

# Town Center South Transportation Study

Guilford, CT

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Prepared for:  
South Central Regional Council of Governments  
and  
Town of Guilford



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## Executive Summary

The *Town Center South Study*, commissioned by the South Central Regional Council of Governments in association with the Town of Guilford, serves as a next step in the planning process for Town Center South (TCS) – an area around the Guilford train station that the Town has designated for a future, mixed-use, transit-oriented neighborhood. This study builds upon the previous work of the TCS Planning Committee by evaluating and addressing the potential future traffic impacts associated with the planned TCS developments and increased ridership from the Guilford train station.

The future traffic forecast for the TCS study area indicates that average daily traffic volumes could increase by 500 vehicles on Lovers Lane and 1800 vehicles on Whitfield Street by 2028 as a result of full build-out of the TCS development areas and full utilization of the available train station parking. Because Whitfield Street serves as the primary access route to TCS and the train station, the traffic forecast predicts that the greatest traffic impacts and delays will be realized at the Water Street/Boston Street/Whitfield Street intersection.

While opportunities to improve the capacity of this intersection are limited, the overall improvement strategy presented in this report comprehensively addresses the future transportation needs of the study area by recommending improvements to:

- Reduce traffic delays at the Water Street/Boston Street/Whitfield Street intersection by encouraging the use of Stone House Lane and Lovers Lane as a secondary access to TCS.
- Mitigate long-term traffic growth by providing improved pedestrian and bicycle accommodations on study area roadways.
- Address near and long-term safety concerns by providing physical improvements that promote safer access and travel to and from TCS for vehicular and non-vehicular traffic.

### **Specific improvement recommendations include:**

- Widening Stone House Lane, Lovers Lane, and Pages Lane to provide 4 ft shoulders and sidewalk to accommodate bicyclists and pedestrians.
- Reconfiguring the Stone House Lane/Lovers Lane intersection to facilitate safer traffic operations.
- Realigning the Old Whitfield Street/New Whitfield Street intersection and potentially restricting or eliminating access to Old Whitfield Street via Summer Street to improve safety and access.
- Providing a new access roadway on the Woodruff property connecting Driveway to Stone House Lane to encourage the use of Stone House Lane and Lovers Lane for TCS access.
- Providing traffic calming measures to encourage slower travel speeds on area roadways.

It is estimated that these improvement recommendations can be provided at a current cost for construction of approximately \$5 million (exclusive of right-of-way, utility relocation, environmental mitigation, and engineering costs).

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# 1

## Introduction

The South Central Regional Council of Governments (SCRCOG), in association with the Town of Guilford, commissioned the *Town Center South Study* to help the Town assess the potential transportation impacts associated with the proposed long-term development plans in the area around the existing Guilford train station commonly known as Town Center South (TCS). The current TCS Plan (Draft, January 2007) was developed by the TCS Planning Committee to encourage the development of a mixed-use, transit-oriented neighborhood around the train station.

This study serves as a next step in the planning process for TCS by quantifying and evaluating the existing traffic conditions; estimating the future traffic generation from TCS developments and assessing the potential traffic impacts; and providing a recommendations plan that will address the evolving transportation needs of TCS as it develops into the future.

### 1.1 Study Area

The TCS study area, illustrated in Figure 1-1, is roughly bordered by Broad Street on the north; Whitfield Street on the west; Long Island Sound on the south; and Lovers Lane on the east. The study area includes the Guilford train station located off Pages Lane, the planned TCS developments, and the roadways and critical intersections that provide access to the train station and planned TCS developments. These roadways include Route 77 (Church Street and Whitfield Street), Route 146 (Water Street and Boston Street), Old Whitfield Street, New Whitfield Street, Stone House Lane, and Lovers Lane.

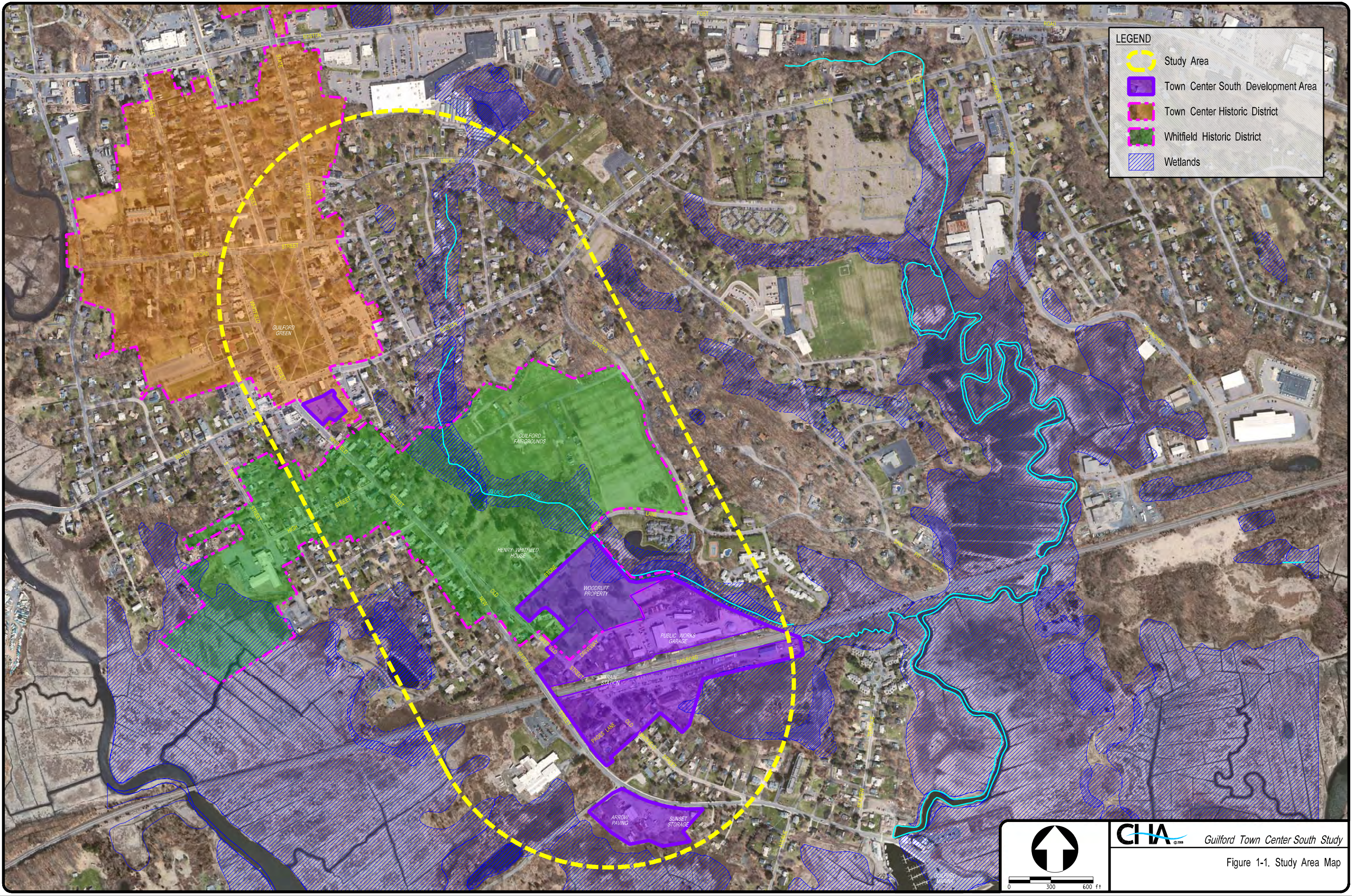
The study area also includes portions of the Town Center and Whitfield historic districts and encompasses several landmarks and historic resources such as the Town Green, Town Marina, Henry Whitfield House, Woodruff Farm, and Guilford Fairgrounds.

Environmental resources in the study area include freshwater and tidal wetlands, floodplains, and Sluice Creek.

Access to and from the TCS area and the train station is essentially limited to either Whitfield Street, or Lovers Lane/Stone House Lane. Whitfield Street is the primary access for traffic coming to and from the north, west, and east parts of town, including I-95 Interchange 58 at Route 77 (Church Street). Lovers Lane/Stone House Lane is a secondary access, predominantly serving traffic coming to and from the north and east parts of town, including I-95 Interchange 59 at Goose Lane.

The study assumes that secondary access to TCS via a connection between Soundview Road and Stone House Lane would not be feasible due to significant environmental constraints and impacts that could not be readily avoided or mitigated if such a connection were provided. Therefore, for the purposes of this study, the area east of Lovers Lane to Soundview Road is not included in the TCS study area.

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**LEGEND**

- Study Area
- Town Center South Development Area
- Town Center Historic District
- Whitfield Historic District
- Wetlands

0 300 600 ft

**CIA** Guilford Town Center South Study  
Figure 1-1. Study Area Map



## 1.2 Study Participants

The study effort was completed in cooperation with the study team – consisting of SCRCOG staff, Guilford Town officials, and Clough Harbour & Associates LLP consultant staff – and representatives from the TCS Planning Committee, who were designated by the First Selectman. The study team and TCS Planning Committee representatives participated in several meetings during the course of the study to review study findings and discuss preliminary improvement recommendations. Citizens of Guilford were also involved in the study process through a public information meeting where the study findings and preliminary recommendations were presented and reviewed by the attendees. Comments from the study participants and the public were incorporated into the recommendations plan presented in Section 4 of this document.

# 2

## Existing Transportation Conditions

The study team collected existing traffic data to establish baseline conditions on key roadways and at key intersections in the study area. Traffic operations analyses were also conducted at several intersections to measure how they function under current traffic conditions. Existing parking data for the Guilford train station was collected as a basis for assessing parking demands at the station.

### 2.1 Existing Traffic Data

The study team obtained existing traffic data for the study area including daily traffic counts and intersection turning movement counts.

#### 2.1.1 Daily Traffic Counts

Daily traffic counts were obtained along Whitfield Street, New Whitfield Street, Stone House Lane, and Lovers Lane in October 2007 using automatic traffic recorders (ATRs)<sup>1</sup>. For this study, the ATRs recorded average daily traffic (ADT)<sup>2</sup> volumes; vehicle classifications and truck volumes; and average and 85<sup>th</sup> percentile<sup>3</sup> travel speeds. The existing traffic data is presented in Figure 2-1.

As shown in the figure, ADTs range from 450 vpd on Lovers Lane to 4600 vpd on Whitfield Street. More than 7% of traffic on Whitfield Street is heavy truck traffic, which translates to more than 300 trucks traveling through the historic Town center via Whitfield Street on an average weekday. The posted speed limit of 25 mph is often exceeded by as much as 13 mph on New Whitfield Street and 10 mph on Stone House Lane.

#### 2.1.2 Intersection Turning Movement Counts

SCRCOG obtained intersection turning movement counts at six intersections in the study area during the weekday afternoon (PM) peak commuting period in August 2007. The PM commuting period (4 to 6 p.m.) is typically when the highest hourly traffic volumes are experienced during a given weekday. The study team used the PM peak hour volumes to analyze traffic operations at three key intersections in the study area. The existing PM peak hour traffic volumes are presented in Figure 2-1. Traffic operations are discussed in Section 2.2.

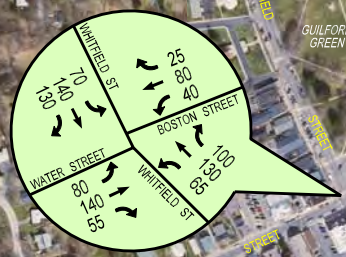
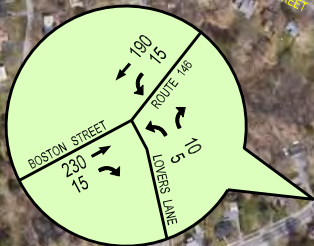
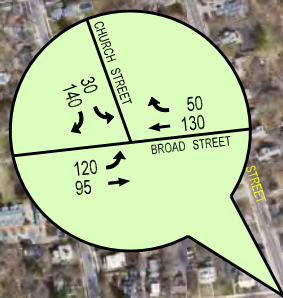
<sup>1</sup> ATRs consist of two closely spaced rubber tubes stretched across the roadway that use air impulses created by passing vehicles to record traffic data.

<sup>2</sup> Average daily traffic (ADT) is measured in vehicles per day (vpd) and is the total two-way traffic volume passing through a segment of roadway in a typical 24-hour period.

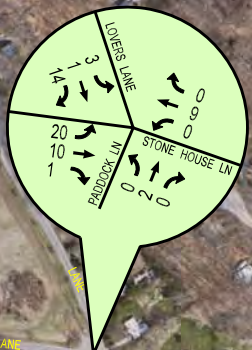
<sup>3</sup> 85<sup>th</sup> percentile speed is the speed at which 85% of vehicles are traveling at or below.

**LEGEND**

- Intersection Volumes - PM Peak Hour
- Average Daily Traffic Data
- Town Center South Development Area



Average Daily Traffic [vpd]	450
Average Daily Truck Traffic [vpd]	14
Percentage Trucks	3.2%
85th Percentile Speed [mph]	31
Average Speed [mph]	25
Posted Speed [mph]	25



Average Daily Traffic [vpd]	4600
Average Daily Truck Traffic [vpd]	340
Percentage Trucks	7.4%
85th Percentile Speed [mph]	37
Average Speed [mph]	31
Posted Speed [mph]	25

Average Daily Traffic [vpd]	550
Average Daily Truck Traffic [vpd]	26
Percentage Trucks	4.8%
85th Percentile Speed [mph]	35
Average Speed [mph]	28
Posted Speed [mph]	25



Average Daily Traffic [vpd]	4000
Average Daily Truck Traffic [vpd]	300
Percentage Trucks	7.6%
85th Percentile Speed [mph]	38
Average Speed [mph]	32
Posted Speed [mph]	25

Figure 2-1. Existing Traffic Data

## 2.2 Existing Traffic Operations

The study team performed existing traffic operations analyses at three key intersections in the study area to determine how these intersections function during the PM peak hour (5 to 6 p.m.) under current traffic conditions. These intersections include:





- **Water Street/Boston Street/Whitfield Street** – unsignalized, four-legged intersection with stop controls on eastbound, westbound, and northbound approaches. This intersection is considered the primary access point to planned TCS developments via Whitfield Street and it is anticipated that the greatest increase in traffic volume associated with TCS will be experienced here. The study team analyzed the operations using CORSIM traffic simulation software due to the offset of the eastbound and westbound approaches and the free-flow southbound movement into the intersection.
- **Boston Street/Lovers Lane** – unsignalized, T-intersection with stop control on northbound Lovers Lane approach. This intersection is considered the secondary access point to planned TCS developments via Lovers Lane and it is anticipated that a significant increase in traffic volume associated with TCS will be experienced here.
- **Church Street/Broad Street** – unsignalized, T-intersection with stop control on the southbound Church Street approach. This intersection is considered a primary access point to the Town center via Church Street and it is anticipated that only a fraction of the traffic volume increase associated with TCS will be experienced here.

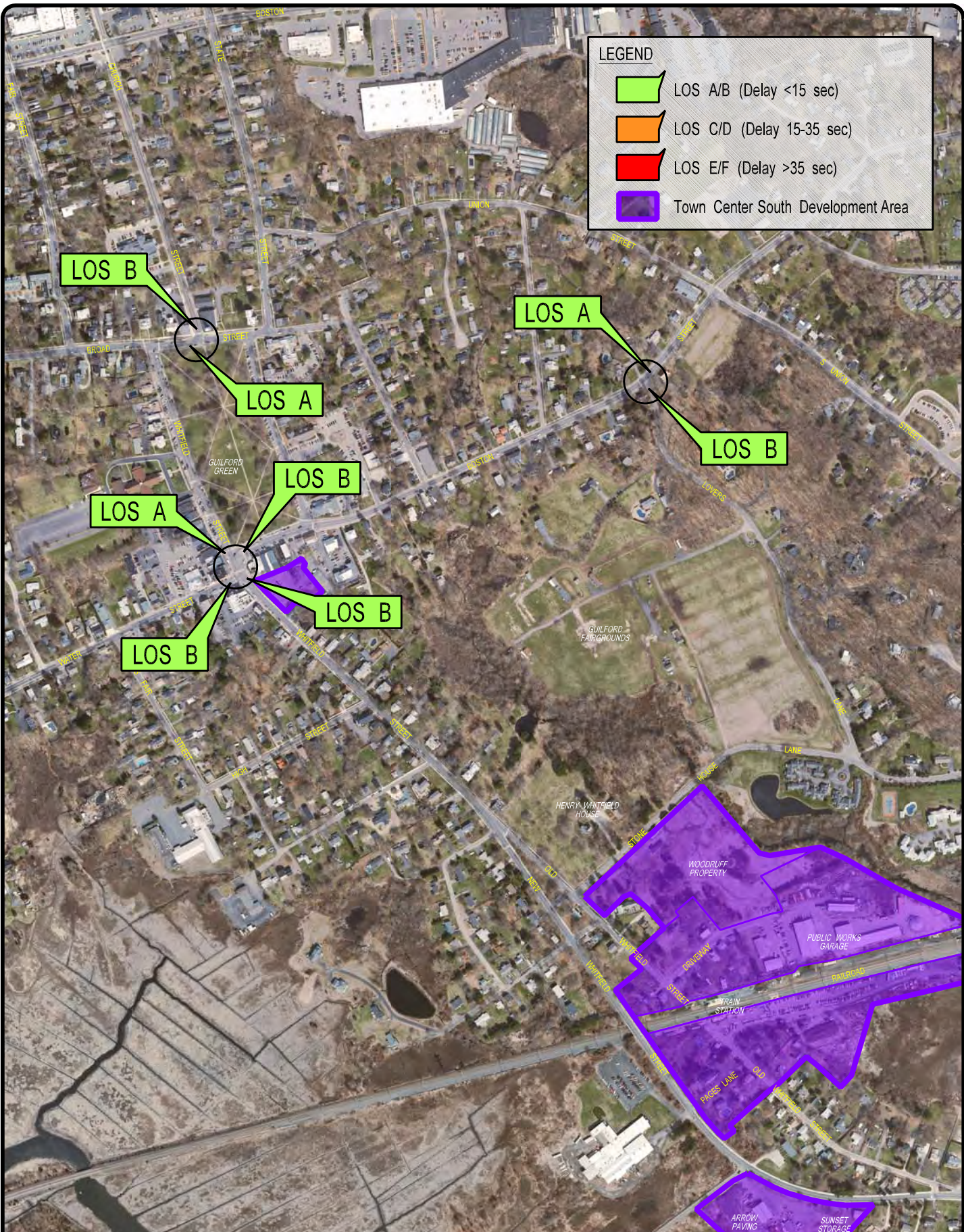

The operational effectiveness of each unsignalized intersection approach was assigned a level of service (LOS) based on the average delay (in seconds per vehicle) experienced by drivers who are waiting to proceed through the intersection. LOS values can range from A to F with LOS A representing the best operational conditions with minimal delay. LOS F represents long delays and generally unacceptable and congested conditions. The existing traffic operations are illustrated in Figure 2-2.

As shown in the figure, all three intersections currently operate at LOS B or better during the PM peak hour. These results indicate that no mitigation measures are required at this time to improve operations at these intersections.

It should be noted that northbound approach of the Water Street/Boston Street/Whitfield Street intersection, in particular, experiences surges of traffic that occur approximately within five minutes of afternoon inbound train arrivals. These surges momentarily affect the operations of the intersection, resulting in slightly longer traffic queues on the Water Street, Boston Street, and northbound Whitfield Street approaches. Observations indicate that the northbound traffic queue can exceed 10 vehicles for a short time, but the queue typically dissipates within minutes of the traffic surge arriving at the intersection. This condition occurs approximately twice an hour during the PM peak period for the current train schedule. Because the traffic surges are of relatively short duration, the overall impact on the average operations during the peak hour is minimal.

**LEGEND**

-  LOS A/B (Delay <15 sec)
-  LOS C/D (Delay 15-35 sec)
-  LOS E/F (Delay >35 sec)
-  Town Center South Development Area

0 300 600 ft

Figure 2-2. Existing Traffic Operations

### 2.3 Train Station Parking Data

The existing train station parking area, shown in Figure 2-3, consists of 175 spaces located within two paved surface lots on the south side of the station. There is also space for more than 40 additional vehicles to park in the gravel parking area located off the east end of the larger lot.

The study team observed parking utilization at the train station on three random weekday afternoons in early 2008 to estimate an average weekday parking demand. This information is useful in determining whether future parking availability can accommodate the anticipated growth in Shore Line East ridership and its associated parking demands. The existing weekday parking demand observations are summarized in Table 2-1. Future parking requirements are discussed in detail in Section 3.

Table 2-1. Observed Weekday Parking Demand for Train Station

Date of Observation	Observed Parking Demand		
	Paved Lots	Gravel Area	Total
Tuesday, January 15, 2008	170	45	215
Thursday, March 6, 2008	117	5	122
Monday, March 10, 2008	142	2	144
<b>Average Parking Demand</b>	<b>143</b>	<b>17</b>	<b>160</b>

As shown in Table 2-1, the average weekday parking demand for the train station is currently 160 spaces. This equates to approximately 90% utilization of the paved surface lots on any given day, though there are days when the demand exceeds the paved parking capacity.



Figure 2-3. Train Station Parking Areas (South Side of Station)

# 3

## Future Transportation Conditions

The planning horizon for this study is 2028. In order to assess what the future transportation conditions could be in 20 years, the study team developed a future traffic forecast that incorporates the current Town Center South plan and estimates the impacts that the train station will have on the transportation system if ridership continues to increase. This section presents the methodology the study team used to develop the future traffic forecast and discusses the potential impacts of traffic growth on area roadways and intersections.

### 3.1 Traffic Forecast

The future traffic forecast developed by the study team includes two principal sources of new traffic growth that could be realized by 2028. These two sources include the planned Town Center South developments and increased Shore Line East ridership from the Guilford train station. Traffic generation from TCS is primarily a function of the sizes and uses of the planned developments. Traffic generation from the train station is primarily a function of ridership and parking availability.

#### 3.1.1 Town Center South Development Scenario

The study team worked with representatives from the Town Center South Planning Committee to develop a likely development scenario for TCS that could be realized in a 20-year planning horizon. The development scenario is based on information provided in the current Town Center South Plan (Draft, dated January 2007) and considers the development or redevelopment opportunities in the locations illustrated in Figure 3-1.

As shown in the figure, there is a mix of residential, office, and retail uses planned in five primary development areas. In total, the TCS development scenario includes:

- 120 residential units consisting of single family houses, condominiums, and townhouses
- 60,000 square feet of general office space
- 20,000 square feet of specialty retail space
- A daycare center

The number of residential units and the relative floor spaces for office and retail uses are consistent with the concepts presented in the Town Center South Plan. It is important to note that the number of residential units around the train station and on the Arrow Paving/Sunset Storage properties is limited by the capacity of a traditional waste water treatment/septic system that can be accommodated in the area. Based on the Town Center South Plan, the study team assumed that 215 bedrooms, or approximately two bedrooms per residential unit, could be treated by a traditional septic system. The study team anticipates that opportunities to utilize a higher capacity waste water treatment system will need to be investigated if greater residential density is needed to attract private developers to TCS.

**LEGEND**

- Residential Space
- Office/Retail Space
- Town Center South Development Area

**BOSTON STREET SOUTH**

- Residential: 10 Units
- Office: 4000 sf
- Retail: 4000 sf

**WOODRUFF PROPERTY**

- Day Care Center

**DRIVEWAY/TRAIN STATION (NORTH)**

- Residential: 60 Units
- Office: 40,000 sf
- Retail: 4000 sf

**TRAIN STATION (SOUTH)**

- Residential: 30 Units
- Office: 16,000 sf
- Retail: 12,000 sf

**ARROW PAVING/SUNSET STORAGE**

- Residential: 20 Units

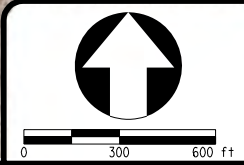
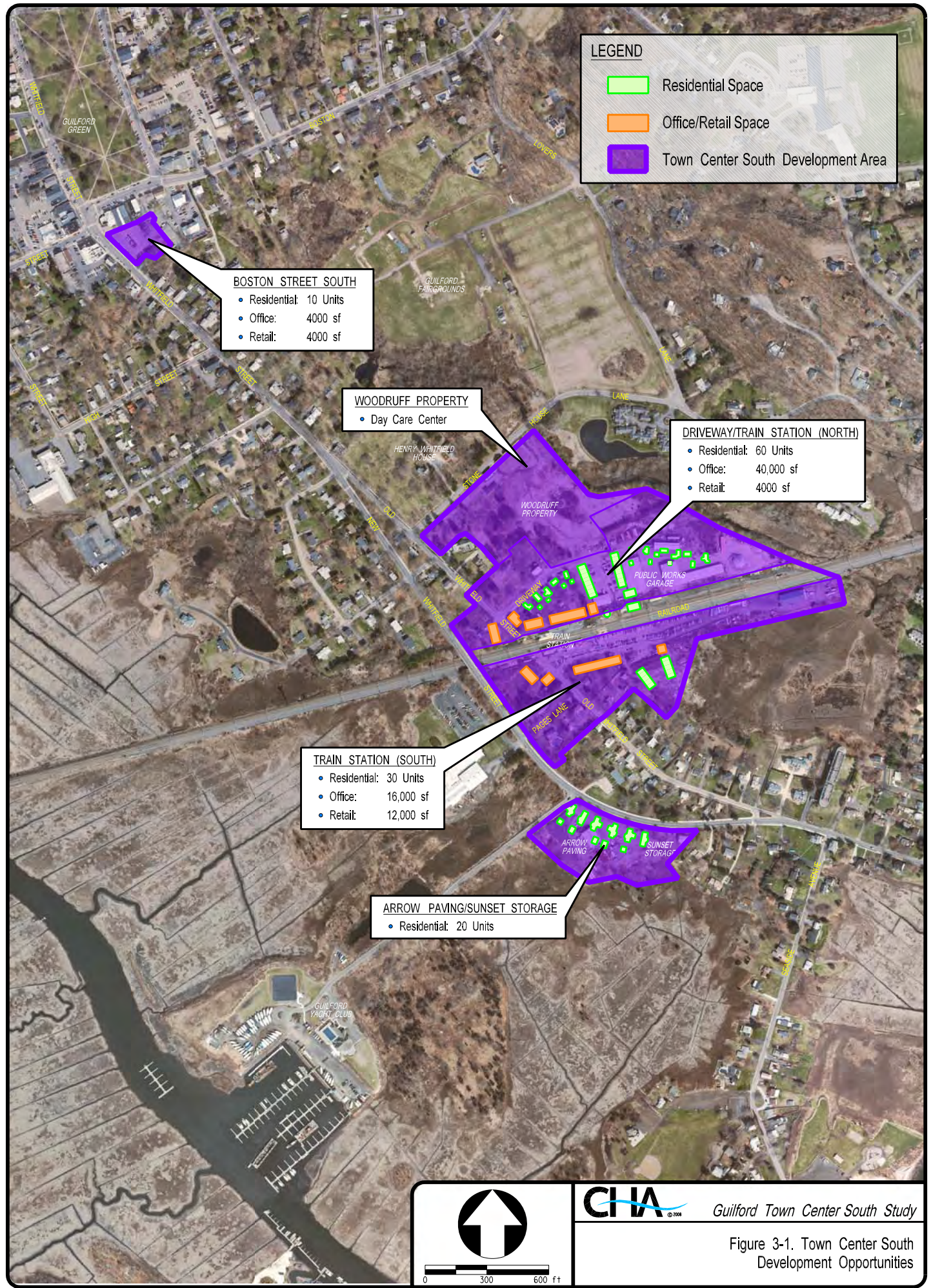


Figure 3-1. Town Center South Development Opportunities



### 3.1.2 Town Center South Trip Generation

To begin quantifying the potential traffic impacts associated with the TCS development scenario, the study team first estimated the total number of trips generated by each of the land uses in the various Town Center South development locations. Both PM peak hour trips and daily trips were estimated using trip generation rates published by the Institute of Transportation Engineers (ITE). The trip generation data for TCS is summarized in Table 3-1.

Table 3-1. Town Center South Trip Generation Data

Development Location / Proposed Land Use	Office/Retail/Other			Residential	PM Peak Hour Trip Generation		Daily Trip Generation	
	Building Footprint [sf]	Floors	Gross Floor Area [sf]	Dwelling Units	Trip Rate	Trips [vph]	Trip Rate	Trips [vpd]
<b>Driveway / Train Station (North)</b>								
<b>Residential</b>								
Single Family Detached	-	-	-	10	1.01 / DU	= 10	9.57 / DU	= 96
Condominium / Townhouse	-	-	-	50	0.52 / DU	= 26	5.86 / DU	= 293
<b>Subtotal</b>	-	-	-	<b>60</b>		<b>36</b>		<b>389</b>
<b>Office</b>								
General Office Building	20000	2	40000	-	1.49 / 1000 sf	= 60	11.01 / 1000 sf	= 440
<b>Subtotal</b>	<b>20000</b>	-	<b>40000</b>	-		<b>60</b>		<b>440</b>
<b>Retail</b>								
Specialty Retail Center	4000	1	4000	-	2.71 / 1000 sf	= 11	42.04 / 1000 sf	= 168
<b>Subtotal</b>	<b>4000</b>	-	<b>4000</b>	-		<b>11</b>		<b>168</b>
<b>Train Station (South)</b>								
<b>Residential</b>								
Single Family Detached	-	-	-	0	1.01 / DU	= 0	9.57 / DU	= 0
Condominium / Townhouse	-	-	-	30	0.52 / DU	= 16	5.86 / DU	= 176
<b>Subtotal</b>	-	-	-	<b>30</b>		<b>16</b>		<b>176</b>
<b>Office</b>								
General Office Building	8000	2	16000	-	1.49 / 1000 sf	= 24	11.01 / 1000 sf	= 176
<b>Subtotal</b>	<b>8000</b>	-	<b>16000</b>	-		<b>24</b>		<b>176</b>
<b>Retail</b>								
Specialty Retail Center	12000	1	12000	-	2.71 / 1000 sf	= 33	42.04 / 1000 sf	= 504
<b>Subtotal</b>	<b>12000</b>	-	<b>12000</b>	-		<b>33</b>		<b>504</b>
<b>Arrow Paving / Sunset Storage</b>								
<b>Residential</b>								
Single Family Detached	-	-	-	5	1.01 / DU	5	9.57 / DU	48
Condominium / Townhouse	-	-	-	15	0.52 / DU	8	5.86 / DU	88
<b>Subtotal</b>	-	-	-	<b>20</b>		<b>13</b>		<b>136</b>
<b>Woodruff Property</b>								
<b>Institutional</b>								
Day Care Center	Assume: 5	40 Child : Emp	Children 1	-	4.79 / Emp	38	28.13 / Emp	225
<b>Subtotal</b>						<b>38</b>		<b>225</b>
<b>Boston Street South</b>								
<b>Residential</b>								
Single Family Detached	-	-	-	0	1.01 / DU	0	9.57 / DU	0
Condominium / Townhouse	-	-	-	0	0.52 / DU	0	5.86 / DU	0
Apartments	-	-	-	10	0.62 / DU	6	6.72 / DU	67
<b>Subtotal</b>	-	-	-	<b>10</b>		<b>6</b>		<b>67</b>
<b>Office</b>								
General Office Building	0	1	0	-	1.49 / 1000 sf	0	11.01 / 1000 sf	0
Single Tenant Office Building	4000	1	4000	-	1.73 / 1000 sf	7	11.57 / 1000 sf	46
<b>Subtotal</b>	<b>4000</b>	-	<b>4000</b>	-		<b>7</b>		<b>46</b>
<b>Retail</b>								
Specialty Retail Center	4000	1	4000	-	2.71 / 1000 sf	11	42.04 / 1000 sf	168
<b>Subtotal</b>	<b>4000</b>	-	<b>4000</b>	-		<b>11</b>		<b>168</b>
<b>Totals</b>			<b>80000</b>	<b>120</b>		<b>255</b>		<b>2495</b>

As shown in the table, it is estimated that 255 PM peak hour trips and 2495 daily trips will be generated by the planned TCS developments. The proportion of these trips that will be realized as vehicle trips and how these vehicle trips will be distributed to the roadway network are discussed in Sections 3.1.3 and 3.1.5.

### 3.1.3 Vehicle Trip Reductions

The trip generation estimates presented in Section 3.1.2 account for all types of trips – vehicle, pedestrian, bicycle, train – and do not consider trips that are made between adjacent land uses. One of the greatest benefits of providing mixed-use, transit-oriented neighborhoods like Town Center South is the ability to minimize traffic impacts by making it convenient for people to use non-motorized modes of transportation to travel to work, go to the store, or travel between uses. To better represent the number of actual *vehicle* trips that will impact traffic on the local roadway network, the study team reduced the trip generation estimates to reflect multi-modal trips and trips between adjacent uses. These reductions include:

- **7% trip discount for multi-modal (pedestrian, bicycle, and train) trips.** This percentage was derived from census data for blocks in and around the TCS area and it is consistent with observations of the proportion of walking/bicycling trips to vehicle trips currently accessing the train station during the PM peak hour.
- **10% trip discount for internal capture.** Internal capture trips refer to short trips between adjacent land uses that do not require someone to access the roadway network with a vehicle to complete the trip. For example, someone who drives to the office in the morning, walks to a nearby store at lunch, returns to the office after lunch, and drives home in the evening completes four trips, only two of which are vehicle trips on area roadways.

The internal capture discount is applied after the multi-modal discount such that the total trip discount is approximately 16.3%. The study team applied the total discount to the trip generation estimates for each of the TCS development locations to estimate the number of vehicle trips taken on area roadways during the PM peak hour and the whole day. The results are shown in Table 3-2.

Table 3-2. Discounted Trip Generation Estimates for Town Center South Development Scenario

Development Location	PM Peak Hour Trips [vph]			Daily Trips [vpd]		
	Total Trips	Discount	Vehicle Trips	Total Trips	Discount	Vehicle Trips
Driveway/Train Station (North)	107	17	90	997	163	834
Train Station (South)	73	12	61	856	140	716
Arrow Paving/Sunset Storage	13	2	11	136	22	114
Woodruff Property	38	6	32	225	37	188
Boston Street South	24	4	20	281	46	235
<b>Totals</b>	<b>255</b>	<b>41</b>	<b>214</b>	<b>2495</b>	<b>408</b>	<b>2087</b>

### 3.1.4 Train Station Traffic Generation

The Connecticut Department of Transportation estimates that Shore Line East ridership from the Guilford train station will increase approximately 113% over the next 20 years. It is noted that this estimate is highly variable and can be affected by many unpredictable factors such as changes in service frequency; the timing and duration of the pending Pearl Harbor Memorial Bridge construction; rising gas prices; and parking availability at the Guilford station and nearby Shore Line East and Metro North stations. For the purposes of this study, however, the study team focused on whether the availability of parking at the Guilford station could limit future ridership potential, and thereby limit future traffic generation from the station.

To quantify the potential traffic impacts associated with the Department’s ridership growth estimate, the study team made several assumptions regarding the relationships between parking demand, ridership, and traffic generation. These assumptions include:

- The average weekday parking demand directly correlates to observed traffic trips entering and exiting the existing parking lots during the PM peak hour.
- Average weekday parking demand will increase linearly with estimated increases in ridership until parking availability is exceeded.
- Traffic generation will increase linearly with estimated increases in ridership until parking availability is exceeded.

Based on these assumptions, the study team estimates that average weekday parking demand will increase linearly with ridership by 113% over the next 20 years, increasing from 160 spaces to approximately 340 spaces. The required number of spaces to fully accommodate the estimated ridership growth exceeds the planned parking capacity of 325 spaces. The planned parking capacity includes 175 spaces in the existing paved surface lots on the south side of the train station and the programmed parking improvements on the north side of the train station that will provide 150 additional spaces.

Because the estimated parking demand is approximately equal to the planned parking capacity, the study team assumes that future parking availability will have a negligible affect on limiting the average weekday ridership from the train station. Consequently, the study team assumes that existing traffic generation will grow by 113% over the next 20 years, consistent with ridership growth.

The study team estimated existing traffic generation from the train station by observing vehicle trips entering and exiting the train station on two occasions in March 2008. The numbers of vehicle trips observed during the PM peak hour are summarized in Table 3-3.

Table 3-3. Observed PM Peak Hour Vehicle Trips at Train Station

Date of Observation	Observed Vehicle Trips		
	Entering	Exiting	Total
Thursday, March 6, 2008	12	57	69
Monday, March 10, 2008	11	54	65
<b>Average Vehicle Trips</b>	<b>12</b>	<b>56</b>	<b>68</b>

By applying 113% traffic growth to the average existing trip data, the study team estimates that approximately 145 vehicle trips will be coming to and from the train station during the PM peak hour in 2028. This number represents a net increase of 77 trips entering and exiting the parking lots on the north and south sides of the train station. The study team estimates 10 of these new trips will access the south side lots (78 total trips including the existing 68 trips), and 67 will access the north side lot. In terms of new daily trips, the study team estimates that approximately 450 vehicles per day could be generated by increased ridership from the train station.

### 3.1.5 Trip Distribution

The study team distributed the potential new PM peak hour vehicle trips generated by the planned TCS developments and the train station to the existing roadway network by 1) estimating the split between entering and exiting traffic for each of the land uses and development areas; and 2) assigning the entering and exiting traffic to the various roadways in the study area. The percentage split between entering and exiting traffic for each land use is summarized in Table 3-4. The percentages for residential, office, and retail uses are based on rates published by the Institute of Transportation Engineers (ITE). The percentages for the train station are based on observation.

Table 3-4. Percentage Split between Entering and Exiting Traffic

Land Use	Percentage Split	
	Entering	Exiting
Single Family Detached House	64%	36%
Apartments	65%	35%
Condominium/Townhouse	67%	33%
General Office Building	17%	83%
Single Tenant Office Building	15%	85%
Specialty Retail	44%	56%
Day Care Center	47%	56%
Train Station	18%	82%

As shown in the table, the majority of traffic entering TCS during the PM peak hour will be destined for residential developments as people return home from work; the majority of traffic exiting TCS will be originating from the train station and office uses as people arrive at the station or leave work for the evening.

In order to assign the entering and exiting traffic to the various roadways in the study area, the study team made some assumptions regarding the predominant directions of travel to and from the TCS development areas. These assumptions are based on existing travel patterns and study team inferences about the likelihood of the various roadways and points of access being used by traffic originating or destined for particular developments. These assumptions include:

- **Driveway/Train Station (North):** Approximately 67% of traffic coming to and from this location will use Old Whitfield Street and Whitfield Street to access points north, west, and east. Approximately 20% will use Stone House Lane/Lovers Lane to access points north and east. Approximately 8% will travel south.
- **Train Station (South):** Approximately 70% of traffic coming to and from this location will use New Whitfield Street and Whitfield Street to access points north, west, and east. Approximately 15% will use Stone House Lane/Lovers Lane to access points north and east. Approximately 10% will travel south.
- **Arrow Paving/Sunset Storage:** Approximately 75% of traffic coming to and from this location will use New Whitfield Street and Whitfield Street to access points north, west, and east. Approximately 15% will use Stone House Lane/Lovers Lane to access points north and east. Approximately 10% will travel south.
- **Woodruff Property:** Approximately 60-65% of traffic coming to and from this location will use New Whitfield Street and Whitfield Street to access points north, west, and east. Approximately 28% will use Stone House Lane/Lovers Lane to access points north and east. Approximately 5% will travel south.
- **Boston Street South:** Approximately 75% of traffic coming to and from this location will travel north on Whitfield Street to access points north, west, and east. Approximately 25% will travel south on Whitfield Street.

Figure 3-2 shows the overall entering and exiting trip distribution for key roadways in the study area. As shown in the Figure, Whitfield Street is the primary access route serving approximately 67% of the new trips coming to and from TCS. Lovers Lane/Stone House Lane is the secondary access route serving approximately 17% of the trips coming to and from TCS.

### 3.1.6 Future Traffic Volumes

The study team applied the trip distributions shown in Figure 3-2 to the new vehicle trip data for the planned TCS developments and the train station to develop future traffic volumes along the key roadways and at the key intersections in the study area. These volumes are shown in Figure 3-3.

As shown in the Figure, the greatest percentage increases in daily traffic volumes are expected to occur on Lovers Lane and Stone House Lane where daily volumes could more than double. However, these roadways will experience the lowest net volume increases of the four roadways that were studied because they are a secondary access to the TCS developments. As the primary access to TCS, Whitfield Street is expected to experience a net volume increase of approximately 1800 vpd, or a 39% increase.

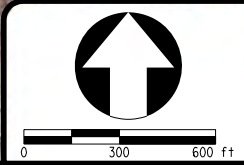
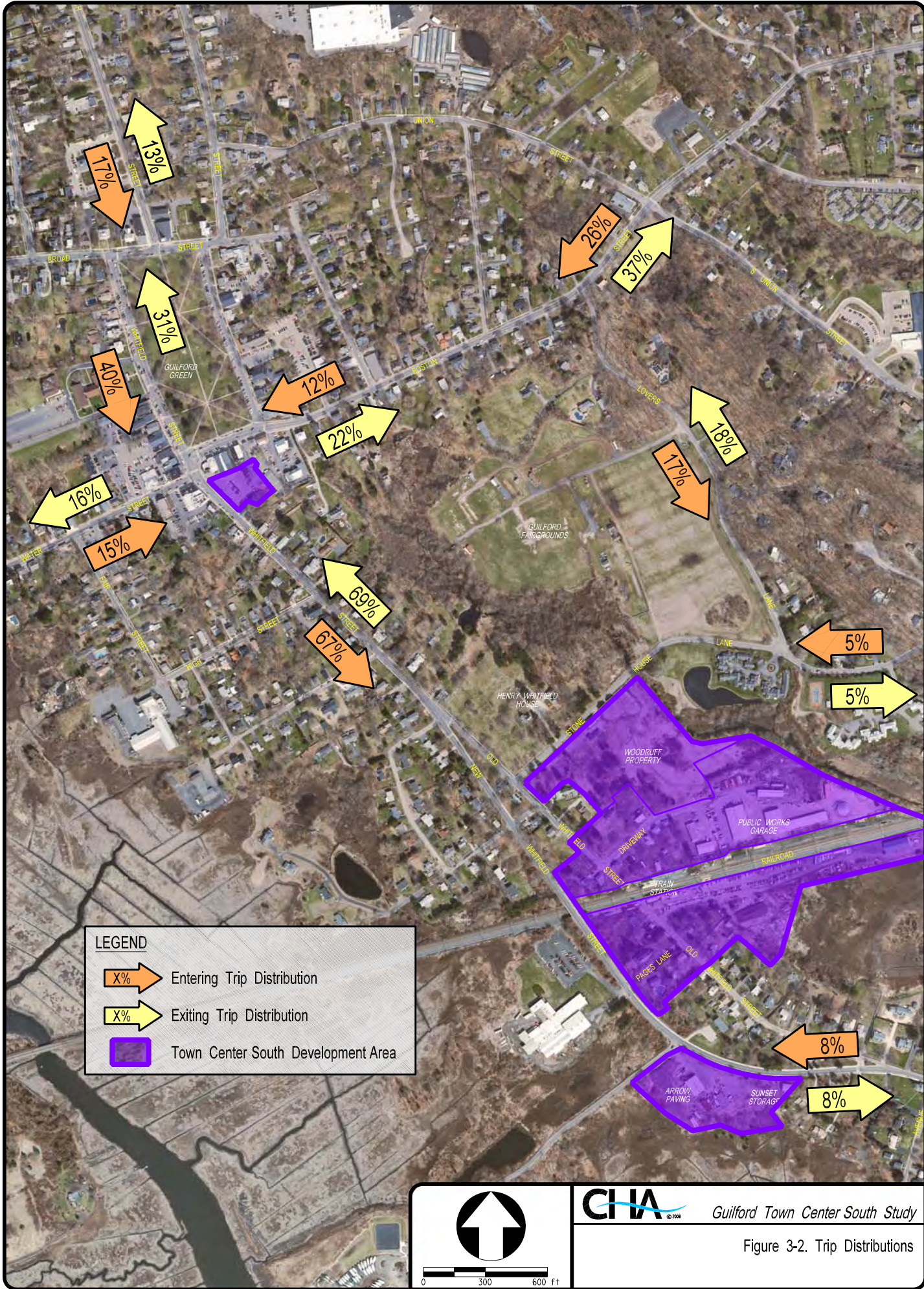
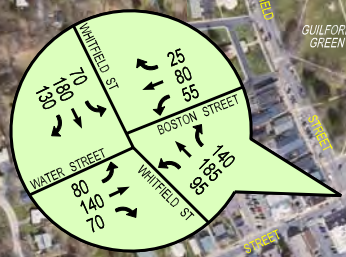
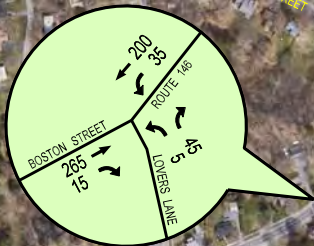
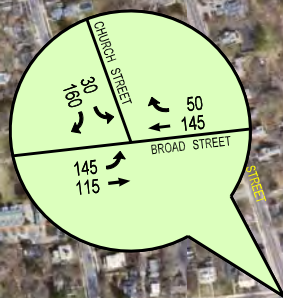


Figure 3-2. Trip Distributions

**LEGEND**

- Intersection Volumes - PM Peak Hour
- Average Daily Traffic Data
- Town Center South Development Area



2008 Average Daily Traffic [vpd]	450
2028 Average Daily Traffic [vpd]	950
Net Increase [vpd]	500
Percentage Increase	111%

2008 Average Daily Traffic [vpd]	4600
2028 Average Daily Traffic [vpd]	6400
Net Increase [vpd]	1800
Percentage Increase	39%

2008 Average Daily Traffic [vpd]	550
2028 Average Daily Traffic [vpd]	1200
Net Increase [vpd]	650
Percentage Increase	118%

2008 Average Daily Traffic [vpd]	4000
2028 Average Daily Traffic [vpd]	4900
Net Increase [vpd]	900
Percentage Increase	23%

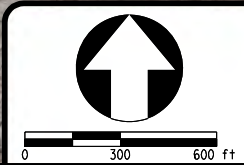


Figure 3-3. Future Traffic Data



### 3.1.7 Other Traffic Considerations

It is important to note that the study team made two additional assumptions regarding the future traffic forecast that are unique to the study area.

First, the study team assumed that no traffic volume discounts would be taken for existing developments that might be redeveloped as new uses under the TCS Plan. For example, the future traffic forecast estimates the number of new trips generated from developments along Driveway and adds these trips to the existing traffic generated from that area. However, the forecast does not consider reductions for existing trips from developments, like the Department of Public Works garage, that are assumed to no longer exist along Driveway in the future. Because there is no discount in the future traffic forecast for these existing trips, the forecast is slightly conservative. The study team notes that this assumption does not change the understanding that there will be a net reduction in truck trips when properties like the Department of Public Works and Arrow Paving are redeveloped as residential, office, or retail spaces.





Secondly, the study team has assumed that background traffic growth – or growth that occurs on the regional roadway network due to changes in land use and demographics – would not be factored into the future traffic forecast. The Connecticut Department of Transportation estimates that background traffic growth in the Town of Guilford will be approximately 25% over the 20-year period from 2008 to 2028. This an average, town-wide growth rate that includes traffic growth on major arterials like I-95, US 1 (Boston Post Road), and Route 80. Due to the relative geographic isolation of the study area roadways from the influences of the major arterials, and based on historic traffic data that shows approximately no growth over the last 15 years on Route 77 and Route 146 near the study area, the study team assumed that it would be overly-conservative to include the background traffic growth in the future traffic forecast. The study team believes that nearly all traffic growth in the study area over the next 20 years will be generated by increased usage of the Guilford train station, and by new developments in TCS, both of which are already accounted for in the future traffic forecast.

## 3.2 Future Traffic Operations

The study team performed future traffic operations analyses at three key intersections in the study area to determine how the existing operations at these intersections would change by 2028 if the planned TCS developments and increased ridership on Shore Line East are fully realized.

Similar to the existing traffic operations presented in Section 2.2, the operational effectiveness of each unsignalized intersection approach was assigned a level of service (LOS) based on the average delay (in seconds per vehicle) experienced by drivers who are waiting to proceed through the intersection. LOS values can range from A to F with LOS A representing the best operational conditions with minimal delay. LOS F represents long delays and generally unacceptable and congested conditions. The future traffic operations are illustrated in Figure 3-4.

**LEGEND**

-  LOS A/B (Delay <15 sec)
-  LOS C/D (Delay 15-35 sec)
-  LOS E/F (Delay >35 sec)
-  Town Center South Development Area

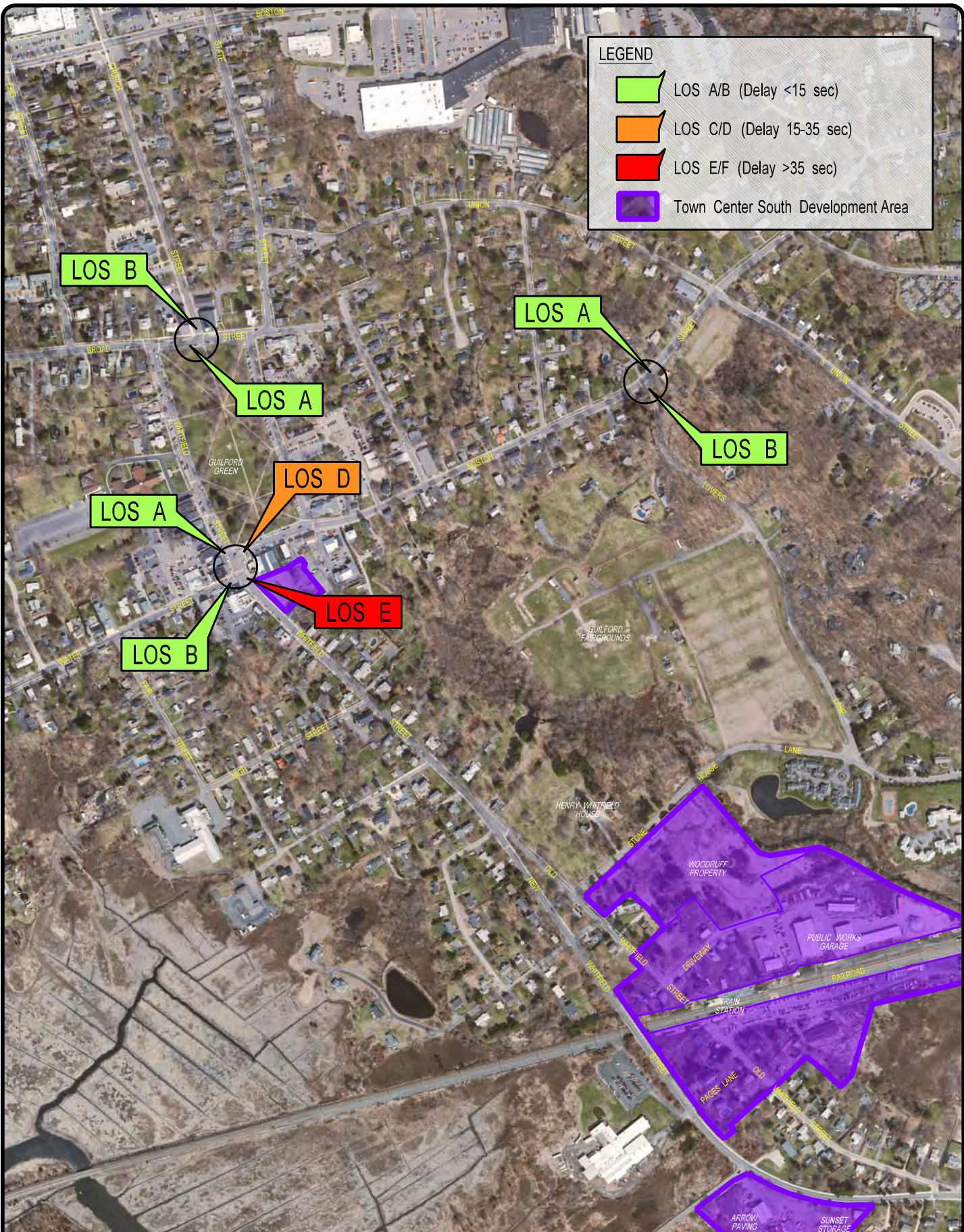

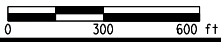




Figure 3-4. Future Traffic Operations

As shown in Figure 3-4, the northbound approach of Whitfield Street to the Water Street/Boston Street/Whitfield Street intersection is expected to operate at LOS E in 2028. This approach currently operates at LOS B. The analysis shows that there will be delays longer than 60 seconds on the northbound approach with traffic queues that will exceed 20 vehicles during the PM peak hour. The operations on the westbound approach to this intersection are also expected to degrade, though LOS D is still considered acceptable.

The other two study intersections will incur slightly longer delays during the PM peak hour due to the forecasted traffic growth, however, the LOS of each approach remains unchanged from the existing condition.

### 3.3 Conclusions

Based on the results of the future traffic operations analyses, there will be a need to address the traffic growth that could be realized from full development of Town Center South and from increased ridership from the Guilford train station. Of particular concern is the potential traffic growth in the Town center that will not only impact traffic operations at the Water Street/Boston Street/Whitfield Street intersection, but could also impact quality of life by affecting roadway safety for those who travel and live in the area.

# 4

## Recommendations Plan

The goal of the transportation recommendations plan for Town Center South (TCS) is to help mitigate the long-term traffic impacts that the planned TCS developments and increased ridership from the Guilford train station will have likely on local roadways and the Town center. This section presents the overall improvement strategy, detailed improvement recommendations, and implementation strategy that the study team developed to help the Town achieve this goal.

### 4.1 Improvement Strategy

The future traffic analyses presented in Section 3 show that there is potential for significant traffic growth to be realized on local roadways in the study area over the 20-year planning horizon. The study team estimates that average daily traffic on Whitfield Street could increase nearly 40% resulting in longer traffic delays and decreased levels of service at the Water Street/Boston Street/Whitfield Street intersection, especially during the weekday afternoon peak commuting period.

Typically, the addition of turn lanes or the installation of a traffic signal at this intersection would be considered to help reduce the anticipated traffic delays. However, given the historic context of the Town center and the existing constraints in all four quadrants of the intersection, the study team believes that physical changes to the roadway that would require widening for turn lanes or signalization are either out of context with the area, or are simply not feasible due to potential impacts to existing buildings and the Town Green.



In addition, a singular approach to reducing traffic delays at this intersection does not address the broader consequences that traffic growth could have on overall quality of life and safety in the area. For this reason, the study team believes that a comprehensive improvement strategy will not only address traffic delays at the Water Street/Boston Street/Whitfield Street intersection, but will 1) help mitigate long-term traffic growth; and 2) address near and long-term safety concerns that could be created or exacerbated by increasing traffic demands and changing traffic patterns.

Key components of a comprehensive improvement strategy include:

- **Encouraging the use of Stone House Lane and Lovers Lane for TCS access.**

Because Stone House Lane and Lovers Lane provide an existing secondary access to future Town Center South developments and train station parking located north of the railroad, the study team believes that this route could be more utilized to help mitigate traffic growth at the Water Street/Boston Street/Whitfield Street intersection. The study team estimates that slightly more than half of all TCS traffic coming to and from the east will travel through the Water Street/Boston Street/Whitfield Street

intersection if current travel trends continue. It is possible to redirect a significant amount of this traffic around this intersection by making roadway improvements that will ultimately encourage the increased use of Stone House Lane and Lovers lane for access to TCS. Potential improvements include geometric and safety improvements on these roadways and a potential new access roadway across the Woodruff property. In addition, the traffic analysis shows that the Boston Street/Lovers Lane intersection could accommodate the additional traffic while still operating at an acceptable LOS D during the PM peak hour.

It is important to note that mitigating traffic and traffic delays at the Water Street/Boston Street/Whitfield Street intersection could help reduce the attractiveness of diversion routes, such as High Street and South Fair Street, that motorists would potentially use more frequently to avoid delays at this intersection. The study team also notes that the recreational use of Stone House Lane and Lovers Lane by pedestrians and bicyclists is an important consideration when recommending the increased use of these roads by vehicular traffic. As such, the detailed improvement recommendations described in Section 4.2 include provisions for sidewalks and shoulders to more safely accommodate pedestrians and bicyclists.

- **Providing safe access to TCS via Whitfield Street.**

Whitfield Street is the primary access to the train station and future Town Center South developments and will experience some traffic growth in the future whether or not Stone House Lane and Lovers Lane become more heavily used for access to the area. For this reason, it is important to provide safety improvements that will address existing needs (such as limited sight distances from Old Whitfield Street to Whitfield Street) and minimize the potential for future safety and operational concerns when traffic growth occurs and traffic patterns change in the TCS area.

- **Promoting safe, non-motorized travel.**

The future traffic forecast includes a 7% discount on trip generation estimates to account for people who walk, bike, or use the train to access the planned TCS developments. The study team believes that it is possible to realize a greater discount for non-motorized travel by providing better and safer access to the area for pedestrians and bicyclists. Safety for pedestrians and bicyclists becomes particularly important considering that vehicular traffic will increase, thereby increasing the potential for conflicts with motor vehicles.

- **Providing local transit service to TCS and other Town destinations.**

Whether there will be sufficient ridership demand generated by development growth in Guilford to support local bus or shuttle service will have to be a subject of further study by the Town or region as development materializes in TCS and elsewhere in town. The study team believes that future transit service opportunities could include an expansion of existing CT Transit bus service to the area, or the introduction of a new local shuttle service that links riders with residential and employment destinations, and with other transit services and transfer points, such as park and ride lots near I-95 Exit 58. The study team recognizes that provisions for local transit service should be part of the long-term transportation improvement strategy for the Town if ridership demand can make it a viable transportation alternative.

## 4.2 Improvement Recommendations

The study team developed specific recommendations as part of the overall improvement strategy to improve access to TCS and to provide generally safer facilities for all motorists, pedestrians, and bicyclists. This section presents a summary of the existing transportation conditions and concerns; the details of the improvement recommendations and their benefits; and a summary of the impacts associated with the recommendations for the following areas:

- Stone House Lane
- Stone House Lane/Lovers Lane Intersection
- Lovers Lane
- Old Whitfield Street/New Whitfield Street Intersection
- Access Road between Driveway and Stone House Lane

The estimated construction costs for the improvement recommendations are presented in Section 4.3.

The study team notes that the improvement recommendations presented in this section were developed based on current Town and State standards for local roadway design and the design layouts are conceptual in nature. Standards for the critical design elements used in preparation of the conceptual layouts are shown in Table 4-1. The study team also notes that these improvement recommendations are subject to further refinement under subsequent planning initiatives undertaken by the Town. Any of the recommendations that are ultimately advanced to implementation will also undergo preliminary and final design, and will be subject to review and approval by the permitting agencies that have jurisdiction over the environmental resources in the area.

Table 4-1. Design Criteria

Design Element	Design Standard	Value Used for Design
Travel Lane Width	10' – 11'	10'
Shoulder Width	2' – 4'	4' (See Note 1)
Sidewalk Width	5'	5'
Horizontal Curve Radii		
• Town Minimum	300'	See Note 2
• 25 mph Design Speed	145'	See Note 2

**Notes:**

1. Shoulder widths of 4' are the recommended minimum for accommodating bicyclists.
2. The Town minimum of 300' was provided where possible. Lesser values were used in some locations to minimize impacts, however all curves meet the minimum standard for a 25 mph design speed.

#### 4.2.1 Stone House Lane (between Old Whitfield Street and Lovers Lane)

##### Existing Conditions

- Two-lane roadway with no defined shoulders; no curb; no sidewalk. Width varies from approximately 22 ft to 24 ft.
- Non-standard roadway curvature near Fairgrounds.
- Culvert crossing at Sluice Creek.
- Fairgrounds, Henry Whitfield House, and Woodruff Farm properties located within Whitfield Historic District.



##### Concerns

- Narrow roadway with no shoulders and no sidewalk is a safety concern for pedestrian and bicycle access.
- Increasing traffic demands will likely exacerbate safety concerns for those who currently walk and bike along the roadway.
- Non-standard curvature is a safety concern.



##### Recommendations (See Figures 4-1 and 4-2)

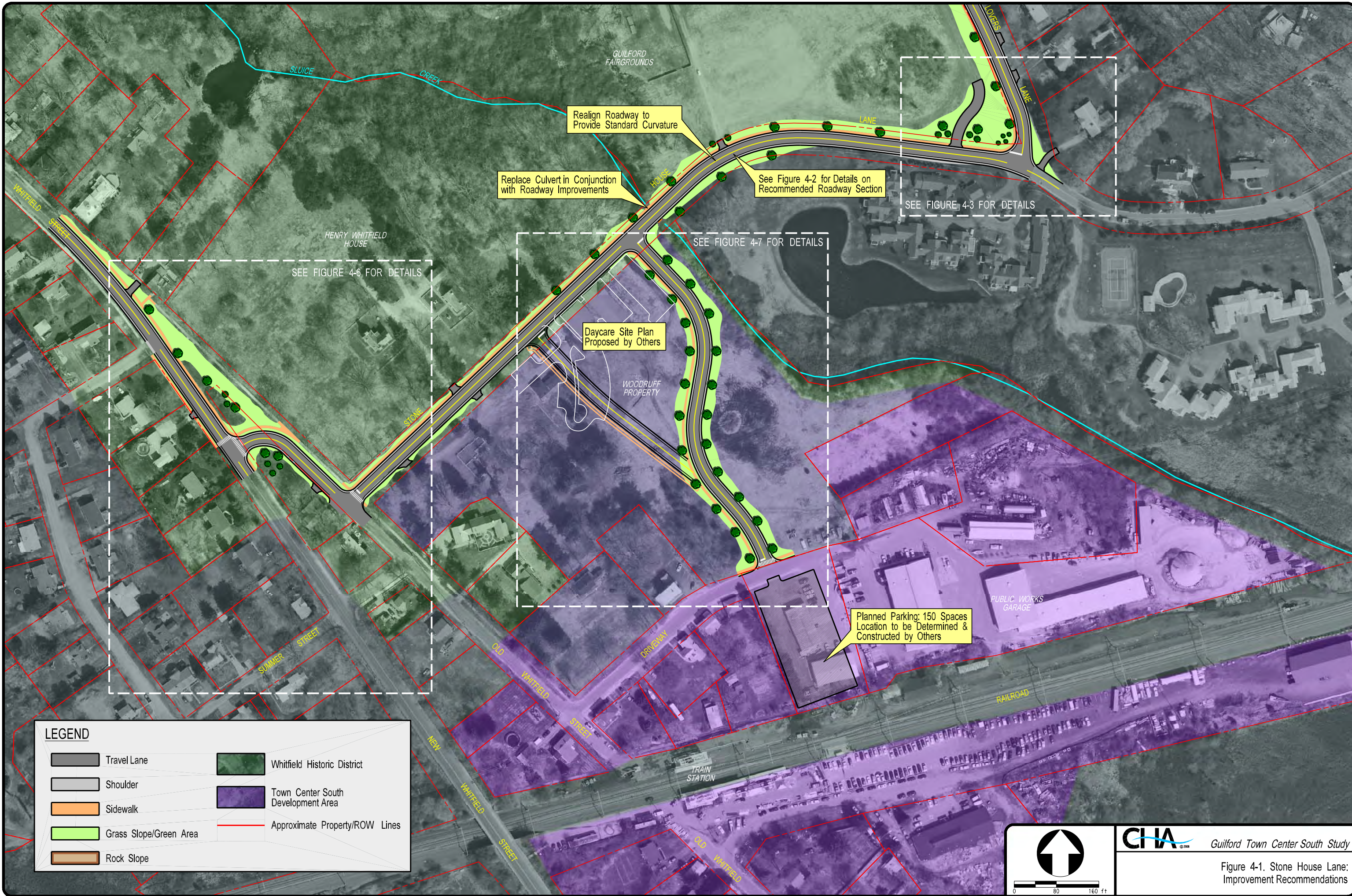
- Widen roadway to provide 10 ft travel lanes and 4 ft shoulders with white edge striping.
- Provide 5 ft sidewalk on north side of roadway.
- Provide grass strip between roadway curb and sidewalk to buffer pedestrians, and to accommodate utilities and street trees if the impacts associated with the additional 4 ft width are acceptable to the Town and abutting property owners.
- Provide street trees, particularly along Fairgrounds property, to replace trees impacted by widening, to visually narrow roadway to discourage higher travel speeds, and to improve aesthetics.
- Replace Sluice Creek culvert in conjunction with roadway improvements.
- Realign roadway to provide standard curvature near Fairgrounds.

##### Benefits

- Travel lane width of 10 ft and edge striping help discourage higher travel speeds.
- Shoulder width of 4 ft more safely accommodates bicyclists.
- Sidewalk separates pedestrians from vehicular traffic.

##### Summary of Impacts

- Slope grading along both sides of roadway will likely require grading easements and could impact existing roadside features – such as trees, split rail fences, and stone walls – resulting in relocation or replacement of these features.
- Overhead utilities along north side of roadway will need to be relocated to accommodate roadway improvements and new sidewalk.
- Fire hydrant near Henry Whitfield House will need to be relocated.
- Underground utilities including water and gas lines could be impacted by roadway improvements.
- Potential wetland impacts near Sluice Creek.



Realign Roadway to Provide Standard Curvature

Replace Culvert in Conjunction with Roadway Improvements

See Figure 4-2 for Details on Recommended Roadway Section

SEE FIGURE 4-3 FOR DETAILS

SEE FIGURE 4-6 FOR DETAILS

SEE FIGURE 4-7 FOR DETAILS

Daycare Site Plan Proposed by Others

Planned Parking: 150 Spaces  
Location to be Determined & Constructed by Others

**LEGEND**

- |  |  |
|--|--|
|  Travel Lane            |  Whitfield Historic District        |
|  Shoulder               |  Town Center South Development Area |
|  Sidewalk               |  Approximate Property/ROW Lines     |
|  Grass Slope/Green Area |  |
|  Rock Slope             |  |

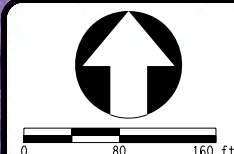
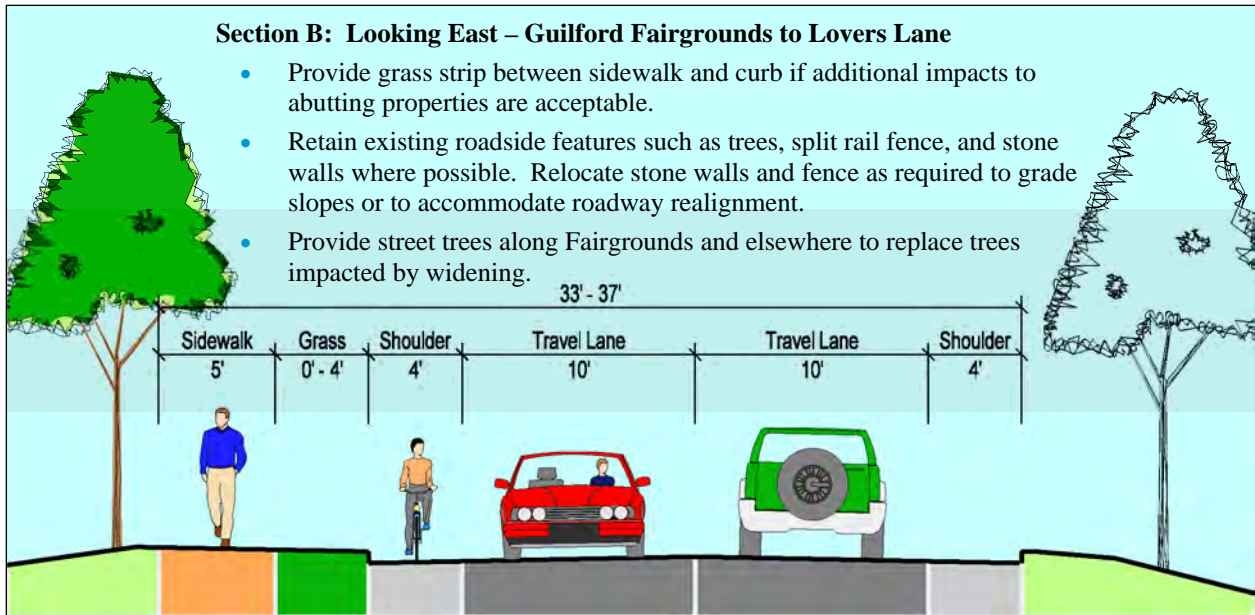
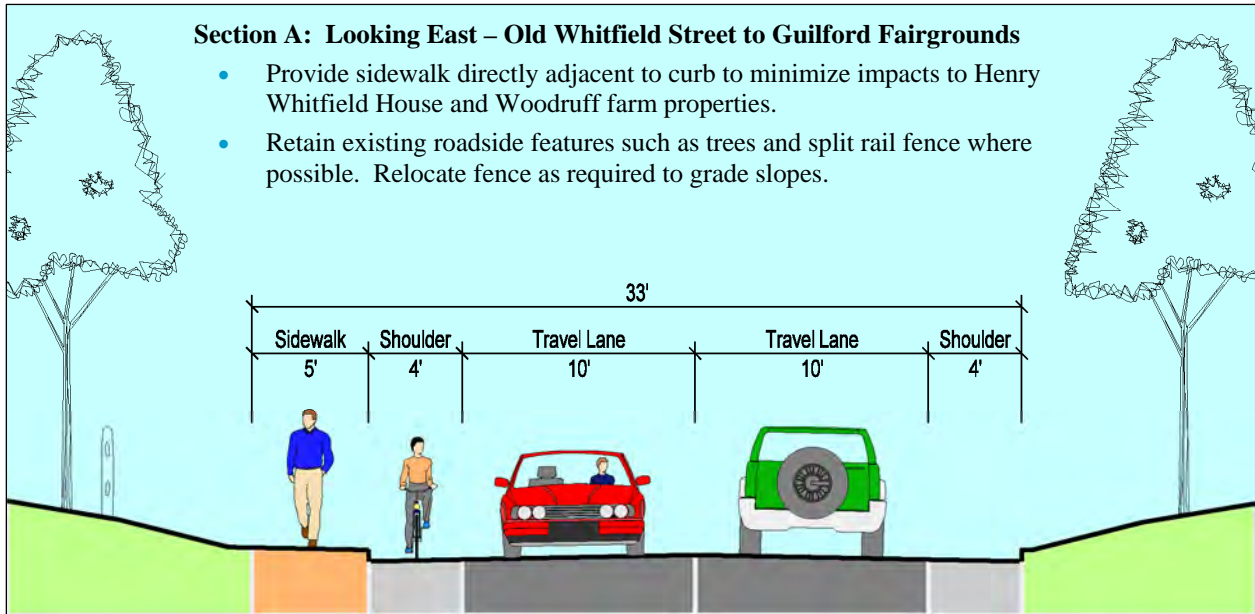




Figure 4-2. Stone House Lane: Roadway Section Details



## 4.2.2 Stone House Lane/Lovers Lane Intersection

### Existing Conditions

- Slightly skewed, T-intersection with stop control on Lovers Lane approach and wide intersection mouth.
- Stop bar location approximately 65 ft back from intersection.
- Paddock Lane to condominium complex on south side of intersection creates a minor fourth leg to the intersection.
- Fairgrounds driveway and residential driveway access into intersection create minor fifth and sixth legs.
- Fairgrounds is located within Whitfield Historic District.



### Concerns

- Wide intersection mouth with excessive pavement and large corner radii allow for higher speed turning movements.
- Stop bar location is set too far back to allow for adequate sight distance along Stone House Lane from Lovers Lane.
- Driveway access directly into intersection is not ideal.
- Overall intersection geometry is not favorable to facilitating secondary access to and from TCS.

### Recommendations (See Figure 4-3)

- Realign Lovers Lane approach to Stone House Lane to eliminate intersection skew.
- Modify corner radii and remove excess pavement to encourage safer turning operations.
- Relocate Fairgrounds driveway and residential driveway access to either Stone House Lane or Lovers Lane such that access points are removed from the intersection.

### Benefits

- Geometric improvements facilitate safer use of Stone House Lane and Lovers Lane for secondary access to TCS.

### Summary of Impacts

- Slope grading and new sidewalk along Fairgrounds will likely require grading easements and possibly a small property taking.
- Overhead utilities along north side of roadway near intersection will need to be relocated to accommodate roadway and intersection improvements and new sidewalk.
- Underground utilities including water and gas lines could be impacted by roadway improvements.
- Existing catch basins in and near intersection will need to be relocated or replaced.



GUILFORD FAIRGROUNDS

Relocate Driveway Access from Middle of Intersection

Realign Lovers Lane Intersection Approach

Remove Excess Pavement from Intersection

Relocate Driveway Access from Middle of Intersection

Existing Intersection Configuration

**LEGEND**

- Travel Lane
- Shoulder
- Sidewalk
- Grass Slope/Green Area
- Rock Slope
- Whitfield Historic District
- Approximate Property / ROW Lines



0 40 80 ft

Figure 4-3. Stone House Lane/Lovers Lane Intersection: Improvement Recommendations

### 4.2.3 Lovers Lane

#### Existing Conditions

- Two-lane roadway with no defined shoulders; no curb; no sidewalk. Width varies from approximately 18 ft to 22 ft.
- Non-standard curvature north of Fairgrounds.
- Fairgrounds is located within Whitfield Historic District.
- Thomas Griswold House and residence at Lovers Lane/Boston Street intersection are close to roadway.



#### Concerns

- Narrow roadway with no shoulders and no sidewalk is a safety concern for pedestrian and bicycle access.
- Increasing traffic demands will exacerbate safety concerns for those who currently walk and bike along roadway.
- Non-standard curvature and narrow roadway with rock ledge and trees near northern end of roadway limit sight distances creating safety concerns.



#### Recommendations (See Figures 4-4 and 4-5)

- Widen roadway to provide 10 ft travel lanes and 4 ft shoulders with white edge striping.
- Provide 5 ft sidewalk on west side of roadway.
- Provide grass strip between roadway curb and sidewalk to buffer pedestrians, and to accommodate utilities and street trees if the impacts associated with the additional 4 ft width are acceptable to the Town and abutting property owners.
- Provide street trees, particularly along Fairgrounds property, to replace trees impacted by widening; to visually narrow roadway and discourage higher speeds; and to improve aesthetics.
- Minimize impacts to residential properties along east side of Lovers Lane by widening roadway to the west side adjacent to the Fairgrounds.
- Realign roadway to provide standard curvature north of Fairgrounds.
- Minimize impacts to Thomas Griswold House property and residential property at the Lovers Lane/Boston Street intersection by providing stone retaining walls with architectural treatments.



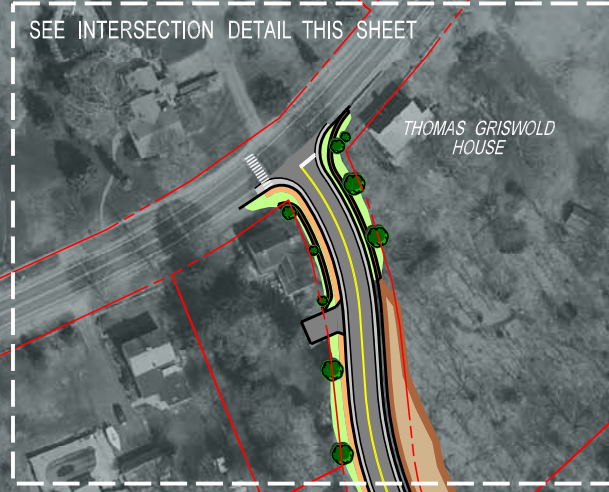
#### Benefits

- Travel lane width of 10 ft and edge striping help discourage higher travel speeds.
- Shoulder width of 4 ft more safely accommodates bicyclists.
- Sidewalk separates pedestrians from vehicular traffic.
- Wider roadway section and improved curvature provide greater sight distances for motorists.

#### Summary of Impacts

- Slope grading, rock ledge excavation, and new sidewalk will likely require grading easements and some property takings.
- Existing roadside features – such as trees, fences, and stone walls – could require relocation or replacement.
- Overhead utilities along west side of roadway will need to be relocated.

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6/26/2008



Realign Roadway to Provide Standard Curvature

See Figure 4-5 for Details on Recommended Roadway Section

Widen Roadway to West Side of Lovers Lane to Minimize Impacts to Residential Properties on East Side

Match Aesthetic Treatment of New Wall to Existing Wall

Provide Stone Retaining Wall to Minimize Property Impacts

Provide Stone Retaining Wall to Minimize Property Impacts

**LEGEND**

	Travel Lane		Whitfield Historic District
	Shoulder		Approximate Property/ROW Lines
	Sidewalk		
	Grass Slope/Green Area		
	Rock Slope		

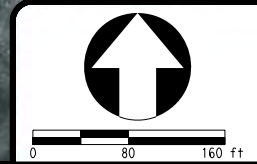
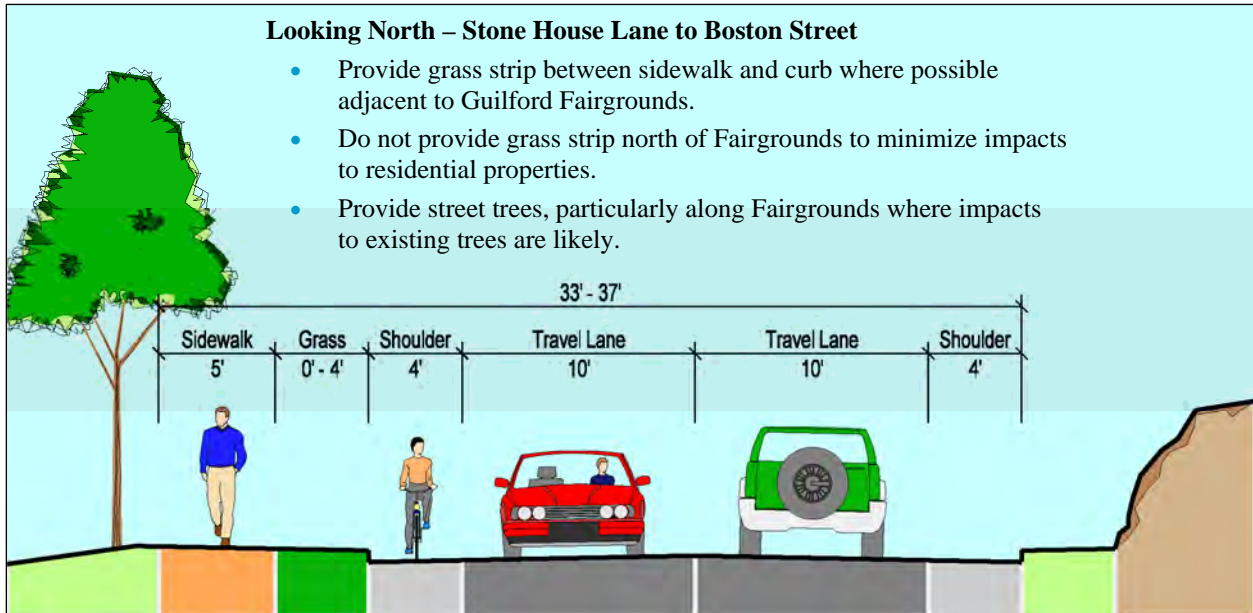


Figure 4-5. Lovers Lane: Roadway Section Details



**Note:**  
 Rock ledge occurs on left and right sides in some locations north of Fairgrounds as shown in Figure 4-4. Rock ledge is not shown on the left in this section for simplicity.

#### 4.2.4 Old Whitfield Street/New Whitfield Street/Whitfield Street Intersection

##### Existing Conditions

- Heavily skewed, Y-intersection of Old Whitfield Street, Whitfield Street, and New Whitfield Street. Stop control on Old Whitfield Street approach. Frances Road creates a fourth leg to the intersection.
- Short segment of Summer Street connects New Whitfield Street to Old Whitfield Street and serves as alternate access to Old Whitfield Street and Stone House Lane from New Whitfield Street.
- Properties along Whitfield Street, New Whitfield Street, and Old Whitfield Street are located within the Whitfield Historic District.




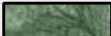

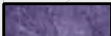

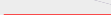

##### Concerns

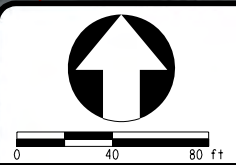
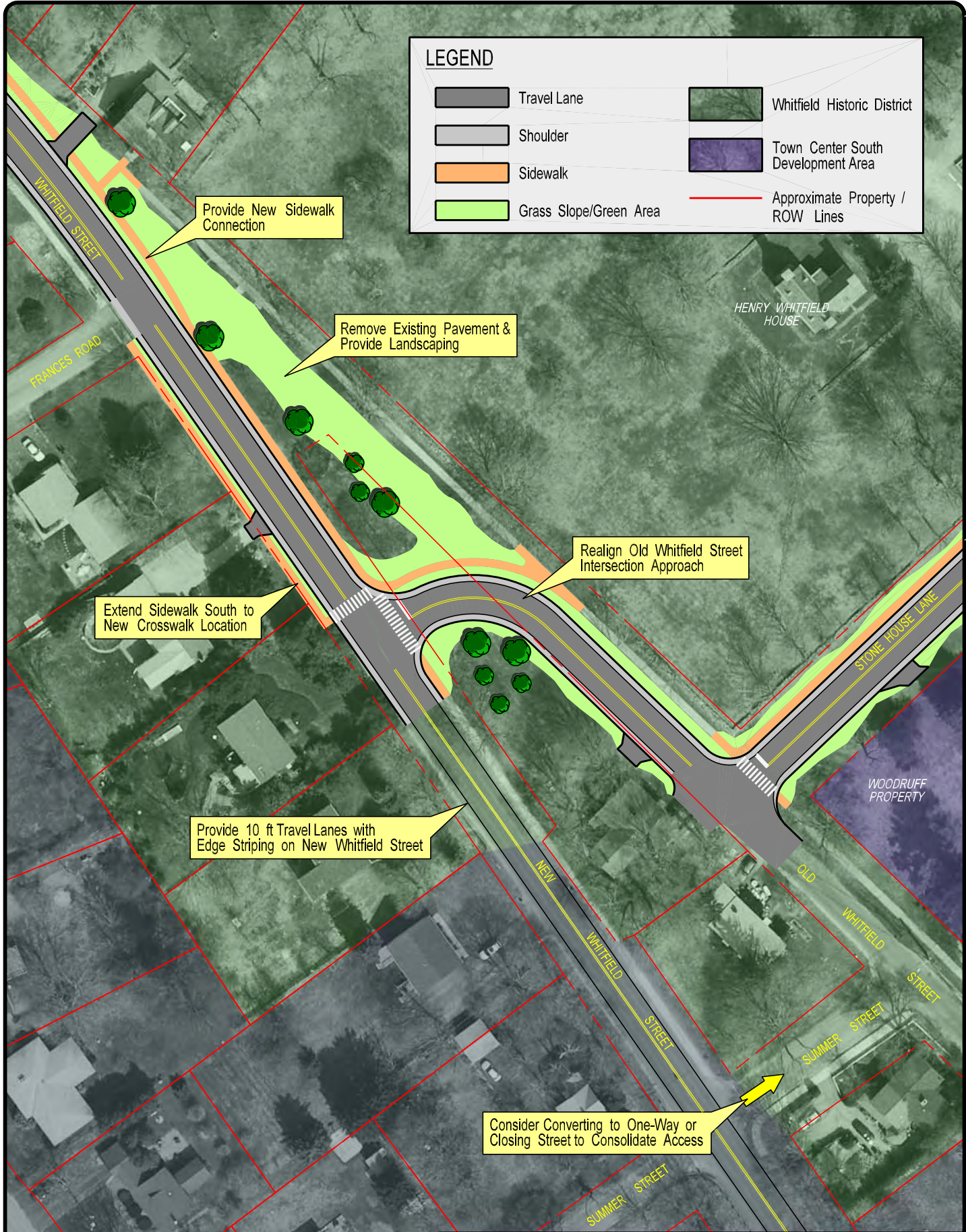
- Poor sight lines at Y-intersection are a safety concern for motorists looking south from northbound Old Whitfield Street approach. Skewed approach and trees located in the “triangle” contribute to poor sight lines.
- Y-intersection geometry allows for high-speed maneuver from southbound Whitfield Street to Old Whitfield Street. This condition could become more critical when the planned parking lot is constructed on the north side of the train station and more vehicles begin to access the train station from Old Whitfield Street.
- Summer Street connection to New Whitfield Street could serve as a bypass around delays and traffic queues that occur on the Old Whitfield Street approach to the Y-intersection, especially during the weekday afternoon peak hour once the planned parking is provided on the north side of the train station.

##### Recommendations (See Figure 4-6)

- Realign Old Whitfield Street approach to New Whitfield Street to provide T-intersection.
- Widen roadway north of Stone House Lane to provide 10 ft travel lanes and 4 ft shoulders.
- Remove existing Old Whitfield Street pavement located north of the realignment and provide new grass, trees, and landscaping as desired by the Town.
- Provide 5 ft sidewalk along realigned approach; provide new sidewalk connection across former Old Whitfield approach to Whitfield Street; Extend sidewalk on west side of New Whitfield street south to align with realigned approach.
- Consider consolidating access to and from New Whitfield Street by:
  - Converting Summer Street to one-way traffic in the eastbound direction. This improvement prevents traffic that is exiting the train station and TCS developments from using both Summer Street and Old Whitfield Street to access New Whitfield Street, thus limiting the number of vehicular conflict points on New Whitfield Street.
  - Or, closing Summer Street. This configuration could make access to the Department of Public Works (DPW) slightly more difficult for larger trucks, which would be restricted to using the realigned section of Old Whitfield Street. Closure of Summer Street might be more appropriate if and when the DPW garage is relocated and truck traffic is reduced.

**LEGEND**

- |  |  |
|--|--|
|  Travel Lane            |  Whitfield Historic District        |
|  Shoulder               |  Town Center South Development Area |
|  Sidewalk               |  Approximate Property / ROW Lines   |
|  Grass Slope/Green Area |  |





**Benefits**

- Realignment of Old Whitfield Street approach will improve safety by providing better sight lines and better-defined turning movements.
- Consolidation of access to and from New Whitfield Street will improve safety and operations by minimizing the number of vehicular conflict points along the roadway.

**Summary of Impacts**

- Realignment of Old Whitfield Street will require a partial property taking. Full acquisition of this property will not be required.
- Realignment of Old Whitfield Street and sight line improvements will require the removal of several trees from the triangular area between Old Whitfield Street and New Whitfield Street.
- Sidewalk extension south along the west side of New Whitfield Street will likely require grading easements and possibly several small property takings.
- Overhead utilities along the west side of Old Whitfield Street will need to be relocated to accommodate roadway widening and realignment.
- Underground utilities including water lines (with fire hydrants) could be impacted by roadway improvements.

**Near-term Improvement Opportunities**

- Provide a new stop sign control for northbound New Whitfield Street approach to the existing intersection with Old Whitfield Street, creating a three-way stop that includes Frances Road. The primary justification for the stop sign would be to improve safety for vehicles accessing Whitfield Street from the skewed Old Whitfield Street approach. Stop sign warrants for a four-way stop controlled intersection should be investigated once the planned parking lot is constructed on the north side of the train station. The study team anticipates that traffic patterns in the study area could change immediately when the new parking is provided.

**Other Considerations**

- Provide white edge striping along New Whitfield Street to define 10 ft travel lanes. Narrower travel lanes will help encourage slower travel speeds. Striping will provide 4 ft shoulders in most areas to accommodate bicyclists.
- Extend Stone House Lane west to directly intersect New Whitfield Street and close Old Whitfield Street north of Stone House Lane to traffic; close Summer Street to consolidate access. This alternative results in direct impacts to the residential dwelling located on the west side of Old Whitfield Street.

#### 4.2.5 Access Roadway between Driveway and Stone House Lane

##### Existing Conditions

- Current roadway access to the planned train station parking and TCS developments on the north side of the railroad is limited to Driveway via Old Whitfield Street.
- The area located between Stone House Lane and Driveway and east of Old Whitfield Street is currently occupied by several residential properties and the Woodruff farm property, which is currently owned by the Town.
- Site plans are currently in development for a new daycare to be located on the Woodruff farm property.
- Environmental constraints, including Sluice Creek and large wetland areas located east of Driveway, limit the feasibility of providing new access to the train station area via an extension of Driveway to Soundview Road or to other points east, including a direct connection to Lovers Lane.

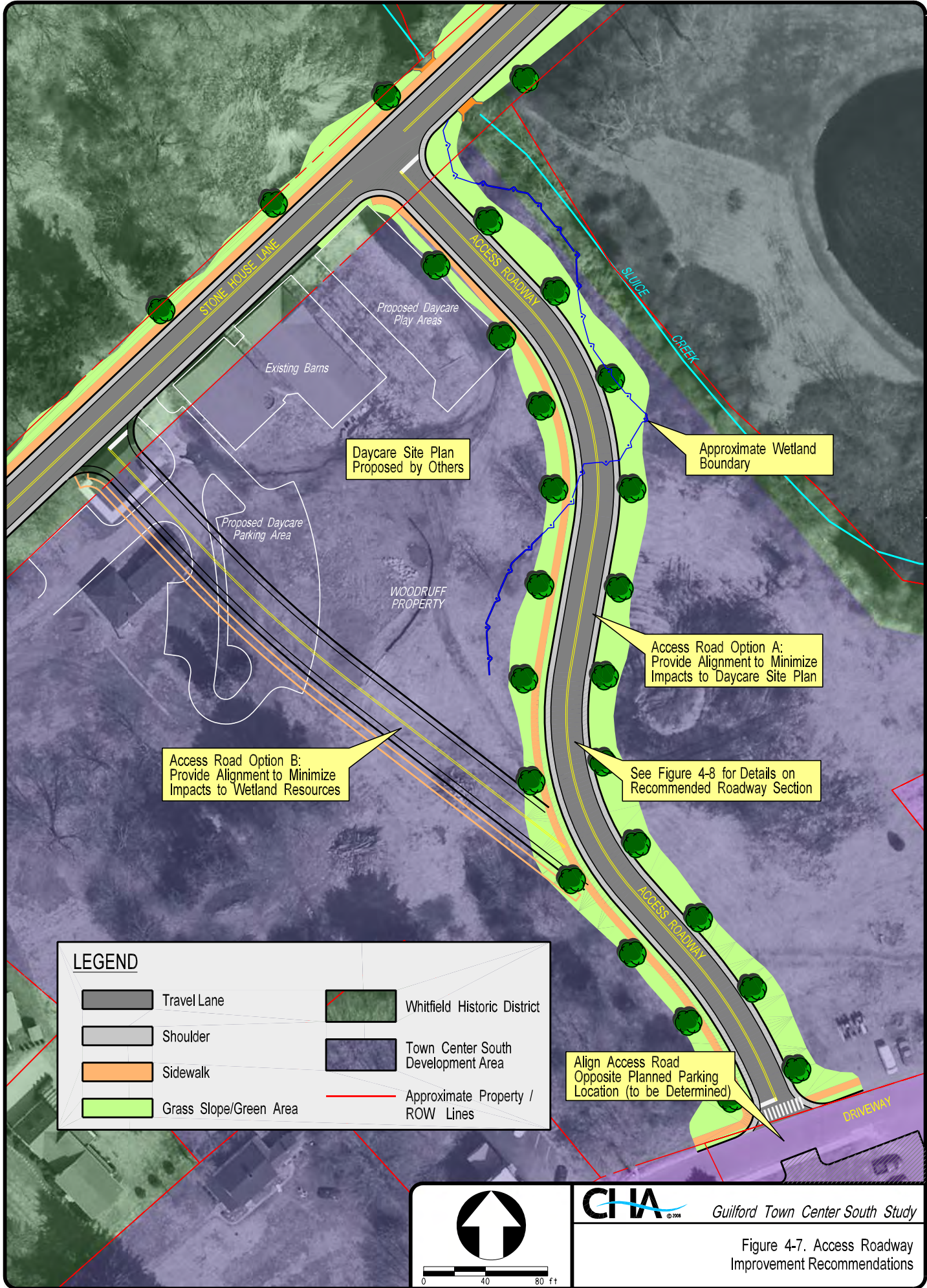


##### Concerns

- Old Whitfield Street south of Stone House Lane, and the residences along this roadway, will experience the full burden of traffic growth associated with the train station and TCS developments unless another access route is provided to Driveway.
- Secondary access to the north side of the train station from the east via Stone House Lane and Lovers Lane is somewhat circuitous from Driveway. Currently, the roadway network does not facilitate convenient access from the east to the north side of the train station.

##### Recommendations (See Figure 4-7 and Figure 4-8)

- Provide new access roadway across Woodruff farm property to connect Driveway to Stone House Lane. Two alignment options are shown in Figure 4-8 to illustrate how the access roadway could be provided within the context of the proposed daycare site plan, and alternatively, how the access roadway could be provided to minimize environmental impacts along the east side of the Woodruff farm property. The study team recommends the Town continue to coordinate with the daycare architect to develop an alignment and site plan that best balances the needs of the daycare, the needs of the Town, and the potential impacts to the Woodruff farm property and environmental resources.
- In general, the recommendation is for the access roadway to align opposite the planned parking lot access on Driveway and to intersect Stone House Lane as far east as possible to maximize the separation distance between the access roadway and residential properties on Old Whitfield Street.
- Provide 10 ft travel lanes and 4 ft shoulders with white edge striping. Provide 5 ft sidewalk along west side of access roadway with grass strip where possible to buffer pedestrians from traffic.



Daycare Site Plan Proposed by Others

Approximate Wetland Boundary


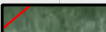



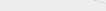

Access Road Option B: Provide Alignment to Minimize Impacts to Wetland Resources

Access Road Option A: Provide Alignment to Minimize Impacts to Daycare Site Plan

See Figure 4-8 for Details on Recommended Roadway Section

Align Access Road Opposite Planned Parking Location (to be Determined)

**LEGEND**

	Travel Lane		Whitfield Historic District
	Shoulder		Town Center South Development Area
	Sidewalk		Approximate Property / ROW Lines
	Grass Slope/Green Area		






Figure 4-7. Access Roadway Improvement Recommendations

**Recommendations (Continued)**

- Provide street trees, particularly along the west side of the roadway, for aesthetics and to provide a visual and noise buffer between the access roadway and the remaining Woodruff farm property and adjacent residential properties.

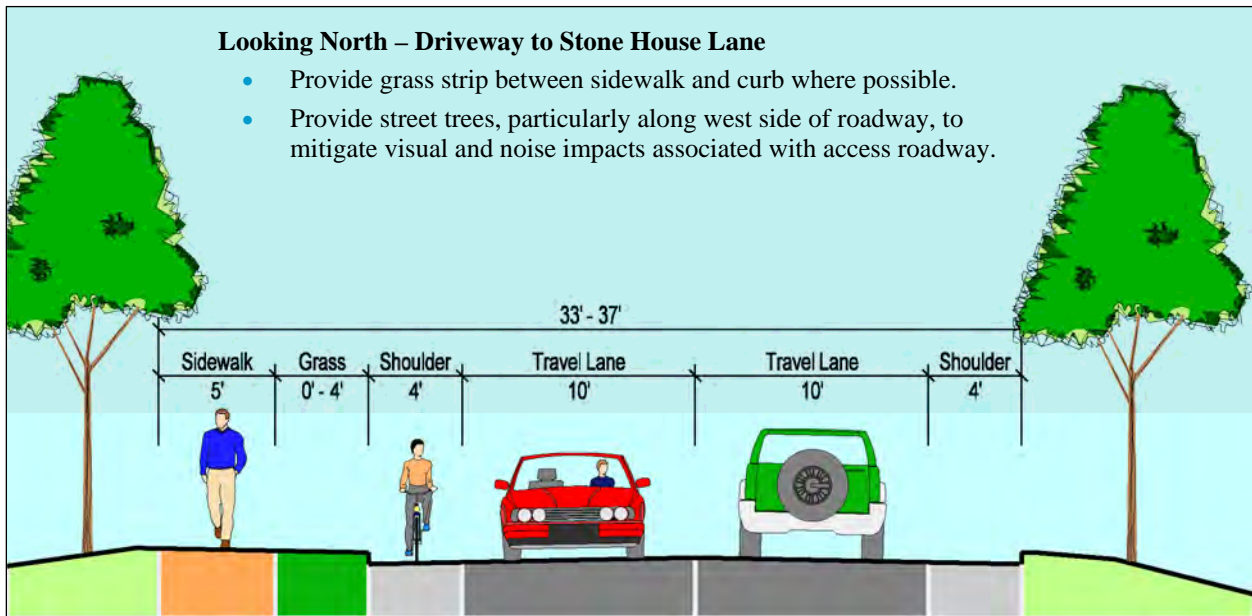
**Benefits**

- Access roadway provides alternative access to and from Driveway for motorists, pedestrians, and bicyclists.
- Access roadway facilitates and encourages the use of Stone House Lane and Lovers Lane for access to and from the train station and TCS developments on the north side of the railroad, ultimately helping to mitigate traffic growth at the intersection of Water Street/Boston Street/Whitfield Street intersection.

**Summary of Impacts**

- Roadway right-of-way will be required across the Woodruff farm property.
- Wetlands and floodplains will be impacted; greater impact areas will result the further east that the access roadway alignment is located.
- Relocation of overhead utilities along the north side of Driveway could be required depending on the eventual access roadway intersection location.

**Figure 4-8. Access Roadway: Roadway Section Details**



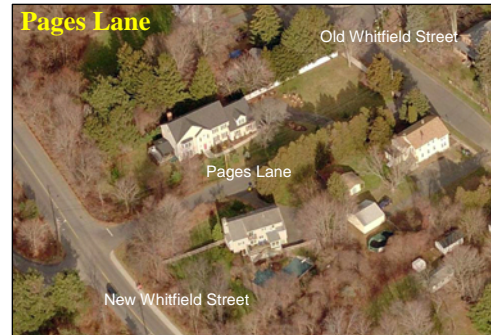
## 4.2.6 Pages Lane

### Existing Conditions

- Two-lane roadway with no defined shoulders and no sidewalk. Width is approximately 20 ft.
- Pages Lane is the primary access between New Whitfield Street and the south side of the train station for vehicles traveling to and from the north.

### Concerns

- Narrow roadway with no shoulders and no sidewalk is a safety concern for pedestrians and bicyclists on Pages Lane.
- No Americans with Disabilities Act (ADA)-compliant pedestrian access to south side of train station. Existing concrete stairways located both north and south of the New Whitfield Street railroad overpass do provide a connection with limited access between New Whitfield Street and the north and south sides of the train station.



### Recommendations (See Figure 4-9 and Figure 4-10)

- Widen roadway to provide 10 ft travel lanes and 4 ft shoulders with white edge striping.
- Provide 5 ft sidewalk along north side of Pages Lane.
- Provide street trees to replace existing trees impacted by the roadway widening.







### Benefits

- Sidewalk improves pedestrian safety and provides connectivity and ADA-compliant access from New Whitfield Street to the south side of the train station and future TCS developments.
- Shoulder width of 4 ft more safely accommodates bicyclists.

### Summary of Impacts

- Slope grading and new sidewalk will likely require grading easements and some partial property takings.
- Existing roadside features – such as trees, guiderail, and private landscaping – could require relocation or replacement.
- Overhead utilities along north side of roadway will need to be relocated.

**LEGEND**

-  Travel Lane
-  Shoulder
-  Sidewalk
-  Grass Slope/Green Area
-  Town Center South Development Area
-  Approximate Property / ROW Lines

RAILROAD

TRAIN STATION

NEW WHITFIELD STREET

OLD WHITFIELD STREET

Provide New Sidewalk Connection

See Figure 4-11 for Details on Recommended Roadway Section

Provide 10 ft Travel Lanes with Edge Striping on New Whitfield Street

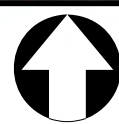
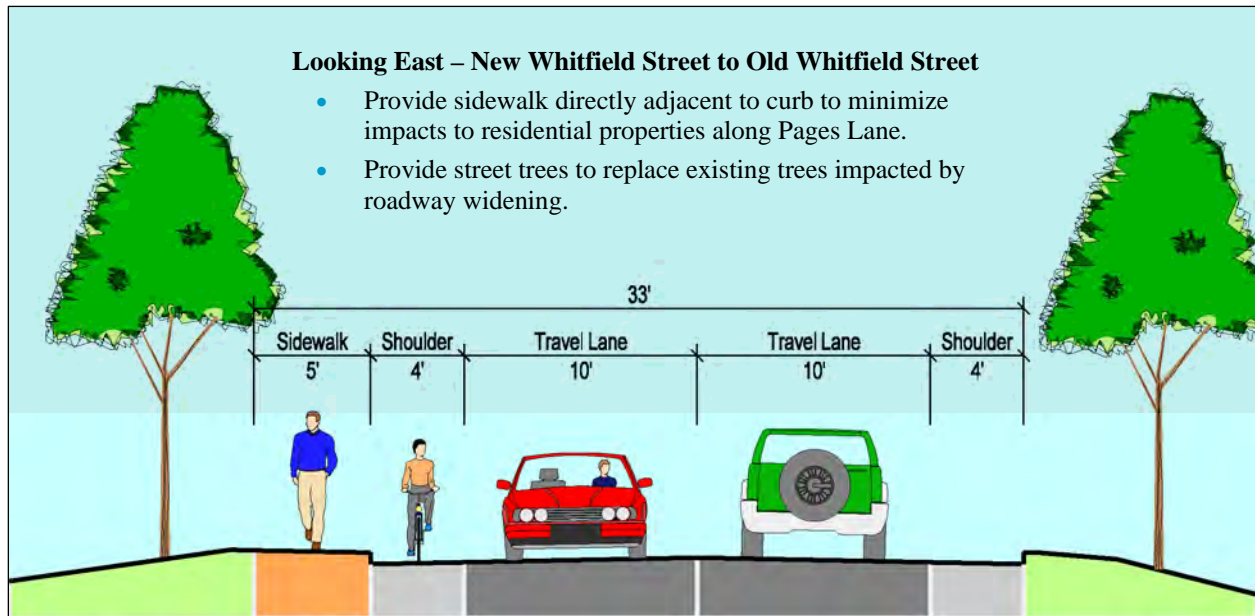


Figure 4-9. Pages Lane Improvement Recommendations

Figure 4-10. Pages Lane: Roadway Section Details



#### 4.2.7 Traffic Calming Recommendations

In addition to the recommendations detailed above, the study team recommends the Town consider implementing traffic calming improvements along study area roadways to help mitigate traffic speeds and improve overall safety in the study area. These traffic calming improvements could be incorporated into the other improvement recommendations described above or initiated independently of these recommendations as the need arises. In particular, the Town should consider the use of the following traffic calming measures:

- **Narrowed Travel Lanes**

Delineate 10 ft wide travel lanes, particularly along New Whitfield Street, with white edge striping to encourage slower travel speeds and to provide a shoulder area for bicyclists.

- **Traffic Islands**

Install traffic islands in conjunction with pedestrian crosswalk locations to provide pedestrian refuge and to encourage slower travel speeds through narrowed travel lanes. Landscaping within the islands can also serve as a gateway feature to Town Center South.



- **Textured and Colored Crosswalks**

Install textured and colored bituminous pavement or brick pavers in place of traditional crosswalk markings to better define pedestrian crossing locations for both pedestrians and motorists.

- **Street Trees and Landscaping**

As noted throughout the improvement recommendations, install street trees where space allows to help visually narrow the roadway and to encourage slower travel speeds. Install landscaping at gateway locations (such as near the recommended intersection of Stone House Lane with the access roadway, and near the realigned intersection approach of Old Whitfield Street to New Whitfield Street) to also encourage slower travel speeds.

The Town is referred to the South Central Regional Council of Governments' *Traffic Calming Resource Guide* (June 2008) for additional information on these traffic calming measures.



### 4.3 Construction Cost Estimates

The study team developed planning-level construction cost estimates for the improvement recommendations described in Section 4.2 in accordance with Connecticut Department of Transportation’s (ConnDOT) guidelines for preliminary cost estimating dated January 2008. Table 4-2 presents a summary of the estimated construction costs for the various improvement recommendations.

The cost estimates assume the following conditions:

- Roadway widening will be accomplished by providing a 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 realignment will be accomplished by reconstructing the entire existing roadway and providing a full-depth, bituminous concrete pavement structure.
- Additional cost allowances for right-of-way acquisitions, utility relocations, and environmental mitigation 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 values over a likely 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 might be overly conservative.

A detailed breakdown of the estimated quantities and unit prices for major construction items is provided in the appendix.

Table 4-2. Planning-Level Construction Cost Estimates

Improvement Location	Estimated Cost (2008 \$)	Estimated Cost (2018 \$)
Stone House Lane (including Lovers Lane intersection)	\$1,340,000	\$2,190,000
Lovers Lane	\$2,380,000	\$3,880,000
Old Whitfield Street/New Whitfield Street/Whitfield Street Intersection	\$320,000	\$530,000
Access Roadway between Driveway and Stone House Lane	\$620,000	\$1,010,000
Pages Lane	\$290,000	\$480,000
<b>Totals</b>	<b>\$4,950,000</b>	<b>\$8,090,000</b>

#### 4.4 Implementation Strategy

It is anticipated that build-out of Town Center South will occur slowly over the 20-year planning horizon, resulting in a measured increase in traffic over the same time period. Consequently, the need to implement many of the improvement recommendations might not become evident until significant traffic growth begins to materialize on study area roadways.

The relatively high cost of the improvement recommendations, however, suggests that the Town should begin prioritizing these improvements and developing a phased implementation strategy, well before TCS developments and traffic growth are realized. Early programming of the Town's highest priority improvements will help secure timely funding of these improvements, while subsequent phasing of the lower priority improvements will help spread the capital investment required by the Town out over several years.

In addition, the opening of the planned parking lot on the north side of the train station in the next few years could immediately impact traffic and travel patterns in the study area as commuters begin parking in this lot. The study team anticipates that in addition to new parking demand that will potentially be generated by the lot, it is possible that commuters who currently use the parking lot on the south side of the station could begin parking on the north side. This possible near-term impact on traffic in the study area could be an incentive for the Town to begin prioritizing and programming the long-term improvement recommendations, as well as an incentive to investigate and implement lower cost, near-term improvements, such as providing new stop control at the Old Whitfield Street/New Whitfield Street intersection and edge striping on New Whitfield Street.