Route 10 Corridor Study

City of New Haven – Town of Hamden

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South Central Regional Council of Governments

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June 2008

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1 Introduction

The South Central Regional Council of Governments (SCRCOG) on behalf of the City of New Haven and Town of Hamden commissioned the *Route 10 Corridor Study* to develop a set of recommendations for the corridor that will address existing corridor needs and deficiencies, and help support each municipalities' long-term vision for transportation and land use in the corridor. This study includes a detailed assessment of the existing transportation system and land use conditions; a future traffic conditions assessment; and a comprehensive recommendations plan that the participating municipalities and SCRCOG can utilize as a guide to prioritize and program future improvement projects.

1.1 Study Area

The Route 10 study area, as shown in Figure 1-1, begins at I-95 Interchange 45 in the City of New Haven and continues northerly approximately 7.5 miles to the intersection of Skiff Street in the Town of Hamden. The corridor includes segments of Ella T. Grasso Boulevard, Whalley Avenue (Route 63), Fitch Street, Arch Street, and Dixwell Avenue.

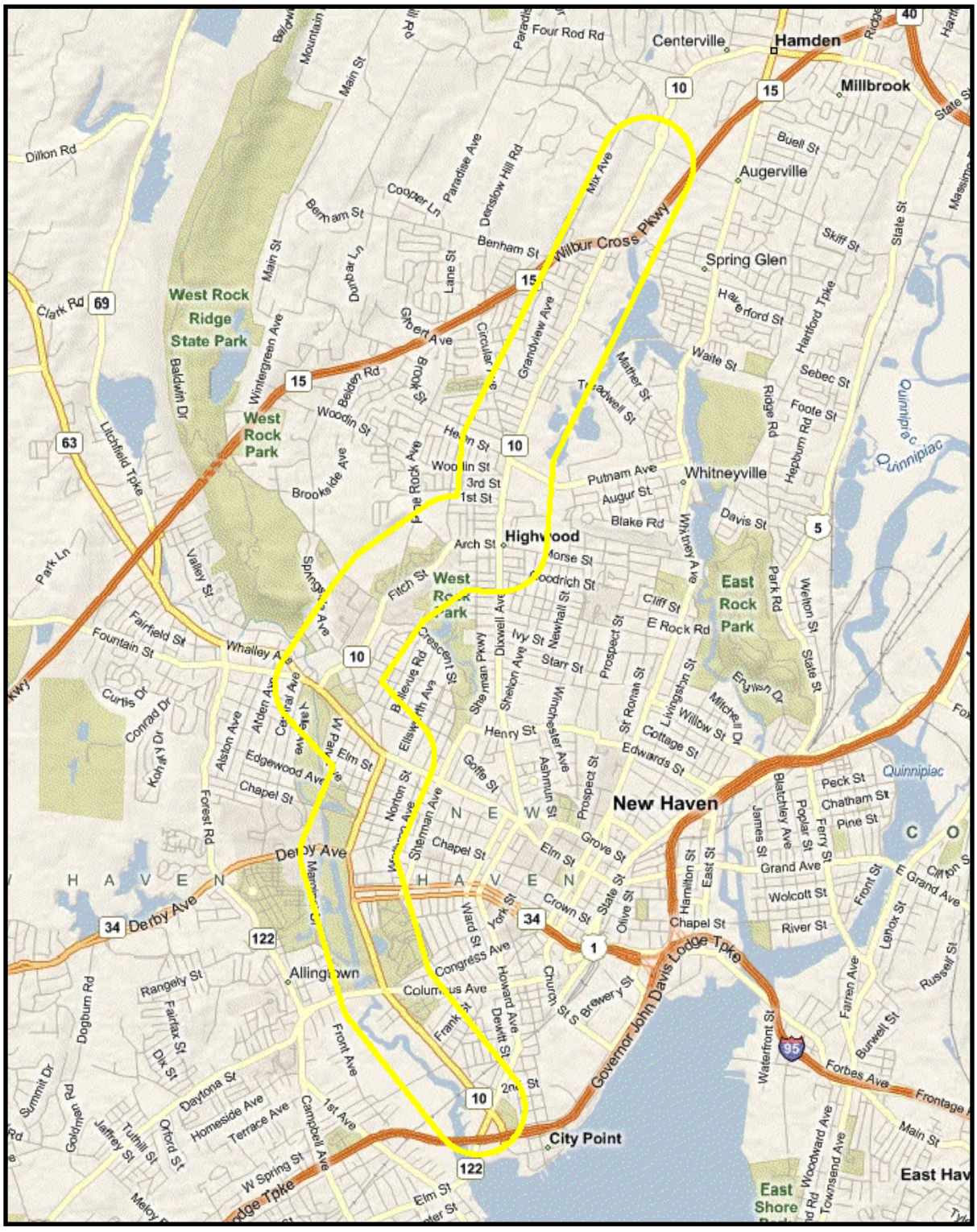
Specific details regarding the existing roadway infrastructure, travel environment, and land use in the study area are discussed in Section 2, Existing Conditions Assessment.

1.2 Route 10 Corridor Goals and Objectives

The following transportation and land use goals and objectives were developed for the Route 10 corridor based on meetings with City of New Haven and Town of Hamden officials, SCRCOG, and consultant staff. These long-term goals and objectives are to:

- Improve safety for vehicular, pedestrian, and bicycle traffic throughout the corridor. This includes providing improved pedestrian and bicycle facilities and utilizing appropriate traffic calming techniques to mitigate vehicular travel speeds.
- Create more walkable streets with strong and safe pedestrian and bicycle linkages to the surrounding neighborhoods, especially by making it safer and more convenient for pedestrians to cross Route 10.
- Mitigate traffic growth and development sprawl by providing compact, mixed-use development that facilitates shared parking and results in less reliance on the automobile.
- Facilitate mode shift from dependence on the single-occupant auto to increased use of mass transit and non-motorized forms of travel.
- Promote growth, improve housing choice, and increase employment opportunities in the corridor through infill development and conversion of one-story, single-use buildings to multi-story, mixed-use buildings.

Figure 1-1. Study Area



1.3 Public Outreach Process

The public outreach process of this study involved a variety of stakeholders whose input was critical in helping to develop improvement recommendations that respond to the transportation and land use needs of the corridor while remaining consistent with the long-term corridor goals. Specifically, the outreach process included the involvement of City of New Haven and Town of Hamden officials, Southern Connecticut State University (SCSU) officials, community representatives, interested citizens, ConnDOT staff, and SCRCOG staff. Numerous meetings, including two advertised public informational meetings, were conducted throughout the study to discuss and present study findings and recommendations. The recommendations of this study were designed specifically to incorporate and address community concerns that were raised at these meetings.

2
Existing Conditions Assessment

This section presents an evaluation of the existing conditions in the corridor relative to the transportation system and the land uses that this system serves along Route 10 in New Haven and Hamden. The transportation system includes all of the roadways, pedestrian accommodations, bicycle facilities, and transit services and amenities that support mobility through the Route 10 corridor and between regional destinations that are linked by the various components of the transportation system. Land uses include the various neighborhoods, commercial districts, parks and public spaces, institutions, and civic buildings in the study area.

2.1 Transportation System

The study team's assessment of the existing transportation system included:

- Evaluating the characteristics of the various roadway segments that comprise the Route 10 corridor.
- Determining traffic conditions and evaluating traffic operations and capacity at key intersections and along key roadway segments.
- Reviewing historical accident data, identifying high accident locations, and assessing the leading types and causes for accidents along the corridor.
- Evaluating pedestrian and bicyclist facilities.
- Identifying transit services and amenities.

An exhibit illustrating the key components of the existing transportation system is provided at the end of Section 2.1.

2.1.1 Roadway Characteristics

Route 10 is classified by the Connecticut Department of Transportation (ConnDOT) as an urban arterial roadway. The roadway is further classified as a principal arterial along Ella T. Grasso Boulevard, Whalley Avenue, and Dixwell Avenue; and as a minor arterial along Fitch Street and Arch Street. These classifications determine the minimum geometric standards for the corridor that are used as a basis for evaluating the existing roadways, and as a basis for developing improvement recommendations.

A summary of the geometric standards for principal and minor urban arterials is shown in Table 2-1. The standards were obtained from ConnDOT's *Highway Design Manual 2003 Edition*, Figures 5B, C, and D, for new/major construction and assuming that roadside development is "built-up."

Table 2-1. Design Criteria for Urban Arterials

Design Element	Minor Arterial	Principal Arterial
Lane Widths		
• Travel Lane	10’ – 12’	11’ – 12’
• Turning Lane	11’	11’
• Bicycle Lane	5’	5’
• Parking Lane	10’ – 11’	10’ – 11’
Shoulder Widths		
• Right Side	4’ – 8’	4’ – 8’
• Left Side	2’ – 4’	2’ – 4’
Sidewalk Width	5’	5’

As shown in Table 2-1, the only difference between the design criteria for minor and principal arterials is the minimum travel lane width. It should be noted that travel lane, turning lane, and shoulder widths are considered by ConnDOT to be critical design elements. This designation stipulates that a formal design exception process must be completed when the minimum design criteria are not satisfied by new construction projects. Less stringent requirements are placed on non-critical design elements, though design minimums should be provided where possible.

The existing geometric characteristics of the various roadway segments that comprise the Route 10 study corridor are outlined in Table 2-2. The typical number of lanes, travel lane widths, shoulder widths, and overall roadway widths are shown for each segment. The posted speed limit, median width (where applicable), and the presence of on-street parking are also noted for each segment.

As shown in Table 2-2, minimum travel lane widths are generally provided throughout the corridor. These lanes tend to be on the narrow end of the acceptable range of values, which from a traffic calming and safety standpoint, helps encourage slower travel speeds. However, several segments contain wide travel lanes that accommodate on-street parking or could be striped with a shoulder for bicyclists, but are not marked as such. In many of these areas, the result is an excessively wide travel lane that encourages higher travel speeds and provides no guidance to users regarding what area is safe to occupy for driving, parking, or biking.

The view along northbound Ella T. Grasso just south of Edgewood Park shows a 48 ft wide roadway with a single centerline stripe and on-street parking that is not defined with pavement markings.

Table 2-2. Existing Roadway Characteristics

Roadway Segment	Posted Speed [mph]	Number of Travel Lanes	Travel Lane Width [ft]	Shoulder Width [ft]	Overall Width [ft]	Median Width [ft]	On-street Parking
Ella T. Grasso Boulevard							
• Interchange 45 to Legion Avenue (Rte 34)	35	4	12	0	48	-	No
• Legion Avenue (Rte 34) to Derby Avenue (Rte 34)	35	4	12	0	60	12	No
• Derby Avenue (Rte 34) to Whalley Avenue (Rte 63)	35	2	14[1]	0[2]	48	-	Yes[3]
Whalley Avenue							
• Ella T. Grasso Boulevard to West Park Avenue	25	4	10	0[2]	65	10	Yes[3]
• West Park Avenue to Fitch Street	25	4	11	6[5]	68	12	Yes[4]
Fitch Street/Arch Street							
• Whalley Avenue to Crescent Street	25	2	14 – 17	0	28 – 34	-	No
• Crescent Street to Pine Rock Avenue	25	4	11	0	72 – 82	Varies	No
• Pine Rock Avenue to Fairview Avenue	25	3/2[6]	11	5-8[5]	38	-	No
• Fairview Avenue to Dixwell Avenue	25	2	11-12	0	23	-	No
Dixwell Avenue							
• Arch Street to Putnam Avenue	35	4	11	0[2]	64	-	Yes[3]
• Putnam Avenue to Route 15	35	4	11	0[2]	64	-	Yes[3]
• Route 15 to Skiff Street	35	4	11-14	0[2]	64[7]	-	No

Notes:

1 Lane width shown assumes a parking lane width of 10 ft.

2 On-street parking takes the place of a shoulder in this location.

3 On-street parking is not delineated with pavement markings.

4 On-street parking is permitted within the shoulder area, but is rarely used.

5 Shoulder width shown is assumed based on the overall roadway width, but no shoulder delineation is provided.

6 Number of northbound lanes drops from 2 to 1 midway along segment, but overall width remains the same throughout the segment.

7 Overall width includes left turn lanes along much of segment.

2.1.2 Daily Traffic Volumes

Average daily traffic (ADT) volumes in the study corridor were obtained from ConnDOT for the most recent count period in 2006. ADT, measured in vehicles per day (vpd), is the total traffic passing through a defined segment of roadway in a 24-hour period. A summary of ADT volumes in the Route 10 corridor is presented in Table 2-3.

Table 2-3. ADT Volumes in Route 10 Corridor

Location	ADT Volume (vpd)
Ella T. Grasso Boulevard	
Between Kimberly Avenue and Washington Avenue	18,300
Between Washington Avenue and US Route 1	20,000
Between US Route 1 and Legion Avenue	19,300
Between Legion Avenue and North Frontage Road	29,500
Between North Frontage Road and Route 34 (Derby Avenue)	36,100
Between Route 34 and Chapel Street	18,700
Between Chapel Street and Edgewood Avenue	17,400
Between Edgewood Avenue and Whalley Avenue	12,500
Whalley Avenue	
Between Ella T. Grasso Boulevard and Blake Street	20,800
Between Blake Street and Fitch Street	23,600
Fitch Street – Arch Street	
Between Fitch Street and Blake Street	11,800
Between Blake Street and Crescent Street	12,800
Between Crescent Street and Hamden Town Line	10,400
Between New Haven City Line and Fairview Avenue	10,400
Between Fairview Avenue and Dixwell Avenue	14,000
Dixwell Avenue	
Between Arch Street and Woodin Street	27,000
Between Woodin Street and Putnam Avenue	30,700
Between Putnam Avenue and Scott Street	25,600
Between Scott Street and Church Street	27,500
Between Church Street and Mather Street	31,800
Between Mather Street and Benham Street	34,300
Between Benham Street and Route 15 NB Ramps	40,600
Between Route 15 NB Ramps and SB Ramps	37,700
Between Route 15 SB Ramps and Connolly Parkway	33,200
Between Connolly Parkway and Skiff Street	26,900

As shown in the table, average daily traffic on Route 10 ranges between 10,400 and 40,600 vehicles per day. In general, the highest volumes occur on:

- Dixwell Avenue in the vicinity of Route 15 Interchange 60 and the *Magic Mile* in Hamden where there is a heavy mix of regional commuter traffic and local commercial traffic.
- Ella T. Grasso Boulevard between Legion Avenue and Derby Avenue where there is a confluence of regional traffic heading north-southbound on Route 10 and east-westbound on Route 34.
- Whalley Avenue between Ella T. Grasso Boulevard and Fitch Street where there is a confluence of regional traffic heading north-southbound on Route 10 and east-westbound on Route 63.

The lowest volumes occur on Fitch Street and Arch Street where the roadway is only two lanes wide and traffic capacity is much lower than on Dixwell Avenue, Ella T. Grasso Boulevard, and Whalley Avenue.

2.1.3 Traffic Operations & Capacity

Intersection Capacity

The study team evaluated existing traffic operations at 10 of the 39 signalized intersections in the study corridor to generally assess the level of traffic delays and congestion that are currently being experienced during the morning (AM) and afternoon (PM) peak hours. A level of service (LOS) was determined for each intersection and intersection approach by performing capacity analyses using SYNCHRO software and existing AM and PM peak hour turning movement volumes obtained by SCRCOG (see appendix for traffic volume diagram). The AM and PM peak hour traffic operations are summarized in Table 2-4.

LOS for a signalized intersection is based on average delay experienced by motorists at the intersection. LOS values can range from A to F with LOS A representing the best operational conditions and short delays. LOS F represents long delays and generally congested, unacceptable conditions. LOS D or better is considered acceptable for this roadway classification.

Table 2-4. AM & PM Peak Hour Traffic Operations – 2008 Existing Condition

Intersection / Direction	Movement	AM Peak Hour LOS	AM Peak Hour Avg. Delay (sec / veh)	PM Peak Hour LOS	PM Peak Hour Avg. Delay (sec / veh)
Ella T. Grasso Boulevard & Kimberly Avenue					
Ella T. Grasso Boulevard	NB	D	37.0	D	35.4
Ella T. Grasso Boulevard	SB	F	85.0	D	54.7
Kimberly Avenue	EB	D	52.9	D	35.5
Kimberly Avenue	WB	C	31.1	D	51.9
Overall		**D**	**54.3**	**D**	**43.3**
Ella T. Grasso Boulevard & Legion Avenue					
Ella T. Grasso Boulevard	NB	B	17.0	E	55.1
Ella T. Grasso Boulevard	SB	D	35.10	C	31.6
Overall		**C**	**30.1**	**D**	**40.6**
Ella T. Grasso Boulevard & North Frontage Road					
Ella T. Grasso Boulevard	NB	A	5.2	C	32.5
Ella T. Grasso Boulevard	SB	A	2.9	C	30.6
North Frontage Road	WB	D	42.3	D	38.5
Overall		**B**	**13.6**	**C**	**34.2**
Fitch Street & Whalley Avenue					
Fitch Street	SB	F	101.7	F	112.2
Whalley Avenue	EB	E	39.7	E	64.7
Whalley Avenue	WB	D	75.3	E	60.3
Overall		**E**	**56.4**	**E**	**71.5**
Fitch Street & Blake Street					
Fitch Street	NB	C	28.7	F	110.5
Fitch Street	SB	D	51.67	D	42.2
Blake Street	EB	E	59.7	C	25.2
Blake Street	WB	C	24.6	F	290.2
Overall		**D**	**41.2**	**F**	**115.1**
Arch Street & Fairview Avenue/Fitch Street					
Fitch Street	NB	B	18.2	D	45.8
Fairview Avenue	SB	C	25.1	C	25.6
Arch Street	EB	C	5.89	A	9.4
Arch Street	WB	A	27.5	C	20.9
Overall		**C**	**22.1**	**C**	**31.4**
Dixwell Avenue & Arch Street/Morse Street					
Dixwell Avenue	NB	C	32.0	D	38.2
Dixwell Avenue	SB	D	36.3	D	49.9
Arch Street	EB	D	53.9	D	54.4
Morse Street	WB	D	54.0	D	52.9
Overall		**D**	**39.8**	**D**	**47.4**

Table 2-4. AM & PM Peak Hour Traffic Operations – 2008 Existing Condition

		AM Peak Hour		PM Peak Hour	
Intersection / Direction	Movement	LOS	Avg. Delay (sec / veh)	LOS	Avg. Delay (sec / veh)
Dixwell Avenue & Helen St/Putman Ave/Circular Ave					
Dixwell Avenue	NB	D	48.2	E	69.6
Dixwell Avenue	SB	F	83.9	F	119.1
Putman Street	WB	F	86.9	F	131.8
Circular Street	SE	F	86.3	F	120.1
Overall		**E**	**73.5**	**F**	**106.7**
Dixwell Avenue & Newton Street					
Dixwell Avenue	NB	A	6.5	A	8.7
Dixwell Avenue	SB	B	18.8	C	25.8
Newton Street	EB	D	49.9	C	26.0
Overall		**B**	**15.6**	**B**	**17.7**
Dixwell Avenue & Treadwell Street					
Dixwell Avenue	NB	A	4.9	A	6.8
Dixwell Avenue	SB	B	16.7	E	77.2
Treadwell Street	WB	C	34.2	D	46.8
Overall		**B**	**14.5**	**D**	**44.0**

As shown in Table 2-4, overall operations are currently unacceptable (LOS E or F) at several intersections including:

- Fitch Street and Whalley Avenue – LOS E during the AM and PM peak hours.
- Fitch Street and Blake Street – LOS F during the PM peak hour.
- Dixwell Avenue & Helen Street/Putnam Avenue/Circular Avenue – LOS E and F during the AM and PM peak hours.

Delays during the PM peak hour are generally longer than delays during the AM peak hour in the study corridor. This condition illustrates the combined influence of strong commuter demand and heavy commercial/retail traffic that is generated in the afternoon.

Roadway Capacity

The study team also assessed the existing service volumes that can be accommodated by various segments of the Route 10 corridor while maintaining LOS D in the corridor. These service volumes provide a suitable approximation of roadway capacity and can help illustrate how capacity compares to the existing PM peak hour volume, or traffic demand, along each segment. The purpose of this assessment is to determine if sections of the corridor have reserve capacity or are over capacity relative to the existing traffic demands. Table 2-5 provides a summary of the approximate capacity and the PM peak hour demand for each segment. The approximate capacity of each segment was derived from the *2000 Highway Capacity Manual* (HCM) and based on example service volumes for urban streets (HCM Exhibit 10-7).

As shown in the table, most of the Route 10 corridor currently has reserve capacity, though several segments are approaching capacity. Once the peak hour traffic demands exceed the capacities shown in the table, the operations along the segment will generally degrade from and acceptable LOS D, to LOS E or F.

Table 2-5. Comparison of PM Peak Hour Demand to Capacity

Roadway Segment	Capacity [vph]	PM Peak Demand [vph]	Percent Capacity [vol/cap]
Ella T. Grasso Boulevard			
• Interchange 45 to Legion Avenue (Rte 34)	3600	1800	50%
• Legion Avenue (Rte 34) to Derby Avenue (Rte 34)	3600	3400	94%
• Derby Avenue (Rte 34) to Whalley Avenue (Rte 63)	1700	1600	94%
Whalley Avenue			
• Ella T. Grasso Boulevard to West Park Avenue	3400	1800	53%
• West Park Avenue to Fitch Street	3600	2000	56%
Fitch Street/Arch Street			
• Whalley Avenue to Crescent Street	1600	900	56%
• Crescent Street to Pine Rock Avenue	3400	1700	50%
• Pine Rock Avenue to Fairview Avenue	1600	1200	75%
• Fairview Avenue to Dixwell Avenue	1600	1100	69%
Dixwell Avenue			
• Arch Street to Putnam Avenue	3400	2000	59%
• Putnam Avenue to Route 15	3400	2600	76%
• Route 15 to Skiff Street	3400	3000	88%

2.1.4 Travel Speeds

ConnDOT provided existing travel speed data for five locations in the study corridor. The speed data was obtained from a radar sampling of 50 vehicles for the northbound and southbound directions. Table 2-6 provides a summary of the average speed and 85th percentile speed (the speed at which 85% of the vehicles are traveling at or below), for the five locations.

Table 2-6. Travel Speed Summary

Location	Speed [mph]		
	Posted	Average	85th Percentile
New Haven			
Ella T. Grasso Boulevard between Kimberly Avenue and Washington Avenue	35	41	46
Ella T. Grasso Boulevard between Chapel Street and Edgewood Avenue	35	34	37
Fitch Street between Onyx Street and Blake Street	25	32	36
Fitch Street between Dyer Street and Crescent Street	25	39	43
Fitch Street between Pine Rock Avenue and SCSU Driveway	25	36	40
Hamden			
No speed data provided for study corridor	-	-	-

A speed trailer located along Ella T. Grasso Boulevard just north of Columbus Avenue indicates that speeding is also a concern along this section of Route 10.

As shown in Table 2-6, speeding is a concern in four of the five locations where the average speeds exceed the posted speeds by 6 to 13 mph, and 85th percentile speeds exceed the posted speeds by 11 to 18 mph. The only location where observed speeds are consistent with the posted speed limit is Ella T. Grasso Boulevard between Chapel Street and Edgewood Avenue near Edgewood Park. It is possible that the predominantly residential surroundings and the presence of on-street parking in this area help control travel speeds.

2.1.5 Accident History

The study team obtained accident data from ConnDOT's *Traffic Accident Viewing System* (TAVS) for the three-year period beginning January 1, 2004 and ending December 31, 2006. A review of this accident data indicates that there are 43 locations (listed in the appendix), consisting of both intersections and segments of roadway, that are considered high accident locations based on the accident rates at these locations over the three-year period. The relatively common occurrence of these high accident locations suggests that overall safety is a general concern throughout the corridor. Tables 2-7 and 2-8 summarize the most common collision types and contributing factors associated with accidents along segments of the Route 10 study corridor. The segments listed in the tables were defined based on their similar roadway characteristics and driving environments.

As shown in the tables, 2202 accidents were recorded in the Route 10 corridor during the three-year analysis period. Of these accidents, approximately 44% were rear end collisions, and 29% were related to vehicles making turning maneuvers. Approximately 41% of all accidents were attributed to following too closely, and 21% to motorists failing to grant the right-of-way (ROW) to other motorists.

The most frequent collision types in the corridor, and the leading contributing factors to these collisions, are likely a function of the driving environment along much of Route 10. Route 10 in most locations is a high volume arterial roadway that serves thousands of daily commuter trips and provides a high degree of access to surrounding land uses via intersecting roadways, commercial and residential drive-ways. Vehicles slowing or stopping for traffic signals; motorists slowing in traffic to complete turns; motorists attempting to enter or cross streams of steady and high speed through traffic; and general driver impatience and inattention, likely contribute significantly to the accident history in the Route 10 corridor. It can also be stated that vehicle speeds, in conjunction with following too closely, is a significant contributing factor to the number of rear end and turning-related collisions.

Of particular concern is the 32 pedestrian collisions that have occurred throughout the Route 10 corridor (specific accident locations are shown on Figure 2-1 at the end of Section 2.1). This relatively high number of pedestrian accidents emphasizes the need to heighten driver awareness of pedestrian traffic and provide safer pedestrian accommodations.

Table 2-7. Summary of Collision Types

Roadway Segment	Percentage						Total Number of Accidents	Number of Pedestrian Accidents	Number of High Accident Locations
	Rear End	Turning – Intersecting Paths	Turning – Opposite Directions	Turning – Same Direction	Sideswipe – Same Direction	Other			
Ella T. Grasso Boulevard									
• Interchange 45 to Columbus Avenue (US 1)	39%	14%	14%	6%	12%	15%	332	5	9
• Columbus Avenue (US 1) to Derby Avenue (Rte 34)	51%	6%	17%	4%	11%	11%	199	2	2
• Derby Avenue (Rte 34) to Whalley Avenue (Rte 63)	44%	2%	10%	10%	18%	16%	249	6	9
Whalley Avenue									
• Ella T. Grasso Boulevard to Fitch Street	30%	16%	5%	7%	19%	23%	206	5	4
Fitch Street/Arch Street									
• Whalley Avenue to Crescent Street	46%	12%	8%	4%	10%	20%	78	1	5
• Crescent Street to Fairview Avenue	53%	7%	15%	4%	8%	13%	100	1	1
• Fairview Avenue to Dixwell Avenue	49%	13%	14%	3%	6%	15%	101	1	3
Dixwell Avenue									
• Arch Street to Route 15	43%	20%	9%	5%	13%	10%	675	6	6
• Route 15 to Skiff Street	52%	12%	12%	2%	11%	11%	262	5	4
Totals	**44%**	**13%**	**11%**	**5%**	**13%**	**14%**	**2202**	**32**	**43**

Table 2-8. Summary of Contributing Factors

Roadway Segment	Percentage								Total Number of Accidents
	Following too Closely	Failed to Grant Right-of-Way	Violated Traffic Control	Improper Lane Change	Improper Passing Maneuver	Improper Turning Maneuver	Speed too Fast for Conditions	Other	
Ella T. Grasso Boulevard									
• Interchange 45 to Columbus Avenue (US 1)	36%	25%	4%	7%	3%	5%	2%	18%	332
• Columbus Avenue (US 1) to Derby Avenue (Rte 34)	47%	14%	6%	10%	2%	5%	2%	14%	199
• Derby Avenue (Rte 34) to Whalley Avenue (Rte 63)	41%	12%	8%	3%	15%	7%	2%	12%	249
Whalley Avenue									
• Ella T. Grasso Boulevard to Fitch Street	26%	24%	4%	5%	3%	7%	5%	26%	206
Fitch Street/Arch Street									
• Whalley Avenue to Crescent Street	44%	19%	5%	0%	4%	3%	4%	21%	78
• Crescent Street to Fairview Avenue	52%	17%	7%	3%	2%	4%	3%	12%	100
• Fairview Avenue to Dixwell Avenue	48%	22%	4%	5%	3%	2%	1%	15%	101
Dixwell Avenue									
• Arch Street to Route 15	40%	27%	3%	7%	2%	5%	2%	14%	675
• Route 15 to Skiff Street	48%	16%	11%	9%	1%	5%	1%	9%	262
Totals	**41%**	**21%**	**5%**	**7%**	**4%**	**5%**	**2%**	**15%**	**2202**

2.1.6 Pedestrian Accommodations

Sidewalks are present throughout most of the Route 10 corridor and provide some degree of pedestrian connectivity and accessibility to various destinations in and around the corridor. The only discontinuities in the existing sidewalk system are located between:

- New Haven Career Center and the north end of Evergreen Cemetery on the east side of Ella T. Grasso Boulevard.
- Columbus Avenue (US 1) and Derby Avenue (Route 34) along the west side of Ella T. Grasso Boulevard and adjacent to West River Memorial Park.
- Wintergreen Avenue and Arch Street along the west side of Fitch Street and adjacent to Beaverdale Memorial Park and SCSU campus.

In addition to these few discontinuities, there are existing deficiencies in the sidewalk system relative to Americans with Disabilities (ADA) accessibility, crosswalks, and pedestrian signals. Overall pedestrian safety and walkability are also concerns given the high volume and high speed nature of the corridor, and the relatively long crossing distances created by four and five lane wide intersection approaches.

In particular, Town of Hamden officials expressed specific concerns about the walkability of Dixwell Avenue and the generally unfriendly pedestrian environment created by the width of the roadway and limited crossing opportunities. Pedestrian crossings are typically identified with white crosswalk markings and are located at signalized intersections where pedestrians are provided an exclusive pedestrian signal phase that allows them to cross while all traffic is stopped at the intersection. Along Dixwell Avenue, there are some locations where signalized intersections are spaced more than one-quarter mile apart. Pedestrians are generally more apt to cross Route 10 at a random midblock location or an unsignalized intersection that is closer to their destination than to walk to a more distant signalized intersection. This is of particular concern on Dixwell Avenue where there is considerable pedestrian traffic originating from residential neighborhoods on the west side of the corridor and heading for commercial establishments on the east side.

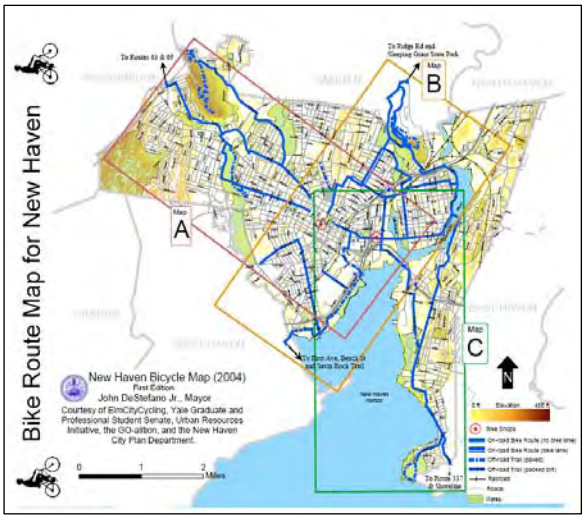
Pedestrians are often seen crossing Dixwell Avenue between moving lanes of traffic rather than crossing at a crosswalk due in part to the distance between signalized intersections in some areas.

City of New Haven officials also expressed specific concerns about the general need for functional pedestrian pushbuttons and updated pedestrian signal equipment in the corridor. To help determine the existing needs, the study team conducted a field survey of all 39 signalized intersections and determined whether crosswalks are present, if ramps are ADA-compliant, if pedestrian signals and signal phases are provided, and if pedestrian pushbuttons are operating correctly. The following deficiencies were noted (a complete inventory is provided in the appendix):

- Ella T. Grasso Boulevard at Washington Avenue: No crosswalk markings; no pedestrian signals.
- Ella. T. Grasso Boulevard at New Haven Career Campus: Pushbutton does not activate signal.
- Ella. T. Grasso Boulevard at Columbus Avenue (US 1): No pedestrian signal heads.
- Ella T. Grasso Boulevard at Chapel Street: No pedestrian pushbuttons or signal heads.
- Ella T. Grasso at Edgewood Avenue: No pedestrian pushbuttons or signal heads.
- Ella T. Grasso at Elm Street: No pedestrian pushbuttons or signal heads.
- Whalley Avenue at Pendleton Street: *Do Not Walk* signal not functioning properly.
- Fitch Street at Bowen Street: No crosswalk across Fitch Street at Bowen Street.
- Dixwell Avenue at Putnam Avenue: No pedestrian pushbutton or signal head across Putnam Avenue.
- Dixwell Avenue at Treadwell Avenue: No pedestrian signal heads.
- Dixwell Avenue at Route 15: No crosswalks, pedestrian pushbuttons, or signal heads at northbound and southbound ramp intersections.
- Dixwell Avenue at Hamden Plaza: No pedestrian pushbuttons or signal heads for Dixwell Avenue crossing at Hamden Plaza Driveway 1.
- Dixwell Avenue at Skiff Street: No pedestrian pushbuttons or signal heads.

2.1.7 Bicycle Facilities

There are no dedicated bicycle facilities in the Route 10 corridor, though there are numerous on-street and off-street bike routes that intersect the corridor or that are located in close proximity to Route 10. The City of New Haven published a bike route map (2004) that the study team used to identify bike routes in the City. On-street bike routes include streets with marked bike lanes and streets that have been determined to be bicycle friendly in regard to slower traffic speeds and wider shoulder areas. Off-street bike routes include bicycle trails and shared-use paths.



Bike routes in the City that intersect the Route 10 corridor include:

- Edgewood Avenue, which runs east-west and intersects Ella T. Grasso Boulevard just north of Edgewood Park.
- Edgewood Park trail: Begins near intersection of Chapel Street and Ella T. Grasso Boulevard and extends northwest through Edgework Park to the intersection of Whalley Avenue and Fitch Street.
- Ella T. Grasso Boulevard north of Whalley Avenue to Crescent Street.
- Blake Street, which intersects Whalley Avenue and Fitch Street.
- Crescent Street and Wintergreen Avenue adjacent to SCSU.

In general, many of the identified bike routes in the City provide connectivity between Downtown and the surrounding neighborhoods while radiating outward from Downtown. There appears to be opportunities to connect some of these mainly east-west routes with north-south bicycle facilities along Ella T. Grasso Boulevard in New Haven. The City also has plans for a West River Greenway Trail that would provide a north-south bike route parallel to Route 10, though it does not appear that this route would directly serve Route 10 abutters.

In Hamden, there is one bike route identified on ConnDOT's *Connecticut Statewide Bicycle Map* that intersects the Route 10 corridor. This route includes Circular Avenue, Benham Street, and Main Street and crosses Dixwell Avenue at the Circular Avenue intersection. In addition, the Farmington Canal Trail currently parallels the east side of Dixwell Avenue north of Route 15. There are future plans to extend this trail south along the former rail line to provide a continuous trail between Hamden and Downtown New Haven. This trail would parallel Dixwell Avenue between Skiff Street and Arch Street, before diverging from the Dixwell Avenue corridor. Ultimately, as a component of the East Coast Greenway, the trail will be used for bicycle travel between Maine and Florida. This bikeway/greenway will be a resource for the Town of Hamden and the City of New Haven. It will provide open space and recreational facilities for the area as well as an important pedestrian and bicycle circulation route between Hamden Town Center and Downtown New Haven. It may also provide an economic stimulus since bike travelers will require services such as bike rental and repair, and food. Regional and interstate bicycle travelers may also require overnight accommodations.

Overall, the Route 10 study corridor itself – including Ella T. Grasso Boulevard, Whalley Avenue, Fitch Street, Arch Street, and Dixwell Avenue – are not bicycle-friendly and are not conducive to safe biking. This is due to the lack of delineated roadway shoulders or dedicated bike lanes that would provide a dedicated area for bicyclists adjacent to vehicular traffic. Relatively high vehicle speeds throughout the corridor also discourage bicyclists from sharing the road with vehicles, particularly when there are no adequate areas defined for bicyclists in the roadway.

2.1.8 Transit Services and Amenities

Public transit service in the Route 10 study corridor is provided by CT Transit. The New Haven Division of CT Transit operates local bus service seven days a week along 22 routes on a "spoke-and-hub" system out of Downtown New Haven. Currently, seven routes provide service or accommodate stops and transfers in the Route 10 study corridor. These routes are shown in Figure 2-1 and include:

- B – Congress Avenue / Whalley Avenue
- D – Dixwell Avenue
- F – West Chapel Street
- M – Washington Avenue/State Street
- O – Route 1
- Q – State Street/Edgewood Avenue
- Z – Goffe Street/Sargent Drive

The B (Congress Avenue), F, M, O, Q, and Z routes only intersect or traverse short segments of the Route 10 corridor, providing stops or allowing transfers to other routes that operate in the corridor. The remaining routes – B (Whalley Avenue), D, M, and O – operate along longer segments of the Route 10 corridor. Headways along these routes typically range from about 10 minutes to 30 minutes during the morning and afternoon commuting periods, and considerably longer during off-peak periods.

Bus stop amenities along these routes include:

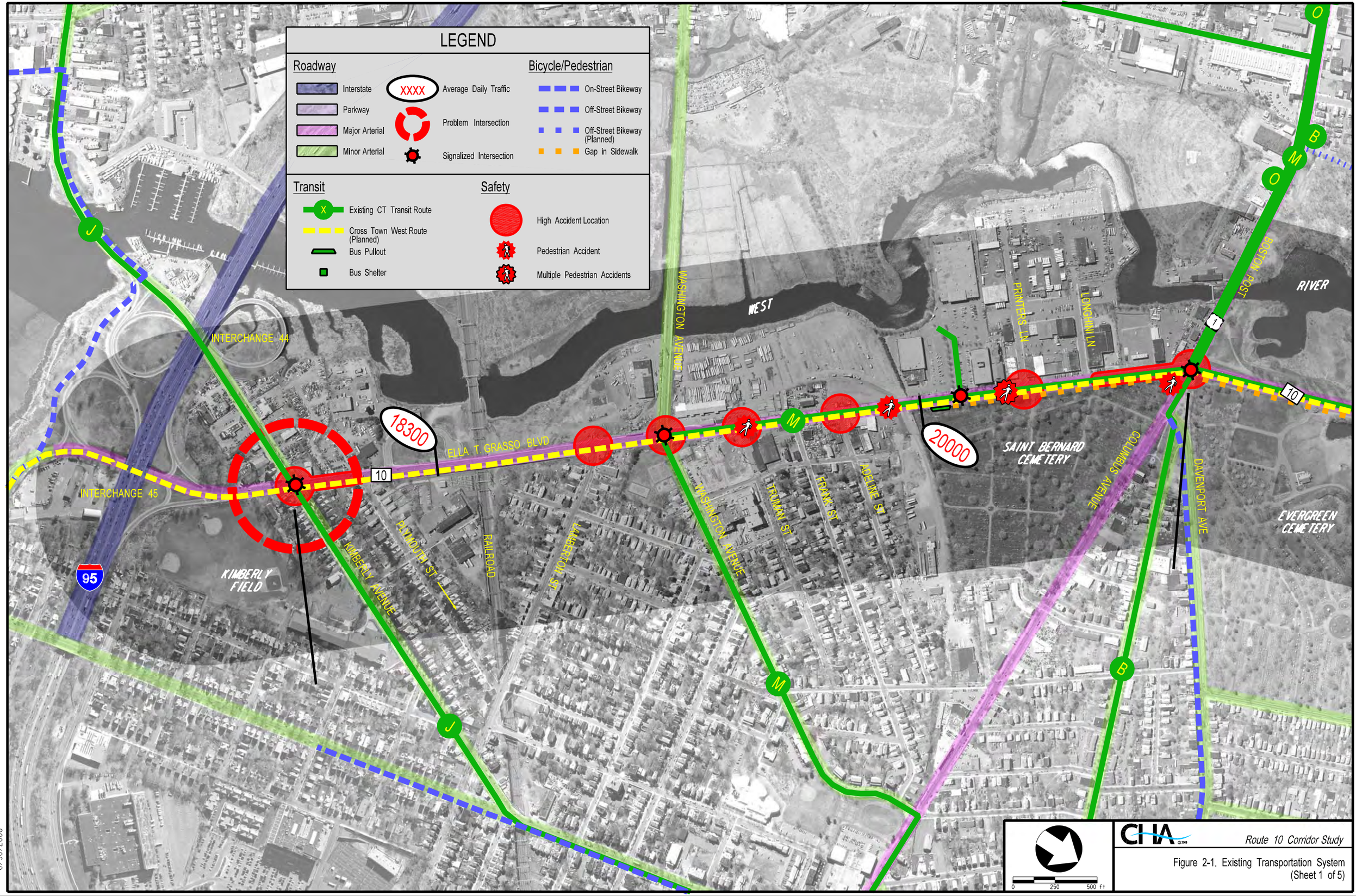
- Ella T. Grasso Boulevard
  - Northbound bus pullout adjacent to New Haven Career Center.
  - Bus shelter with bench and route information on Edgewood Avenue.
- Whalley Avenue
  - Southbound bus shelter with bench and route information near Ella T. Grasso Boulevard.
  - Southbound bus shelter with route information at Hubinger Street.
  - Southbound bus shelter with bench at Fitch Street.
- Fitch Street
  - Southbound bus shelter with bench just south of Wintergreen Avenue.

- Dixwell Avenue
  - Southbound bus shelter with bench and route information just north of Arch Street.
  - Southbound bus shelter with bench at Woodin Street.
  - Northbound bus shelter with bench at Walgreen's just south of Putnam Avenue.
  - Southbound bus shelter with bench just north of Circular Avenue.
  - Northbound bus pullout with shelter and bench at Putnam Plaza between Putnam Avenue and Scott Street.
  - Southbound bus shelter and bench at Newton Street.
  - Southbound bus shelter with bench and route information at Church Street.
  - Northbound bus shelter with bench at Home Depot just south of Benham Street.
  - Southbound bus shelter with bench just north of Hamden High School.
  - Northbound bus pullout with shelter and bench at Market Place plaza.

The City of New Haven is promoting the implementation of a *Cross Town West* bus route that would run north-south between Sea Street in New Haven and the Second Street/Dixwell Avenue intersection in Hamden following sections of Route 10 (including Ella T. Grasso Boulevard, Whalley Avenue, Fitch Street, and Arch Street) and several local streets (including Blake Street, Dix Street, Warren Street, and Second Street). The route, as shown in Figure 2-1 at the end of Section 2.1, would provide access to numerous employment generators in Hamden and New Haven that are currently serviced through the hub/spoke system of transfers in Downtown New Haven. The route would be incorporated in the existing CT Transit system and would provide access to major employer destinations – such as SCSU, St. Raphael's Hospital, Dixwell Avenue – without the need for Downtown transfers. The Cross Town West bus route was a recommendation of the Statewide Bus Study completed by ConnDOT in 1999.

The implementation of the Cross Town West bus route would help support the creation of *transit nodes* at intersections of this route with the existing Downtown routes currently on the hub and spoke system.

Private transit service in the Route 10 study corridor includes a shuttle system operated by Southern Connecticut State University. The shuttle service provides on-campus links between parking areas and university facilities, as well as off-campus links to Union Station. The latest Master Plan of Development for the university includes a revised shuttle system that would allow shuttles to operate on existing campus pathways, including the pedestrian bridge over Route 10, to contain shuttle circulation on-campus, thereby removing shuttles from Route 10 where delays are common during peak commuting periods.



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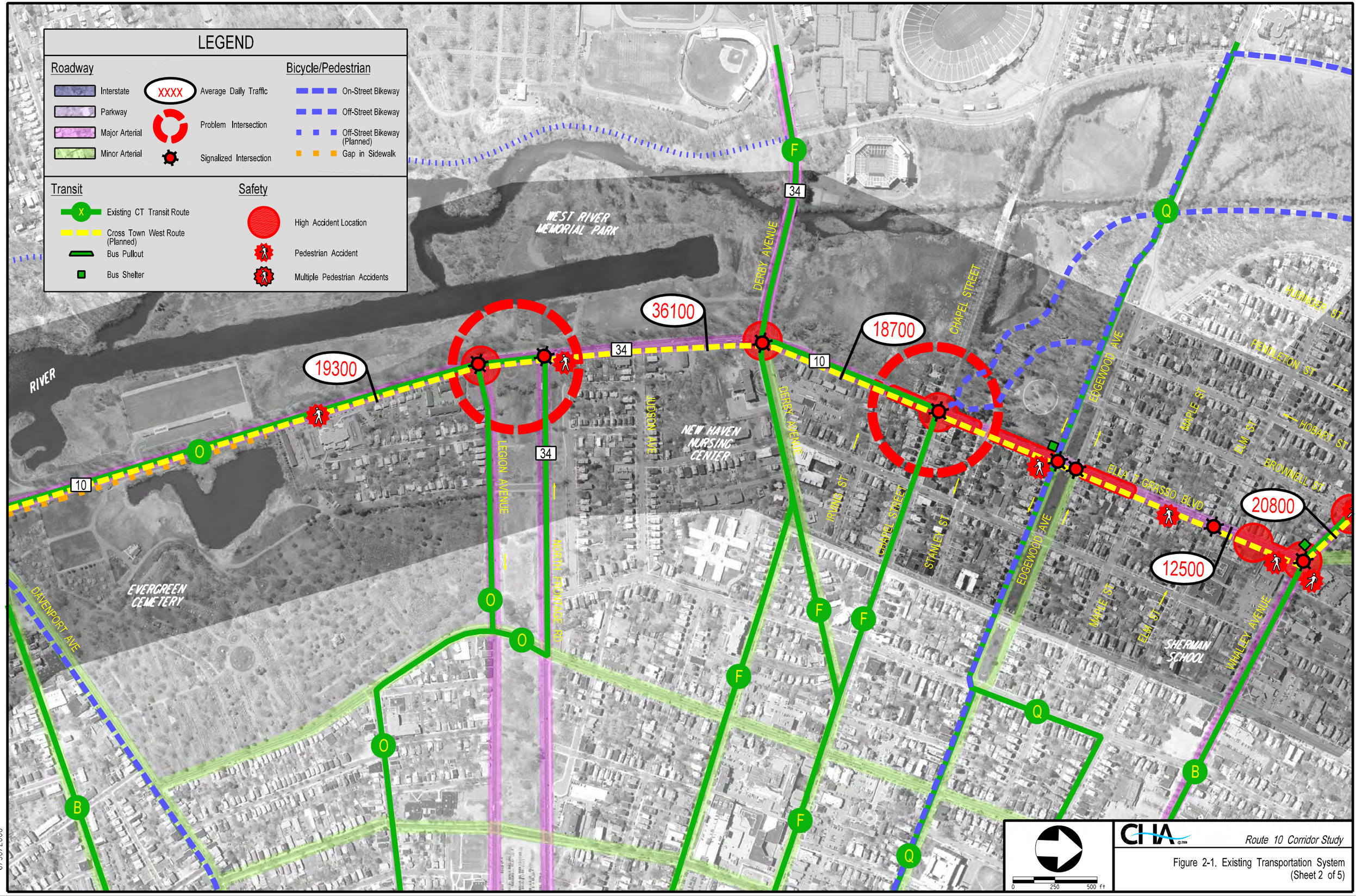
Route 10 Corridor Study

Figure 2-1. Existing Transportation System
(Sheet 1 of 5)



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Route 10 Corridor Study

Figure 2-1. Existing Transportation System (Sheet 2 of 5)

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Hamden

New Haven

BOWLING GREEN

COMMUNITY ACTION AGENCY

EDGEWOOD PARK

BEECHER SCHOOL

BEAVERDALE MEMORIAL PARK

SOUTHERN CONNECTICUT STATE UNIVERSITY

BEAVER PONDS

CONGREGATION BETH EL CEMETERY

ST. BRENDAN'S ROMAN CATHOLIC CHURCH & SCHOOL

FARNHAM AVENUE

FITCH STREET

PINE ROCK AVENUE

WINTERGREEN AVE

BLAKE ST

JEWELL ST

ONYX ST

DYER ST

CRESCENT ST

WHALLEY AVENUE

WEST PARK AVE

OSBORN ST

HUBINGER ST

T YOUNG

PENDLETON

WHITTLESEY

HOBART

ELLA T GRASSO BLVD

ARCH STREET

WARNER ST

BURKE ST

BOWEN ST

ALSTRUM ST

DIXWELL AVENUE

FAIRVIEW AVENUE

11800

12800

23400

8000

10400

15200

20800

14000

10

63

B

Z

D

LEGEND

Roadway

- Interstate
- Parkway
- Major Arterial
- Minor Arterial

XXXX Average Daily Traffic

Problem Intersection

Signalized Intersection

Bicycle/Pedestrian

- On-Street Bikeway
- Off-Street Bikeway
- Off-Street Bikeway (Planned)
- Gap in Sidewalk

Transit

X Existing CT Transit Route

Cross Town West Route (Planned)

Bus Pullout

Bus Shelter

Safety

High Accident Location

Pedestrian Accident

Multiple Pedestrian Accidents

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Route 10 Corridor Study

Figure 2-1. Existing Transportation System (Sheet 3 of 5)

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LEGEND

Roadway

- Interstate
- Parkway
- Major Arterial
- Minor Arterial
- XXXX — Average Daily Traffic
- Problem Intersection
- Signalized Intersection

Bicycle/Pedestrian

- On-Street Bikeway
- Off-Street Bikeway
- Off-Street Bikeway (Planned)
- Gap in Sidewalk

Transit

- X — Existing CT Transit Route
- Cross Town West Route (Planned)
- Bus Pullout
- Bus Shelter

Safety

- High Accident Location
- Pedestrian Accident
- Multiple Pedestrian Accidents

WARNER ST
BURKE ST
WHITING ST
NORTH ST
FIRST ST
SECOND ST
THIRD ST
FOURTH ST
PINE ST
GEORGE ST
WIDOW ST
HELEN ST
PAIER COLLEGE OF ART
LIBRARY
GOFFEN AVENUE
SCOTT ST
NEWTON ST
COLLINS ST
LEXINGTON ST
BEACON ST
CONCORD ST
CHURCH ST
MILLS ST
CUMLEY ST
ST JAMES
HOMESTEAD
HILLCREST AVE
DIXWELL AVENUE
BAGLEY AVENUE
OREGON AVE
TREADWELL ST
PERSHING
FOCH
HAIG ST
ARCH STREET
KEEFE COMMUNITY CENTER
HAMDEN PARK DRIVE
HORSE STREET
PUTNAM AVENUE
PUTNAM PLAZA
25700
30700
27100
31800
10
D
O
G
Planned Farmington Canal Trail

0 250 500 ft

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Route 10 Corridor Study

Figure 2-1. Existing Transportation System (Sheet 4 of 5)

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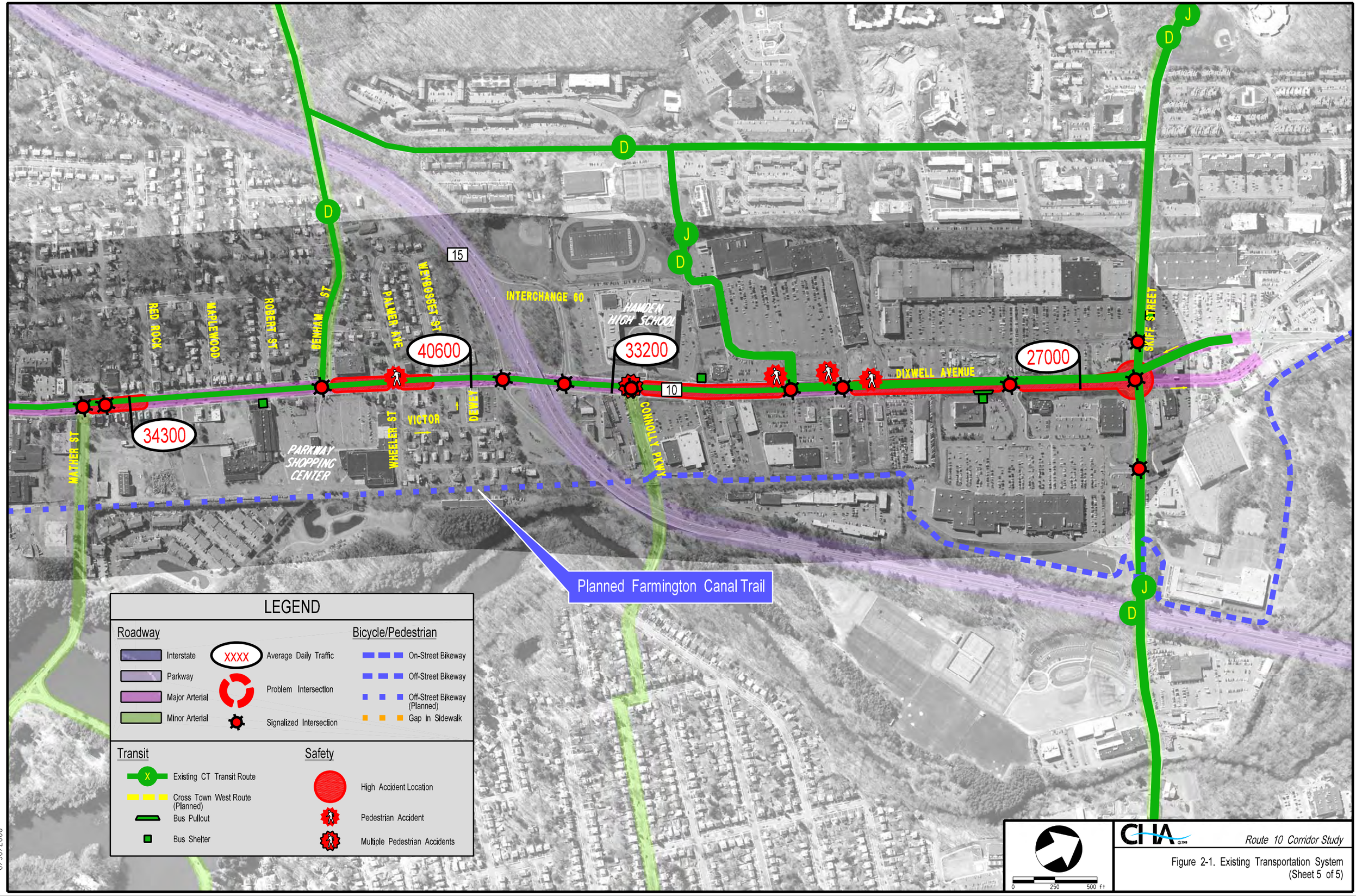

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2.2 Land Use and Zoning

The existing land use and zoning described below for New Haven and Hamden are illustrated in Figure 2-2 provided at the end of this section.

2.2.1 Land Use in New Haven

The land uses along the west side of Ella T. Grasso Boulevard between I-95 and Columbus Avenue (US 1) are mostly industrial. They are comprised of a range of manufacturing, light industry, motor vehicle storage and repair, material recycling, outdoor storage, and wholesale retailers. The east side of Ella T. Grasso Boulevard in this segment of highway is a combination of residential uses, schools, playgrounds, mixed-use commercial, and Saint Bernard cemetery.

Between US 1 and Legion Avenue, there is very little development since the west side of the street borders West River Memorial Park and the east side borders Evergreen Cemetery for much of this length. A residential area of the Hill Neighborhood lies just north of Evergreen Cemetery and includes some apartments and a nursing home.

From North Frontage Road (Route 34) to Edgewood Avenue, there is also very little development on the west side of the street since it borders West River Memorial Park and Edgewood Park. The east side of the street lies in the West River Neighborhood and is mostly residential but also includes the Old Barnard Elementary School.

North of Edgewood Avenue to Whalley Avenue (Route 63), Ella T. Grasso Boulevard is made up of dense multi-family residential homes and apartments. Many of the homes are very stately and historic.

The three blocks along Whalley Avenue between Ella T. Grasso Boulevard and Pendleton Street is another section of the corridor that has retained its traditional charm. Like the district near Circular Avenue in Hamden, this district has a more intimate feel to the streetscape since the buildings are mostly small-scale, traditional, two-story storefronts, situated close to the street and close to each other. Parking is mostly located in discrete parking lots behind the stores and service establishments or on the street. Consequently, this section of the corridor provides a scale and massing that relate well to the pedestrian, creates a strong “street wall”, and provides a logical transition between the intensity of Whalley Avenue and the quiet character of the adjacent residential districts. This pattern and character of urban development reinforces pedestrianism and contributes greatly to walkability. These buildings should not only be preserved but also replicated (see discussion on New Urbanism in Section 4.2.2).

The next two blocks traveling west on Whalley Avenue are dense multi-family housing and apartments until the character of the street changes quite abruptly with the reemergence of Edgewood Park and an expansive cemetery at Jewell Street.

A small area of industrial uses also exists on the west side of Fitch Street just north of Whalley Avenue and south of Blake Street. Surrounding the intersection of Blake Street and Fitch Street is a small area of neighborhood-oriented, convenience retail. Between Blake Street and Crescent Street, the land use is mostly medium density residential.

North of Crescent Street and extending to the Hamden Town line is the vast campus of Southern Connecticut State University, although a great expanse of the west side of Fitch Street in comprised of the Beaverdale Memorial Park cemetery.

2.2.2 Land Use in Hamden

Fitch Street in Hamden is comprised of medium density, single-family and two-family residences. There is a church on the corner of Dixwell Avenue and Arch Street and the intersection of Fitch Street and Fairview Avenue has small-scale commercial development and a few neighborhood-oriented retail stores.

A one block section of Dixwell Avenue (the west side of Dixwell Avenue between Circular Avenue and 4th Street/Woodin Street) is one of the few sections of the corridor that has retained its traditional charm. This district has a more intimate feel to the streetscape since the buildings are mostly small-scale, traditional (many Art Deco-style), two-story storefronts, situated close to the street and close to each other. Parking is mostly located in discrete parking lots behind the stores and service establishments or on the street. Consequently, this section of the corridor provides a scale and massing that relate well to the pedestrian, creates a strong "street wall", and provides a logical transition between the intensity of Dixwell Avenue and the quiet character of the adjacent residential districts.

Building uses along Dixwell Avenue in Hamden are primarily service, retail and auto-related with some institutional, residential, and banking uses. The size and intensity of auto-related uses, such as auto sales and service, and the auto-oriented nature of the retail uses, such as strip shopping plazas, drive-through restaurants and banks, and the conversion of former single family residences to retail or service uses, all detract from the functionality and attractiveness of the street. Functionally, the numerous curb-cuts and high volume driveways creates many points of conflict between turning vehicles and pedestrians and through vehicles. Visually, the large expanses of parking between the street and buildings and the clutter of numerous signs add to the sense of confusion and lack of order of the street.

Much of the land use along Dixwell Avenue that is not developed with "big-box" stores or strip shopping centers is comprised of small businesses, many of which are in buildings that are former residences converted to retail, office or service establishments. These businesses typically have isolated and inefficient parking lots with wide and sometimes multiple curb cuts which inhibit safe traffic movement.

Electric and telecommunications lines are constructed overhead on utility poles and underground within conduits within the study area The east side of Dixwell Avenue has overhead utility lines the entire length, whereas the west side has some lines with numerous gaps. The residential side streets typically have overhead utility lines on one side or the other. The town of Hamden has expressed a desire to relocate all overhead services into underground facilities, possibly within a new median down the center of Dixwell Avenue.

2.2.3 Summary of Existing Land Use

Table 2-9 provides a summary of land uses in the corridor within the various roadway segments. The land uses fall into eight general categories, as follows:

- **Medium Density Residential:** Primarily single-family homes, duplexes and two-family homes with a density of 8 to 12 units per acre.
- **High Density Residential:** Multi-family homes and apartment complexes with a density of 12 to 25 units per acre.
- **Neighborhood Commercial:** Small-scale commercial development that provides convenience retail or services to the surrounding neighborhoods. These commercial districts are more intimate in character than other commercial areas of the corridor because they usually have traditional architecture and relatively small parking areas (since many of their customers are able to walk to business). As such, they are compatible with the surrounding residential districts and create a more attractive streetscape.
- **Auto-oriented Mixed-use**: These areas include strip retail development, small-scale retail uses that rely heavily on drive-by traffic and have relatively large parking lots between the street and the buildings (e.g. drive-through restaurants, chain pharmacies, automobile service centers).
- **"Big Box" Retail**: These uses are predominately located along Dixwell Avenue in Hamden north of Mather Street and include large-scale strip shopping centers (e.g. Hamden Plaza, The Marketplace at Hamden, Hamden Mart) that draw its customers from the region. Buildings are often 50,000 to 100,000 sf, single story 'big boxes' that house national retailers (e.g. Home Depot, Petco, Walmart, TJ Max, Kohl's, Staples, Marshalls, Old Navy), large scale food stores or regional retailers (e.g. Stop & Shop, Shaws, Bob's, Town Fair Tire), and automobile dealerships (e.g. Ford, GMC)
- **Industrial:** Industrial uses in the corridor are predominantly located along the west side of Ella Grasso Boulevard between I-95 and Columbus Avenue (US 1). They are comprised of a range of manufacturing, light industry, motor vehicle storage and repair, material recycling, outdoor storage, and wholesale retailers. A small area of industrial uses also exists on the west side of Fitch Street just north of Whalley Avenue and south of Blake Street.
- **University**: Southern Connecticut State University is a growing state university of more than 12,000 students and 30 buildings. It is located less than three miles from Downtown New Haven on approximately 168 acres. About 38% of its students live on campus, the balance either live in nearby private housing or commute to campus from neighboring towns.
- **Park or Cemetery:** There are numerous parks and cemeteries along the corridor that cover a considerable percentage of the land in the corridor. The more prominent parks include West River Memorial Park and Edgewood Park in New Haven.

Table 2-9. Summary of Existing Land Use

Roadway Segment	GENERAL LAND USE							
	Medium Density Residential	High Density Residential	Neighborhood Commercial	Auto-Oriented Mixed-Use	"Big Box" Retail	Industrial	University	Park or Cemetery
Ella T. Grasso Boulevard								
• Interchange 45 to Columbus Avenue (US 1)								
• Columbus Avenue (US 1) to Derby Avenue (Rte 34)								
• Derby Avenue (Rte 34) to Whalley Avenue (Rte 63)								
Whalley Avenue								
• Ella T. Grasso Boulevard to Fitch Street								
Fitch Street/Arch Street								
• Whalley Avenue to Crescent Street								
• Crescent Street to Fairview Avenue								
• Fairview Avenue to Dixwell Avenue								
Dixwell Avenue								
• Arch Street to Route 15								
• Route 15 to Skiff Street								

2.2.4 Zoning in New Haven

- **RM-1 District (Low-Middle Density Residential):** This district provides for high-middle density dwellings of various types at a density of about 12 dwelling units per acre, as well as restricted non-residential uses that generally support and harmonize with a middle density area.
- **RM-2 Districts (High-Middle Density Residential):** This district provides for high-middle density dwellings of various types at a density of about 22 dwelling units per acre, as well as restricted non-residential uses that generally support and harmonize with a middle density area.
- **BA District (General Business):** This district serves to provide central concentrations of convenience goods, specialty goods, amusements and services for adjacent neighborhoods. They also provide locations for small businesses with a city-wide market who cannot operate in the downtown area, predominantly in the retail trade.
- **IL District (Light Industry):** This district is regulated by a set of performance standards prescribing upper limits for nuisance factors such as noise and smoke. Industries are permitted which keep within those limits, as well as business uses which generally support and are integrated with other uses in the district. Further development of residences is prohibited from these districts in order to conserve the supply of commercial and industrial land and to prevent residences from being established under adverse conditions. The IL District is characterized in general by less intensive development and fewer outdoor uses than Heavy Industry Districts.

2.2.5 Zoning in Hamden

Existing zoning designations along Dixwell Avenue in Hamden include:

- **B-1 (Business 1):** Retail stores, service establishments, offices and other small businesses which are required to meet the daily needs of residents of the Town.
- **B-2 (Business 2):** Broad variety of retail stores, service establishments, office, theaters, motels and public parking designed to serve the Town and the region.
- **CDD-1 (Controlled Development District 1):** To encourage the appropriate development of land previously industrial and currently under utilized allowing mixed uses such as manufacturing, retail, services, offices, and multi-family.
- **R-5 (Residence District 5):** Moderate density residential with 6,000 sf minimum lot and 60 ft minimum lot width.

The project area is located in three different zones; permitted uses and development requirements vary on either side of the street – typically the east side allowing a variety of mixed uses and the west side retail, office, and service.

LEGEND

Land Use

- Auto-Oriented Retail
- Traditional Neighborhood-Oriented Retail
- Local, Small-Scale Retail
- Multi-Family Residential
- Single-Family Residential
- Industrial
- Mixed Commercial
- Church
- School
- Cemetery
- Park

Zoning

RM-1	Low-Middle Density
RM-2	High-Middle Density
RO	Residence-Office
RS-1	Special-Single Family
PDD	Planned Developement District
IL	Light Industry
BA	General Business
BC	Marine
CEM	Cemetery
PARK	Park

TOWN OF WEST HAVEN
WEST
WASHINGTON AVENUE
INTERCHANGE 44
INTERCHANGE 45
ELLA T. GRASSO BLVD
10
1
RM-1
RM-2
IL
PRINTERS LN
LONGHINI LN
PARK
KIMBERLY FIELD
KIMBERLY AVENUE
PLYMOUTH ST
RAILROAD
LAMBERTON ST
WASHINGTON AVENUE
TRUMAN ST
FRANK ST
ADELINE ST
SAINT BERNARD CEMETERY
CEM
COLUMBUS AVENUE
DAVENPORT AVE
EVERGREEN CEMETERY
BOSTON POST
RIVER
HEALTH CENTER
BA
RM-2

0 250 500 ft

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Route 10 Corridor Study

Figure 2-2. Existing Land Use & Zoning (Sheet 1 of 5)

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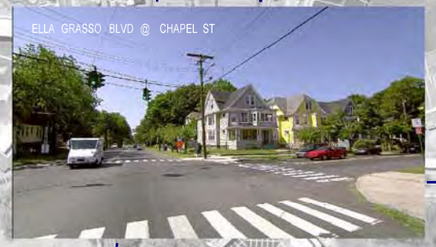
LEGEND

Land Use

- Auto-Oriented Retail
- Traditional Neighborhood-Oriented Retail
- Local, Small-Scale Retail
- Multi-Family Residential
- Single-Family Residential
- Industrial
- Mixed Commercial
- Church
- School
- Cemetery
- Park

Zoning

RM-1	Low-Middle Density	IL	Light Industry
RM-2	High-Middle Density	BA	General Business
RO	Residence-Office	BC	Marine
RS-1	Special-Single Family	CEM	Cemetery
PDD	Planned Developement District	PARK	Park



RM-1 RM-2 PDD BA RO CEM PARK

WEST RIVER MEMORIAL PARK
ROWING COURSE
WEST RIVER WILDLIFE SANTUARY
EDGEWOOD PARK
OLD BARNARD SCHOOL
NEW HAVEN NURSING CENTER
EVERGREEN CEMETERY
SHERMAN SCHOOL
ST. BRENDAN'S ROMAN CATHOLIC CHURCH & SCHOOL

DERBY AVENUE
CHAPEL STREET
EDGEWOOD AVE
LEGION AVENUE
NORTH FRONTAGE RD
DAVENPORT AVE
IRVING ST
STANLEY ST
MAPLE ST
ELM ST
WHALLEY AVENUE
HUBINGER ST
PENDLETON ST
HOBART ST
BROWNELL ST
ELLA T GRASSO BLVD
RIVER

34 10

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0 250 500 ft

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Figure 2-2. Existing Land Use & Zoning
(Sheet 2 of 5)

LEGEND

Land Use

- Auto-Oriented Retail
- Traditional Neighborhood-Oriented Retail
- Local, Small-Scale Retail
- Multi-Family Residential
- Single-Family Residential
- Industrial
- Mixed Commercial
- Church
- School
- Cemetery
- Park

Zoning

RM-1	Low-Middle Density	IL	Light Industry	R-1	Residence 1
RM-2	High-Middle Density	BA	General Business	R-4	Residence 4
RS-1	Special Single-Family	BC	Marine	R-5	Residence 5
RS-2	General Single-Family	CEM	Cemetery	CDD-1	Controlled Developement District 1
PDD	Planned Developement District	PARK	Park	B-2	Business 2

0 250 500 ft

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Route 10 Corridor Study

Figure 2-2. Existing Land Use & Zoning (Sheet 3 of 5)

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6/30/2008

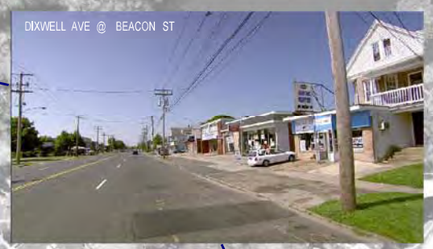
LEGEND

Land Use

- Auto-Oriented Retail
- Traditional Neighborhood-Oriented Retail
- Local, Small-Scale Retail
- Multi-Family Residential
- Single-Family Residential
- Industrial
- Mixed Commercial
- Church
- School
- Cemetery
- Park

Zoning

R-1	Residence 1	CDD-1	Controlled Developement District 1
R-3	Residence 3	CDD-2	Controlled Developement District 2
R-4	Residence 4	B-1	Business 1
R-5	Residence 5	B-2	Business 2



R-5 R-4 R-1 R-4 R-5 CDD-1 B-1 B-2 CDD-1 CDD-1 R-4 R-5

WARNER ST BURKE ST WHITING ST NORTH ST FIRST ST SECOND ST THIRD ST FOURTH ST PINE ST GEORGE ST WOODIN ST HELEN ST FARNAM AVENUE PAIER COLLEGE OF ART LIBRARY SCOTT ST NEWTON ST COLLINS ST LEXINGTON ST BEACON ST CONCORD ST CHURCH ST MILLIS ST OLMLEY ST ST JAMES HOMESTEAD HILLCREST AVE

DIXWELL AVENUE 10 DIXWELL AVENUE OREGON AVE BAGLEY AVENUE TREADWELL ST PERSHING FOCH HAIG ST

ARCH STREET KEEFE COMMUNITY CENTER HAMDEN PARK DRIVE MORSE STREET PUTNAM AVENUE PUTNAM PLAZA HAMDEN

0 250 500 ft

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Route 10 Corridor Study

Figure 2-2. Existing Land Use & Zoning (Sheet 4 of 5)

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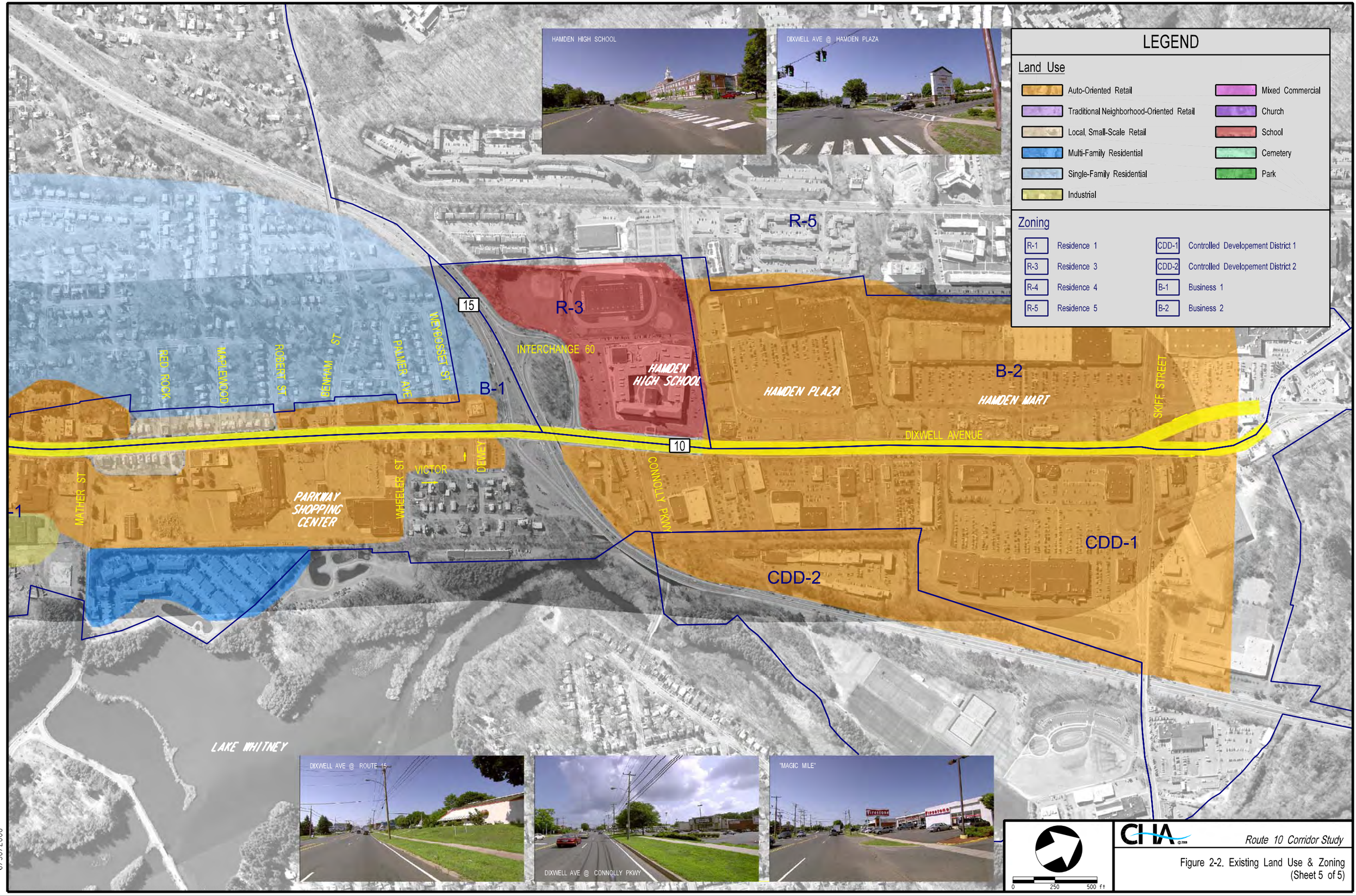

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Route 10 Corridor Study

Figure 2-2. Existing Land Use & Zoning
(Sheet 5 of 5)

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6/30/2008

3 Future Traffic Assessment

The future traffic assessment for this study considers the potential impacts that vehicular traffic growth will have on the existing roadways in the Route 10 corridor over a 20-year planning horizon (2028). Typically, a future conditions assessment would determine where and to what extent capacity improvements would be required in the corridor to maintain acceptable levels of service over the planning horizon. However, the heavily developed urban nature of the Route 10 corridor places considerable limitations on the level of capacity improvements that can be accommodated without significantly impacting abutting developments and properties. In addition, the long-term goals that have been defined for the corridor emphasize the objective to enhance the urban character of the roadway by making it safer and more accessible to those who choose to walk, bike, or take a bus in the corridor. For these reasons, there is less emphasis on determining what the capacity improvements would be, and more focus on determining how future vehicular traffic could be affected if existing roadway capacity were generally maintained in the future in favor of other roadway safety and multimodal improvements.

3.1 Traffic Forecast

The 2028 traffic forecast for this study considered two components of potential future traffic growth in the study corridor. One component is regional background growth which is associated with anticipated regional changes in land use and demographics over the 20-year planning horizon. The other component is localized traffic growth which is associated with traffic generated by planned major developments in the study area.

3.1.1 Regional Background Growth

The regional background growth rates for the study corridor were provided by ConnDOT's traffic forecasting unit. These rates are derived from the Department's Statewide travel demand model and incorporate forecasted changes in regional demographics (such as population, employment, and household data), trip generation, trip distribution, and travel mode choice. The rates provided by ConnDOT reflect average traffic growth that is expected on a town or city-wide basis for all roadways in the travel model, including Route 10 and most major arterial and collector roadways. The forecasted traffic growth rates provided by ConnDOT include:

- **New Haven: 25%** total traffic growth between 2008 and 2028. This is an average annual traffic growth rate of approximately 1.1%.
- **Hamden: 30%** total traffic growth between 2008 and 2028. This is an average annual traffic growth rate of approximately 1.3%.

3.1.2 Potential Effect of Major Developments

The study team researched and collected information from the State Traffic Commission (STC) regarding recently approved and pending applications for planned major developments in the Route 10 study corridor. Currently, only one development under review by the STC, a Taco Bell restaurant being proposed adjacent to the Hamden Mart plaza on Dixwell Avenue, is located in the Route 10 corridor. Based on a review of the traffic study for this development, the study team concluded that the resultant 35 PM peak hour trips on Dixwell Avenue from this development were relatively insignificant in comparison to the overall future peak hour volume of approximately 3900 vehicles. Consequently, these trips were not accounted for separately in the future traffic forecast.

The study team recognizes that the potential traffic impacts associated with the planned redevelopment of the Route 34 corridor, including deconstruction of the limit-access portion of the roadway located east of the Air Rights Garage in New Haven, will be much more significant over the 20-year planning horizon than trip generation from any one individual retail development like the Taco Bell. The Route 34 redevelopment not only has the potential to increase traffic volumes on the local roadway network and Route 10, but to affect overall traffic patterns in and around Downtown New Haven.

In addition, the Town of Hamden is currently revising their zoning regulations to allow for greater development density along Dixwell Avenue and to encourage infill development on currently developed properties. Although the Town envisions that these developments will be mixed-use, thus helping to mitigate some of the potential future traffic impacts associated with them, traffic on Route 10 will most likely be affected to some degree.

3.1.3 Future Baseline Traffic Volumes

Because the long-term development plans in the Route 34 corridor and the potential development opportunities along Dixwell Avenue and in other areas along the Route 10 corridor are difficult to accurately define at this time, due in part to the unpredictability of the market forces that will ultimately drive these developments, it is equally difficult to accurately predict the traffic generated by them. This is particularly true because traffic generation estimates are based on the size and specific use of the development, both of which are unknown and highly variable for any given development area. For these reasons, the study team developed a baseline traffic forecast that only represents the regional background traffic growth in New Haven and Hamden. This baseline forecast can be used to illustrate the minimum impacts that future traffic growth is likely to have on the Route 10 corridor. It can be assumed that any additional traffic generated by major developments in the corridor would then provide some level of additional impacts that can be qualitatively compared to the known baseline traffic forecast.

Table 3-1 summarizes the 2028 baseline average daily traffic (ADT) volumes for the count locations originally presented in Section 2.1.2. A traffic volume diagram that represents the baseline AM and PM peak hour volumes for the study intersections is provided in the appendix.

Table 3-1. 2028 Future Baseline ADT Volumes

Location	Baseline ADT Volume (vpd)	Net Increase from 2008 (vpd)
Ella T. Grasso Boulevard		
Between Kimberly Avenue and Washington Avenue	22,900	4600
Between Washington Avenue and US Route 1	25,000	5000
Between US Route 1 and Legion Avenue	24,100	4800
Between Legion Avenue and North Frontage Road	36,900	7400
Between North Frontage Road and Route 34 (Derby Avenue)	45,100	9000
Between Route 34 and Chapel Street	23,400	4700
Between Chapel Street and Edgewood Avenue	21,800	4400
Between Edgewood Avenue and Whalley Avenue	15,600	3100
Whalley Avenue		
Between Ella T. Grasso Boulevard and Blake Street	26,000	5200
Between Blake Street and Fitch Street	29,500	5900
Fitch Street – Arch Street		
Between Fitch Street and Blake Street	14,800	3000
Between Blake Street and Crescent Street	16,000	3200
Between Crescent Street and Hamden Town Line	13,000	2600
Between New Haven City Line and Fairview Avenue	13,000	2600
Between Fairview Avenue and Dixwell Avenue	18,200	4200
Dixwell Avenue		
Between Arch Street and Woodin Street	35,100	8100
Between Woodin Street and Putnam Avenue	39,900	9200
Between Putnam Avenue and Scott Street	33,300	7700
Between Scott Street and Church Street	35,800	8300
Between Church Street and Mather Street	41,300	9500
Between Mather Street and Benham Street	44,600	10,300
Between Benham Street and Route 15 NB Ramps	52,800	12,200
Between Route 15 NB Ramps and SB Ramps	49,000	11,300
Between Route 15 SB Ramps and Connolly Parkway	43,200	10,000
Between Connolly Parkway and Skiff Street	35,000	8100

As shown in Table 3-1, the forecasted traffic growth rate of more than 1% annually over the next 20 years would potentially increase ADT by more than 10,000 vpd in some locations, including near the Route 15 Interchange 60 on Dixwell Avenue. It is important to note that future traffic operations in the interchange area will be very sensitive to the potential traffic impacts brought by the greater development densities that are planned for Hamden's *Magic Mile*, which is located between the interchange and Skiff Street.

3.2 Future Traffic Operations and Capacity

Table 3-2 summarizes the future traffic operations that can be expected at the 10 study intersections if 25% to 30% baseline traffic growth is realized in the corridor. It should be noted that the operations analyses were performed assuming that the future traffic signal timings would be optimized for the existing cycle lengths.

Table 3-2. AM & PM Peak Hour Traffic Operations – 2028 Future Condition

		AM Peak Hour		PM Peak Hour	
Intersection / Direction	**Movement**	**LOS**	**Avg. Delay (sec / veh)**	**LOS**	**Avg. Delay (sec / veh)**
Ella T. Grasso Boulevard & Kimberly Avenue					
Ella T. Grasso Boulevard	NB	E	78.2	E	76.7
Ella T. Grasso Boulevard	SB	F	160.2	F	124.2
Kimberly Avenue	EB	E	65.3	F	81.9
Kimberly Avenue	WB	E	68.3	E	76.6
Overall		**F**	**93.4**	**F**	**90.4**
Ella T. Grasso Boulevard & Legion Avenue					
Ella T. Grasso Boulevard	NB	D	36.9	F	169.0
Ella T. Grasso Boulevard	SB	F	212.0	E	69.7
Overall		**F**	**163.4**	**F**	**105.3**
Ella T. Grasso Boulevard & North Frontage Road					
Ella T. Grasso Boulevard	NB	B	18.9	F	229.5
Ella T. Grasso Boulevard	SB	E	72.6	E	72.02
North Frontage Road	WB	E	70.8	F	81.8
Overall		**E**	**63.5**	**F**	**114.3**
Fitch Street & Whalley Avenue					
Fitch Street	SB	F	196.0	F	253.3
Whalley Avenue	EB	F	88.8	F	100.8
Whalley Avenue	WB	F	99.5	F	151.1
Overall		**F**	**105.6**	**F**	**146.1**
Fitch Street & Blake Street					
Fitch Street	NB	E	71.2	F	223.0
Fitch Street	SB	F	185.5	F	121.6
Blake Street	EB	D	35.3	D	35.8
Blake Street	WB	F	162.8	F	593.5
Overall		**F**	**118.2**	**F**	**241.3**
Arch Street & Fairview Avenue/Fitch Street					
Fitch Street	NB	D	43.7	F	178.1
Fairview Avenue	SB	F	183.5	F	158.3
Arch Street	EB	B	11.0	B	18.3
Arch Street	WB	F	203.9	F	148.9
Overall		**F**	**137.0**	**F**	**152.1**

Table 3-2. AM & PM Peak Hour Traffic Operations – 2028 Future Condition

		AM Peak Hour		PM Peak Hour	
Intersection / Direction	Movement	LOS	Avg. Delay (sec / veh)	LOS	Avg. Delay (sec / veh)
Dixwell Avenue & Arch Street/Morse Street					
Dixwell Avenue	NB	D	45.9	D	47.2
Dixwell Avenue	SB	F	81.8	F	84.6
Arch Street	EB	F	108.4	F	129.6
Morse Street	WB	F	137.0	F	216.3
Overall		**F**	**80.4**	**F**	**89.4**
Dixwell Avenue & Helen St/Putman Ave/Circular Ave					
Dixwell Avenue	NB	E	79.2	F	111.9
Dixwell Avenue	SB	F	220.1	F	241.8
Putman Street	WB	F	231.9	F	257.4
Circular Street	SE	F	143.5	F	249.8
Overall		**F**	**163.4**	**F**	**205.3**
Dixwell Avenue & Newton Street					
Dixwell Avenue	NB	A	6.6	A	8.5
Dixwell Avenue	SB	C	22.4	C	27.8
Newton Street	EB	D	50.9	E	60.3
Overall		**B**	**18.0**	**B**	**19.9**
Dixwell Avenue & Treadwell Street					
Dixwell Avenue	NB	A	7.9	A	10.0
Dixwell Avenue	SB	F	169.7	F	245.9
Treadwell Street	WB	F	166.9	F	274.0
Overall		**F**	**109.6**	**F**	**149.9**

As shown in Table 3-2, the baseline traffic growth is anticipated to result in overall unacceptable (LOS E or F) operations at 9 of the 10 study intersections. Under existing traffic conditions, only 3 of the 10 intersections experience unacceptable operations. This analysis shows that it is likely that most of the signalized intersections in the corridor (minor intersections like one-way Newton Street being the possible exception) will be at or near capacity if the forecasted baseline traffic growth is realized and no other traffic mitigating measures or mechanisms are implemented or triggered to help reduce demand.

A comparison of the estimated traffic capacities to the forecasted PM peak hour traffic volumes for the various segments of the corridor indicates that several roadway segments are also likely to be near or over capacity under the baseline future traffic conditions.

Table 3-3. Comparison of PM Peak Hour Demand to Capacity – 2028 Future Condition

Roadway Segment	Capacity [vph]	PM Peak Demand [vph]	Percent Capacity [vol/cap]
Ella T. Grasso Boulevard			
• Interchange 45 to Legion Avenue (Rte 34)	3600	2300	64%
• Legion Avenue (Rte 34) to Derby Avenue (Rte 34)	3600	4200	117%
• Derby Avenue (Rte 34) to Whalley Avenue (Rte 63)	1700	2000	118%
Whalley Avenue			
• Ella T. Grasso Boulevard to Osborn Street	3400	2200	65%
• Osborn Street to Fitch Street	3600	2500	69%
Fitch Street/Arch Street			
• Whalley Avenue to Crescent Street	1600	1100	69%
• Crescent Street to Pine Rock Avenue	3400	2100	62%
• Pine Rock Avenue to Fairview Avenue	1600	1500	94%
• Fairview Avenue to Dixwell Avenue	1600	1400	88%
Dixwell Avenue			
• Arch Street to Putnam Avenue	3400	2600	76%
• Putnam Avenue to Route 15	3400	3400	100%
• Route 15 to Skiff Street	3400	3900	115%

Table 3-3 shows that Ella T. Grasso Boulevard north of Route 34 and Dixwell Avenue north of Putnam Avenue, could be over capacity based on the future traffic assumptions. It is important to note that the proximity of these roadway segments to the planned major developments along Route 34 and the potential infill development along Dixwell Avenue make them particularly vulnerable to additional traffic impacts generated by these developments.

4

Improvement Recommendations Plan

The study team developed improvement recommendations and concepts for the Route 10 corridor that are consistent with the goals and objectives for transportation and land use in the corridor and respond to the needs and deficiencies that were identified through a thorough assessment of the corridor conditions. Many of the recommendations are long-term improvements that will require significant time and capital funds to implement. Some recommendations can be accomplished in the near-term at relatively lower cost, while others are more dependent upon private investment. The recommendations plan presented in this section details the transportation and land use improvement opportunities in the Route 10 corridor and suggests a strategy for implementation. Construction cost estimates for the improvements are presented in Section 4.7.

4.1 General Improvement Philosophy

The functional classification of Route 10 as an arterial roadway suggests that its primary purpose is to move traffic between inter-city destinations, while secondarily providing access to adjacent land uses. However, the Route 10 corridor passes through and past neighborhoods, commercial districts, and public parks, suggesting that although its designed to function as a highway for much of its length, it functions equally as an urban street. The long-term goals for the Route 10 corridor emphasize the objective to enhance the urban street character of the corridor through land use and transportation improvements that support multimodal mobility, safety, and smart growth. At the same time, there is less emphasis on simply providing capacity improvements that serve to reduce travel delays for motorists.

In general, the improvement recommendations aim to provide a safer and more efficient corridor for all users – including motorists, pedestrians, bicyclists, and transit riders. This approach follows the *complete streets* philosophy and incorporates design elements to encourage slower travel speeds, improve facilities for pedestrians and bicyclists, encourage transit use, and improve overall accessibility. The study team notes that public support of the complete streets philosophy was demonstrated at a public meeting conducted in April 2008. When asked to rate their transportation priorities, attendees ranked safety highest, followed in descending order by walkability, transit services/amenities, bicycle accommodations, and vehicular mobility.

4.2 Complete Streets "Toolbox"

The study team developed a set of transportation-related design elements and land use strategies that can be implemented in various locations in the Route 10 corridor to help achieve a *complete streets* environment. This section describes the purpose and benefits of each of these transportation and land use "tools." Section 4.3 provides details regarding where each of these tools can be effectively implemented in the corridor.

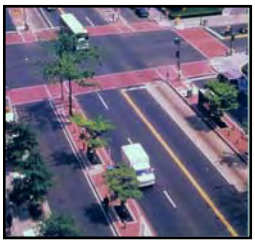
4.2.1 Transportation Tools

Narrow Travel Lanes

Urban streets should be designed with narrower travel lanes (11 ft versus 12 to 13 ft) and narrower or no shoulders to encourage slower travel speeds.

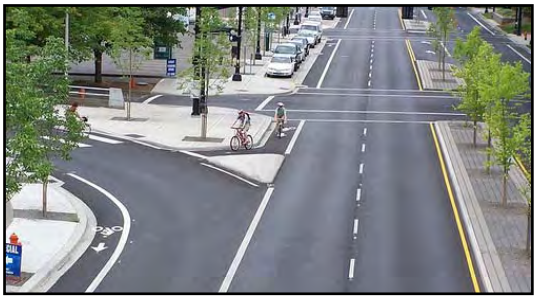
Landscaped Medians

Raised islands located along the centerline of a street visually narrow the travel lanes. They are often landscaped to provide a visual amenity. Medians can also be fitted with a gap to allow pedestrian passage.



Channelizing Island

At many arterial street intersections, pedestrians have difficulty crossing due to right turn movements and wide crossing distances. Well-designed right turn slip lanes limit vehicle turning speeds and increases the visibility of pedestrians. Right turn slip lanes should be accompanied by pedestrian refuge islands within the intersection.



Modern Roundabout

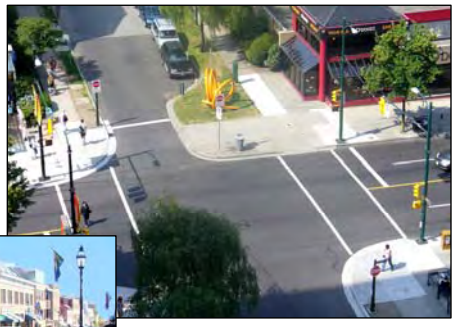
Modern roundabouts are gaining favor as a viable alternative to traditional signalized intersections. Roundabouts can improve both safety and efficiency for pedestrians, bicyclists and motor vehicles. Unlike traffic circles or rotaries, modern roundabouts require entering vehicles to yield to vehicles already in the circulating roadway, discouraging higher speeds on entry. Roundabouts can also serve as attractive and landscaped gateways or distinctive entry points into a town center.

On-street Parking

The presence and availability of on-street parking serves several critical needs on urban thoroughfares including: meeting parking needs of adjacent uses (especially retailers); buffering pedestrians from moving traffic; and increasing pedestrian activity on the street.

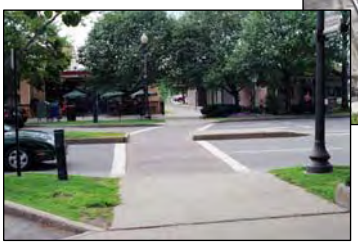
Curb Extensions

Curb extensions (also called bulb-outs or neck-downs) extend the line of the curb into the traveled way to reduce the width of the street at intersections. They are designed to shadow the width of a parking lane, bus stop or loading zone and serve to better define and delineate the traveled way as being separate from the parking lane and roadside. Curb extensions can also reduce pedestrian crossing distances and exposure to traffic; and improve driver and pedestrian sight distance and visibility at intersections.



Textured Crosswalks

Wider, better-designed, and articulated crosswalks can greatly improve pedestrian safety. Where possible, they can extend through the tips of medians to provide a pedestrian safety zone. Examples of safe crosswalks in arterial streets include illuminated crosswalks with pavement embedded lights, raised crosswalks, and crosswalks with pedestrian count-down signals.



Mid-block Crosswalks

Crosswalks at mid-block locations are desirable where block lengths are especially long provided they are signalized and are protected with medians and curb extensions (i.e. mid-block chokers).

Bicycle Lanes

Bicycle lanes indicate a preferential or exclusive space for bicycle travel on a street, and are typically striped – although colored pavement is sometimes used. They create a more consistent separation between bicyclists and passing motorists, and can also provide a buffer zone between motor vehicles and pedestrians on a sidewalk.

Street Trees & Streetscaping

Street trees and other streetscaping improvements (such as ornamental street lights, bollards, etc.) visually reinforce that the street is in a high pedestrian, slower speed zone. Street trees in particular also serve to enclose the street or reinforce the 'street-wall'. Studies have shown that vertical enclosure of the street reduces the perceived width of the street and can cause drivers to slow down.

4.2.2 Land Use Tools

Neighborhood Transit Center (NTC)

- Located at or near intersection of local bus routes.
- Development consists of multi-story buildings with commercial, retail, residential, and civic uses.
- NTC maintains character of traditional town center (like Westville).
- Higher density development is permitted in exchange for quality public spaces.
- NTC creates a park-once-and-walk environment.

Convert Strip Malls to Mixed-use Centers

- Promotes transit use and walkability.
- Provides quality public plazas within development.
- Increases floor areas and real estate values.
- Eliminates "island-effect" created by sea of parking at "big-box" stores.
- Provides improved access to shops.
- Accommodates efficient parking areas.

Infill to Create Street Wall

- Multi-story buildings visually enclose the street.
- Maximum of 10 ft between buildings and sidewalk.
- Parking located behind buildings.
- Attractive streetscaping.
- Wide sidewalks.

Courtyard-style Multi-family Residences

- Provide for more affordable and diverse housing opportunities.
- Internal courtyard focus provides private amenity for residents.
- Buildings can be close to street and still provide privacy for residents.

4.2.3 Transit-supportive Land Use

The above land use tools can collectively be considered "transit-supportive" land use. One of the objectives of this study is to decrease dependency on the single-occupant automobile and thereby reduce traffic congestion. Denser, quality, mixed-use development (that includes a significant number of residential units) constructed along existing bus routes in our cities will serve to reduce sprawl in outlying areas and reduce distances that people commute to work by providing people with housing opportunities closer to where they work and shop. Improvements to the Route 10 corridor, therefore, should not only address ways to improve transit systems, but also foster patterns of development that improve access to transit and encourage use of transit by co-locating uses at or near transit hubs.

Transit-friendly development not only controls growth and encourages redevelopment of and reinvestment in our urban centers, but also reduces highway congestion, reduces harmful vehicle emissions, and decreases the amount of runoff from roadways. Improved transit opportunities also provide area residents with improved quality of life by reducing commuting stress and household transportation expenses. These land use tools are prime examples of Smart Growth. The construction of private, infill development along the corridor, therefore, is inseparable from the objective to improve the delivery of efficient and quality transportation services to the corridor's residents.

Supportive, dense land use promotes transit ridership. All transit routes need a threshold level of development for service to be optimized. Transit also serves pedestrians. If the areas around a bus stop or transit hub are not comprised of quality, pedestrian-friendly development, then pedestrians will not be enticed to walk from the transit station to their destination or from their point of origin to the station. This is the principal challenge of future growth of outlying areas of New Haven and of Hamden's principal commercial corridors, to create compact, lively, contextual, high-quality, mixed-use development to revitalize existing commercial properties that are within walking distance of major bus routes.

The economic development rewards of a successful infill redevelopment program include increased investment in our historic urban core; increased property values and tax revenues; strengthening of the city's appeal as a place to live, work and play; and, increased customer base (e.g. transit users, new residents, and increased level of pedestrianism) for area retailers.

Transit-supportive land uses recommended for the Route 10 Corridor in this study include:

- **The 'Neighborhood Transit Center' (NTC):** This prototypical plan for Smart Growth incorporates mixed-use development with a bus transit station, or pulse point, to create a compact, neighborhood-oriented development where transit supports land use and vice versa. 'Neighborhood Transit Centers' could convert under-utilized industrial sites, strip shopping plazas and other auto-oriented uses to compact, mixed-use developments that would support transit, mitigate traffic growth, and provide a neighborhood center for renewed commerce and provide a setting for social and cultural activities.

- **Infill Development in Westville Village Center:** The center of Southern Connecticut State University's (SCSU) campus is situated only six-tenths of a mile north of Westville Village Center. The Village is therefore a logical and natural destination for students, faculty and other university workers to shop, dine, and gather for social interaction. The development concept for the Westville Village Center capitalizes on the unique architectural and historical assets and traditional charm of the Village by providing infill development within its under-developed core (i.e. the back streets area between Whalley Avenue and the West River). This infill development would be designed to match the density, height, scale, and character of the existing buildings that front on Whalley Avenue or Blake Street. It would provide a critical mass of leasable space and retail services to improve the economic sustainability of the village and support its long-term viability.
- **Hamden 'College Town':** This land use tool would create an intimate cluster of mixed-use buildings at the intersection of Fitch Street, Arch Street, and Fairview Avenue in Hamden – just over the New Haven line. The development is within 1,000 feet of the northern limits of SCSU and six-tenths of a mile from the Student Union and therefore within easy walking distance. It would provide convenient retail services and housing for people who work or study at SCSU. In this way, property owners, landlords and retailers can capitalize on the large pool of potential tenants and customers at the University; and, at the same time, decrease traffic congestion by reducing the need for students, faculty and SCSU workers – as well as local residents – to drive beyond the neighborhood for goods and services.
- **Liner Buildings for Existing Strip Shopping Centers:** This land use tool would convert existing retail strip malls to more pedestrian-oriented and less automobile-oriented development by constructing two or three story 'liner buildings' around the perimeter of the site. This strategy would create a 'street-wall' and optimize development opportunities without the need to construct additional parking. The October 2007 Planning Charrette in Hamden envisioned these liner buildings (as a prototype that could be applied to nearly any suburban-style retail strip center) surrounding the Stop & Shop supermarket site at the intersection of Putnam and Dixwell.
- '**New Urbanism' Redevelopment of the 'Magic Mile':** This development strategy would convert 'Big Box' retail malls into high-density, pedestrian and transit-oriented, walkable, mixed use developments using the urban planning principles of 'New Urbanism'. A prototype of this large-scale redevelopment concept is depicted on the 20 acre Hamden Plaza site located just north of Hamden High School. It would utilize three, four, or even five story buildings constructed on new streets carved out of the existing 10 acre parking lot to humanize the site and create a traditional town center where people could live, work, shop, dine and socialize without ever using a car.

All of these development concepts are based on planning and design precepts borrowed from the New Urbanism and Smart Growth movements; including:

- Development organized within a traditional grid of streets with short blocks that encourage walking and promote safety and security.
- Streets with narrow traffic lanes, on-street parking, wide sidewalks, and bicycle lanes where possible.
- Bus transit facilities are integrated within the development to create multi-functional public spaces that allow transit riders to undertake multiple tasks or errands at one stop, or to simply enjoy a cup of coffee at a sidewalk café while waiting for the bus.
- Human-scaled architecture would result in finely detailed, contextual buildings with porches, cafes, custom pedestrian-level lighting and signage.
- Multi-story, mixed-use buildings (e.g. residential, small-scale retail, restaurants, professional services such as doctors, lawyers finance and real estate offices) situated close to a tree-lined street.
- Discrete parking located to the rear of buildings or along the curb of the street not only create more walkable streets but also help to calm traffic.
- The proximity and mix of uses would allow for shared parking and reduce parking demand - in part because each use would have a different or complimentary peak hour and because the development would have a 'park once-and-walk' layout that would allow people to visit multiple destinations without having to drive.

It should be noted that the transit-supportive land use recommendations of this study are illustrative only and that the City of New Haven and the Town of Hamden would not be acquiring private land for redevelopment. Rather, if residents support the concepts, the private sector would initiate and implement the development and assemble any land that may be necessary. The municipalities may want to facilitate these redevelopment initiatives by revising zoning to allow the uses and densities and adopting design standards to control the more subjective aspects of development. In fact, the Town of Hamden is already revising its land use and zoning regulations to allow such redevelopment. As an outgrowth of the recent town-wide charrette, the Town is drafting completely new, form-based zoning regulations based on the 'Smart Code'.

The Smart Code is a land development ordinance that integrates zoning, subdivision regulations, urban design, public works standards and basic architectural controls into one document. It is customized for each community and calibrated for each district within the community to enable walkable and mixed-use neighborhoods, to improve transportation options, to preserve and enhance local character, to provide housing diversity, and to create more vibrant communities.[1]

[1] SmartCode Central, "About the Code". Source website: http://www.smartcodecentral.com/about2.html

The Smart Code is a "form-based code" that primarily addresses the physical form of building and community. It is therefore unlike conventional zoning codes based on use and density.[2]

Not incidentally, private redevelopment using New Urbanism principles and the Smart Code greatly improves the "walkability" and safety of the street. These traditional patterns of development can therefore provide traffic calming benefits. By creating enclosure and changing the psychological feel of the street, they send a clear reminder to motorists of the dual functions of the street, as both a movement corridor and as a place for social and cultural activity. [3] The presence of pedestrians, bicyclists, parked vehicles and prominent cross-walks also conveys a sense of uncertainty and a reminder that movement on the street is not limited to vehicles. The attention to detail of the design of the street edge and the creation of an interesting and compact "street-wall" on private property have a moderating influence on motor vehicle speeds and obligate motorists to drive slowly and attentively.[4] All of these visual cues impart a distinct village character to the street that will remind motorists that they are in special district and are using streets that are designed for multiple users. People, not cars, are the priority.

[2] Ibid.

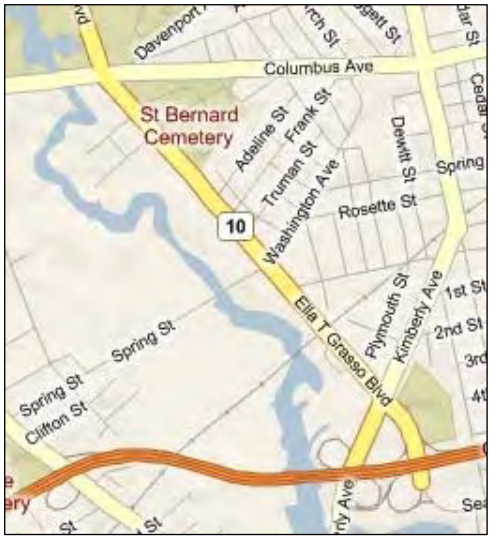
[3] Engwicht, David, "Street Reclaiming Through Design"; Source website: http://www.lesstraffic.com/Articles/Traffic/SRdesign.htm

[4] Nozzi, Dom. "The Ingredients of a Walkable Street" Source website: http://www.walkablestreets.com/walkingred.htm

4.3 Ella T. Grasso Boulevard Improvement Recommendations

The study team developed improvement recommendations for three segments of the Ella T. Grasso Boulevard section of the Route 10 study corridor. It is anticipated that the roadway improvement recommendations for each segment could be programmed as individual projects, or combined and programmed as a larger corridor-wide improvement project.

4.3.1 Kimberly Avenue to Columbus Avenue (US 1)



Identified Issues & Needs

- Nine high accident locations in this section of the corridor.
- 332 total accidents, 5 involving pedestrians, between January 2004 and December 2006.
- No bike routes in or near corridor; insufficient roadway width to accommodate bicyclists.
- Sidewalk along east side of roadway terminates at intersection for New Haven Career Campus; no sidewalk connectivity along east side north to Legion Avenue.
- No crosswalks at intersection of Washington Avenue.
- Kimberly Avenue identified as problem intersection by City. Delays at Kimberly Avenue intersection for eastbound left turning traffic to northbound Route 10 during peak hours.
- Industrial land uses along the corridor and unattractive development negatively impact the value of adjacent residential areas of the Hill Neighborhood.
- Industrial uses between Ella T. Grasso Boulevard and the West River separate and isolate the valuable natural and recreational resources of the river from the Hill Neighborhood.
- Lack of public spaces along the corridor.
- No visual cues within the right-of-way or beyond the edge of the right-of-way to impart the multi-use function of the street.

Recommendations (See Figures 4-1, 4-2, and 4-3)

- Widen existing roadway surface from 48 ft to 54 ft to provide 5 ft bike lanes with markings in northbound and southbound directions while maintaining the overall back-of-sidewalk to back-of-sidewalk width of approximately 68 ft. This will require modifying the existing curbline and reducing the existing sidewalk width to approximately 7 ft on both sides of roadway.
- Provide 11 ft travel lanes.

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Textured Crosswalks
- Bicycle Lanes
- Street Trees
- Courtyard-style Multi-family Residences
- Neighborhood Transit Center

- Replace or relocate existing street trees to accommodate roadway widening for bike lanes. Plant additional street trees along the corridor to provide enclosure and visual cue that the street is not an extension of the interstate highway system but a street that serves neighborhoods.
- Provide new crosswalk markings at all intersections in the near-term; provide textured and colored crosswalks as part of next roadway improvement or maintenance project that includes repaving Ella T. Grasso Boulevard.
- Optimize signal timings at Kimberly Avenue to improve peak hour operations. Consider restriping the eastbound Kimberly Avenue approach to provide a double left turn lane to northbound Route 10 to improve intersection capacity.
- Plan and enable the construction of a Neighborhood Transit Center and courtyard-style multi-family residences (see Section 4.2.3 and Figure 4-3) at one or more sites along the corridor; preferably at the junction of existing and proposed bus lines such as the intersection of Route 10 and Kimberly Avenue and/or the intersection of Route 10 and Columbus Avenue.

Other Considerations

- ConnDOT's current plans to replace the existing I-95 bridge over the West River and to consolidate Interchanges 44 and 45 will change existing travel patterns on Kimberly Avenue near the interchange and at the intersection with Ella T. Grasso Boulevard. Traffic that currently exits northbound I-95 via Interchange 44 onto Kimberly Avenue will exit directly onto Route 10. The new traffic pattern will greatly reduce the volume of left turns from eastbound Kimberly Avenue to northbound Route 10, potentially eliminating the long-term need for capacity improvements on Kimberly Avenue.
- Several representatives from the bicycling community expressed concerns regarding the safety of bike lanes located adjacent to high speed travel lanes. It is recommended that the feasibility of providing bike lanes that are physically separated or buffered from the travel lanes be investigated as part of a future design project to provide bike lanes in the corridor. The study team recognizes that additional sidewalk and utility impacts will result from additional widening to provide this separation.

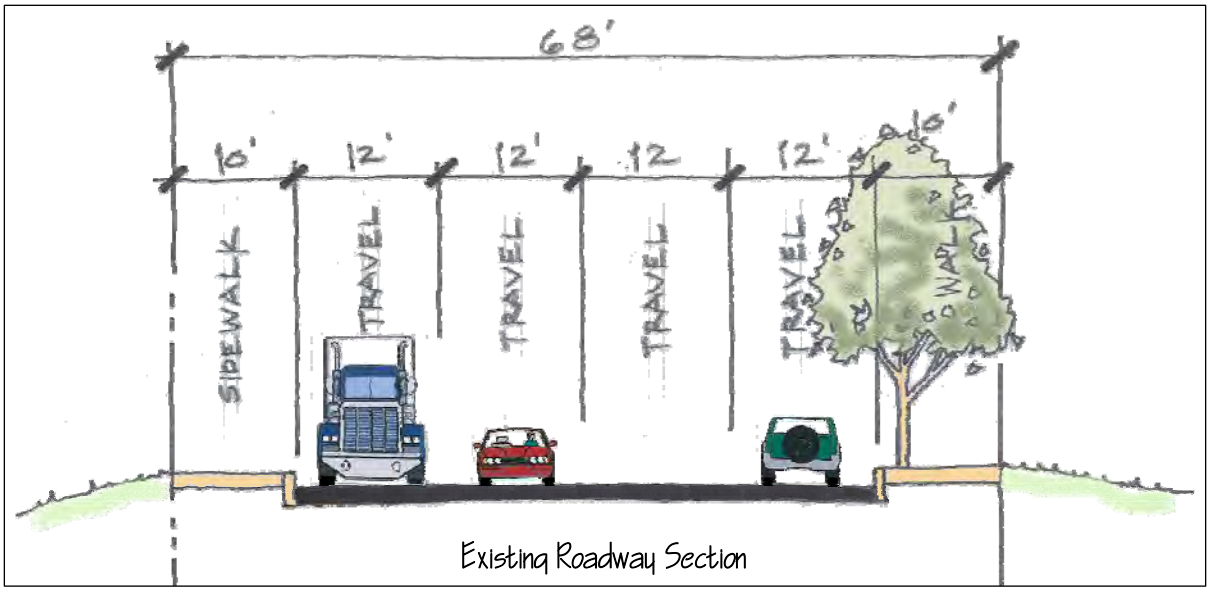
Constraints & Limitations

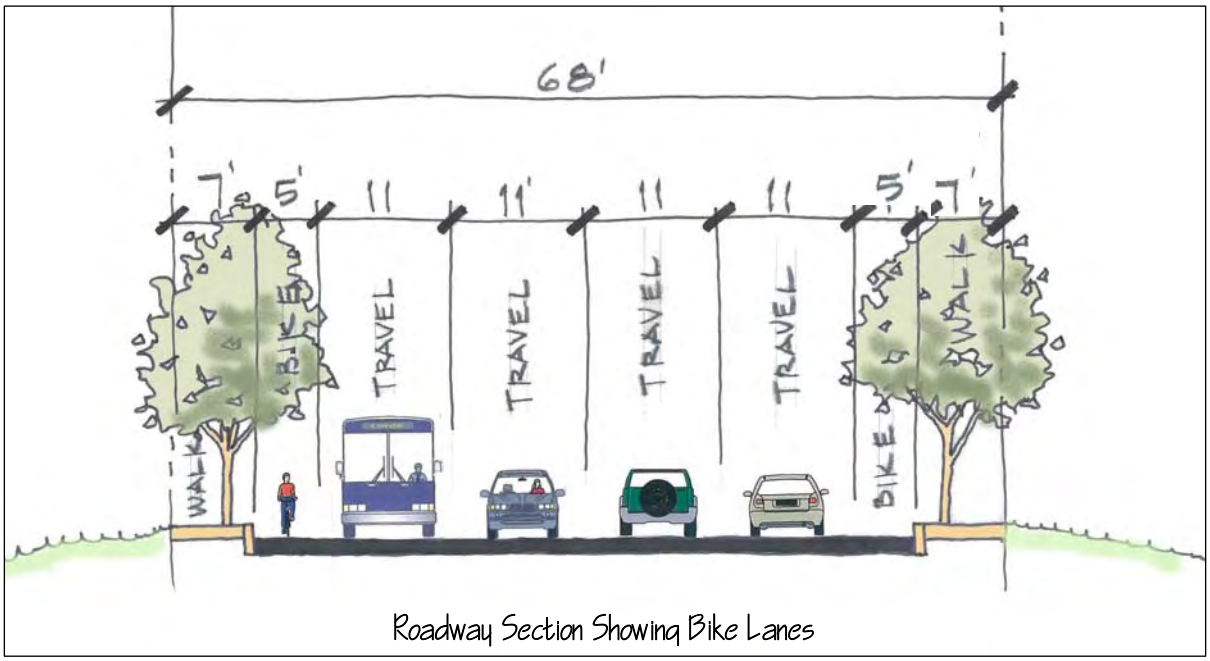
- The existing railroad bridge located between Kimberly Avenue and Washington Avenue limits opportunities to widen the roadway to provide bike lanes and wider sidewalks without widening the bridge. Overall bridge width is approximately 68 ft.

Summary of Impacts

- No right-of-way impacts are anticipated with the recommended improvements.
- Existing utility poles and overhead utilities, stormwater drainage structures, and several fire hydrants, would have to be relocated to accommodate widening for bike lanes. Existing street trees would have to be relocated or replaced.

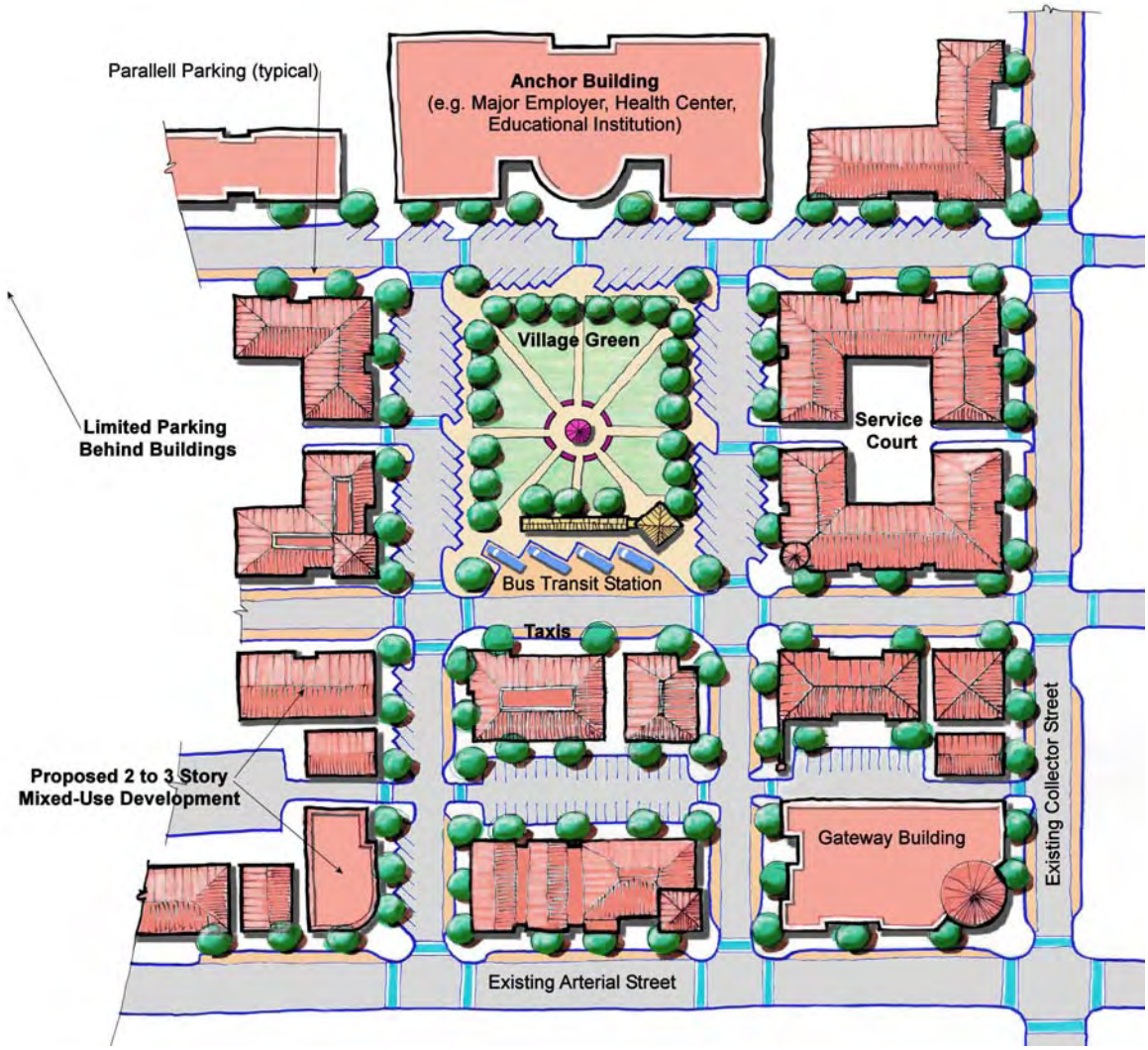
Figure 4-1. Ella T. Grasso Boulevard: Kimberly Avenue to Columbus Avenue (US 1) Typical Roadway Sections






10
ELIA T. GRASSO BOULEVARD
KIMBERLY AVENUE
Modify Curb & Sidewalk to Accept Double Left Turn
Optimize Signal Timings
Potential Restriping to Provide Double Left Turn Lanes
KIMBERLY AVENUE
FROM I-95
TO I-95
0
40
80 ft
CHA
Route 10 Corridor Study
Figure 4-2. Kimberly Avenue Near-term Improvement

Figure 4-3. Neighborhood Transit Center (NTC) Prototype



Refer to discussion in Section 4.2.3 for information about the attributes and community-building benefits of an NTC.

4.3.2 Columbus Avenue (US 1) to Derby Avenue (Route 34)

Identified Issues & Needs

- Two high accident locations in corridor.
- 199 total accidents, 2 involving pedestrians, between January 2004 and December 2006.
- No bike routes in corridor; insufficient roadway width to accommodate bicyclists. Bike lanes proposed as part of long-term Route 34 corridor improvement plans currently being considered by ConnDOT.
- No sidewalk along west side of roadway; no sidewalk along east side of roadway south of Legion Avenue.
- Legion Avenue and North Frontage Road intersection with Route 10 identified as a problem intersection by City. ConnDOT completed improvements in 2007 to address chronic safety and operational issues at this intersection.
- Few visual cues within the right-of-way or beyond the edge of the right-of-way that impart the multi-use function of the street.

Recommendations (See Figures 4-4, 4-5a, and 4-5b)

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Landscaped Medians
- Textured Crosswalks
- Bicycle Lanes
- Street Trees
- Modern Roundabouts

- Widen existing roadway surface to 60 ft to provide 11 ft travel lanes, 2 ft shoulders, and a new 12 ft landscaped median. Median serves as a traffic calming measure to mitigate traffic speeds through this area. Median can also accommodate left turn lanes at driveways to West River Memorial Park soccer fields and Evergreen Cemetery. Provide street trees along the corridor to provide enclosure and visual cues that the street is not an extension of the interstate highway system but a street that serves neighborhoods and parks.
- Provide 10 ft shared-use path adjacent to West River Memorial Park to accommodate pedestrians and bicyclists.
- Reserve space along east side of roadway adjacent to Evergreen Cemetery to accommodate provisions for a future sidewalk.

- Consider geometric improvements at the Legion Avenue and North Frontage Road intersection with Route 10 to improve safety and future traffic operations. Two potential improvement options considered by the study team include:
    - Option A: Oval-shaped modern roundabout that replaces the existing signalized intersections and provides a large landscaped island that could serve as a gateway to Downtown. A roundabout would help improve safety issues associated with heavy southbound left turn movements from Route 10 to Legion Avenue, and would improve overall intersection capacity and future traffic operations. Additional study would be required to demonstrate future levels of service for this option.
    - Option B: Jug-handle configuration that redirects southbound left turn movements to an intersection approach aligned directly opposite Legion Avenue. A jug-handle converts the heavy left turn movement to a through movement and provides additional intersection capacity and queue storage space. The configuration also provides a large landscaped island that could serve as a gateway to Downtown from Legion Avenue. Future levels of service would be improved over a no-build option; however, issues with long queues between signalized intersections during peak hours cannot be completely remedied.
- Provide new crosswalk markings at all intersections in near-term; provide textured and colored crosswalks as part of next roadway improvement or maintenance project.

Other Considerations

- Several New Haven residents expressed concerns regarding pedestrian safety at the crossings of Legion Avenue and North Frontage Road under Option A since signalized pedestrian crossings would no longer be provided. The study team recognizes that if signalized pedestrian crossings are determined by the City or ConnDOT to be required at these intersections, then Option A would not be a feasible option.

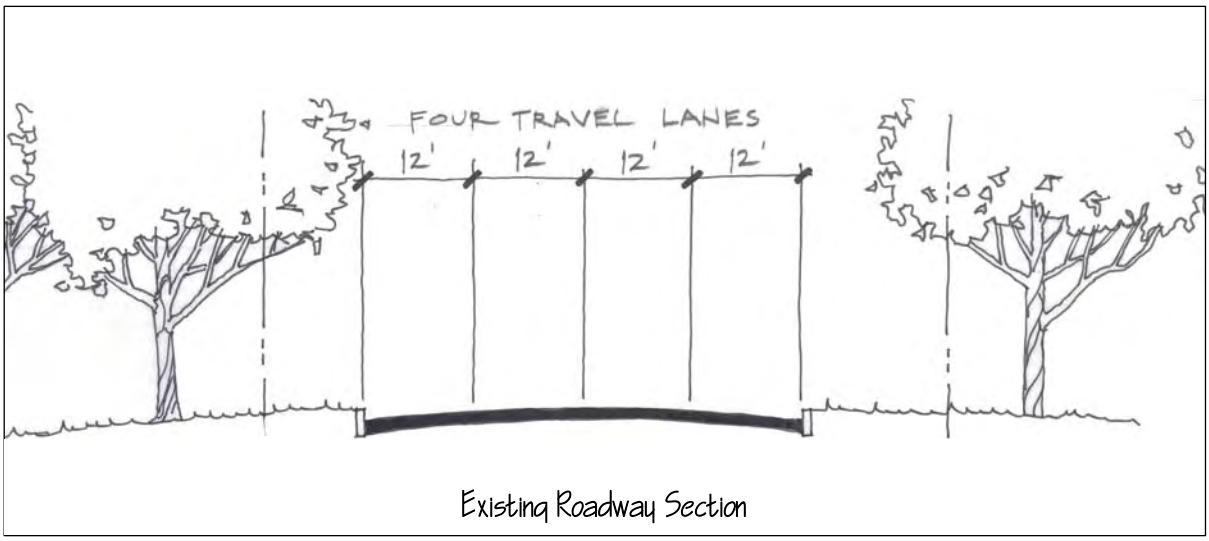
Constraints & Limitations

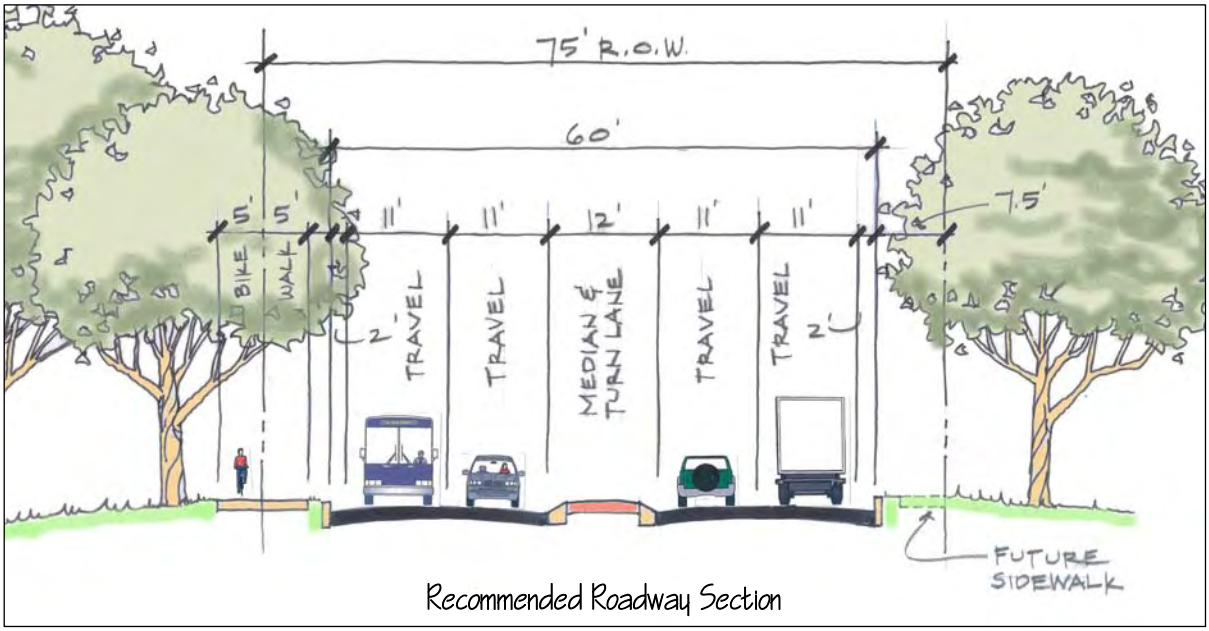
- West River Memorial Park and the Peace Garden, which is located on the east side of Route 10 between Legion Avenue and North Frontage Road, are the primary constraints in this area. It is anticipated that any roadway improvements or intersection improvements that require widening or shifting of the roadway would aim to avoid or minimize impacts to these constraints, as well as attempt to balance the impacts on both sides of Route 10. It is also anticipated that the Peace Garden would be relocated, if necessary, to accommodate the improvements. A relocation site would be chosen such that the Peace Garden is accessible to the public; that is, it would not be relocated to an island in the intersection.
- The need to minimize impacts to the existing vacant land located between Legion Avenue and North Frontage Road in order to accommodate the City's future development plans in this area limits the number of feasible improvement options for the intersection of Legion Avenue and North Frontage Road. Several options to realign North Frontage Road and Legion Avenue to consolidate the intersection were investigated by the study team and ConnDOT, but were subsequently determined to be not feasible due to the level of impacts to the existing vacant land.

Summary of Impacts

- No right-of-way (ROW) impacts are anticipated with widening the roadway to provide a landscaped median. However, ROW and slope grading impacts are anticipated with providing the shared use path adjacent to West River Memorial Park.
- ROW impacts for Legion Avenue intersection Option A include approximately 0.4 acre on West River Memorial Park property, and approximately 0.9 acre on 6 properties located on east side of Route 10.
- ROW impacts for Legion Avenue intersection Option B include approximately 0.5 acre on West River Memorial Park property, and approximately 0.8 acre on 7 properties located on east side of Route 10.
- Existing utility poles and overhead utilities, stormwater drainage structures, and several fire hydrants would have to be relocated to accommodate widening for bike lanes. Existing street trees would have to be replaced.

Figure 4-4. Ella T. Grasso Boulevard: Columbus Avenue (US 1) to Derby Avenue (Route 34) Typical Roadway Sections





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Route 10 Corridor Study

Figure 4-5a. Legion Avenue/North Frontage Road Improvement Option A

$FILE$
$DATE$

Route 10 Corridor Study

Figure 4-5b. Legion Avenue/North Frontage Road Improvement Option B

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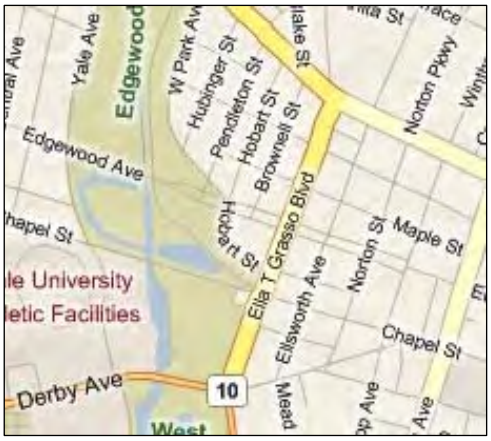
6/30/2008

4.3.3 Derby Avenue (Route 34) to Whalley Avenue



Identified Issues & Needs

- Nine high accident locations in corridor.
- 249 total accidents, 6 involving pedestrians, between January 2004 and December 2006.
- Existing roadway is 48 ft wide with on-street parking in many areas, however, only centerline striping is provided with no other delineation for lane use or on-street parking.
- No bike routes in this section of roadway; there is an existing off-street bike route through Edgewood Park with access from Route 10 at the intersection of Chapel Street, and an existing on-street bike route along Edgewood Avenue that intersects the corridor.
- Chapel Street was identified as a problem intersection by the City.
- Existing signal equipment at the intersections of Chapel Street, Edgewood Avenue (two signals), Elm Street, and Whalley Avenue was determined to be older and outdated.
- No pedestrian pushbuttons or signal heads located at the intersections of Chapel Street, Edgewood Avenue (two signals), and Elm Street, with a relatively high volume of pedestrians crossing the Boulevard to travel from the residential neighborhoods to the east to Edgewood and West River Memorial Parks or from residential neighborhoods to the west to Downtown New Haven. There are also a high number of college students and other pedestrians and bicyclists crossing the Boulevard to access the recreational and sports facilities associated with Yale University's sports and athletic complex to the west (e.g. the Yale Bowl, Yale Field, Tennis Stadium).

Recommendations (See Figures 4-6 and 4-7)

- Maintain existing roadway width and provide 11 ft travel lanes, 5 ft bicycle lanes, and 8 ft on-street parking lanes in both directions.
- Provide curb extensions on Route 10 at the intersections of Chapel Street, Edgewood Avenue, Maple Street, and Elm Street to protect on-street parking, shorten pedestrian crossing distances, and encourage slower travel speeds.
- Consider providing a textured, mid-block crossing with curb extensions and pedestrian warning signs to enhance pedestrian visibility and safety at the unsignalized intersection of Stanley Street, which is opposite the main entrance to Edgewood Park.
- Provide additional street trees along the corridor to provide enclosure and visual cues that the street is in a residential district and serves multiple users.

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- On-street Parking
- Curb Extensions
- Mid-block Crosswalks
- Textured Crosswalks
- Bicycle Lanes
- Street Trees

- Upgrade or provide new traffic signal and pedestrian signal equipment at the intersections of Chapel Street, Edgewood Avenue (two signals), Elm Street, and Whalley Avenue. Signals should be interconnected as necessary to provide more efficient traffic progression through the corridor, and should be equipped with vehicle detection to provide for semi-actuated signal phases for side roads. Intersections with high left turn volumes should also be equipped with a leading or lagging protected left phase as necessary to maintain acceptable levels of service for through traffic. It is anticipated that modernization of the signal equipment and optimized signal timings and phasings will eliminate the need for dedicated left turn lanes at most intersections, thus preserving most of the existing on-street parking in the area.

Other Considerations

- Provide 11 ft travel lanes, 5 ft bicycle lanes, and 8 ft on-street parking lanes, without curb extensions, as a near-term improvement.
- Advance a near-term improvement project for traffic and pedestrian signal upgrades independent of other physical roadway improvements (such as curb extensions and textured crosswalks).

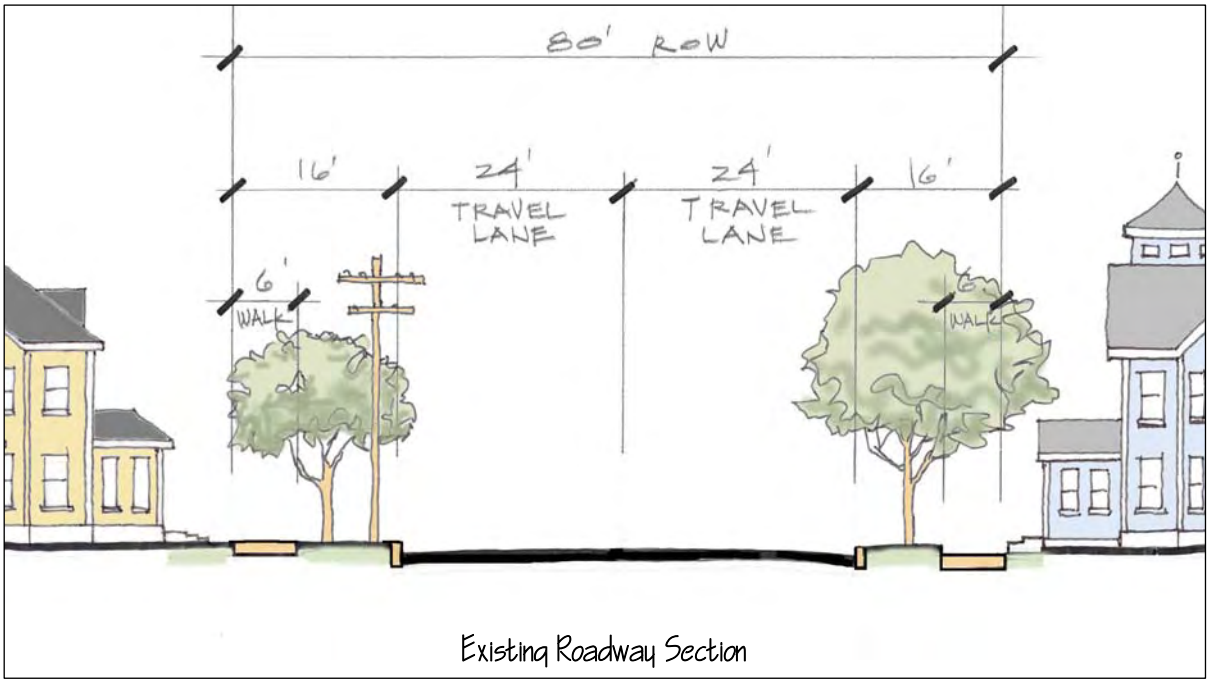
Constraints & Limitations

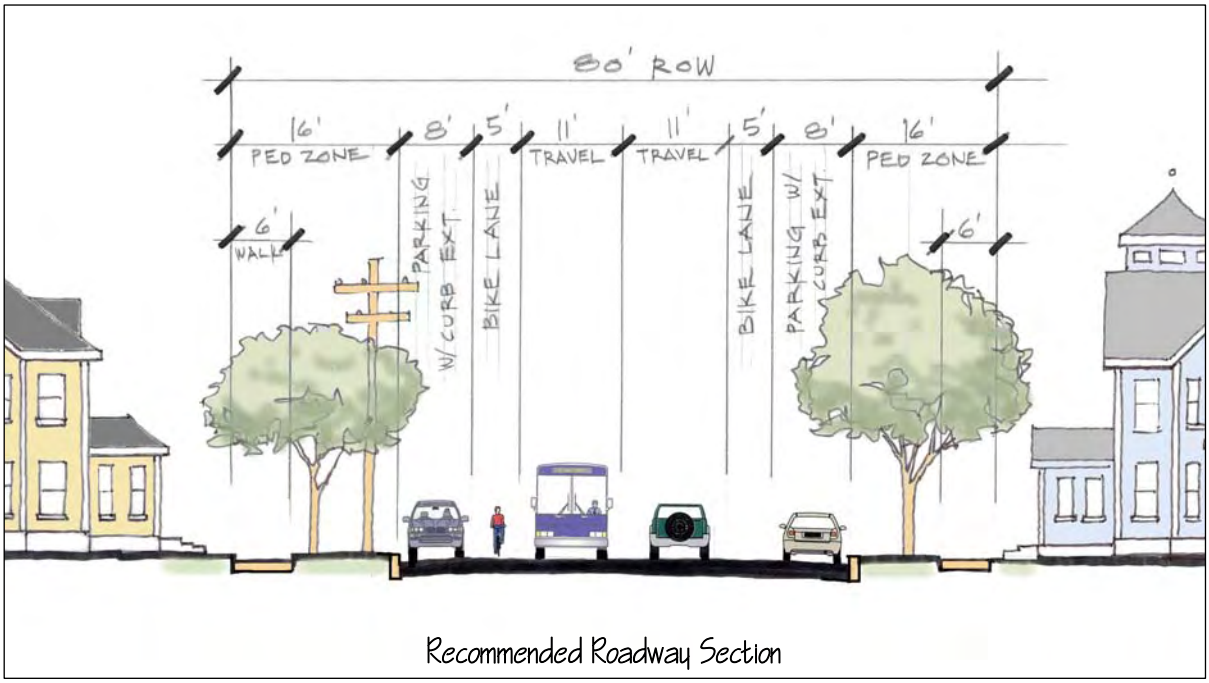
- Edgewood Park and existing residential homes located relatively close to the right-of-way are the primary constraints in this area. Because the recommendations can be provided within the existing roadway surface, no impacts are anticipated to the park or existing right-of-way. In addition, it is anticipated that any roadway widening to provide a future left turn lane at an intersection, if necessary, could be accommodated within the existing 80 ft right-of-way without impacts to properties.

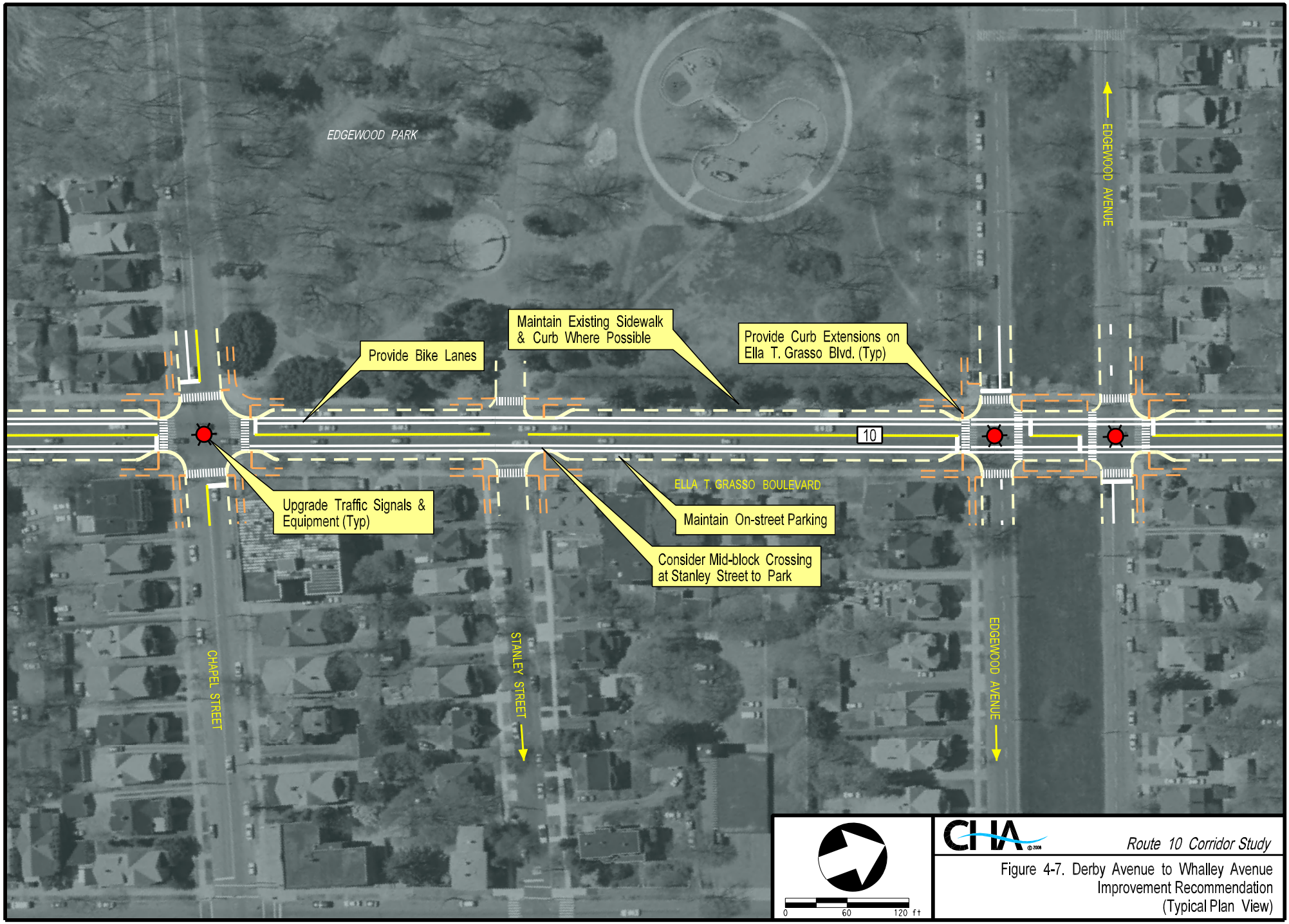
Summary of Impacts

- No right-of-way impacts are anticipated with the recommended improvements.
- No significant utility impacts are anticipated; however, some existing stormwater drainage structures could require relocation or new structures could be required to maintain adequate surface drainage upon implementation of curb extensions.

Figure 4-6. Ella T. Grasso Boulevard: Derby Avenue (Route 34) to Whalley Avenue Typical Roadway Sections






EDGEWOOD PARK
EDGEWOOD AVENUE
Maintain Existing Sidewalk & Curb Where Possible
Provide Curb Extensions on Ella T. Grasso Blvd. (Typ)
Provide Bike Lanes
10
ELLA T. GRASSO BOULEVARD
Upgrade Traffic Signals & Equipment (Typ)
Maintain On-street Parking
Consider Mid-block Crossing at Stanley Street to Park
CHAPEL STREET
STANLEY STREET
EDGEWOOD AVENUE
0
60
120 ft
CHA
Route 10 Corridor Study
Figure 4-7. Derby Avenue to Whalley Avenue Improvement Recommendation (Typical Plan View)

4.4 Whalley Avenue Improvement Recommendations (between Ella T. Grasso Boulevard and Fitch Street)

Identified Issues & Needs

- Four high accident locations in corridor.
- 206 total accidents, 5 involving pedestrians, between January 2004 and December 2006.
- Existing roadway consists of two travel lanes in each direction with a flush center median/left turn lane. On-street parking is permitted in both directions along much of the roadway but is not delineated with pavement markings and the parking lane is too narrow; cars are often parked partially on the roadway and partially on the grass strip along the roadway.
- No bike routes in this section of roadway; there is an existing off-street bike route through Edgewood Park with access from Route 10 at the intersection of Fitch Street; an existing on-street bike route (with markings) north on Ella T. Grasso Boulevard; and an existing on-street bike route along Whalley Avenue north of Fitch Street.
- Roadway is straight and wide and conducive to high travel speeds, particularly along the cemetery and Edgewood Park between West Park Avenue and Fitch; the posted speed limit is 25 mph throughout.
- Existing neighborhood commercial district on Whalley Avenue between Ella T. Grasso Boulevard and Pendleton Street lacks an attractive streetscape and unifying design elements.
- Westville Village Center could serve as a much more viable village center if there were better pedestrian, bicycle, and transit connections or linkages to Southern Connecticut State University and if the village had more critical mass of retail and service uses to attract a wider range of people.

Recommendations (See Figures 4-8 and 4-9)

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Landscaped Medians
- On-street Parking
- Curb Extensions
- Textured Crosswalks
- Bicycle Lanes
- Street Trees
- Neighborhood Transit Center
- Infill Development to Create Street Wall

- South of West Park Avenue: Widen existing roadway surface from 66 ft to 71 ft to accommodate 8 ft parking lanes in both directions while providing 11 ft travel lanes and maintaining an 11 ft turn lane/flush median throughout. Provide curb extensions on Whalley Avenue at intersections to protect on-street parking, to reduce pedestrian crossing distances, and to improve pedestrian visibility, particularly at existing unsignalized crossing locations. Provide textured and colored crosswalks as part of next roadway improvement or maintenance project.

- North of West Park Avenue: Maintain existing roadway width and replace existing flush median with a narrower, 6 ft raised median that can accommodate vertical features, such as ornamental street lighting with banners, that can both serve as a gateway to Westville and encourage slower travel speeds. Provide delineation for on-street parking where it is permitted along this section of roadway.
- Plan and enable construction of the Westville Village Development Concept, Infill Development, and Courtyard-Style Multi-Family Residences (see Section 4.2.3 and Figure 4-9).
- Continue work with officials at SCSU to forge partnerships for growth and to implement mutually beneficial connections between the university and Westville Village Center.
- Encourage the conversion of industrial uses along Fitch Street (between Whalley and Blake) to neighborhood-oriented and transit-supportive, mixed-use development to be more compatible with the adjacent residential districts and to provide more continuous retail linkages between SCSU and Westville Village Center.

Other Considerations

- Bike lanes along this section of Whalley Avenue were not a primary recommendation of this study because the study team believed that the existing bike routes (including those through Edgewood Park and along Blake Street/Ella T. Grasso Boulevard) provided sufficient connectivity in the area between destinations such as Downtown, Southern Connecticut State University (SCSU), and Westville. However, several representatives from the bicycling community expressed the desire for bike lanes along Whalley Avenue. The study team recognizes that additional widening (15 ft total to widen from 66 ft to 81 ft) would be required south of West Park Avenue to provide bike lanes and on-street parking. North of West Park Avenue, the elimination of existing on-street parking in this area (where there is little to no demand for it), could accommodate bike lanes and a wider, landscaped median of approximately 12 ft.
- Consider providing other streetscape improvements in the neighborhood commercial district between Ella T. Grasso Boulevard and Pendleton Street to effect traffic calming, to bring attention to the unique range of goods and services available, and to instill more community pride in the district. Provide incentives or fund façade enhancements to commercial buildings in the corridor. The streetscape improvements and façade enhancements should have a unifying theme and should highlight the traditional, historic, village character of the district.

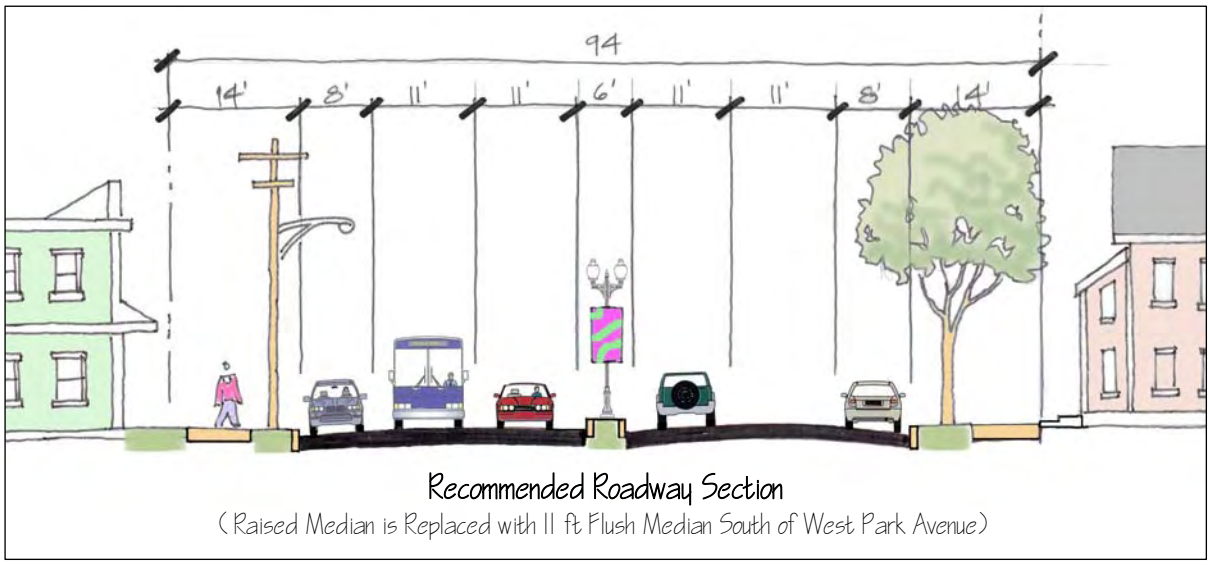
Constraints & Limitations

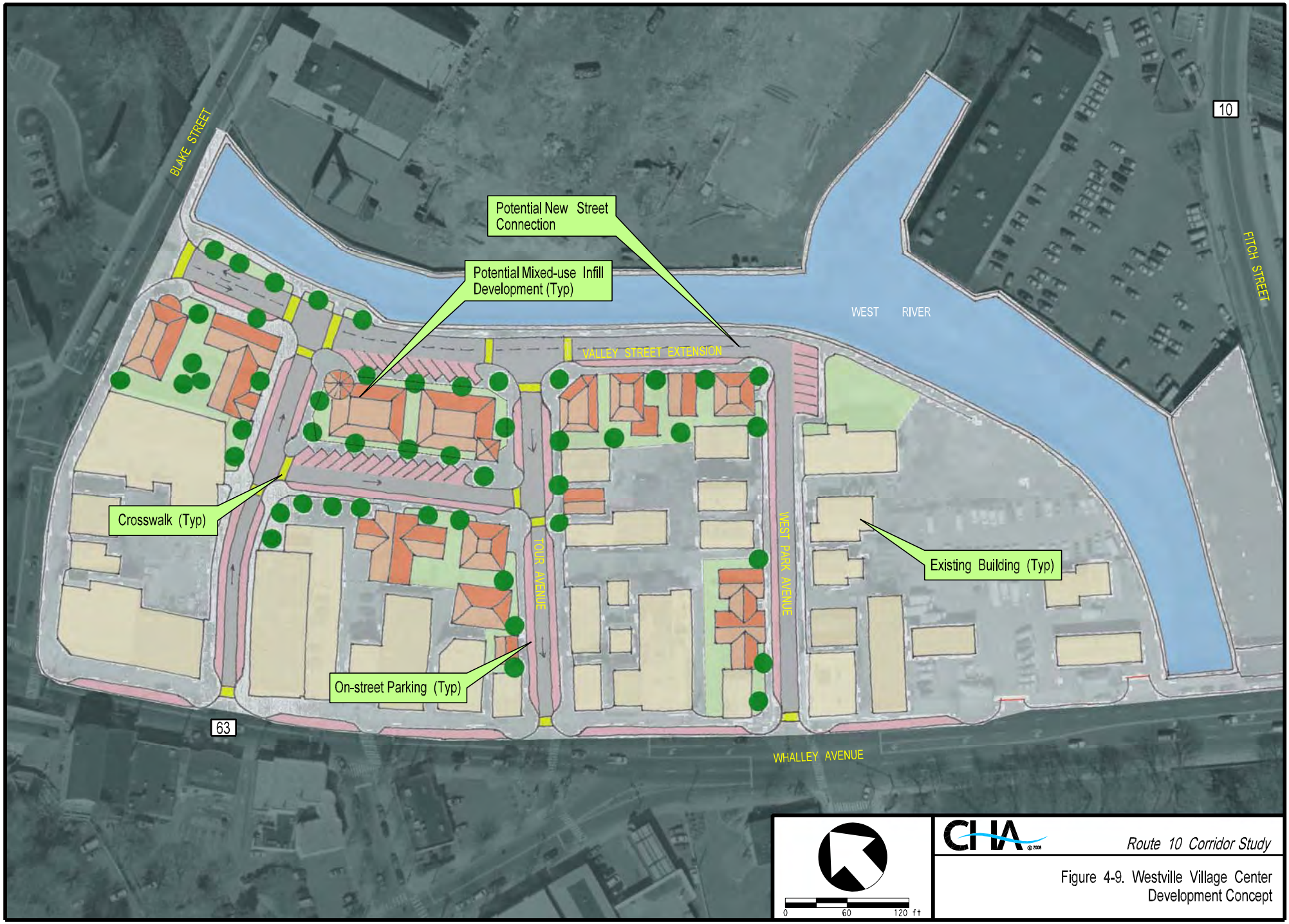
- Existing street trees and overhead utilities along the south side of Whalley Avenue are the primary constraints on widening this section of roadway to provide on-street parking and bike lanes. If widening is limited to approximately 5 ft to only provide for on-street parking lanes, then it is possible that impacts to existing overhead utilities could be minimized by widening to the north side of the roadway. If additional widening is necessary to provide bike lanes, then it is possible that impacts will need to be balanced on both sides of the roadway. In either case, the study team anticipates that widening can be accommodated within the existing 94 ft right-of-way with minor grading and driveway impacts to adjacent residential properties.

Summary of Impacts

- No right-of-way impacts are anticipated with the recommended improvements.
- Existing utility poles and overhead utilities, stormwater drainage structures, and fire hydrants, would have to be relocated to accommodate widening. Existing street trees would have to be relocated or replaced.

Figure 4-8. Whalley Avenue Recommended Roadway Section




BLAKE STREET
10
Potential New Street Connection
Potential Mixed-use Infill Development (Typ)
FITCH STREET
WEST RIVER
VALLEY STREET EXTENSION
Crosswalk (Typ)
TOUR AVENUE
WEST PARK AVENUE
Existing Building (Typ)
On-street Parking (Typ)
63
WHALLEY AVENUE
0
60
120 ft
CHA
Route 10 Corridor Study
Figure 4-9. Westville Village Center Development Concept

4.5 Fitch Street/Arch Street Improvement Recommendations

The study team developed improvement recommendations for three segments of the Fitch Street and Arch Street section of Route 10. It is anticipated that the roadway improvement recommendations for each segment could be programmed as individual projects, or combined and programmed as a larger corridor-wide improvement project.

4.5.1 Whalley Avenue to Crescent Street

Identified Issues & Needs

- Five high accident locations in corridor.
- 78 total accidents, 1 involving a pedestrian, between January 2004 and December 2006.
- Average and 85th percentile travel speeds are 32 mph and 36 mph, respectively, near Onyx Street. Posted speed limit is 25 mph.
- Average and 85th percentile travel speeds are 39 mph and 43 mph, respectively, between Dyer Street and Crescent Street. Posted speed limit is 25 mph.
- Existing roadway is between 28 ft and 34 ft wide with one travel lane in each direction and no on-street parking; only centerline striping is provided; no edge lines to define shoulder areas.
- No bike routes in this section of roadway; there are existing on-street bike routes along Blake Street and Crescent Street that intersect the corridor.
- Medium density land uses along this section of the corridor do not optimize the transportation and transit infrastructure and do not provide the traffic calming and walkability benefits of a more continuous 'street wall' or the safety benefits of 'eyes-on-the-street'.

Recommendations

- Maintain existing roadway width and provide edge striping to delineate 11 ft travel lanes throughout this section. Narrower travel lanes will help encourage slower travel speeds and will provide shoulders between 3 ft and 6 ft wide that can be used by bicyclists. This shoulder should not be marked as a bicycle lane because the minimum 5 ft width cannot be maintained throughout this section. The study team does not recommend widening the roadway to provide full bicycle lanes in this area because alternate bike routes exist on the adjacent roadway network and shoulders will provide some refuge for bicyclists on Fitch Street.

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Textured Crosswalks
- Street Trees
- Courtyard-style Multi-family Residences
- Infill Development to Create Street Wall

- This area has a high density of residential and commercial curb cuts. Provide street trees between Onyx Street and Dyer Street and textured crosswalks at the intersection of Blake Street to encourage slower travel speeds. These measures, along with curb cut consolidation and access management improvements that could be integrated into the redevelopment recommendations (see below) for this area, could help reduce the number of rear-end and turning-related collisions, or at least lessen the severity of these accidents.
- Plan and enable construction of the Infill Development and Courtyard-style Multi-family Residences (see Section 4.2.2).

Constraints & Limitations

- Proximity of existing buildings to the roadway and the cemetery near the southern end of Fitch Street are the primary constraints along this section of roadway. These constraints limit opportunities to increase traffic capacity through the addition of turning lanes or travel lanes along the roadway south of Crescent Street. The Whalley Street intersection is particularly constrained against capacity improvements.

Summary of Impacts

- Because the recommended roadway improvements maintain the existing roadway width, the study team does not anticipate any quantifiable impacts to rights-of-way or utilities associated with the roadway recommendations. However, existing properties and utilities near Blake Street could be impacted should private redevelopment occur in this area.

4.5.2 Crescent Street to Arch Street

Identified Issues & Needs

- One high accident location in corridor.
- 100 total accidents, 1 involving a pedestrian, between January 2004 and December 2006.
- No bike routes on Fitch Street north of Wintergreen Avenue; there is an existing on-street bike route on Crescent Street and Wintergreen Avenue that overlaps Fitch Street between these intersections.
- No sidewalk for pedestrian connectivity on west side of roadway between Wintergreen Avenue and Arch Street.
- No edge line striping exists to delineate shoulders despite excessively wide travel lanes, particularly north of Pine Rock Avenue where the roadway section transitions from three lanes to two.
- Crescent Street identified as a problem intersection by Southern Connecticut State University (SCSU) officials. In particular, pedestrian safety is a concern as a large number of students use the street level crossings here instead of the pedestrian overpass. Additionally, there is poorly-defined lane usage on the southbound approach (right turn lane is implied, but not marked) and a poorly-defined lane shift through the intersection in the southbound direction.
- SCSU officials identified the need for left turn lanes at side road intersections and University driveways to maintain traffic mobility along Fitch Street during peak hours.
- SCSU officials noted that speeding has historically been an issue along Fitch Street through the campus, but recent enforcement measures have helped mitigate speeding occurrences.
- Large university parking lots facing Fitch Street in the vicinity of Pine Rock Avenue result in an unattractive streetscape that do not provide the traffic calming and walkability benefits of a ‘street wall’ or the safety benefits of ‘eyes-on-the-street’.
- Relatively low-density of existing commercial development surrounding the intersection of Fitch Street, Arch Street, and Fairview Avenue does not capitalize on the untapped potential of SCSU student, faculty, and worker populations and is not transit-supportive.

Recommendations (See Figures 4-10, 4-11, and 4-12)

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Bicycle Lanes
- Mid-block Crosswalks
- Textured Crosswalks
- Street Trees
- Modern Roundabouts
- Neighborhood Transit Center
- Infill Development to Create Street Wall

- Maintain existing roadway configuration between Crescent Street and Wintergreen Avenue; Provide new pavement markings to better define lane shift in southbound direction through Wintergreen Avenue intersection.
- Realign Wintergreen Avenue intersection approach to provide a perpendicular intersection with Fitch Street. Improved geometry will encourage lower speed right turning movements from eastbound Wintergreen Avenue to southbound Fitch Street and will provide a more direct pedestrian crossing from Wintergreen Avenue to campus buildings on the east side of Fitch Street. Upgrade traffic signal and pedestrian signal equipment in conjunction with intersection realignment.
- Reconstruct roadway between Pine Rock Avenue and Arch Street to provide 11 ft travel lanes, 2 ft shoulders, and a new 12 ft landscaped median. The median, which can accommodate vertical features such as street trees or ornamental lighting, serves as a traffic calming measure to mitigate travel speeds through this area. The median width can also be reduced at intersections and driveways to accommodate left turn lanes.
- Provide a 10 ft shared-use path adjacent to Beaverdale Memorial Park to accommodate pedestrians and bicyclists for improved connectivity and safety between SCSU campus destinations and possible future *college town* (see below) at the Fitch Street/Arch Street intersection.
- Provide wider sidewalk on east side of Fitch Street adjacent to SCSU campus to maximize walkability.
- Improve intersection geometry, capacity, and operations at the intersection of Fitch Street and Arch Street by providing a modern roundabout that replaces the existing signalized intersection. The roundabout could also serve as a gateway to the campus area and provide additional traffic calming benefits.
- Provide textured and colored crosswalks in conjunction with other roadway improvement recommendations in this area.
- Proceed with current university plan to erect new campus buildings and streetscaping in the large parking lot (nearly 1,000 feet long) on the east side of Fitch Street between the Buley Library and Pelz Hall to provide a more continuous street wall.
- Plan and enable construction of the Hamden 'College Town' at the intersection of Fitch Street, Arch Street, and Fairview Avenue (see Section 4.2.3 and Figure 4-12).

Other Considerations

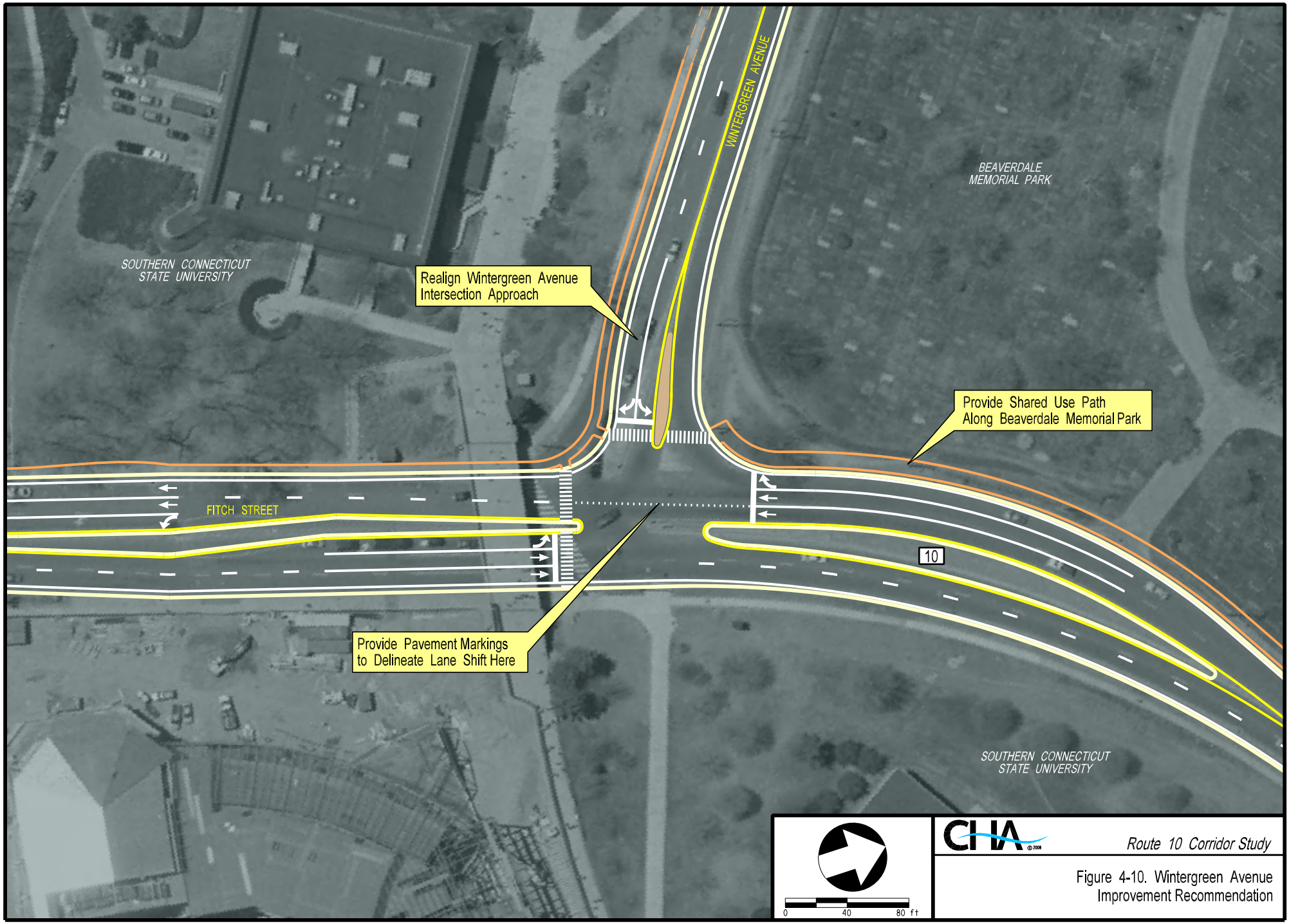
- Overall pedestrian, bicycle, and traffic mobility and safety needs should continue to be evaluated as SCSU campus development as expansion continues, and as new locations for campus parking are being considered.
- Initiate dialogue with SCSU officials about a possible transit hub on University land; preferably near the southern limits of the campus to benefit connections to Westville Village Center. The transit hub would not only provide a pulse point or hub for the intersection of existing bus lines and the proposed Cross Town West bus line, but also provide trolley-type shuttles between the University and Westville Village Center and other destinations frequently used by students.

Constraints & Limitations

- Beaverdale Memorial Park, existing overhead utilities, and existing trees and shrubs along the west side of Fitch Street are the primary constraints in this area. In general, the recommendations along Fitch Street can be provided within the existing 64 ft right-of-way (ROW); however, relocation of existing utilities and replacement of street trees would likely be required to accommodate provisions for the shared use path on the west side of Fitch Street. It is noted that the landscaped median and left turn lanes could be provided within the existing roadway surface and therefore advanced as a project independently of shared use path and sidewalk improvements, if it is determined that the constraints preclude the feasibility of providing the shared use path.
- There is an existing pump station located in southwest quadrant of Fitch Street/Arch Street/Fairview intersection that will have to be relocated to accommodate the 'College Town' redevelopment concept.

Summary of Impacts

- Minor ROW and grading impacts to the Beaverdale Memorial Park property are anticipated with providing the shared use path.
- ROW impacts for the Fitch Street/Arch Street roundabout improvements include approximately 0.3 acre on 8 properties located near the intersection.



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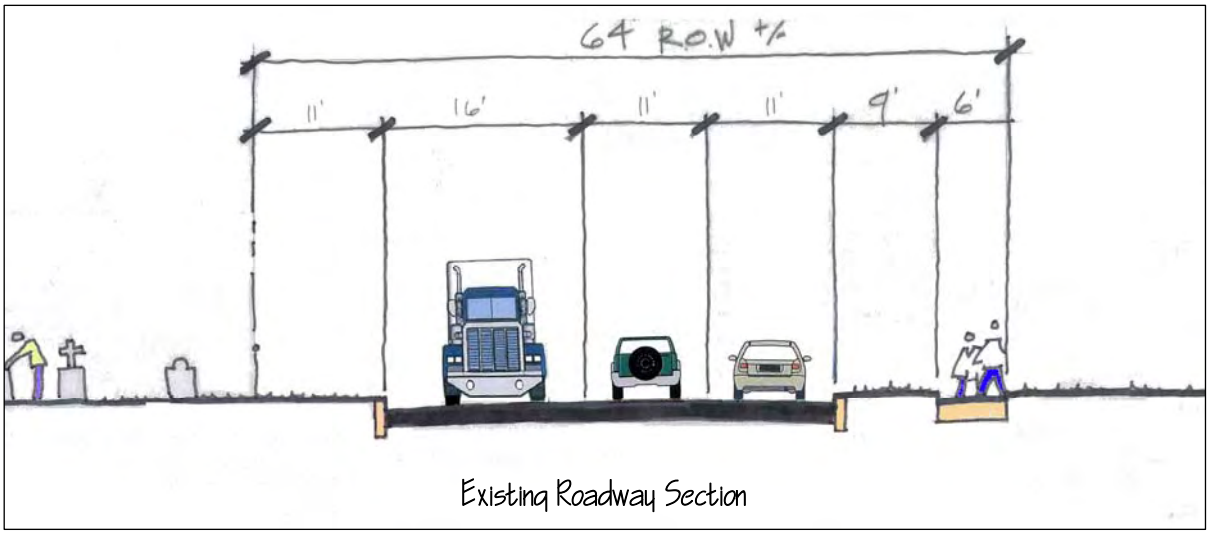
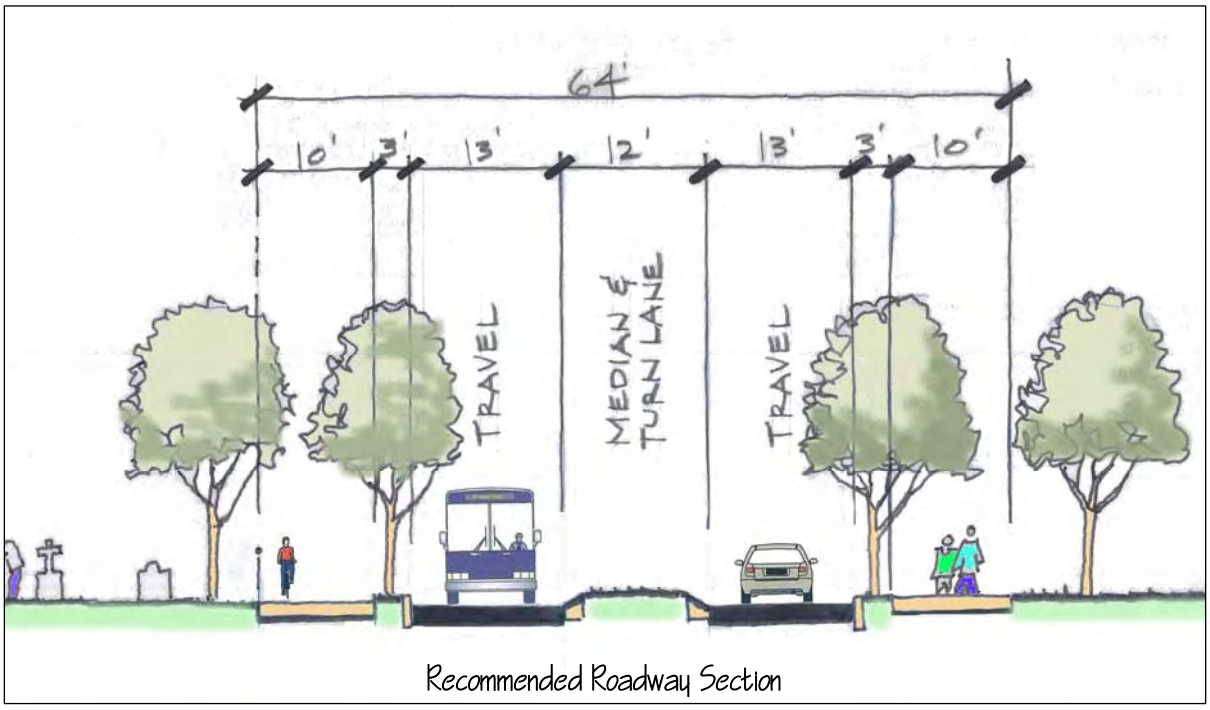
Route 10 Corridor Study

Figure 4-10. Wintergreen Avenue Improvement Recommendation

Figure 4-11. Fitch Street (between Pine Rock Avenue and Arch Street) Typical Roadway Sections






Potential Mixed-use Redevelopment (Typ)
On-street Parking (Typ)
Provide Shared Parking
Provide Roundabout to Replace Traffic Signal
Realign Arch Street Approach to Fitch Street
Relocate Existing Pump Station
Crosswalk (Typ)
FAIRVIEW AVENUE
WARNER STREET
ARCH STREET
ARCH STREET
10
FITCH STREET
10
BEAVERDALE MEMORIAL PARK
0
50
100 ft
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Route 10 Corridor Study
Figure 4-12. College Town Development Concept

4.5.3 Arch Street

Identified Issues & Needs

- Three high accident locations in corridor.
- 101 total accidents, 1 involving a pedestrian, between January 2004 and December 2006.
- No bike routes in this section of roadway due to the narrow roadway width of 23 ft.
- No pedestrian crosswalk to accompany pedestrian pushbutton and signal head located on the northbound Arch Street approach to the signalized intersection of Bowen Street.
- As discussed in Section 4.5.2, the relatively low-density of existing commercial development surrounding the intersection of Fitch Street, Arch Street, and Fairview Avenue does not capitalize on the untapped potential of SCSU student, faculty and worker populations and is not transit-supportive.

Recommendations

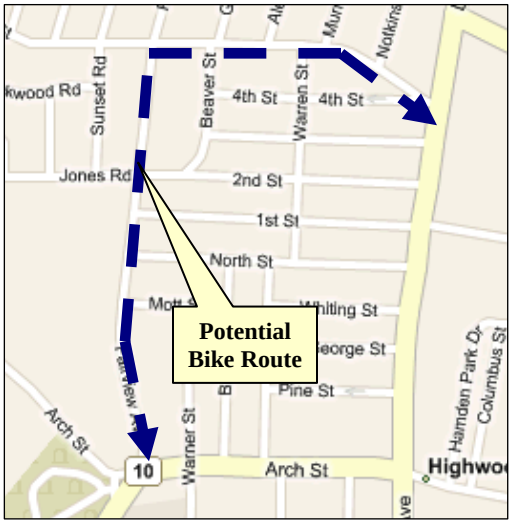
- See Section 4.5.2 for details regarding improvement recommendations at the intersection of Arch Street and Fitch Street.
- Maintain existing roadway configuration between Fitch Street intersection and Dixwell Avenue.
- Provide crosswalk markings at Bowen Street intersection in near-term; provide textured/colored crosswalk as part of next repaving project.
- As discussed in Section 4.5.2, plan and enable construction of the Hamden 'College Town' at the intersection of Fitch Street, Arch Street, and Fairview Avenue (see Section 4.2.3).

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Textured Crosswalks
- Street Trees

Other Considerations

- Due to the lack of space available along Arch Street for future bicycle accommodations and connectivity to Dixwell Avenue and the Farmington Canal Trail, it is recommended that an alternate on-street bike route be considered along Fairview Avenue and Woodin Avenue to connect Fitch Street with Dixwell Avenue. Both Fairview Avenue and Woodin Avenue are two lane roadways, approximately 30 ft wide, with no on-street parking that could be made more bicycle-friendly by providing edge striping to delineate 11 ft travel lanes and 4 ft shoulders.
- ConnDOT completed traffic signal improvements in 2008 at the intersection of Arch Street and Dixwell Avenue.



Constraints & Limitations

- Existing 40 ft right-of-way (ROW) and the proximity of existing residential dwellings to the ROW on both sides of Arch Street are the primary constraints along this section of roadway. These constraints limit opportunities to widen the roadway to provide bike lanes, on-street parking lanes, and traffic capacity improvements in the form of turn lanes or additional through traffic lanes. The study team determined that full property acquisitions would be required along one entire side of the roadway, most likely the west (north) side where there are fewer properties that would be affected, to accommodate any roadway widening.

4.6 Dixwell Avenue Improvement Recommendations

The study team developed improvement recommendations for two segments of the Dixwell Avenue section of Route 10. It is anticipated that the roadway improvement recommendations for each segment could be programmed as individual projects, or combined and programmed as a larger corridor-wide improvement project.

4.6.1 Arch Street to Wilbur Cross Parkway (Route 15)

Identified Issues & Needs

- Six high accident locations in corridor.
- 675 total accidents, 6 involving pedestrians, between January 2004 and December 2006.
- 167 accidents (25%) occurred at commercial driveway intersections.
- No bike routes or bicycle accommodations on Dixwell Avenue, though planned Farmington Canal Trail will parallel Dixwell Avenue.
- Putnam Avenue/Circular Avenue/Helen Street intersection identified as problem intersection by Town of Hamden, particularly due to safety concerns for pedestrians crossing Dixwell Avenue. No pedestrian pushbuttons or signal head for Putnam Avenue crossing.
- Driveways to Walgreen's and Putnam Plaza located on Putnam Avenue just south of Dixwell Avenue identified as problem intersection by Town of Hamden, particularly due to left turning vehicles blocking movements of through traffic.
- Limited pedestrian crossing opportunities on Dixwell Avenue due to relatively long spacing between signalized intersections in some areas.
- Poorly defined on-street parking in many locations. Some businesses (typically auto related) park vehicles within the sidewalk right-of-way (ROW).
- Excessive number of curb-cuts creates traffic conflicts and reduces pedestrian safety.
- Lack of neighborhood identity in this section of corridor due to: a) prevalence of 'corporate architecture' associated with national chain stores; b) large parking lots located between the street and building; c) lack of neighborhood nodes or gateways; and, d) lack of attractive streetscape.

Recommendations (See Figures 4-13a, 4-13b, 4-14a, and 4-14b)

- Widen existing roadway to provide for 16 ft landscaped median (predominantly continuous between signalized intersections) and on-street parking throughout corridor. Median serves as traffic calming measure to mitigate traffic speeds; access management measure to limit commercial drive access in most locations to right-in/right-out movements; and pedestrian refuge area at intersections and mid-block locations. Median width can also be reduced to accommodate left turn lanes at signalized intersections. Additional study would be required to determine length and location of the left turn lanes based on left and U-turn volumes. Removal of left turning traffic from through travel lanes will improve traffic mobility. Widening for median and on-street parking can be accomplished within the existing right-of-way (ROW) of approximately 100 ft in most locations. Some additional widening and potential ROW impacts are likely in vicinity of intersections that are designed to accommodate U-turning traffic.

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Landscaped Medians
- Channelizing Island
- On-street Parking
- Curb Extensions
- Mid-block Crosswalks
- Textured Crosswalks
- Bicycle Lanes
- Street Trees
- Modern Roundabouts
- Convert Strip Malls to Mixed-use Centers
- Courtyard-Style Multi-family Residences
- Neighborhood Transit Center
- Infill Development to Create Street Wall

- Consider providing 5 ft bike lanes on Dixwell Avenue in addition to median and on-street parking. Median and parking lane widths can be reduced to accommodate bike lanes, or ROW can be widened several feet. Strategy to incorporate bike lanes will primarily be dependent on the proximity of existing roadside development to the existing ROW.
- The proposed Farmington Canal Trail and Greenway offers an excellent alternative north-south route for pedestrian and bicycle travel. It should be integrated with the Dixwell Avenue corridor by providing direct pedestrian and bicycle links between the trail and Dixwell Avenue. These linkages should be provided along all of the intersecting side streets and additionally at “mid block” access points that would connect large-scale retail areas on the east side of Dixwell directly to the trail. These improvements will provide more direct connections between the west side of Dixwell Avenue and the residential neighborhoods.
- Consider providing 112 ft ROW to accommodate wider sidewalks, particularly in areas where mixed-use redevelopment opportunities exist and wider sidewalks would be desired to support street activity.

- Consider geometric improvements at the Putnam Avenue/Circular Avenue/Helen Street intersection to improve vehicular and pedestrian safety. Two potential improvement options investigated by the study team include:
    - Option A: Realign Putnam Avenue approach to improve overall intersection geometry and provide raised medians and channelizing island on Dixwell Avenue to accommodate pedestrian refuge during crossings. Consider potential relocation of Circular Avenue approach to consolidate Dixwell Avenue intersection to four approach legs.
    - Option B: Realign Putnam Avenue approach and replace existing signalized intersection with two-lane modern roundabout to improve overall intersection geometry, operations, and safety. Relocate Circular Avenue to intersect Helen Street and convert Helen Street south of Notkins Street to two-way traffic. Provide raised medians on Dixwell Avenue to accommodate pedestrian refuge during crossings.
- Provide left turn lanes on Putnam Avenue at Walgreen's and Putnam Plaza driveways.
- Provide textured and colored crosswalks.
- Provide curb extensions at select locations to protect on-street parking and to reduce pedestrian crossing distances.
- Create neighborhood nodes or "urban character" along the corridor to strengthen the pedestrian experience and improve walkability.
- Plan and enable Infill Development and complementary street level architecture and "street wall" by adopting a form-based code, creating architectural design standards, and instituting façade improvement programs.
- Plan and enable conversion of Strip Malls to Mixed-Use Centers (e.g. Liner Buildings for Existing Strip Shopping Centers), and construction of 'Neighborhood Transit Center' (NTC) and Courtyard Style Multi-Family Residences, at appropriate large sites along the corridor (see Sections 4.2.2 and 4.2.3).

Other Considerations

- Long-term recommendations that include provisions for landscaped medians and on-street parking are consistent with the recommendations that the Town of Hamden developed for the Dixwell Avenue corridor at a Town charrette conducted in 2007.
- The Town requested that consideration be given to burying existing overhead utilities as part of the long-term improvement recommendations. The costs associated with this work are not included in this study.
- Opportunities to consolidate curb cuts and to provide local access management improvements should be investigated in conjunction with any redevelopment plans in the corridor. For efficiency and safety, closely-spaced curb-cuts should be reduced in width and consolidated; the parking lots that they serve should be interconnected. In cases where curb cuts are located close to intersecting streets, they should be relocated further from the intersection or to a side street.
- Provide unified streetscape that includes appropriate furnishings such as benches, ornamental pedestrian-level lighting, and signage.
- Encourage shared parking. Screen existing front yard parking and prohibit new parking between the street and buildings.

Constraints and Limitations

- Existing overhead utilities and ROW are the primary constraints on widening Dixwell Avenue to provide a median, on-street parking, and bike lanes. Some areas of Dixwell Avenue also have topographical constraints that will need to be addressed such that slope grading and driveway impacts on certain parcels can be minimized.

Summary of Impacts

- Widening the roadway and providing a 112 ft ROW along this section of Dixwell would affect more than 200 properties; however, the average taking area would be relatively small at approximately 600 sf per property. Properties located adjacent to signalized intersections that would be designed to accommodate U-turning traffic around the median would likely experience greater impacts.
- ROW impacts for Putnam Avenue/Circular Avenue/Helen Street intersection Option A include complete acquisition of the existing park (which could be relocated to the other side of Putnam Avenue in a land swap) and approximately 0.4 acre on 4 properties on the east side of Dixwell Avenue. Relocation of Circular Avenue would impact a minimum of 8 properties and would require at least 3 full property acquisitions. The relocation of Circular Avenue is not an essential component of Option A; the Putnam Avenue approach to the intersection could be realigned independently of the Circular Avenue relocation.
- ROW impacts for Option B include similar impacts as Option A with an additional full property acquisition required in the northeast quadrant of the intersection. The relocation of Circular Avenue is a required component of the roundabout option, unlike Option A where it is beneficial, but not required.

Figure 4-13a. Dixwell Avenue (between Arch Street and Wilbur Cross Parkway)
Typical Roadway Section with 100 ft ROW

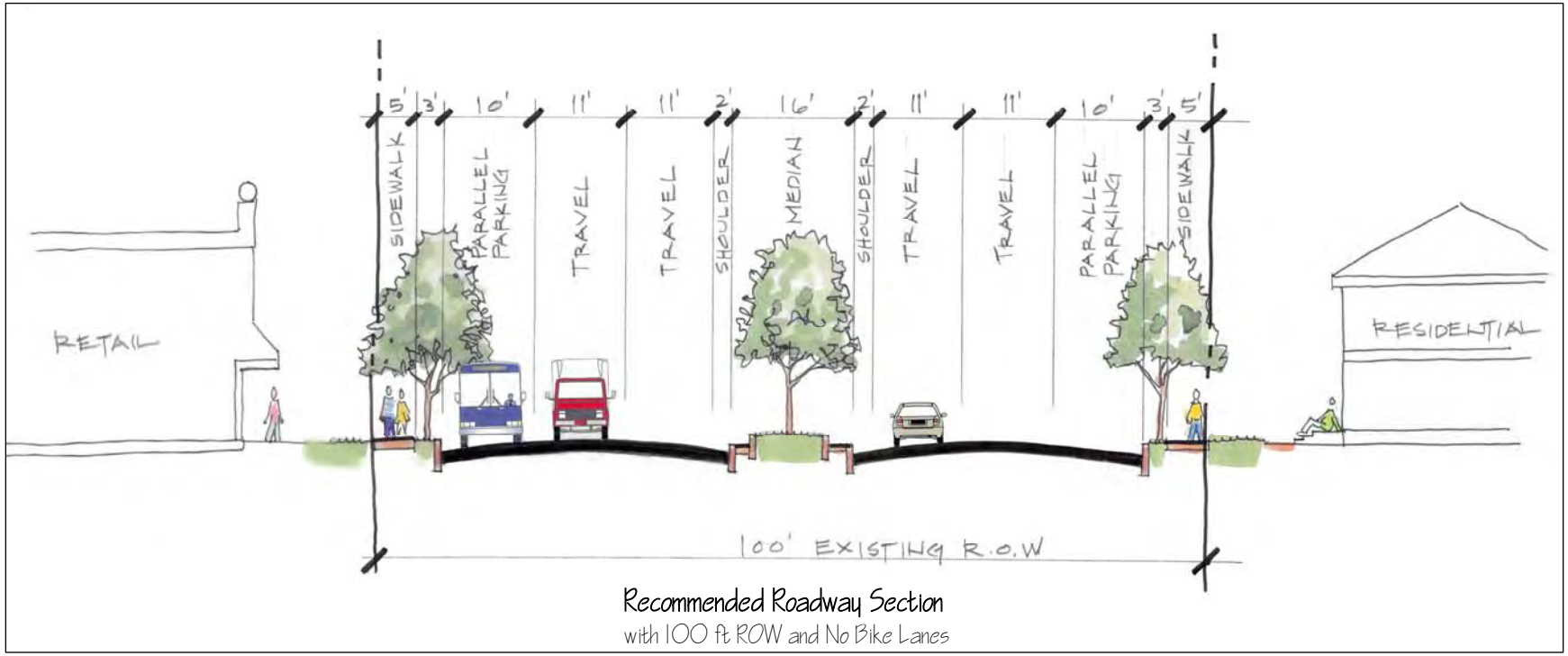
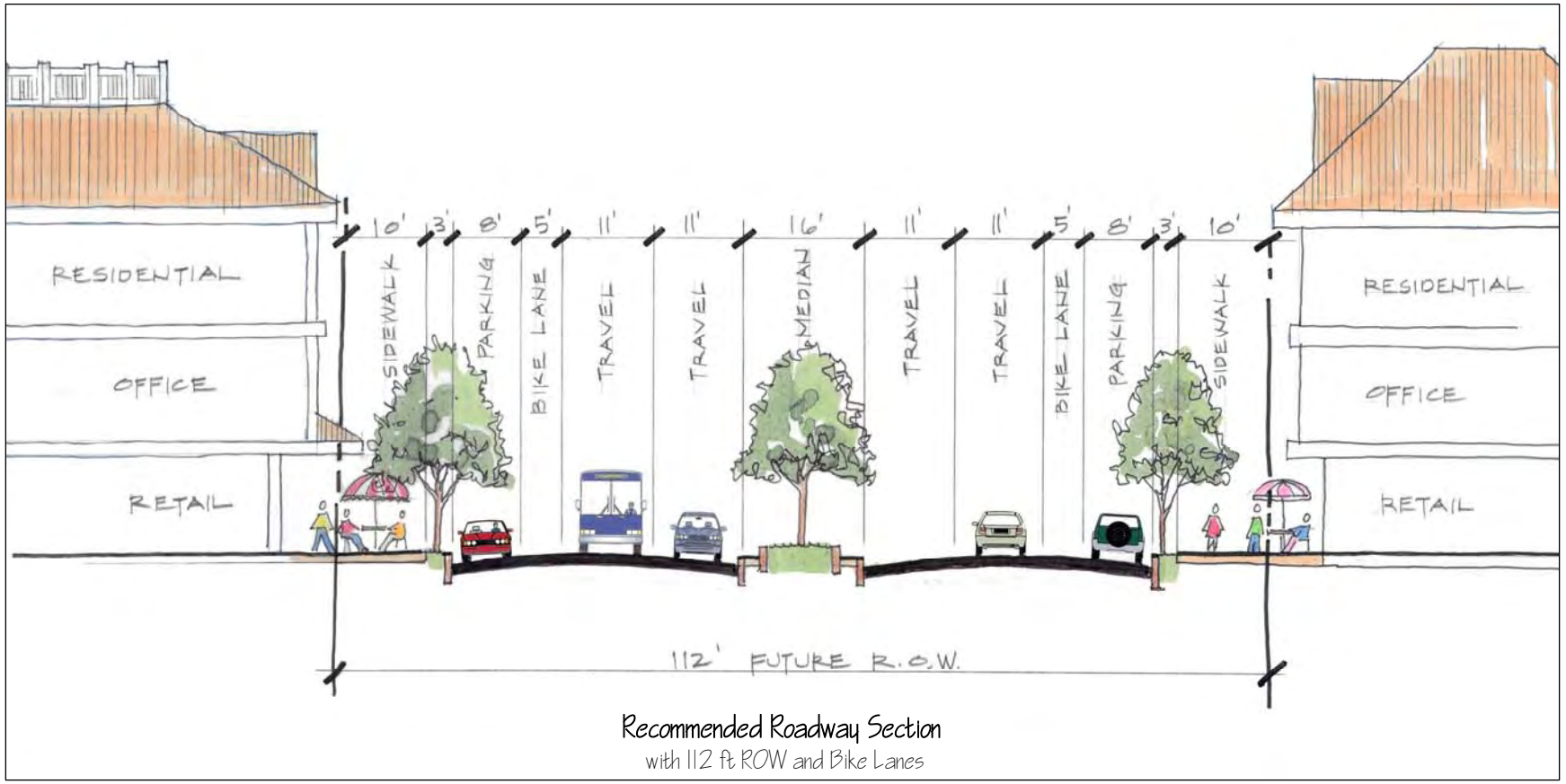


Figure 4-13b. Dixwell Avenue (between Arch Street and Wilbur Cross Parkway)
Typical Roadway Section with 112 ft ROW



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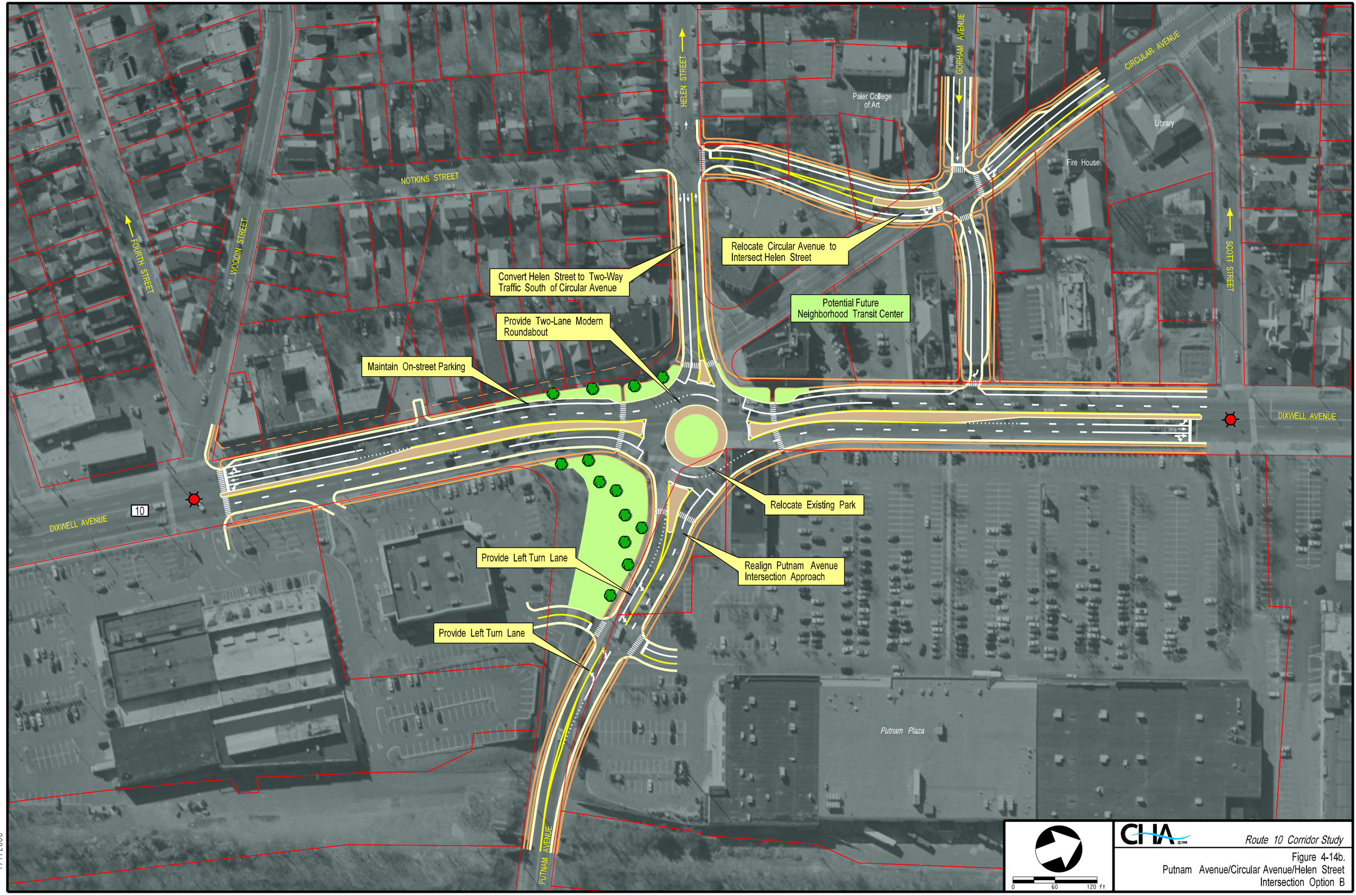

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Route 10 Corridor Study

Figure 4-14b.
Putnam Avenue/Circular Avenue/Helen Street
Intersection Option B

4.6.2 Wilbur Cross Parkway (Route 15) to Skiff Street

Identified Issues & Needs

- Four high accident locations in corridor.
- 262 total accidents, 5 involving pedestrians, between January 2004 and December 2006.
- 121 accidents (46%) occurred at commercial driveway intersections.
- No bike routes or bicycle accommodations on Dixwell Avenue; planned Farmington Canal Trail will parallel Dixwell Avenue.
- Corridor is generally pedestrian and bicycle unfriendly due to high volumes of commuter and commercial traffic. Pedestrian crossing distances on Dixwell Avenue are relatively long.
- Lack of neighborhood identity in this section of corridor due to: a) prevalence of 'corporate architecture' associated with national chain stores; b) excessively large parking lots located between the street and building; c) lack of neighborhood nodes or gateways; and, d) lack of attractive streetscape.

Recommendations (See Figures 4-15 and 4-16)

- Widen existing roadway to provide for 30 ft landscaped median (predominantly continuous between signalized intersections) and on-street parking throughout corridor. Median serves as traffic calming measure to mitigate traffic speeds; access management measure to limit commercial drive access in most locations to right-in/right-out movements; and pedestrian refuge area at intersections and mid-block locations. Median width can also be reduced to accommodate left turn lanes at signalized intersections. Additional study would be required to determine length and location of the left turn lanes based on left and U-turn volumes. Removal of left turning traffic from through travel lanes will improve traffic mobility.
- Consider providing 5 ft bike lanes on Dixwell Avenue in addition to median and on-street parking. Provisions for bike lanes in this segment should be consistent with provisions for bike lanes south of the Wilbur Cross Parkway. That is, continuous bike lanes should be provided if additional right-of-way (ROW) impacts are acceptable in both segments of the Dixwell Avenue corridor.

Applicable *Complete Streets* Tools

- Narrow Travel Lanes
- Landscaped Medians
- On-street Parking
- Curb Extensions
- Mid-block Crosswalks
- Textured Crosswalks
- Bicycle Lanes
- Street Trees
- Convert Strip Malls to Mixed-use Centers
- Infill Development to Create Street Wall

- Consider providing 144 ft ROW to accommodate all amenities including 30 ft median, on-street parking, bike lanes, and wider sidewalks, particularly in areas where mixed-use redevelopment opportunities exist and wider sidewalks would be desired to support street activity. The 144 ft ROW would utilize the existing 100 ft ROW and would utilize existing building setbacks to accommodate roadway improvements.
- The proposed Farmington Canal Trail and Greenway offers an excellent alternative north-south route for pedestrian and bicycle travel. It should be integrated with the Dixwell Avenue corridor by providing direct pedestrian and bicycle links between the trail and Dixwell Avenue. These linkages should be provided along all of the intersecting side streets and additionally at "mid block" access points that would connect large-scale retail areas on the east side of Dixwell Avenue directly to the trail. These improvements will provide more direct connections between the west side of Dixwell Avenue and the residential neighborhoods.
- Provide textured and colored crosswalks.
- Provide curb extensions at select locations to protect on-street parking and to reduce pedestrian crossing distances.
- Reduce conflict points between turning vehicles and help improve circulation by constructing new public service roads and private parking modifications to allow alternative north-south vehicular movement behind the Dixwell Avenue businesses. Shared and interconnected parking lots allow for a more fluid movement, easier customer search pattern, reduces the number of curb cuts, opens up the rear of the buildings, and directs traffic onto signalized/traffic controlled side streets.
- Plan and enable Infill Development and complementary street level architecture and "street wall" by adopting a form-based code, creating architectural design standards, and instituting façade improvement programs.
- Plan and enable conversion of Strip Malls to Mixed-Use Centers (e.g. New Urbanism' Redevelopment of the 'Magic Mile', at appropriate large sites along the corridor (see Section 4.2.3 and Figure 4-15).
- Provide unified streetscape that includes appropriate furnishings such as benches, ornamental pedestrian-level lighting, and signage.

Other Considerations

- Long-term recommendations that include provisions for landscaped medians and on-street parking are consistent with the recommendations that the Town of Hamden developed for the Dixwell Avenue corridor at a Town charrette conducted in 2007.
- The Town requested that consideration be given to burying existing overhead utilities as part of the long-term improvement recommendations. The costs associated with this work are not included in this study.
- Opportunities to consolidate curb cuts and to provide local access management improvements should be investigated in conjunction with any redevelopment plans in the corridor.

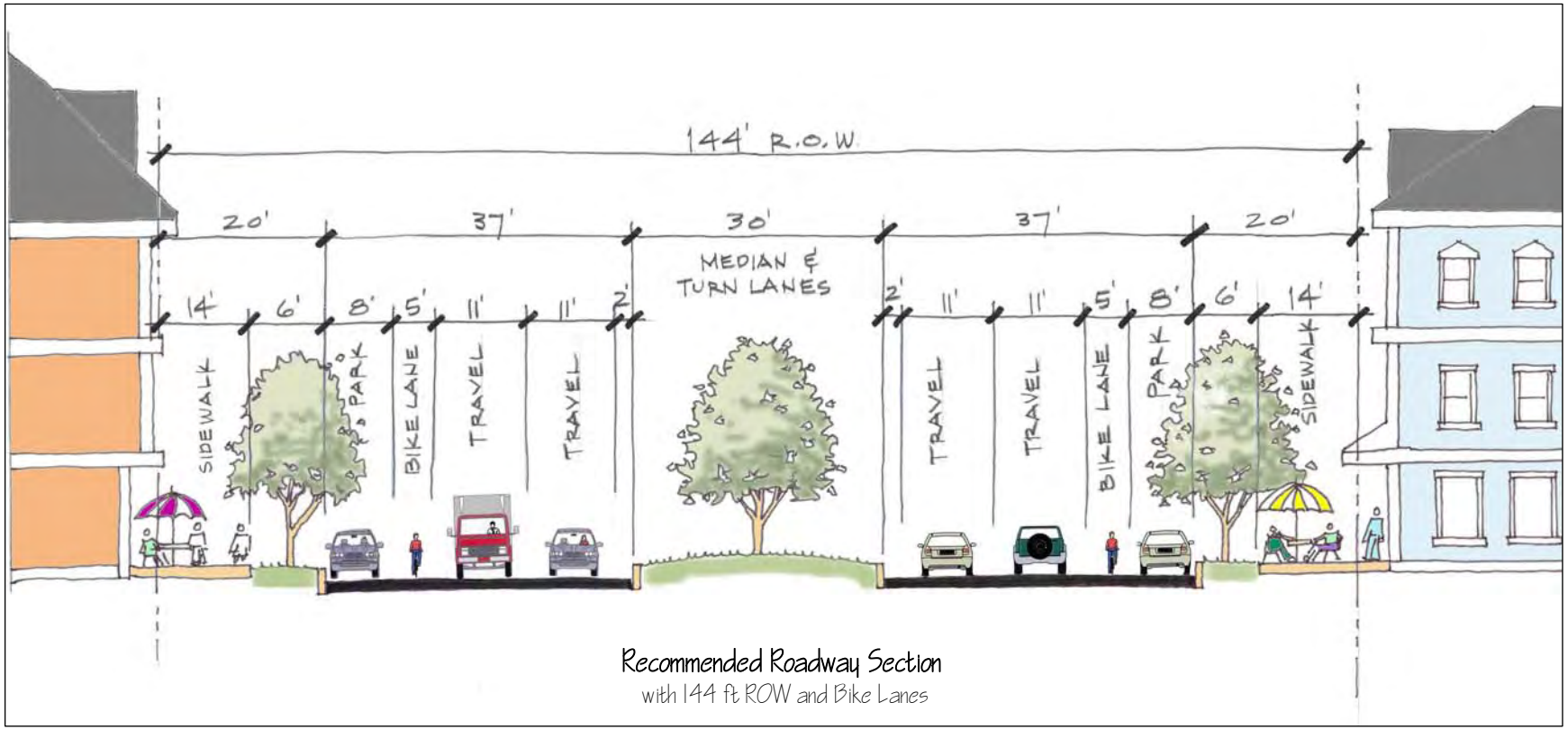
Constraints and Limitations

- Existing overhead utilities and ROW are the primary constraints on widening Dixwell Avenue to provide a median, on-street parking, and bike lanes. Some areas of Dixwell Avenue also have topographical constraints that will need to be addressed such that slope grading and driveway impacts on certain parcels can be minimized.

Summary of Impacts

- Potential property impacts for providing a 144 ft ROW include approximately 3.5 acres of strip takings on 15 commercial properties. It is likely that the roadway would be widened more to the west side of the roadway due to the greater number of properties and businesses on the east side that would be affected by the improvements. In addition, topographical constraints on the east side of the roadway limit opportunities to widen without providing retaining wall structures to support the roadway embankment.
- Existing overhead utilities are located along the east side of Dixwell Avenue in this area. Avoidance of these utilities would require all widening to be accommodated on the west side of Dixwell Avenue. Existing underground utilities and the existing stormwater drainage system would also be affected by widening improvements.

Figure 4-15. Dixwell Avenue (Wilbur Cross Parkway and Skiff Street)
Typical Roadway Section with 144 ft ROW



Potential Parking Structure (Typ)

Provide New Internal Grid of Streets with Parking

On-street Parking (Typ)

Crosswalk (Typ)

Existing Store (Typ)

Potential Multi-story Mixed-use Development (Typ)

Provide Landscaped Median, On-street Parking & Bike Lanes

GREEN DRAGONS

HAMDEN HIGH SCHOOL

DIXWELL AVENUE

CONNOLLY PARKWAY

10

0 60 120 ft

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Route 10 Corridor Study

Figure 4-16. "Magic Mile" Redevelopment Concept

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4.7 Construction Cost and Implementation Guidelines

The study team developed planning-level construction cost estimates and a preliminary strategy for implementation of various near and long-term projects. The information in this section is intended to help guide the prioritization and programming of these projects as the municipalities, SCRCOG, and ConnDOT pursue improvements in the Route 10 corridor.

4.7.1 Construction Cost Estimates

Planning-level construction cost estimates for the various improvement recommendations described in the previous sections were developed in accordance with Connecticut Department of Transportation's guidelines for preliminary cost estimating dated January 2008. Table 4-1 presents a summary of the estimated construction costs for various components of the improvement recommendations.

The cost estimates assume the following conditions:

- Roadway widening will be accomplished by providing full-depth, bituminous concrete pavement structure outside the limits of the existing pavement.
- Existing pavement surfaces adjacent to widened sections will be milled and repaved with new bituminous concrete pavement.
- Roadway and intersection realignment will be accomplished by reconstructing the entire existing roadway or intersection and providing a full-depth, bituminous concrete pavement structure.
- Additional cost allowances for right-of-way acquisitions, utility relocations, environmental mitigation, and engineering are not included in the overall cost estimate.

For planning purposes, the cost estimates are represented in 2008 dollars and 2018 dollars to illustrate the effect that compounding inflation has on the estimated construction cost values over an assumed implementation period of 10 years. The estimated costs in 2018 dollars were determined using an annual inflation rate of 5%. It should be noted that current ConnDOT estimating guidelines recommend the use of a 10% annual inflation rate in developing planning-level cost estimates, though the rate may be overly conservative.

Table 4-1. Planning-level Construction Cost Estimates

Roadway Segment	Estimated Cost (2008 $)	Estimated Cost (2018 $)	Notes
Ella T. Grasso Boulevard			
• **Kimberly Avenue to Columbus Avenue (US 1)**			
o Kimberly Avenue Intersection	$50,000	$80,000	Potential near-term project
o Widening for Bike Lanes	$4,000,000	$6,520,000	
• **Columbus Avenue (US 1) to Derby Avenue (Route 34)**			
o Widening for Median – Columbus Avenue (US 1) to Legion Avenue			
o Shared Use Path along West River Memorial Park to Derby Avenue	$700,000	$1,140,000	Potential near-term project
o Legion Avenue/North Frontage Road Intersection Option A to Derby Avenue	$4,500,000	$7,330,000	
o Legion Avenue/North Frontage Road Intersection Option B to Derby Avenue	$5,300,000	$8,640,000	
• **Derby Avenue (Route 34) to Whalley Avenue (Route 63)**			
o Traffic Signal Improvements at Chapel St, Edgewood Ave, Elm St, Whalley Ave	$950,000	$1,550,000	Potential near-term project
o Curb Extensions, Bike Lanes, On-street Parking Improvements	$600,000	$980,000	Potential near-term project
Whalley Avenue			
• **Ella T. Grasso Boulevard to Fitch Street**			
o Widening to Improve On-street Parking South of West Park Ave; Raised Median	$2,500,000	$4,010,000	
Fitch Street/Arch Street			
• **Whalley Avenue to Crescent Street**			
o Striping, Crosswalk Improvements; Street Trees	$90,000	$150,000	Potential near-term project
• **Crescent Street to Arch Street**			
o Wintergreen Avenue Realignment; Repaving, Shared Use Path to Pine Rock Ave	$1,400,000	$2,280,000	
o Landscaped Median, Shared Use Path, Sidewalk Improvements	$1,700,000	$2,770,000	
o Modern Roundabout at Arch Street/Fitch Street Intersection	$1,900,000	$3,100,000	
• **Arch Street**			
o Crosswalk Markings; Edge Striping for Bike Route on Fairview Ave/Woodin St	$40,000	$65,000	Potential near-term project

Table 4-1. Planning-level Construction Cost Estimates

Roadway Segment	Estimated Cost (2008 $)	Estimated Cost (2018 $)	Notes
Dixwell Avenue			
• **Arch Street to Wilbur Cross Parkway (Route 15)**			
o Widening for Median, On-street Parking, Bike Lanes – Arch St to Woodin St	$5,700,000	$9,290,000	
o Putnam Avenue/Circular Avenue/Helen Street Intersection Option A to Scott St	$4,100,000	$6,680,000	Excludes Circular Ave Relocation
o Putnam Avenue/Circular Avenue/Helen Street Intersection Option B to Scott St	$5,500,000	$8,960,000	Includes Circular Ave Relocation
o Widening for Median, On-street Parking, Bike Lanes – Scott St to Route 15	$17,500,000	$28,500,000	
• **Wilbur Cross Parkway (Route 15) to Skiff Street**			
o Widening for Median, On-street Parking, Bike Lanes – Route 15 to Skiff Street	$9,900,000	$16,130,000	

4.7.2 Implementation Strategy

Implementation of the study recommendations should begin with the prioritization of individual improvement projects by the participating municipalities and SCRCOG. Near-term safety improvement projects, those that can be completed in a relatively short time frame at a relatively low cost and with minor impacts, should be considered for highest priority and early implementation. Table 4-1 in the previous section suggested a variety of "break out" projects that could be considered for high priority, near-term implementation to improve safety for pedestrians, bicyclists, and motorists. These projects include:

- A shared use path along West River Memorial Park to provide safe and accessible accommodations for pedestrians and bicyclists along Ella T. Grasso Boulevard.
- Traffic signal improvements at Chapel Street, Edgewood Avenue, Elm Street, and Whalley Avenue to provide new pedestrian pushbuttons and signal heads.
- Definition of on-street parking and bike lanes along Ella T. Grasso Boulevard between Derby Avenue and Whalley Avenue with pavement markings and curb extensions.
- Edge striping, crosswalk improvements, and street trees on Fitch Street to encourage slower travel speeds and to provide some shoulder area for bicyclists.
- New crosswalk markings on Arch Street near Bowen Street for increased pedestrian visibility, and possible edge striping on the adjacent roadway network to provide a safer bike route between SCSU and Dixwell Avenue.

In addition to these specific improvements, the municipalities and ConnDOT should consider incorporating low cost *complete streets* elements, such as edge striping and textured crosswalks, into future roadway maintenance or repaving projects to more readily facilitate implementation.

A phased priority implementation strategy should be considered for the more costly, long-term projects that could take many years to plan, program, and fund. Ideally, long-term transportation plans for the corridor would be coordinated with some of the land use and redevelopment recommendations for the corridor so that components of the overall improvement strategy, such as consolidation of access and provisions for shared parking among complimentary uses, can be integrated into the corridor over time.

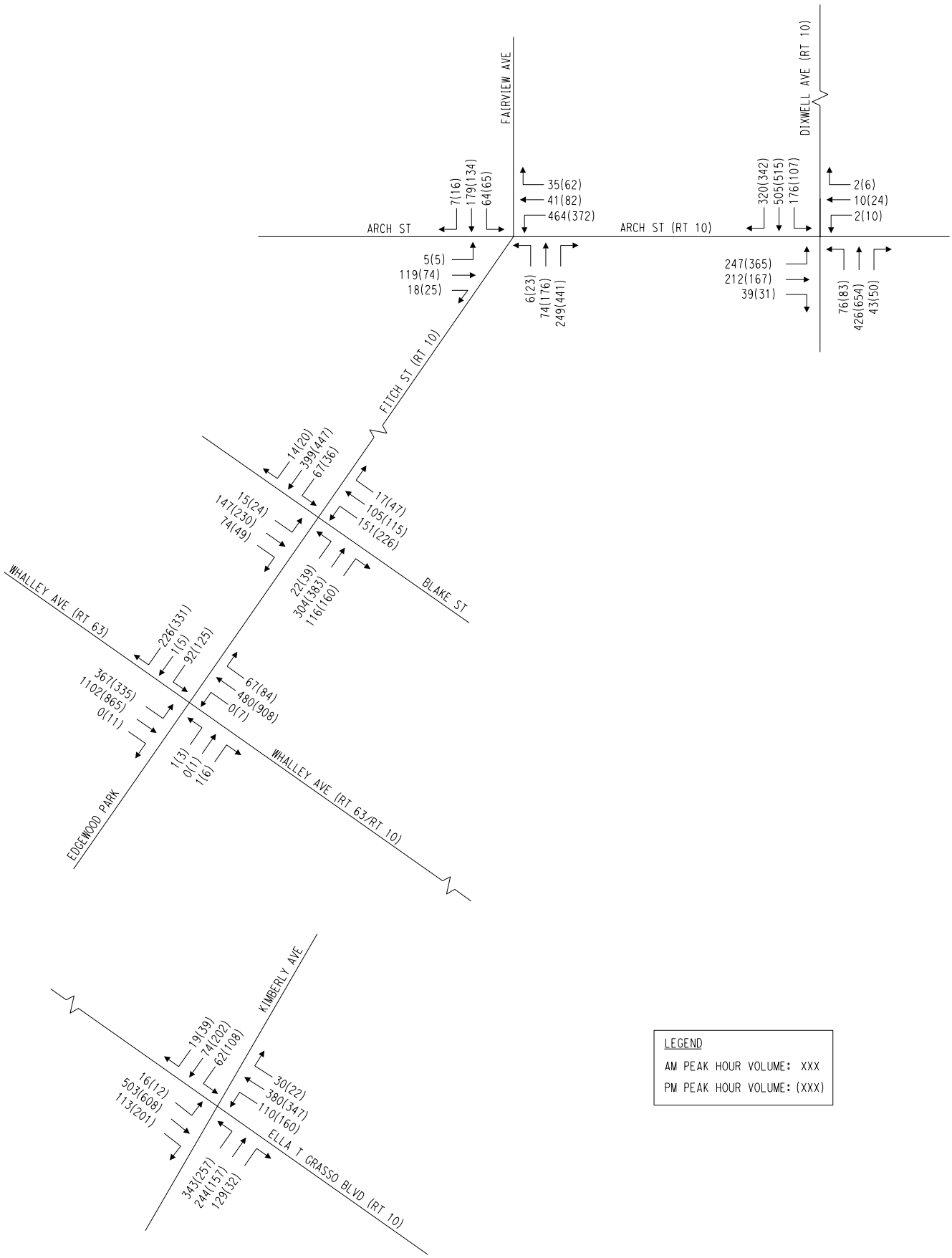
Appendix

Existing (2008) AM & PM Peak Hour Volumes

High Accident Location Listing

Traffic Signal Condition & Pedestrian Accommodations Inventory

Future (2028) AM & PM Peak Hour Volumes



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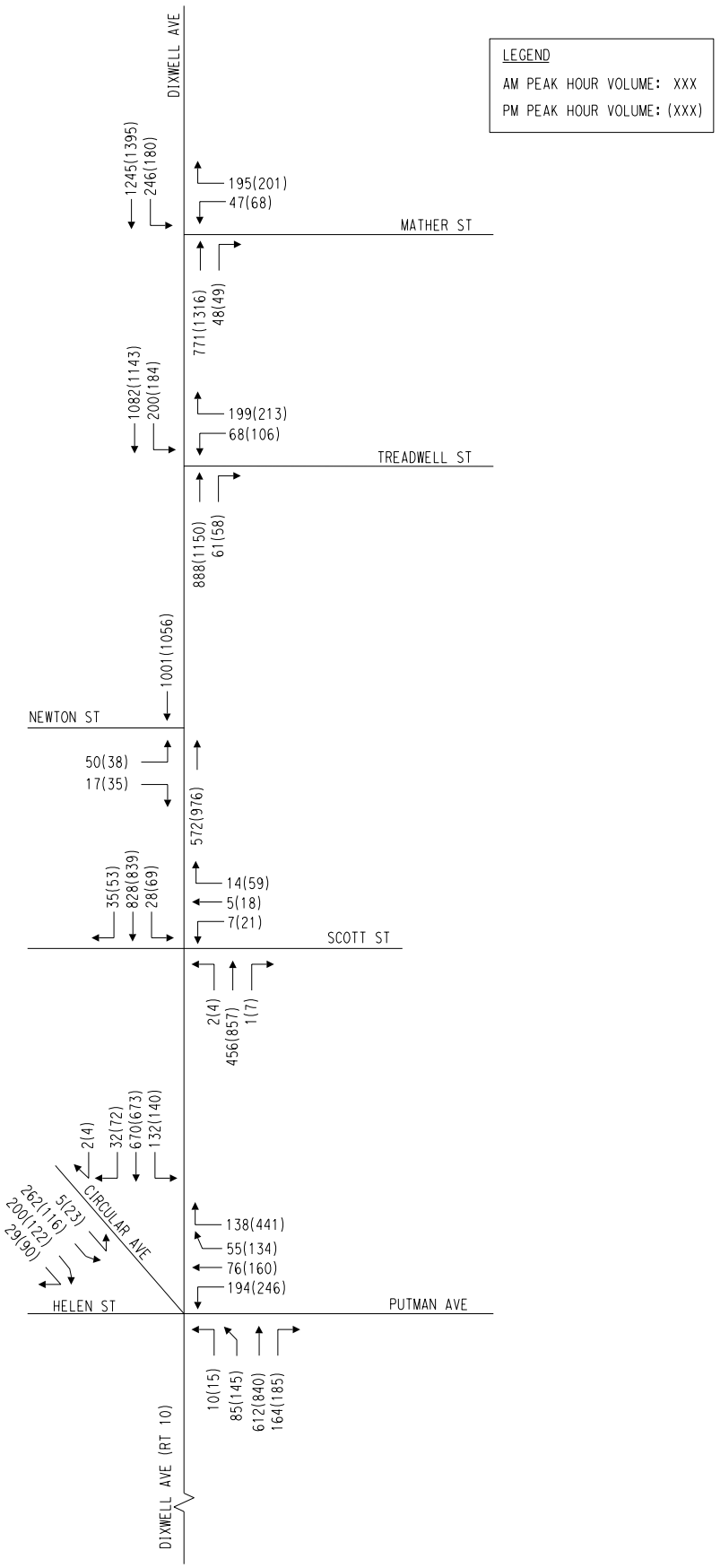
Route 10 Corridor Study

Figure 2-A. Existing (2008)
AM & PM Peak Hour Volumes (Sheet 1 of 2)



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Route 10 Corridor Study

Figure 2-A. Existing (2008)
AM & PM Peak Hour Volumes (Sheet 2 of 2)

NEW HAVEN HIGH ACCIDENT LOCATIONS

Ella T. Grasso Boulevard – 20 Locations

MM 0.28 at Kimberly Avenue
MM 0.29 between Kimberly Avenue and Plymouth Street
MM 0.62 at Lamberton Street
MM 0.70 at Washington Avenue
MM 0.79 at Truman Street
MM 0.89 at Adeline Street
MM 1.10 at Printers Lane
MM 1.19 between Longhini Lane and Columbus Avenue (US 1)
MM 1.29 at Columbus Avenue (US 1)
MM 1.87 at Legion Avenue
MM 2.20 at Derby Avenue (Route 34)
MM 2.35 between Irving Street and Chapel Street
MM 2.41 at Chapel Street
MM 2.42 between Chapel Street and Stanley Street
MM 2.48 between Stanley Street and Edgewood Avenue
MM 2.56 at Edgewood Avenue
MM 2.66 at Maple Street
MM 2.79 at Argonne Street
MM 2.80 between Argonne Street and Whalley Avenue
MM 2.85 at Whalley Avenue

Whalley Avenue – 4 High Accident Locations

MM 2.93 at Blake Street
MM 3.24 at West Park Avenue
MM 3.39 between Jewell Street and Fitch Street
MM 3.42 at Fitch Street

Fitch Street – 6 High Accident Locations

MM 3.43 between Whalley Avenue and Onyx Street
MM 3.68 at Blake Street
MM 3.69 between Blake Street and Dyer Street
MM 3.79 at Dyer Street
MM 4.03 at Crescent Street
MM 4.26 at Pine Rock Avenue

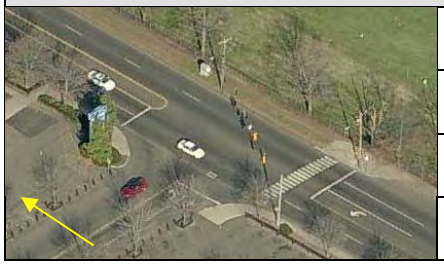
HAMDEN HIGH ACCIDENT LOCATIONS

Arch Street – 3 Locations

MM 4.87	at Bowen Street
MM 4.88	between Bowen Street and Dixwell Avenue
MM 5.00	at Dixwell Avenue

Dixwell Avenue – 10 Locations

MM 5.01	between Dixwell Avenue and Pine Street
MM 5.43	between Woodin Street and Putnam Avenue
MM 6.21	between Cumley Street and Pershing Street
MM 6.54	between Mather Street and Red Rock Terrace
MM 6.81	between Palmer Avenue and Benham Street
MM 6.89	between Wheeler Street and Weybosset Street
MM 7.15	between Connolly and Drive to Hamden Plaza
MM 7.40	between Hamden Plaza Entrances
MM 7.59	between Hamden Plaza Drive and Skiff Street
MM 7.71	at Skiff Street

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Ella T. Grasso Blvd at Kimberly Avenue (New Haven) [1]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes*	Newer
	N	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Newer
	E	Kimberly Avenue	Yes	Yes	No	Yes	Yes	Newer
	W	Kimberly Avenue	Yes	Yes	No	Yes	Yes	Newer
Ella T. Grasso Blvd at Washington Avenue (New Haven) [2]								
	S	Ella T. Grasso Blvd	No	Yes	No	No	No	Newer
	N	Ella T. Grasso Blvd	No	Yes	No	No	No	Newer
	E	Washington Ave	No	Yes	No	Yes	No	Newer
	W	Washington Ave	No	Yes	No	Yes	No	Newer
Ella T. Grasso Blvd at New Haven Career Campus (New Haven) [2]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	Yes[!]	Yes	Fairly New
	N	Ella T. Grasso Blvd	No	Yes	No	No	No	Fairly New
	E	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	W	Campus Driveway	No	Yes	No	Yes	Yes	Fairly New

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Ella T. Grasso Blvd at US Route 1 (New Haven) [2]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Fairly New
	N	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Fairly New
	E	US Route 1	Yes	No	No	Yes	Yes	Fairly New
	W	US Route 1	Yes	Yes	No	Yes	No	Fairly New
Ella T. Grasso Blvd at Legion Avenue (New Haven) [1]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Newer
	N	Ella T. Grasso Blvd	No	No	No	No	No	Newer
	E	Legion Avenue	Yes	Yes	No	Yes	Yes	Newer
	W	N/A	N/A	No	No	Yes	Yes	Newer
Ella T. Grasso Blvd at North Frontage Road (New Haven) [1]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Newer
	N	Ella T. Grasso Blvd	No	Yes	No	No	No	Newer
	E	North Frontage Road	Yes	Yes	No	Yes	Yes	Newer
	W	N/A	N/A	No	No	Yes	Yes	Newer

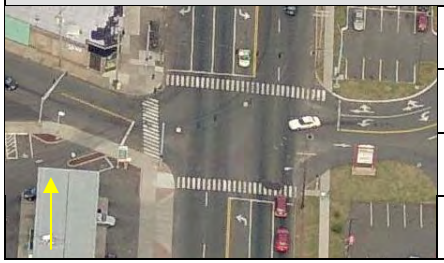
Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Ella T. Grasso Blvd at Route 34 (Derby Avenue) (New Haven) [1]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Newer
	N	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Newer
	E	Route 34	Yes	Yes	No	Yes	Yes	Newer
	W	Route 34	Yes	Yes	No	Yes	Yes	Newer
Ella T. Grasso Blvd at Chapel Street (New Haven)								
	S	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Older
	N	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Older
	E	Chapel Street	Yes	Yes	No	No	No	Older
	W	Chapel Street	Yes	Yes	No	No	No	Older
Ella T. Grasso Blvd at Edgewood Avenue (New Haven)								
	S	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Older
	N	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Older
	E	Edgewood Ave	Yes	Yes	No	No	No	Older
	W	Edgewood Ave	Yes	Yes	No	No	No	Older

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Ella T. Grasso Blvd at Elm Street (New Haven)								
	S	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Older
	N	Ella T. Grasso Blvd	Yes	Yes	No	No	No	Older
	E	Elm Street	Yes	Yes	No	No	No	Older
	W	Elm Street	Yes	Yes	No	No	No	Older
Ella T. Grasso Blvd at Whalley Avenue (New Haven) [1]								
	S	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Older
	N	Ella T. Grasso Blvd	Yes	Yes	No	Yes	Yes	Older
	E	Whalley Ave	Yes	Yes	No	Yes	Yes	Older
	W	Whalley Ave	Yes	Yes	No	Yes	Yes	Older
Whalley Avenue at Pendleton Street (New Haven) [2]								
	S	Whalley Ave	Yes	No	No	Yes	Yes*	Fairly Old
	N	Whalley Ave	No	No	No	No	No	Fairly Old
	E	Whittlesey Ave	No	No	No	No	No	Fairly Old
	W	Pendleton Street	Yes	Yes	No	Yes	Yes*	N/A

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Whalley Avenue at Osborn Avenue (New Haven) [1]								
	S	Whalley Ave	Yes	Yes	No	Yes**	Yes	Older
	N	Whalley Ave	No	No	No	No	No	Older
	E	Osborn Ave	No	Yes	No	No	No	Older
	W	N/A	N/A	Yes	No	Yes	Yes	Older
Whalley Avenue at Fitch Street (New Haven) [1]								
	S	Whalley Ave	Yes	Yes	No	Yes	Yes	Newer
	N	Whalley Ave	Yes	Yes	No	Yes	Yes	Newer
	E	Fitch Street	Yes	Yes	No	Yes	Yes	Newer
	W	Edgewood Park	Yes	Yes	No	Yes	Yes	Newer
Fitch Street at Blake Street (New Haven) [1]								
	S	Fitch Street	Yes	Yes	No	Yes	Yes	Fairly Old
	N	Fitch Street	Yes	Yes	No	Yes	Yes	Fairly Old
	E	Blake Street	Yes	Yes	No	Yes	Yes	Fairly Old
	W	Blake Street	Yes	Yes	No	Yes	Yes	Fairly Old

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Fitch Street at Crescent Street (New Haven) [1]								
	S	Fitch Street	Yes	Yes	No	Yes	Yes	Older
	N	Fitch Street	Yes	No	No	Yes	Yes	Older
	E	Crescent Street	Yes	Yes	No	Yes	Yes	Older
	W	N/A	N/A	Yes	No	No	Yes[!]	Older
Fitch Street at Wintergreen Avenue (New Haven) [2]								
	S	Fitch Street	Yes	Yes	No	Yes[**]	Yes	Older
	N	Fitch Street	No	No	No	No	No	Older
	E	N/A	N/A	No	No	No	No	Older
	W	Wintergreen Avenue	No	Yes	No	Yes	No	Older
Fitch Street at Pine Rock Road (New Haven) [1]								
	S	Fitch Street	Yes	Yes	No	Yes	Yes	Older
	N	Fitch Street	No	No	No	No	No	Older
	E	Driveway	Yes	Yes	No	No	No	Older
	W	Pine Rock Road	No	Yes	No	Yes	Yes	Older

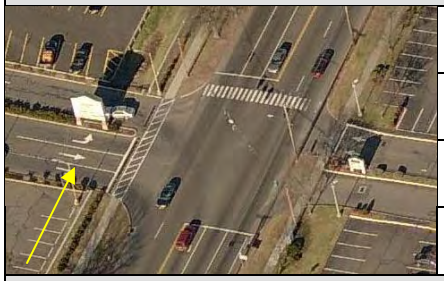
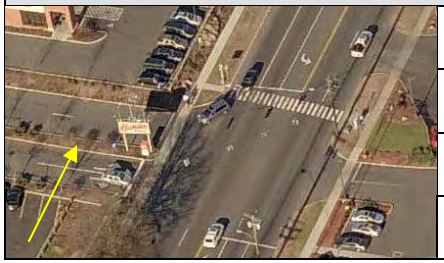
Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Fitch Street at SCSU Driveway (New Haven) [2]								
	S	Fitch Street	No	Yes	No	No	No	Fairly New
	N	Fitch Street	No	No	No	No	No	Fairly New
	E	SCSU Drive	Yes	Yes	No	No	No	Fairly New
	W	N/A	N/A	No	No	No	No	Fairly New
Fitch Street at Arch Street (Hamden) [1]								
	S	Fitch Street	Yes	Yes	No	Yes	Yes	Older
	N	Fairview Ave	Yes	Yes	No	Yes	Yes	Older
	E	Arch Street	No	Yes	No	No	No	Older
	W	Arch Street	No	No	No	No	No	Older
Arch Street at Bowen Street (Hamden) [2]								
	S	Arch Street	No	Yes	No	Yes	Yes	Fairly New
	N	Arch Street	No	No[+]	No	No	No	Fairly New
	E	Bowen Street	Yes	Yes	No	No	No	Fairly New
	W	N/A	N/A	Yes	No	Yes	No	Fairly New

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Arch Street at Dixwell Avenue (Hamden) [1]								
	S	Dixwell Ave	Yes	Yes	No	Yes	Yes	Fairly New
	N	Dixwell Ave	Yes	Yes	No	Yes	Yes	Fairly New
	E	Morse Street	Yes	No	No	Yes	Yes	Fairly New
	W	Arch Street	Yes	Yes	No	Yes**	Yes	Fairly New
Dixwell Avenue at North Street (Hamden) [1]								
	S	Dixwell Ave	Yes	Yes	No	Yes	Yes	Older
	N	Dixwell Ave	No	No[+]	No	No	No	Older
	E	N/A	N/A	No	No	No	No	Older
	W	North Street	Yes	No	No	Yes	Yes	Older
Dixwell Avenue at Fourth Street (Hamden) [1]								
	S	Dixwell Ave	Yes	Yes	No	Yes	Yes	Newer
	N	Dixwell Ave	Yes	Yes	No	Yes	Yes	Newer
	E	Driveway	No	Yes	No	Yes	Yes	Newer
	W	Fourth Street	Yes	Yes	No	Yes	Yes	Newer

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Dixwell Avenue at Putnam Street (Hamden) [3]								
	S	Dixwell Ave	No	No	No	No	No	Fairly New
	N	Dixwell Ave	Yes	Yes	No	Yes	Yes	Fairly New
	E	Putnam Ave	Yes	Yes	No	No	No	Fairly New
	W	Circular Ave/Helen St	Yes	Yes	No	No	No	Fairly New
Dixwell Avenue at Scott Street (Hamden) [1]								
	S	Dixwell Ave	Yes	Yes	No	No	No	Fairly Old
	N	Dixwell Ave	No	Yes	Yes	Yes	Yes	Fairly Old
	E	Driveway	No	No	No	Yes	Yes	Fairly Old
	W	Scott Street	Yes	No	No	No	No	Fairly Old
Dixwell Avenue at Newton Street (Hamden) [1]								
	S	Dixwell Ave	No	No	No	No	No	Fairly Old
	N	Dixwell Ave	Yes	Yes	No	Yes	Yes	Fairly Old
	E	N/A	N/A	No	No	Yes	Yes	Fairly Old
	W	Newton Street	Yes	No	No	No	No	Fairly Old

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Dixwell Avenue at Church Street (Hamden) [1]								
	S	Dixwell Ave	No	No	No	No	No	Fairly New
	N	Dixwell Ave	Yes	Yes	Yes	Yes	Yes	Fairly New
	E	N/A	N/A	No	No	Yes	Yes	Fairly New
	W	Church Street	Yes	Yes	Yes	No	No	Fairly New
Dixwell Avenue at Treadwell Street (Hamden) [2]								
	S	Dixwell Ave	Yes	No[+]	No	Yes	No	Older
	N	Dixwell Ave	No	No	No	No	No	Older
	E	Treadwell Street	Yes	No	No	No	No	Older
	W	N/A	N/A	Yes	Yes	Yes	No	Older
Dixwell Avenue at Mather Street (Hamden) [1]								
	S	Dixwell Ave	Yes	Yes	Yes	Yes	Yes	Fairly New
	N	Dixwell Ave	No	No	No	No	No	Fairly New
	E	Mather Street	Yes	Yes	No	No	No	Fairly New
	W	N/A	N/A	No	Yes	Yes	Yes*	Fairly New

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Dixwell Avenue at Benham Street (Hamden) [3]								
	S	Dixwell Ave	Yes	Yes	Yes	Yes	Yes	Newer
	N	Dixwell Ave	No	No	No	No	No	Newer
	E	Driveway	Yes	Yes	Yes	Yes	No	Newer
	W	Benham Street	No	Yes	Yes	Yes	Yes	Newer
Dixwell Avenue at Route 15 NB Ramps (Hamden)								
	S	Dixwell Ave	No	Yes	No	No	No	Newer
	N	Dixwell Ave	No	Yes	No	No	No	Newer
	E	NB On Ramp	No	Yes	No	No	No	Newer
	W	NB Off Ramp	Yes	Yes	No	No	No	Newer
Dixwell Avenue at Route 15 SB Ramps (Hamden)								
	S	Dixwell Ave	No	No	No	No	No	Newer
	N	Dixwell Ave	No	Yes	No	No	No	Newer
	E	N/A	N/A	No	No	No	No	Newer
	W	SB Ramps	Yes	Yes	No	No	No	Newer

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Dixwell Avenue at Connolly Parkway (Hamden) [1]								
	S	Dixwell Ave	Yes	Yes	No	No	No	Fairly New
	N	Dixwell Ave	Yes	Yes	No	Yes	Yes	Fairly New
	E	Connolly Parkway	Yes	Yes	No	Yes	Yes	Fairly New
	W	Driveway	Yes	Yes	No	Yes	Yes	Fairly New
Dixwell Avenue at Hamden Plaza Driveway 1 (Hamden)								
	S	Dixwell Ave	No	No	No	No	No	Newer
	N	Dixwell Ave	Yes	Yes	No	No	No	Newer
	E	Driveway	***	No	No	No	No	Newer
	W	Driveway	Yes	No	No	No	No	Newer
Dixwell Avenue at Hamden Plaza Driveway 2 (Hamden) [1]								
	S	Dixwell Ave	No	No	No	No	No	Older
	N	Dixwell Ave	Yes	Yes	Yes	Yes	Yes	Older
	E	Driveway	***	Yes	No	Yes	Yes	Older
	W	Driveway	***	No	No	No	No	Older

Location	Intersection Leg		Pedestrian Accommodations					Traffic Signal Condition
			Cross-walk	Ramps	ADA	Ped Button	Ped Signal	
Dixwell Avenue at Hamden Plaza Driveway 3 (Hamden) [1]								
	S	Dixwell Ave	No	Yes	No	No	No	Newer
	N	Dixwell Ave	Yes	Yes	No	Yes	Yes	Newer
	E	Driveway	***	Yes	No	Yes	Yes	Newer
	W	Driveway	***	Yes	No	No	No	Newer
Dixwell Avenue at Skiff Street (Hamden)								
	S	Dixwell Ave	No	Yes	No	No	No	Fairly New
	N	Dixwell Ave	Yes	Yes	No	No	No	Fairly New
	E	Skiff Street	Yes	Yes	No	No	No	Fairly New
	W	Skiff Street	Yes	Yes	No	No	No	Fairly New

Notes

Pedestrian Control:

[1] All-way stop (pedestrian button and pedestrian signal)

[2] Push for green light (pedestrian button and no pedestrian signal; parallel traffic moves concurrently)

[3] Some concurrent traffic movements (pedestrian button and pedestrian signal)

- Dixwell Avenue at Putnam Street (Hamden): Helen St.
- Dixwell Avenue at Benham Street (Hamden): Left turn from Benham St.

Pedestrian Signal:

* "Don't Walk" signal not functioning

** Pedestrian button not clearly visible or no sign for button

*** Sidewalk across driveway

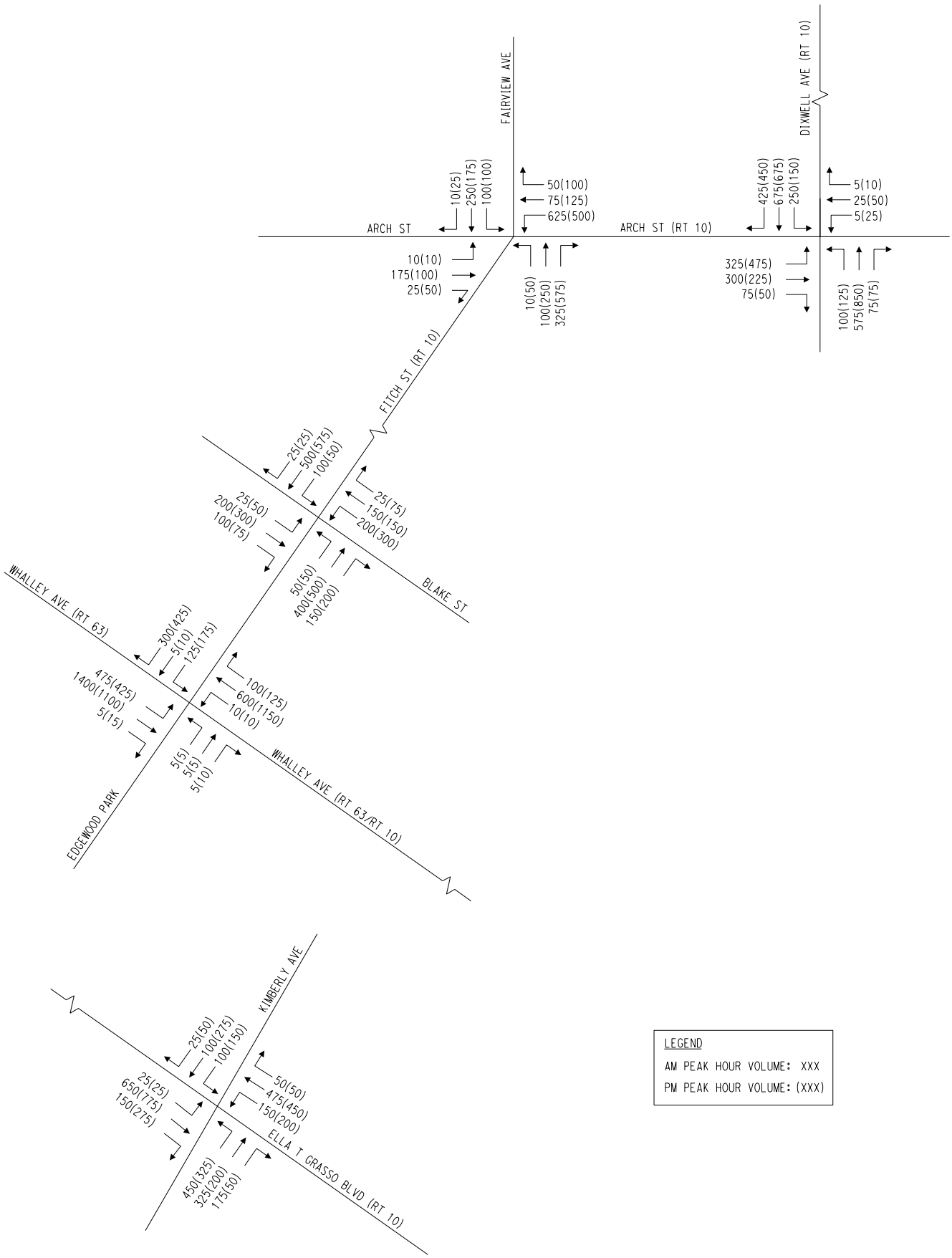
! Pedestrian button fixture with no button (Fitch Street & Crescent Street) or button not functioning (Ella T. Grasso Blvd. & New Haven Career Center)

Pedestrian - Other:

+ Crosswalk leads to driveway ramp; no sidewalk ramp

Traffic Signal Control:

Newer:	Newer-looking signal poles, signal heads, controller cabinet; large lenses on signal; span wires appear in good condition; paint appears newer and not weathered or chipped.
Fairly New:	Newer-looking signal poles, signal heads, controller cabinet; large lenses on signal; span wires appear in fair condition; paint may be weathering or chipping.
Fairly Old:	Older-looking signal heads; mix-match of equipment; span wires appear older, but strung to strain pole; paint is appreciably weathered and chipping.
Older:	Older-looking signal heads; smaller lenses on signal; mix-match of equipment; span wires strung to utility poles and appear older; paint is appreciably weathered and chipping.



NOT TO SCALE

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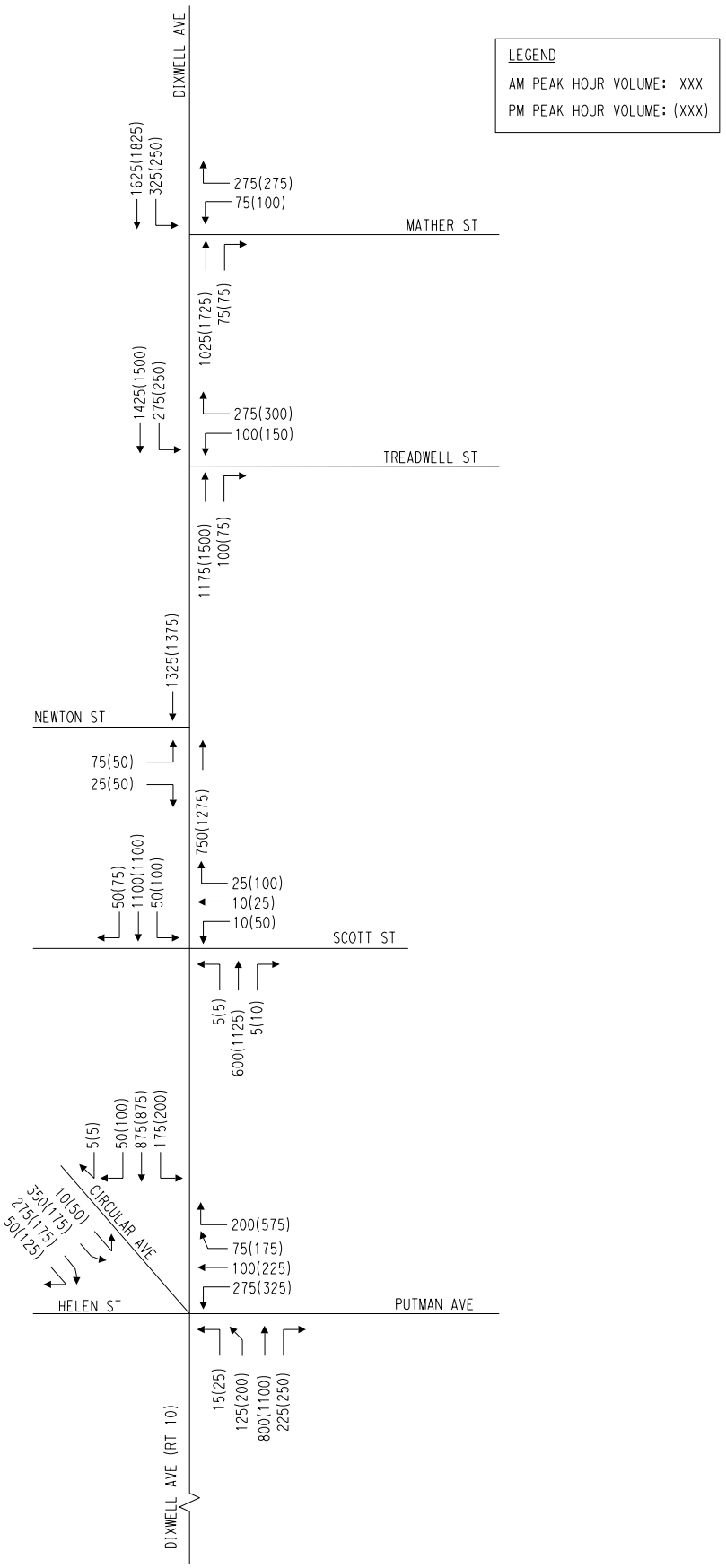
Route 10 Corridor Study

Figure 3-A. Future (2028)
AM & PM Peak Hour Volumes (Sheet 1 of 2)



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Route 10 Corridor Study

Figure 3-A. Future (2028)
AM & PM Peak Hour Volumes (Sheet 2 of 2)