City St. and Golden Ct. to five lanes and four lanes, respectively Signalize Golden Ct. at N. Main St. Widen N. Main St. to provide three lanes at Golden Ct. and four lanes at Union City Add NB left-turn lane on N. Main St.	Figure 7-16	$5,050,000	All three locations operate at LOS D or better in both peak hours	Requires partial or full takings of 15 properties, including demolition of seven buildings	May impact two historic buildings; May adversely impact floodplain
WATERBURY Interchange 29	Realign NB on-ramp to eliminate offset with NB off-ramp terminus Widen S. Main St. to provide left turn lanes at Sheridan Drive Widen Sheriden Dr. to provide two approach lanes to S. Main St. Consolidate west side commercial driveways and place under signal control at Sheriden Dr.	Figure 7-17	$760,000	S. Main St./Sheriden Dr. -- LOS A AM and PM; NB on-ramp geometry significantly improved	None	None
	Restrict access from Route 8 SB to Interchange 28 Widen weave area and retain for local traffic and SB on-ramp traffic Relocate SB on-ramp to the south Widen Route 8 bridge over Prospect St.	Figure 7-18	$15,600,000	Eliminates operationally deficient weave	None	Minor impacts to businesses and residents from restricting access from Rte. 8 SB to Exit 28
S. Main St./ Platts Mill Rd.	Remove existing median on Platts Mill Rd. Restripe S. Main Street NB inside lane as continuous left-turn lane	Figure 7-19	$420,000	LOS A AM and PM	Closes one of three driveways to property on southwest corner of intersection	None
TOTAL COGCNV			$68,720,000			
ROUTE 8 MAINLINE	Shoulder widening and improvement	N/A	$126,280,000	N/A	N/A	
TOTAL LONG TERM			$205,415,000			

7.4 Financial Plan

The purpose of the Financial Plan is to recommend a funding approach that can be used to finance the construction and operation of the recommended improvements for the Route 8 corridor. This plan was developed by exploring the various funding mechanisms available for roadway improvements and identifying the most appropriate methods for funding the improvements recommended in this study. All potential sources of Federal, State and Local funding were considered so that the most efficient use of dollars can be achieved. The Financial Plan also considers the two transportation planning organizations covering parts of the Route 8 Study area, as appropriate, in recommending funding mechanisms.

The Council of Governments of Central Naugatuck Valley (COGCNV) is the transportation planning agency and Metropolitan Planning Organization (MPO) for the Central Naugatuck Valley Region (CNVR), which includes Beacon Falls, Naugatuck and Waterbury from the Route 8 Study Area. The Valley Council of Governments (VCOG) is the transportation planning agency for the lower Naugatuck Valley and includes the Town of Seymour from the Route 8 Study Area. VCOG is part of the Greater Bridgeport and Valley Metropolitan Planning Organization (GBVMPO). The MPOs are responsible for setting priorities and programming federally funded highway and transit projects in their areas. Any transportation project receiving federal funding must be included in the five-year Transportation Improvement Program (TIP) each MPO establishes for its area.

The state of Connecticut also prepares the Statewide Transportation Improvement Program (STIP) every four years. No project is eligible for transportation funding unless it is included in both the STIP and TIP. Both programs are financially constrained and can only include projects for which funding is available. The programs are periodically amended as funding availability or the status of projects changes. The projects included in the TIP and STIP must be consistent with the state's Long Range Transportation Plan and the regional transportation plan. Therefore, the first step in implementing the recommendations of this report is to have them included in the long range plan for each region and in the state's long range plan. Individual projects can then be moved onto the regions' TIPs and the STIP to be allocated funding.

Sources of Funding

Table 7-5 lists various transportation funding programs available, the federal-state (or local) shares and the potential applicability to recommended improvements in this report. Tables 7-6 and 7-7, present the recommended improvements by funding region and the potential funding sources for each improvement. The following sources of funding appear to be applicable or potentially applicable to the some of the recommended projects. These include:

- National Highway System (NHS) – Route 8 is part of the NHS
- National Highway Transportation Safety Administration (NHSTA) – Funding for hazard elimination projects
- Surface Transportation Program Anywhere (STPA) – Funding for projects regardless of rural or urban designation
- Surface Transportation Program Other Urban – Funds for urban areas of less than 200,000 population (Waterbury)
- STP Enhancement Program (STPT) -- Funds may be used for the construction of pedestrian walkways and bicycle transportation facilities
- FHWA Congestion Mitigation and Air Quality (CMAQ) – Funding for projects which provide air quality benefits, such as traffic flow improvement programs that achieve emission reductions
- FHWA Bridge Program (BRXZ) -- Rehabilitate or replace deficient highway bridges
- FHWA Highway Safety Improvement Program (HSIP) -- Funds may be used to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

Funding Plan

Tables 7-6 and 7-7 summarize the recommended Route 8 improvements for the VCOG and COGCNV, respectively. The tables provide a brief summary of each project, the estimated cost and the funding programs potentially applicable to the project. The projects are categorized as near term, medium term and long term.

Six projects with an estimated cost of $11,710,000 are recommended in the VCOG region (Town of Seymour). All appear to be eligible for funding from Surface Transportation Program Anywhere (STPA) and State and Town of Seymour. One long term project, Route 115 at Route 313, may be eligible for Bridge Program (BRXZ) funding for replacement of the Route 313 bridge over the railroad tracks.

Thirteen projects with an estimate cost of $72,495,000 are recommended for the COGCNV region. Up to nine projects, which involve improving geometry for Route

8 on and off ramps, may be eligible National Highway System (NHS) and National Highway Safety Administration (NHTSA) funding in addition to STPA and State funding. One of these projects may also be eligible for STP Transportation Enhancement (STPT) funding for development of a shared-use path along and across the Naugatuck River. Two Waterbury projects would also be eligible for STP Other Urban (STPU) funding. The remaining projects would be eligible for STPA, State and Local funding.

According to the Long Range Regional Transportation Plan 2007-2035, the Central Naugatuck Valley Region can expect to receive $2.4 billion (in constant 2006 dollars) over the life of the plan. About $231 million will be spent on transit. The majority of CNVR's future road project funding is expected to be spent on widening I-84 from Waterbury to Sudbury and replacing the interchange of I-84 and Route 8 in Waterbury (referred to as the "mixmaster"). The remaining funds will be spent on system preservation and improvement projects. The sooner recommended projects are added to the region's long term plan, the sooner they can complete for the limited funding available.

The Regional Transportation Plan for the Greater Bridgeport Planning Region: 2007-2035 estimates that $1.5 billion will be available over the life of the plan to preserve the highway system and implement improvements. The only project identified in Seymour is the Naugatuck River Greenway.

Table 7-5
Funding Sources for Roadway Improvements

Funding Source	Description	Federal/State Shares (%)	Applicability to Route 8 Corridor
FEDERAL			
High Priority Projects (HPP)	Demonstration projects indentified by Congress	100/0	No
FHWA National Highway System (NHS)	Any type of improvement on roadways designated as part of the NHS	80/20	Yes -- Route 8
FHWA Interstate Maintenance (I-M)	Funding to rehabilitate, restore and resurface the interstate highway system	90/10	No
National Highway Transportation Safety Administration (NHTSA)	Funds hazard elimination projects	100/0	Potentially
Surface Transportation Program (STP)	Funding for projects not on NHS or interstate system, except local roads		
STP Anywhere (STPA)	■ Funds for anywhere regardless of rural or urban designation	80/20	Yes
STP Reinvestment and Recovery (STRR)	■ Economic stimulus funding for rural major collectors or above	100	No
STP Other Urban (STPU)	■ Funding for collector and minor arterial roads in urban areas under 200,000 population	80/20	Yes -- Waterbury
STP Rural (STPR)	■ Funding for any type of transportation project in rural areas less than 5,000 population	80/20	No
STP Enhancement Program (STPT)	■ Projects related to intermodal transportation in one of 12 areas	80/20 (local)	Potentially
FHWA Congestion Mitigation and Air Quality (CMAQ)	Projects in Clean Air non-attainment areas for ozone and carbon monoxide with priority given to projects on the State Implementation Plan (SIP) as a Traffic Control Measure (TCM), which will provide air quality benefits, such as traffic flow improvement programs that achieve emission reductions	80/20	Potentially
FHWA Bridge Program (BRXZ)	Rehabilitate or replace deficient highway bridges		
On System (BRX)	■ Bridges on federal-aid road system classified as collector or higher	80/20	Potentially
Off System (BRZ)	■ Bridges not on federal-aid road system – used mostly for municipal bridges	80/20	Potentially
Local Bridges	■ Bridges carrying a certified local road	80/20	No
FHWA Highway Safety Improvement Program (HSIP)	Funding to achieve a significant reduction in traffic fatalities and serious injuries on all public roads	90/10	Yes
STATE			
Special Transportation Fund (STF)	Mostly state match to Federal funds and operating funds for Connecticut DOT		Yes
LOCAL	Mostly local match to Federal funds		Yes

Table 7-6
Recommended Improvements for Valley Council of Governments (Seymour)

Region/Municipality/ Location	Description of Improvement	Figure No.	Construction Cost Estimate	Potential Funding Sources
NEAR TERM				
Interchange 22	Splitter island	Figure 7-1	$160,000	STPA*, State, Local
Route 115 at Route 313	Pavement markings Advance warning sign with flashers Flashing sign control	Figure 7-3	$40,000	STPA, State, Local
Route 113 at Pearl St.	Traffic signal and pedestrian enhancements	Figure 7-6	$530,000	STPA, State, Local
Route 8 Mainline	Speed Control/ITS Improvements		$ 175,000	STPA, HSIP, State, Local
Total Near Term			$905,000	
MEDIUM TERM				
Route 313 at Derby Ave.	Exclusive Derby Ave. NB left-turn lane	Figure 7-5	$390,000	STPA, State, Local
Total Medium Term			$390,000	
LONG TERM				
Interchange 22	Widen Route 67 to 4 lanes Relocate NB off-ramp to Bank Street Reconstruct Wakeley Street/make one-way SB	Figure 7-2	$6,405,000	STPA, State, Local
Route 115 at Route 313	Replace Rte. 313 bridge over the railroad Install flashing signal Install advance flashing warning sign	Figure 7-4	$4,010,000	BRXZ**, STPA, State, Local
Total Long Term			$10,415,000	
TOTAL VCOG			$11,710,000	

* Surface Transportation Program – Anywhere
** FHWA Bridge Program

Table 7-7
Recommended Improvements for Council of Governments of Central Naugatuck Valley*

Region/Municipality/ Location	Description of Improvement	Figure No.	Construction Cost Estimate	Potential Funding Sources
MEDIUM TERM				
Beacon Falls				
Interchange 23	■ Extend NB off-ramp deceleration lane	Figure 7-7	$20,000	NHS,** NHTSA,*** STPA, State
Naugatuck				
Interchange 25	■ Extend NB off-ramp deceleration lane	Figure 7-8	$20,000	NHS, NHTSA, STPA, State
Interchange 25	■ Install roundabout at Cross St./NB ramps intersection ■ Install raised median on Cross St. ■ Close informal parking area along SB off-ramp ■ Improve Cotton Hollow intersection	Figure 7-9	$1,030,000	STPA, State, Local
Interchange 26	■ Extend NB off-ramp deceleration lane to Route 63	Figure 7-10	$80,000	NHS, NHTSA, STPA, State
Interchange 28	■ Extend NB off-ramp deceleration lane to N. Main St.	Figure 7-15	$2,625,000	NHS, NHTSA, STPA, State
Total Medium Term			$3,775,000	
LONG TERM				
Naugatuck				
Interchange 26	■ Relocate NB off-ramp terminus south along Route 63 (S. Main St.) to form a T-type signalized intersection ■ Widen S. Main St. from south of NB off-ramp to north of Route 63 bridge ■ Modify existing signal at S. Main St. and Route 63 bridge ■ Close existing connector road to SB off-ramp	Figure 7-11	$4,560,000	NHS, NHTSA (for NB and SB off-ramps), STPA, State, Local

* Includes Beacon Falls, Naugatuck and Waterbury
** NHS – National Highway System
*** NHTSA – National Highway Transportation Safety Administration
**** STPU – Surface Transportation Program Other Urban (urban areas under 200,000 population)

Table 7-7
Recommended Improvements for Council of Governments of Central Naugatuck Valley* (Continued)

Region/Municipality/ Location	Description of Improvement	Figure No.	Construction Cost Estimate	Potential Funding Sources
Interchange 27	■ Widen SB off-ramp to provide LT lane at Maple Street and shared use path along the Naugatuck River ■ Provide shared-use path on new structure across the Naugatuck River ■ Provide tunnel under railroad for shared-use path ■ Realign Oak Street at Maple Street	Figure 7-12	$31,500,000	STPT (for shared-use path), NHS, NHTSA, State, Local
	■ Close NB off-ramp to N. Main St.	Figure 7-13	$520,000	NHS, NHTSA, STPA, State
	■ Close SB on-ramp from N. Main St. ■ Widen structure to accommodate shared-use path	Figure 7-14	$10,220,000	NHS, NHTSA, HSIP, STPA, State
Interchange 28	Widen Union City St. and Golden Ct. to five and four lanes, respectively Signalize Golden Ct. at N. Main St. Widen N. Main St. to provide three lanes at Golden Ct. and four lane s at Union City	Figure 7-16	$5,425,000	NHS, STPA
WATERBURY Interchange 29	Realign NB on-ramp to eliminate offset with NB off-ramp terminus Widen both S. Main St. approaches to Sheriden Dr. Widen Sheriden Dr. approach to S. Main St. Consolidate west side commercial driveways and place under signal control at Sheriden Dr.	Figure 7-17	$760,000	NHS, NHTSA, (for ramps intersection), STPA, STPU***, State, Local
	Restrict access from Route 8 SB to Interchange 28 Widen weave area and retain for local traffic and SB on-ramp Relocate SB on-ramp to the south Widen Route 8 bridge over Prospect Street	Figure 7-18	$15,600,000	NHS, NHTSA, (for ramps intersection), STPA, STPU***, State, Local
S. Main St./Platts Mill Rd.	Remove existing median on Platts Mill Rd. Restripe S. Main St. NB inside lane as continuous left-turn lane	Figure 7-19	$420,000	STPA, STPU, State, Local
TOTAL LONG TERM			$69,095,000	
TOTAL COGCNV			$72,870,000	

* Includes Beacon Falls, Naugatuck and Waterbury
** NHS – National Highway System
*** NHTSA – National Highway Transportation Safety Administration
**** STPU – Surface Transportation Program Other Urban (urban areas under 200,000 population)