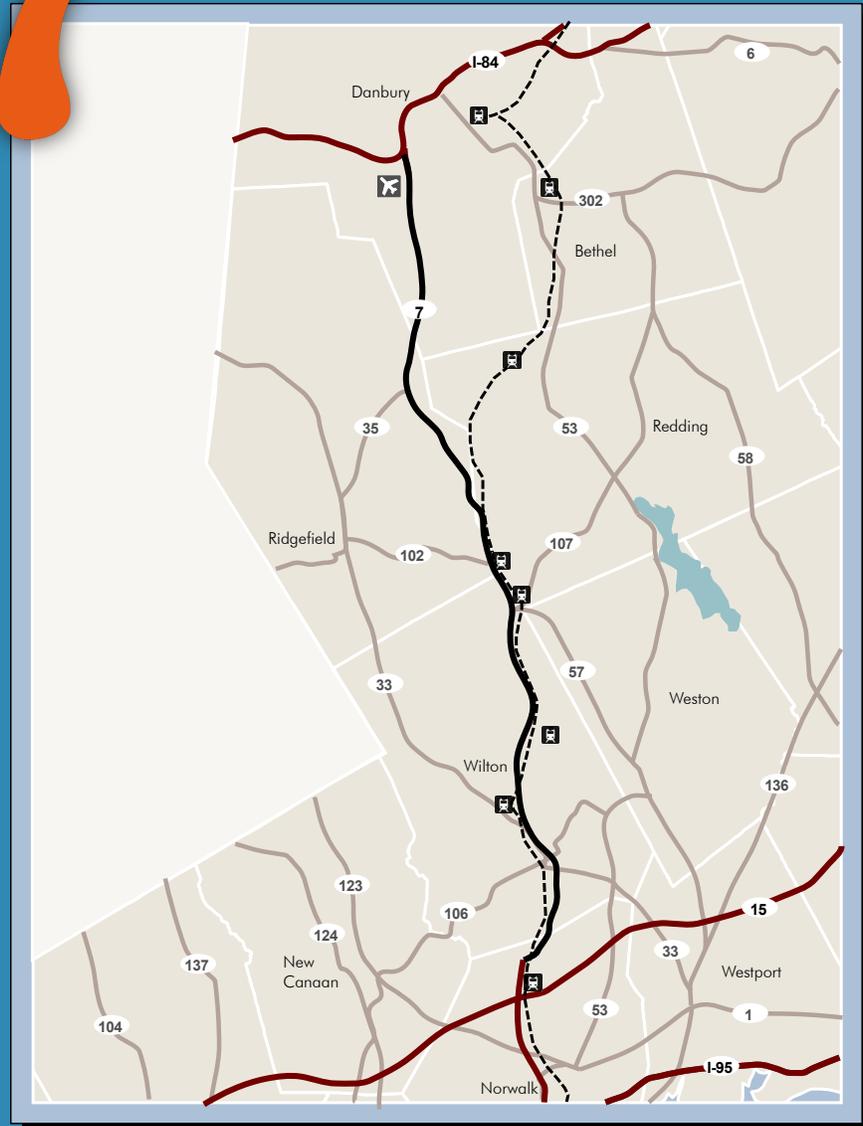


# ROUTE

## Transportation and Land Use Study

### Existing Conditions and Trends Technical Memorandum



Fitzgerald & Halliday, Inc.  
February 2010

Prepared for SWRPA and HVCEO





## Route 7 Corridor Study Existing Conditions and Trends Technical Memorandum

### Table of Contents

Executive Summary.....	1
Introduction.....	3
Study Area Overview/Regional Context.....	3
Overview of Memo Organization.....	5
Transportation System and User Profile.....	7
Transportation System Network.....	7
Transportation System Demand.....	7
Transportation System Choices.....	11
Planned and Programmed Projects in the Study Corridor.....	12
Highway Geometry, Traffic Operations, and Safety.....	13
Roadway Geometry.....	13
Travel Lanes.....	13
Shoulder Width.....	14
Vertical Grade.....	14
Horizontal Curvature and Stopping Sight Distance.....	15
Traffic Operations and Safety.....	18
Historical Traffic Patterns.....	18
Existing Traffic Volumes.....	20
Vehicle Classification.....	22
Peak Periods.....	22
Vehicle Speed.....	23
Travel Time.....	24
Signalized Intersection Operations.....	25
High Accident Locations.....	31
Bicycle, Pedestrian, and Transit Modes.....	33
Bicycling.....	33
Sidewalks.....	35
Bicycling and Walking Near Train Stations.....	35
Branchville Station.....	35
Cannondale Station.....	36
Wilton Station.....	36
Americans with Disabilities Act (ADA) Review.....	37
Public Transit System.....	38
Commuter Rail Service: Danbury Branch Line.....	38
Corridor Bus Service: Danbury-Norwalk 7 Link.....	42
Commuter Shuttles.....	43
Other Employer Shuttles / Vanpools.....	44
Paratransit Service.....	45
Park & Ride Inventory.....	45
Transportation Gaps and Deficiencies – General Observations.....	46
Land Use and Development Potential.....	49

Land Use Analysis Methodology ..... 49

Existing Land Use ..... 50

Constraints to Development..... 54

Visual Resources ..... 55

Land Use Policy and Zoning ..... 59

Existing Land Use and Development Potential Findings - Issues and Opportunities ..... 62

Existing Market and Socioeconomic Conditions..... 65

Market Assessment Methodology ..... 65

    Residential Analysis Methodology..... 66

    Office Analysis Methodology ..... 66

    Retail Analysis Methodology ..... 66

Current Socioeconomic and Market Conditions/Demand ..... 68

    Demographics ..... 68

    Residential Market Conditions..... 69

    Rental Property ..... 71

    Residential Market..... 72

    Office Market ..... 73

    Retail Market ..... 75

Overall Market Demand – Findings..... 77

Conclusions and Next Steps ..... 79

**List of Figures**

Figure 1: Study Area..... 4  
 Figure 2: Major Trip Patterns..... 10  
 Figure 3: Route 7 Geometric Conditions ..... 17  
 Figure 4: 2009 Average Daily Traffic Volumes ..... 21  
 Figure 5: Daily Traffic Volume Patterns ..... 22  
 Figure 6: 85th Percentile Speed ..... 23  
 Figure 7: Signalized Intersection Baseline Peak Hour Level of Service Ratings..... 30  
 Figure 8: Accident Experience..... 34  
 Figure 9: Existing Transit System..... 39  
 Figure 10: Average Weekday Danbury-Norwalk 7 LINK Ridership, FY 02 - FY 09..... 43  
 Figure 11: Existing Land Use Conditions and Development Opportunity Areas ..... 63

**List of Tables**

Table 1: Historical Traffic Volumes on Route 7 ..... 19  
 Table 2: Historical Traffic Volumes on Intersecting Highways..... 19  
 Table 3: Capacity Analysis Summary ..... 27  
 Table 4: Capacity Analysis Summary ..... 28  
 Table 5: Danbury Line Station Parking Capacity and Utilization (1999, 2003 and 2010) ..... 41  
 Table 6: Danbury Branch Line Ridership – Daily Boardings ..... 42  
 Table 7: Park and Ride Facility Inventory and Utilization ..... 46  
 Table 8: Route 7 Existing Land Use Categories..... 51  
 Table 9: TOD Matrix – Route 7 Sites..... 54  
 Table 10: Selected Demographic Data – Route 7 Corridor ..... 68  
 Table 11: Route 7 Corridor Communities Tapestry ..... 70  
 Table 12: Sample Representative Rents – Route 7 Corridor ..... 71  
 Table 13: Sample Home Rental Listings – Route 7 Corridor Communities..... 72  
 Table 14: Major Office Space Vacancies- Route 7 Corridor..... 74  
 Table 15: Data on Sample Available Retail Sites – Route 7 Corridor..... 75  
 Table 16: Route 7 Corridor Communities – Representative Spending Potential Index..... 76



---

## Executive Summary

---

The purpose of the Route 7 Corridor Study is to develop a pro-active plan to address current and long-range travel needs and community quality of life issues along Route 7 in southwestern Connecticut and to build on opportunities to enhance them. This technical memorandum documents the findings of the first step in the study, the assessment of existing conditions in the corridor.

This study recognizes and considers the regional significance of the Route 7 corridor as it traverses numerous communities and links them physically, socially, and economically. Route 7 is an indispensable asset, but it also presents challenges for this region of Connecticut. Key existing condition findings for the transportation system, land-use, and market conditions are as follows:

### Transportation System Gaps and Opportunities

- Route 7 serves both intra- and inter-state travel markets. A high percentage of through trips, mixed with intermediate distance and local trips, rely on the highway as a vital spine for mobility in the corridor. This demand for mobility directly relates to economic growth opportunities in the future.
- A lack of network redundancy places intense pressure on the Route 7 corridor. When the highway breaks down for any reason, little opportunity to divert traffic is available and congestion can reach extreme levels. Quality of life impacts are a direct result.
- Peak traffic conditions exist for about two hours in the morning and three hours in the afternoon; however, volumes remain high for much of the day in both the northernmost and southernmost portions of the corridor where the more intense development patterns exist. In these areas, commuter traffic mixes with shopping and other trip purposes to create sustained traffic levels. Highway capacity will eventually be reached, and in some areas it already has, with limited opportunity for significant increases in the future.
- Current and planned roadway improvements are addressing a number of existing capacity and lane continuity constraints in Wilton and Danbury; however, the section of highway from Grist Mill Road to Route 33 is no longer programmed for improvement. The transition from expressway in Norwalk to an urban arterial with signalized intersections in Wilton presents a number of operational challenges that should be studied further.
- Transit in the corridor is growing and future improvements to the Danbury Branch Line are expected to generate additional rail ridership. This may necessitate the construction of additional parking at train stations, especially in Branchville where parking utilization is currently maximized.
- The interface between bus service and rail service for intra-state trips is very limited. A number of factors such as transfers, schedules, fare policy, time and cost effectiveness need to be explored to understand if bus to rail makes sense for more people.
- A strong travel demand between Danbury and Ridgefield, and to a lesser degree, Norwalk to Ridgefield exists. There are currently no transit routes serving that demand.
- Deficiencies in the sidewalk network and lack of bicycle amenities such as parking may be limiting use of the rail system. At a minimum, it discourages people who may walk or bike for shorter trips along the corridor.

- Route 7 is generally not suitable for walking and biking in the more developed centers such as Branchville, Cannondale and in the vicinity of Georgetown. The road design clearly favors the automobile and does little to influence driver behavior such as maintaining safe speeds and being aware of the presence of bicycles and pedestrians.

### **Land-Use and Development Potential**

- The corridor is largely built-out and environmental constraints limit opportunities for new development. The majority of development opportunities will come from infill, maximizing use of underutilized parcels, and redevelopment.
- Current land use policy and regulations favor keeping the development patterns in the corridor as they exist today.
- Conversely, corridor communities are reportedly receptive to the idea of cohesive mixed-use development in nodes along the corridor. Such nodes would contain commercial development in well-defined areas and help preserve the rural character of the balance of the corridor.
- There are very limited opportunities for high-density residential development that could support workforce housing, such as townhouses.
- There are some loosely formed development clusters existing today that offer an opportunity for creation of more distinct and better defined development nodes.
- Three of the train stations in the corridor; Branchville, Georgetown (in development; not yet existing), and Wilton offer opportunity sites for transit oriented development (TOD), yet each is constrained in some way, creating some challenges to overcome for successful TOD. The I-Park area in Wilton, although not currently served by a train station, affords an additional TOD opportunity that will be explored.

### **Market Demand**

- Route 7 is the service corridor for the region. There is unmet demand for services and goods which patrons typically prefer to purchase locally (closer to home) or at their convenience. These goods range from beauty salons to pharmacies to moderate-value general merchandise to specialty food shops to auto parts and tire stores.
- The biggest unmet residential market demand is for workforce housing ("workforce housing" generally consists of housing intended to serve and appeal to gainfully employed and essential workers in the community).
- The overall multi-family housing supply is limited and the demand is greater than supply.
- There also is unmet demand for senior housing. Rental-based senior housing is reported to have strong demand with few vacancies.
- There is continued demand for office space in Fairfield County, yet the vacancy rate within the corridor is somewhat high at 13%, suggesting there is somewhat of an oversupply. Vacant office space within the corridor may not closely align with demand.

The existing condition findings for the transportation system, land-use, and market conditions will inform the next step in the study: future conditions and the development of a preferred land use scenario. Following the development of a preferred land use scenario, the study will identify strategies and actions to address the gaps in the transportation system and take advantage of opportunities to implement the vision for the corridor as a whole.

---

## Introduction

---

The purpose of the Route 7 Corridor Study is to develop a pro-active plan to address current and long-range travel and community quality of life issues along Route 7 in southwestern Connecticut. This study is also intended to identify opportunities to build on and enhance transportation system assets and community character. This technical memorandum documents the findings of the first step in the study, the assessment of existing conditions in the corridor. It describes market, socioeconomic, and land use conditions along this corridor which is a regional resource in southwestern Connecticut. This memorandum also summarizes the analysis of the transportation system in the corridor and its role in serving both local and regional transportation demand.

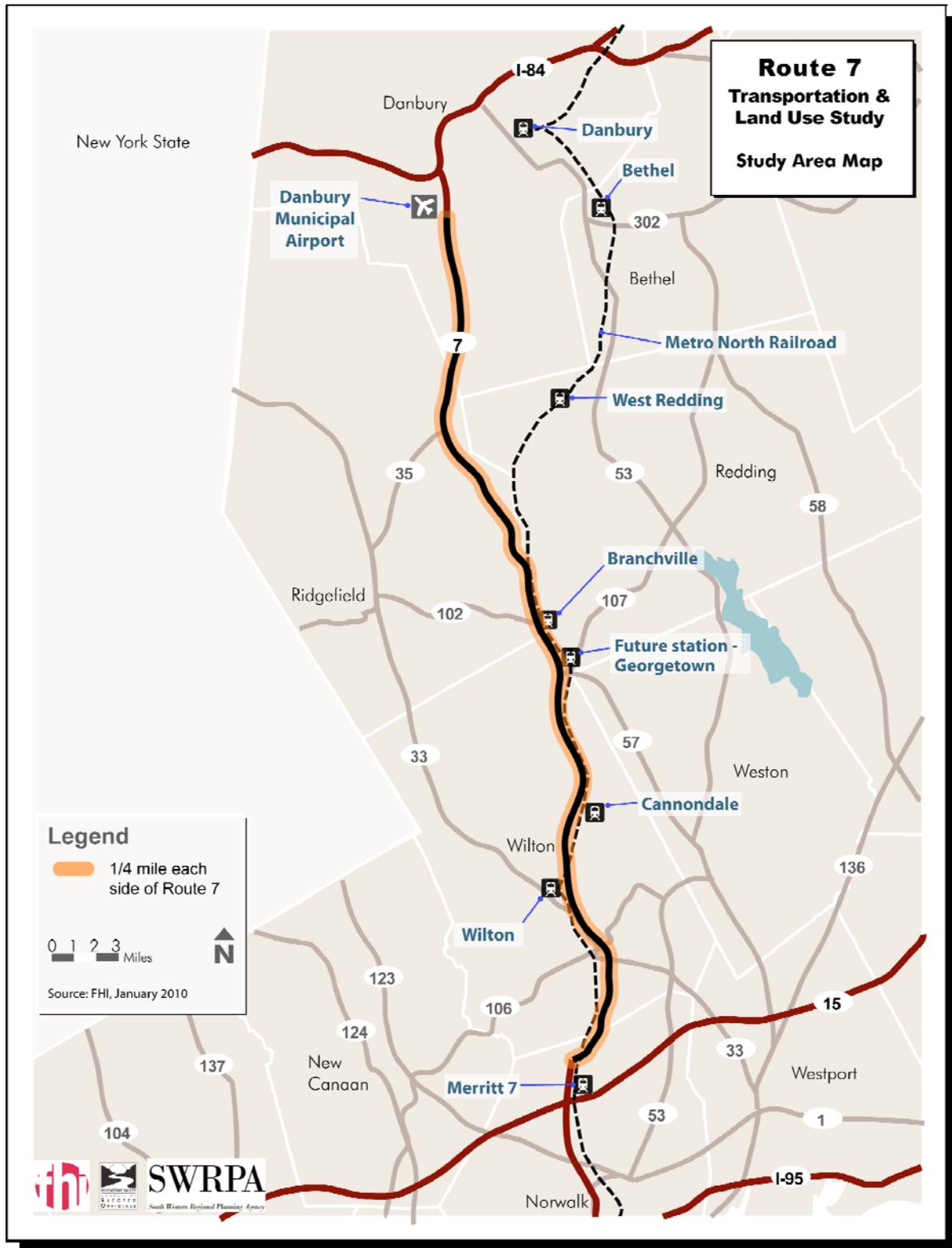
### **Study Area Overview/Regional Context**

The study area for this corridor extends from the intersection of Miry Brook Road with Route 7 in Danbury to the intersection of Route 7 with Grist Mill Road just south of the Norwalk/Wilton town borders. The study area is shown in Figure 1. The area studied generally includes all of Route 7 as described above in a corridor of approximately 1/2 mile wide along the roadway. Where cohesive development abuts the roadway, the entire cluster of development was considered for the analyses extending beyond the 1/2 mile width as necessary. For the market study, the study area was expanded slightly to the north (to about I-84) and to the south (to include the Merritt 7 area) given the strong influence these two areas have on the market conditions in the corridor.

This study recognizes and considers the regional significance of the Route 7 corridor as it traverses numerous communities and links them physically, socially, and economically. Route 7 is an indispensable asset, but it also presents challenges for this region of Connecticut. Route 7 is a key regional north-south travel corridor running the length of the State of Connecticut from Norwalk north to the state line in Massachusetts. Within the study area, it serves numerous functions including:

- Commuter traffic to and from key employment hubs in a) Norwalk and points north and south on I-95 and b) Danbury and points north, east, and west into Westchester County, New York,
- Commuter rail travel with train stations with direct access to Route 7 in Wilton and Branchville,
- Regional and local shopping needs, serving as the retail and service corridor for the surrounding towns. In addition, the corridor provides a direct route to shopping destinations in Norwalk, Wilton, and Danbury (Danbury Mall), and
- Main Street in Wilton, Connecticut, providing direct access to key community resources such as the Wilton Town Hall and Wilton High School.

Figure 1: Study Area



Source: FHI, January 2010

As such, Route 7 is an essential travel corridor that serves a diversity of traveler and community needs while providing connectivity among several urbanized areas as well as suburban communities and beyond. The roadway also traverses and connects many expansive suburban residential and rural areas. In addition, secondary roads that intersect with Route 7 lead to key destinations including community/town centers in Redding, Ridgefield, and Weston.

The segment of Route 7 between Norwalk and Danbury has been studied for decades, with a variety of efforts to add highway capacity and to improve commuter rail operations and mobility. This section of Route 7 has experienced significant traffic growth through the years and significant development along its entire length; with the most concentrated development evidenced in the southern end of the corridor in Wilton. This trend of development has flowed northward from Norwalk's urban edge and southward from Danbury's regional mall and airport area; yet the intensity of development is not uniform along the length of the road. Substantial pockets of low density residential development still occur adjacent to Route 7 north of the town center in Wilton and in Redding and Ridgefield. A Route 7 Expressway, known locally as "Super 7", was considered but not further pursued years ago by the Connecticut Department of Transportation. In addition, shorter by-pass roads were contemplated from the end of the limited-access portion of Route 7 that currently terminates at Grist Mill Road to various "landing points" in the vicinity of Kent Road and Route 33 in Wilton. These proposals were all determined to be unacceptable due to potential environmental and community impacts and strong public opposition. Subsequently, a series of more localized roadway widening and intersection improvements has been implemented, are currently under construction, or are planned for the roadway.

### **Overview of Memo Organization**

This memorandum is organized to present summaries of the quantitative information assessed for the existing conditions on the Route 7 corridor followed by findings. The findings present the issues and opportunities for future development and gaps and opportunities for the transportation system. The appendices to this memorandum provide more detailed data, statistical and mapped information, as well as a bibliography of data and interviews conducted. The evaluation of the current conditions in the corridor includes:

- Transportation system conditions;
- Land use, current zoning, and policy;
- Development opportunities and constraints assessment; and
- Socio-economic conditions and market demand



---

## Transportation System and User Profile

---

### **Transportation System Network**

The Route 7 highway corridor between Norwalk and Danbury is a 2 or 4-lane arterial that serves the north-south movement of traffic between I-84 and I-95. Short segments of expressway connect with both I-84 at the northern end and I-95 at the southern end, which transition to a principal arterial highway in between. Portions of Route 7 between Norwalk and Danbury widen to 4-lanes, and several major intersections are wide enough to accommodate multiple lanes at each approach.

While Route 7 itself is mainly responsible for the conveyance of people and goods along this busy corridor, it is not alone in serving this function. An active commuter rail line extends east of Danbury and runs parallel to Route 7 from the Ridgefield/Redding town line to Norwalk. A number of train stations are situated directly adjacent to Route 7 providing regular service from Danbury to Norwalk, and beyond to locations such as Stamford and New York City.

Additionally, bus transit is offered by a number of service providers in the region and employer shuttles serve many major corporations within the corridor. Park & Ride lots are scattered along the major east-west interstate highways, serving as stops for transit service and offering opportunities to carpool.

A primary focus of the Route 7 Transportation and Land Use Study is to consider the integration of all of these modes and travel choices in the corridor, and develop a plan that fills gaps in the transportation system and optimizes the effectiveness of the entire transportation system for a wide range of users.

### **Transportation System Demand**

This study is intended to examine the multi-modal transportation system and identify potential 'gaps' that exist within and between modes. For example, a missing link in the sidewalk system between a transit stop and a major destination would be considered a gap. In general, this study aims to not only optimize the performance of individual modes, but to also ensure that all modes are operating together to offer travel choices that are reliable and convenient.

One way to help understand the travel decisions that people make is to look at the origins and destinations of their trips. Knowing where trips begin and end can be useful in determining the types of transportation improvements that could benefit the greatest number of people. It also suggests which transportation modes might be available for a given travel market segment. An example might be a trip from Danbury to Norwalk that could potentially make the trip by car, bus, or train.

Ultimately, a person's travel preference might be influenced by a variety of factors including time of day, purpose of trip, cost, schedules, and a host of other factors. However, the start and end points at least offer some insight into the types of options that are available to them.

Along the Route 7 study corridor, average daily traffic varies from about 16,000 to 37,000 vehicles per day. In general, the heaviest traffic exists at the northern and southern-most limits of the corridor where the highway transitions to an urban setting.

For vehicular trips, origin and destination (O-D) data within the study area was provided by the CTDOT for the purpose of determining the distribution of traffic demand along the study area road network. This data was available by conducting a "select link analysis" of the Connecticut statewide travel demand model. O-D data for Route 7, at the following locations, was provided and analyzed:

- Between Route 33 and Wolf Pit Road in Wilton
- Between Routes 107 and 102 in Ridgefield
- North of Route 35 at the Ridgefield/Danbury line
- On the expressway portion of Route 7 in Danbury

The O-D data was provided in a format that listed every trip that passed each of these segments of Route 7, and reported where that trip started and ended within the State of CT as well as external to the state via NY, MA, or RI. All of the data was reduced to a simpler format for the purpose of identifying how the majority of traffic uses Route 7. The trips were classified as follows:

- Local – these trips use Route 7 for a short portion of their total journey. Origins and destinations would typically be along or directly adjacent to the highway and the length of Route 7 traversed would be typically less than 5 miles.
- Intermediate – these trips use Route 7 for a longer portion of their total journey. One end of the trip would be in Norwalk, Danbury, or points beyond such as New York. The other end of the trip would be somewhere along the corridor. Typical distance traveled along Route 7 would be between 5 and 10 miles; however the entire trip could be much longer.
- Through – these trips begin and end their trips in Norwalk, Danbury, and/or locations beyond. Most of these trips use Route 7 for the entire length of the study corridor (approximately 15 miles) and some trips use alternate diversion routes to bypass congestion on Route 7 and the highways feeding Route 7. Either way, these trips represent the long distance travel demand for the Route 7 corridor between Norwalk and Danbury.

A generalized accounting of trips on Route 7 suggests that on average, 10% are local, 57% are intermediate, and 33% are through trips. These percentages vary depending on location because traffic patterns and volumes are different along different segments of the corridor and the composition of local, intermediate, and through trips changes based on the location's proximity to local development and intersecting highways.

Figure 2 illustrates the four select-links used in the analysis as well as some of the more pronounced O-D trip movements, which are explained in more detail in the following text.

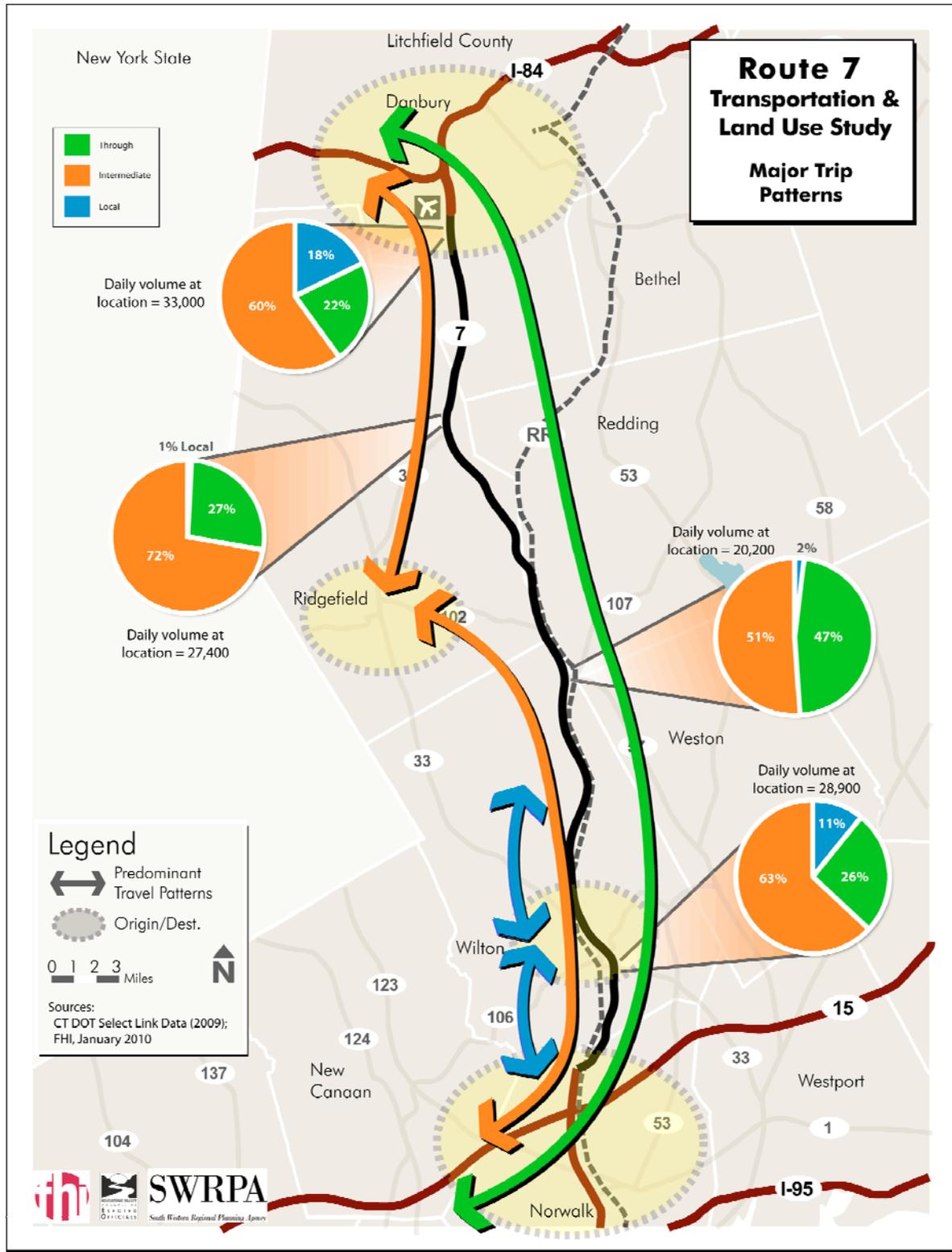
1. There are approximately 9,400 through trips using Route 7 on a daily basis. Through traffic makes up the greatest proportion of the traffic mix in Georgetown, partly due to the lower overall traffic volume in that segment of highway. The other reason is that Georgetown is on the portion of Route 7 that has no potential for an alternate diversion route. All through traffic eventually funnels onto Route 7 and travels through Georgetown.

In the northern portion of Route 7, some through traffic from NY (via I-84) diverts to Sawmill Rd and Route 116 to avoid eastbound congestion in Danbury. Similarly, in the southern portion of the corridor, some through traffic to/from lower Fairfield County diverts to Route 33 and Belden Hill Rd to avoid congestion in Norwalk. Several hundred trips per day may be taking those alternative routes.

2. The origin and destination of Route 7 through trips with the greatest frequency are as follows:
  - a. Danbury to NY via the I-95/Rt. 15 corridor with approximately 3,600 daily trips
  - b. Lower Fairfield County to NY via the I-84 corridor with approximately 3,100 daily trips
  - c. Norwalk to NY via the I-84 corridor with approximately 1,300 daily trips
3. Intermediate distance trips are heaviest between the following origins and destinations:
  - a. The southern end of Route 7 and Ridgefield with approximately 3,300 daily trips
  - b. The northern end of the study corridor (including Danbury and Litchfield County) and Ridgefield with approximately 10,700 daily trips
4. Short trips are heaviest in Wilton between Olmstead Hill Road and Norwalk City Line, equaling about 3,100 daily trips. Short distance trips are also heavy between southern Wilton and Norwalk, mostly around the Route 15/Route 7 interchange, equaling about 3,700 daily trips.

This information may be useful in future stages of the study to help determine the effectiveness of transportation improvements by matching user needs to the appropriate transportation solution. This information will also help to understand which origin-destination pairs have the highest forecasted traffic.

Figure 2: Major Trip Patterns



Source: CTDOT Select Link Data (2009); FHI, January 2010

## **Transportation System Choices**

The existing transportation system offers a variety of options for travelers and the distance of travel, coupled with the origin and destination of the trip, are primary factors in the decision process related to one's preferred mode of travel and travel route. The following is a list of options that each type of travel market could potentially make.

Local – These trips are typically served by the automobile. They are often too short to make fixed route transit service convenient or cost effective; however, paratransit and shuttles are often reasonable alternatives for these trips. Due to the current pattern of development along Route 7 and limited bus shuttle options, the automobile is currently the primary choice for these types of trips. Some trips could potentially be served by walking or bicycling as well, if safe and comfortable linkages could be provided. Finally, access management strategies, such as interconnecting commercial parcels, can help minimize the local turning movement impacts by providing ways to access multiple parcels without having to travel back on Route 7 between sites.

Intermediate – As with the local trips, the intermediate trips using the Route 7 corridor are typically use the automobile. Bus transit service is also an option for these trips. Frequency of transit service is a key consideration for the intermediate trip maker. Bus service is also constrained by the same congestion that frustrates motorists, so comfort and convenience of transit service are paramount to make this an attractive option. Some intermediate trip makers might find commuter rail an option as well, especially if one end of the trip is beyond the corridor in places such as Norwalk, Stamford, or New York City.

Through – A large number of through trips exist on Route 7. These types of trips have the greatest number of travel choices since they have numerous opportunities to be intercepted by a bus or rail transit service. In order for these trips to opt into a transit mode, they usually require a convenient location to access the system and ideally have a single-seat ride to their destination. The destination end of the trip also needs to be accessible from the transit stop, either via walking or a connecting shuttle. The total time and cost of the trip needs to be competitive with the automobile.

Additionally, trips originating beyond the Route 7 corridor may be potential for ridesharing. Park & Ride lots are situated to allow for carpooling. Carpooling saves money, but is not necessarily the most convenient option for many commuters who may require or desire a more flexible schedule. It does however; increase the people-moving capacity of the highway.

### **Planned and Programmed Projects in the Study Corridor**

A number of transportation improvements in the corridor have been identified through other study efforts, some are in construction, and others are planned. The Statewide Transportation Improvement Program (STIP) and Long-Range Transportation Plan (LRTP) from CTDOT were reviewed to identify planned and programmed projects on Route 7 in the study area. Also, CTDOT was contacted to confirm the status of these projects. The following is a list of the planned and programmed projects:

- #34-260 – Widening of US 7 from 0.5 mile north of CT 35 to 0.4 miles south of Wooster Heights Rd in Danbury: This project is essentially complete as of this report's publication and results in a 4-lane cross-section for the length of Rt. 7 indicated.
- #161-118 – Major widening of US 7 from Wolf Pit Road to the North Junction of CT 33 & 106 in Wilton: This project is currently under construction and will result in a 4-lane cross-section for the length of Rt. 7 indicated.
- #161-124 – Reconstruction of US 7 from Old Danbury Road to the vicinity of Olmstead Hill Road in Wilton: This project is programmed to be in the construction phase in 2010 according to the 2010 Draft STIP and will result in a 4-lane cross-section.
- #161-136 – Construct a parking structure at the Wilton Station at US 7 & CT 33: This project is programmed to be in the construction phase in 2010 according to the 2010 Draft STIP.

Additionally, a number of other projects are currently in the planning stages of development.

The CTDOT launched the Danbury Branch Electrification Feasibility Study to evaluate the feasibility of electrifying the Danbury Branch commuter rail line as well as other possible alternatives to improve rail service on the Branch. Phase I of the Study was completed in 2006 and Phase II of the Study began in November 2007. Phase II includes additional refinement of selected improvement alternatives, performance of a detailed Environmental Impact Statement (EIS), and selection of a preferred alternative(s).

Another project led by the Georgetown Land Development Corporation is work toward a large-scale redevelopment of Georgetown that includes reopening the former Georgetown commuter rail station on the Danbury Branch Line and making a number of roadway improvements to support the new development in the Georgetown section of Route 7 at the intersections of Route 107 and at the un-signalized intersection of North Main Street. The project also includes the construction of a new commuter rail station with approximately 300 parking spaces reserved for commuter rail use in a parking garage on site.

Finally, a Preliminary Design (PD) for State Project # 102-305 was completed for the segment of Route 7 between Route 33 and Grist Mill Road. This project is not currently on the STIP or LRTP. The purpose of this project was to improve traffic flow from the Route 7 Expressway terminus to the intersection of Route 7 and Route 33 without building a short bypass of this section. Overall, the project would have widened the existing roadway to provide two lanes of traffic in each direction with an additional operational lane at major intersections.

These projects can have a huge influence on the transportation options in the Route 7 corridor and their status and findings will be reflected appropriately in this study.

### **Highway Geometry, Traffic Operations, and Safety**

The Route 7 alignment is defined by topography. Natural features such as the Norwalk River, rock ledge, and significant expanses of wetlands run parallel to the highway. As such, Route 7 is noted for its curvilinear and rolling alignment. Physical constraints have defined the geometry of Route 7 to a degree, and limit any practical opportunities for major expansion along the entire length of the corridor.

As a result, Route 7 is a unique highway. Within this study corridor, it begins and ends as a limited access expressway and then transitions between a 2-lane and 4-lane arterial. Furthermore, it serves urban, suburban, and rural land use contexts which alter the characteristics of the road itself. For example, urban sections of the highway are characterized by more frequent driveways and dedicated turn lanes at major intersections.

### **Roadway Geometry**

The physical layout, or geometry, of a road is responsible for the flow of traffic and contributes to the degree of safety for motorists, bicyclists, and pedestrians. Factors such as number of lanes, lane width, grade, curvature, and intersection type affect traffic volume, capacity, travel speed, congestion, safety, access to property, and driver behavior. The following sections present an inventory of Route 7's geometric conditions which are to be used to help understand the factors that contribute to congestion and safety issues and help identify gaps in the roadway system.

#### **Travel Lanes**

Traveling north to south, Route 7 transitions from a 4-lane limited access expressway south of I-84 in Danbury to a 2-lane arterial highway at a location approximately 0.25-miles north of the intersection of Route 7 and Old Sugar Hollow Road. Continuing in the southbound direction, the 2-lane section again expands to a 4-lane section approximately 850 feet north of Starrs Plain Road and extends south to the Route 7 junction with Route 35.

From the Route 35 intersection south to Allen's Meadow just north of Wilton High School, Route 7 continues as mainly a 2-lane highway with occasional lane additions at major intersections to accommodate turning vehicles.

In front of the Wilton High School a 4-lane section exists which drops down to 2-lanes from the High School to Ridgefield Road. From Ridgefield Road south, Route 7 is 4-lanes to the junction of Route 33 where it reduces to three lanes wide with 2 lanes in the northbound direction and 1 lane in the southbound direction all the way to Grumman Hill Road. Route 7 is 4-lanes from Grumman Hill Road down to Grist Mill Road; the southern boundary of the study area.

Lane continuity means that the number of travel lanes is maintained between any two given points. When lanes are reduced over a stretch of highway, a bottleneck is created and typically congestion and an increase in traffic accidents result. Frequent lane additions and

subtractions are generally a discouraged traffic engineering practice; however, they can be more effectively accommodated when they are added or subtracted at a major intersection that split the flow of traffic. For example, the 4-lane section of Route 7 in Ridgefield reduces at the intersection with Route 35. Of the 28,400 daily vehicles north of the intersection, about 44% are carried by Route 35 and the remaining 56% are on Route 7 south of the intersection. The reduction to 2-lanes south of the Route 35 intersection is a logical transition because the traffic demand drops significantly south of the intersection.

From Wilton High School to Wolf Pit Road in Wilton, Route 7 varies in number of lanes. This lane discontinuity in Wilton contributes to congestion and safety issues. An ongoing CTDOT construction project is developing a 4-lane cross section for this segment of highway and many of the physical deficiencies in the road are expected to be resolved once this project is completed.

Route 7 from the southern junction of Route 33 to Grumman Hill Road is currently 3 lanes; 2 lanes northbound and 1 lane southbound. A study performed by the CTDOT in 2004 (State Project No. 102-305) proposed a 4 lane section for the segment and additional intersection improvements continuing south to Grist Mill Road. Currently, these improvements have not been funded for further design and construction; therefore, a gap in lane continuity exists between the southern junction of Route 33 and Grumman Hill Road. Also, the transition from the expressway to arterial highway in the Grist Mill Road area is an impediment to mobility.

#### Shoulder Width

Road shoulders serve a number of purposes including emergency vehicle access, breakdown space, and lane separation for bicyclists. According to the CTDOT Design Manual, rural arterials such as Route 7 are typically designed with 4 to 8-foot shoulders.

Generally, Route 7 between Norwalk and Danbury has inconsistent shoulder width. The majority of the corridor consists of sub-standard shoulder width. The northern half of the corridor has significant stretches with a minimum 4-foot shoulder and the southern half is typically less than 4 feet in most locations.

In more pedestrian-scale areas, such as Georgetown and Branchville, it may be undesirable to have wide shoulders that support higher vehicular travel speeds; however, sufficient shoulder width, where appropriate, may help to reduce non-recurrent congestion caused by vehicle breakdowns or traffic incidents.

#### Vertical Grade

Highway grade, or hills, can present safety and operational challenges that should be considered when planning for corridor improvements. Hills can restrict sight lines and increase the distance a vehicle needs to safely stop. During inclement weather, road grades can also contribute to the loss of traction between a vehicle's tires and the pavement surface. In the case of long uphill grades, heavy vehicles such as trucks can be reduced to very low speeds, contributing to congestion.

Route 7 is generally considered to have rolling terrain. The highway is constructed in a valley and has significant stretches that are relatively flat and a few instances where the highway conforms to the hilly terrain. The CTDOT Design Manual suggests that a 7% grade should be considered a maximum for a Principal Urban Arterial. Locations approaching or over 7% are as follows:

- Immediately north of Ridgefield Road in Wilton heading northbound, the grade increases to 6.5% for approximately 850 feet.
- From Stonehenge Road in Danbury heading northbound, the grade increases to 8% for approximately 900 feet.

In addition to the maximum grade, the critical length of grade must be considered. The critical length of grade is the maximum length of a specific uphill grade on which a loaded truck can operate without an unreasonable reduction in speed. The highway gradient in combination with the length of grade will determine the truck speed reduction on upgrades. For Route 7, the following critical road length for each gradient is given:

Grade	Critical Length
2%	3000 feet
3%	1800 feet
4%	1200 feet
5%	900 feet

From Old Mill Road in Wilton heading northbound, the grade increases to 4.5% for approximately 1,500 feet. There is no climbing lane at this location.

#### Horizontal Curvature and Stopping Sight Distance

Horizontal curvature of a road affects a driver's ability to see far enough to be able to stop safely to avoid a collision. Curves, especially when located on a grade, can also contribute to a loss of control of a vehicle if speed limits are not adhered to. The Route 7 alignment runs through a natural valley and as such, is characterized by rolling features and frequent curves.

For Route 7, data related to horizontal curvature and stopping sight distance was obtained from the CTDOT's straight-line diagrams. A straight-line diagram (abbreviated SLD) is a diagram of a road where the road is shown as a straight line. Such diagrams display features along the road, including bridges and intersecting roads. Rows below the diagram show data about the road, including speed limit, number of lanes, driveways, horizontal and vertical alignment, among other data. Although this data was collected in 1986, much of the horizontal and vertical alignment information is still relevant. Field survey was undertaken to confirm issues identified on the SLDs.

The CTDOT Design Manual suggests that a stopping sight distance of 425 feet is required for level surfaces (less than a 3% grade) at a design speed of 50 MPH. The SLDs were used to locate horizontal curves with restricted sight distances of less than 425 feet. If a

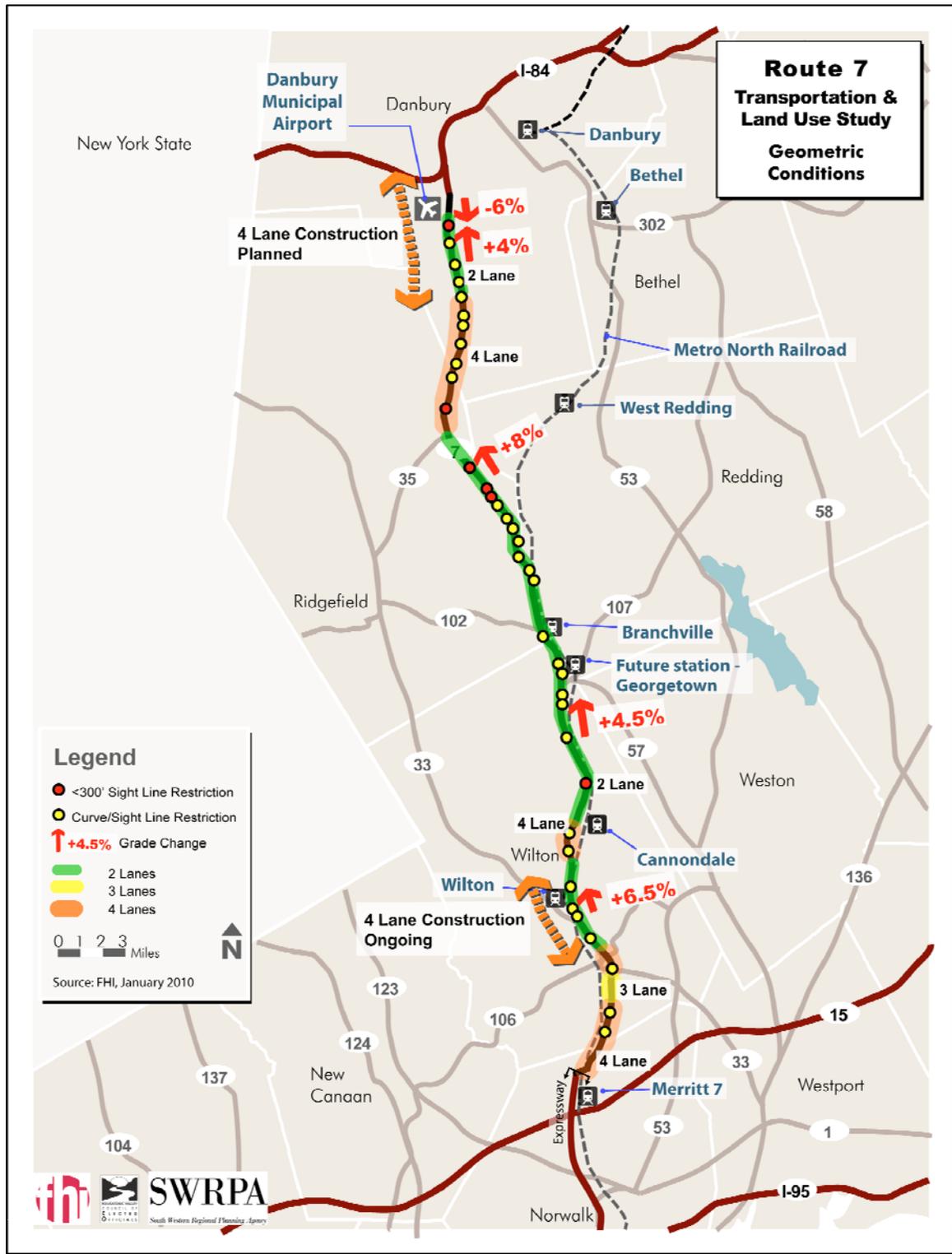
grade over 3% existed at the same location as the curve, a lower sight distance was used as per the Design Manual.

Field verification of the SLDs revealed that some of the deficiencies noted in the 1986 survey have been mitigated by development along the corridor and the current widening project in Wilton. A few areas in particular were confirmed to still have restricted sight lines, and the most significant are listed below:

- North of Ridgefield Road in Wilton there is a 6.5% grade that restricts sight lines to about 200'.
- North of Seeley Road in Wilton there is a 9 degree curve that restricts sight lines to less than 275'.
- Between Cains Hill Road and New Road in Ridgefield there is a 10.5 degree curve to the right followed by an 8 degree curve to the left limiting sight distance to 250'.
- North of Druid Lane in Ridgefield there is an 8% grade that limits sight distance to 200'.
- North of Laurel Lane in Ridgefield there is rock ledge that limits sight distance to about 275'.
- Entering the expressway in Danbury just south of Miry Brook Road the grade limits sight distance to about 250'.

Figure 3 illustrates the lane arrangements, shoulder width, locations where restricted sight distance was recorded, and vertical grade deficiencies.

Figure 3: Route 7 Geometric Conditions



Source: FHI, January 2010

## **Traffic Operations and Safety**

A large percentage of traffic using Route 7 on a daily basis is through traffic, using the corridor as a regional connector between the interstate highways. As such, Route 7 is part of a larger network of roads that form a complete trip by many users. Operating conditions on I-95, Route 15, and Route 1 in southwest Connecticut are inextricably linked to the overall delay and accessibility issues that confront many motorists using Route 7. Similarly, congestion on I-84 in and around Danbury is part and parcel of the total delay experienced by the longer distance inter-regional and inter-state trips.

The highway capacity constraints leading to Route 7, as well as on Route 7, result in drivers using local diversion routes to avoid congestion on Route 7 where possible. At the Ridgefield/Wilton town line, virtually all of the through traffic must converge back onto Route 7 as there is no practical diversion route adjacent to this segment of the corridor.

In addition to its role as a regional thoroughfare, Route 7 is a local road for some trips. The highway serves as a commercial and services corridor for many local residents and businesses. These shorter distance trips are more diverse in their purpose, meaning that unlike commuter travel, these trips include a high proportion of shopping and other non-business activities. Since shorter trips have fewer choices with regard to travel modes, the safe and efficient operation of the highway is of great importance for the local community.

Route 7 in Wilton from approximately Olmstead Hill Road to the Norwalk City Line has the heaviest concentration of businesses in the corridor, and is the segment with the highest percentage of short distance trips. Numerous driveways along this stretch of road increase the conflict points for vehicles accessing properties. Consequently, this stretch of road has a concentration of vehicular accidents. The majority of high accident locations are near complex intersections, where lanes converge, or where numerous driveways exist. Some of this may be alleviated once the current construction project is completed; however, access management can be a potential solution for improving safety and operations in this area.

Other nodes of development that experience heavy local trip activity include the Cannondale and Georgetown sections of Wilton, and the Branchville section of Ridgefield. These areas contain concentrated development that attracts a mix of local and longer distance traffic. These areas also interface with the commuter rail system. These areas are not particularly well defined with gateways, or visual clues, that a vehicle is entering a more developed and active area. Potential opportunities exist to develop appropriate gateways that visually transition the highway from a high speed thoroughfare to a local activity center.

### **Historical Traffic Patterns**

In general, daily traffic volume on Route 7 has remained relatively consistent and even decreased between 1999 and 2007. Recently collected data for 2009 shows traffic has recovered since 2007 and has surpassed 1999 and 2001 levels.

The CTDOT maintains traffic count records on Route 7. Locations within the three study area municipalities were selected for comparative purposes. Table 1 lists the three locations, the year of the count, and the average daily traffic at that location.

Table 1: Historical Traffic Volumes on Route 7

Town	Location	Year of Count	Average Daily Traffic
Danbury	South of Old Sugar Hollow Road	2009	31,800
Danbury	South of Old Sugar Hollow Road	2007	27,100
Danbury	South of Old Sugar Hollow Road	2004	31,700
Danbury	South of Old Sugar Hollow Road	2001	28,500
Ridgefield	North of Route 102	2009	22,000
Ridgefield	North of Route 102	2007	16,100
Ridgefield	North of Route 102	2004	16,400
Ridgefield	North of Route 102	2001	18,200
Wilton	North of Cannon Road	2009	27,800
Wilton	North of Cannon Road	2005	20,200
Wilton	North of Cannon Road	2002	23,000
Wilton	North of Cannon Road	1999	23,600

Source: CTDOT TMSADT Database and FHI Traffic Count Program (2009)

Average daily traffic volume on other state highways that intersect with Route 7 is summarized in Table 2.

Table 2: Historical Traffic Volumes on Intersecting Highways

Route	Location	Year of Count	Average Daily Traffic
33	West of Route 7	2005	14,200
106	Northeast of Route 7	2005	2,700
106	Southwest of Route 7	2005	10,400
107	East of Route 7	2005	12,500
102	West of Route 7	2007	6,800
35	Southwest of Route 7	2007	13,500

Source: CTDOT TMSADT Database (2009)

### Existing Traffic Volumes

Automatic Traffic Recorders (ATR) were placed at six locations along Route 7 to collect 24-hour traffic data. The ATRs were installed on November 4<sup>th</sup> and removed on November 12<sup>th</sup> in 2009. The data collected by the ATRs was used by the CTDOT to develop Year 2009 traffic volume diagrams (presented in Appendix C). The six count locations on Route 7 are as follows:

1. North of Grumman Hill Road in Wilton
2. South of Wolf Pit Road in Wilton
3. South of Mountain Road in Wilton
4. North of Route 102 in Ridgefield
5. North of Druid Lane in Ridgefield
6. North of West Starrs Plain Road in Danbury

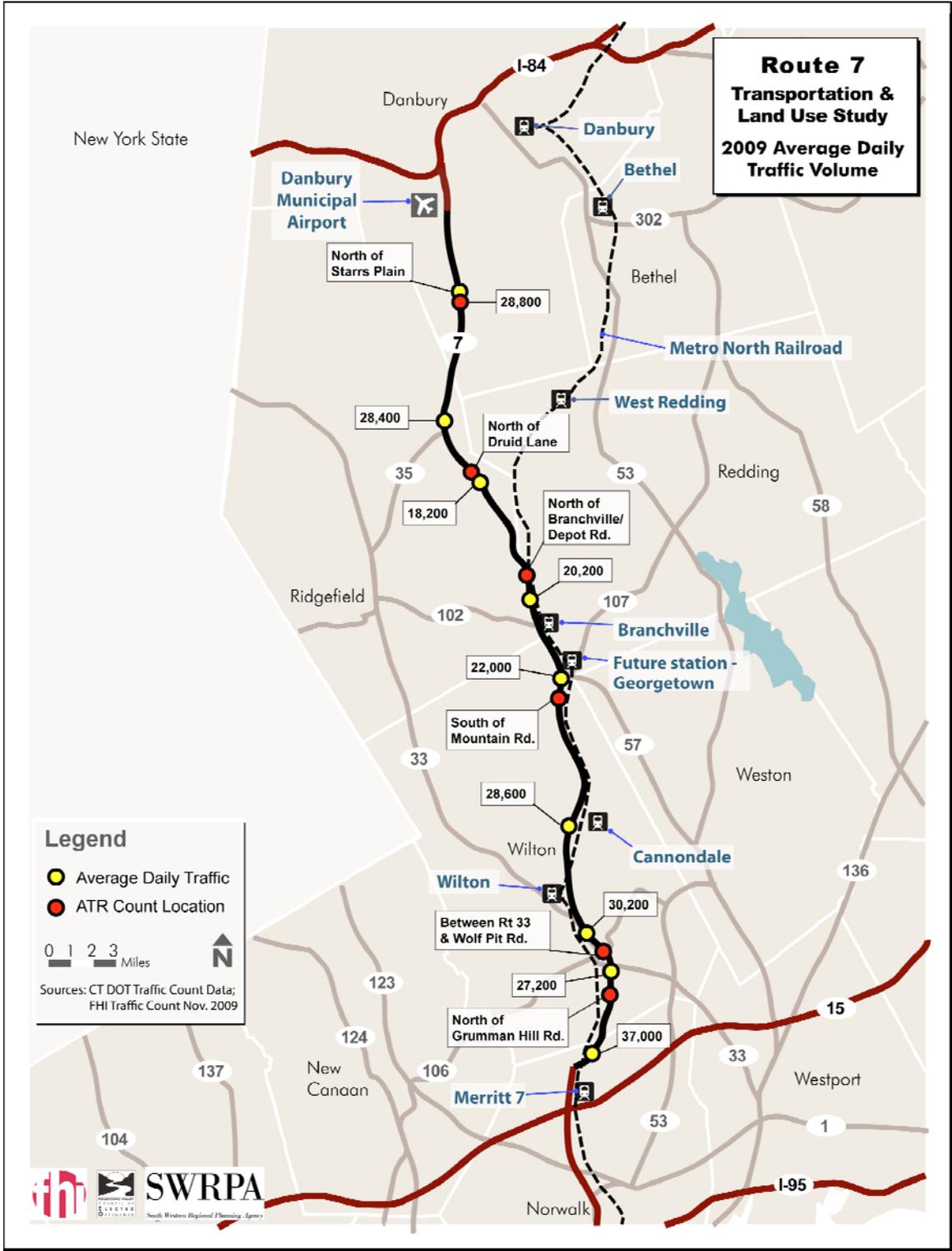
Based on these counts, the average daily traffic volume on Route 7 is highest at each end of the study corridor, where Route 7 transitions from an expressway to a principal arterial. Starting north of Grist Mill Road in Norwalk, the traffic is at its highest with a 2009 volume of 37,000 vehicles per day (vpd). Continuing northward, traffic volume decreases to 27,200 vpd immediately south of the junction with Route 33 and then increases to 30,200 vpd north of Wolf Pit Road in Wilton.

Immediately south of Route 107 in the Georgetown section of Wilton, the daily traffic volume is 22,000 vpd. North of the junction with Route 102, the traffic decreases further to 20,200 vpd. Traffic continues to decrease south of Route 35 in Ridgefield to about 18,200 vpd. North of Route 35 the traffic grows steadily until the corridor reaches the expressway section in Danbury. At that point, traffic levels are at 28,800 vehicles per day.

The increased traffic levels at the north and south extremes of the corridor are indicative of the denser land use development in those areas and the transition to a higher capacity limited-access facility. The higher traffic volume may also be a result of Route 7 serving as a gateway to Wilton from Norwalk and to Ridgefield from Danbury.

Figure 4 illustrates the location of the six ATR count stations as well as the 2009 ADTs calculated for select locations along Route 7.

Figure 4: 2009 Average Daily Traffic Volumes



Sources: CTDOT Traffic Count Data; FHI Traffic Counts November 2009

### Vehicle Classification

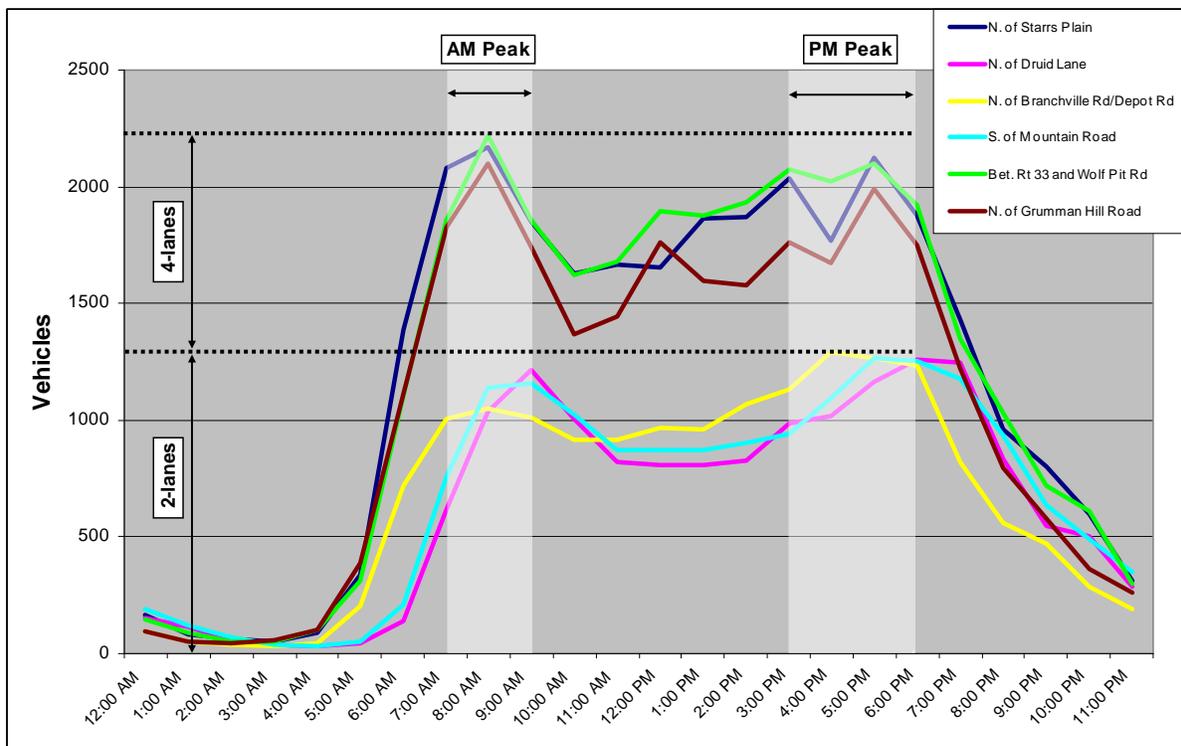
Each of the six ATR count stations also collected vehicle classification data. Vehicles were classified by car, truck, and bus. While each station varied slightly from one another, the general composition of traffic was approximately 95% cars, 0.5% buses and 4.5% trucks.

In the southern end of the corridor, from Route 33 to Grist Mill Road, the car represents about 89% of the vehicles, while buses remain at 0.5% and trucks make up about 10.5% of the vehicles. The intense commercial activity in the lower part of the corridor likely accounts for the higher truck percentage in this area.

### Peak Periods

The 24-hour traffic count data from the six ATR locations was used to determine the start and duration of the peak traffic periods in the day. Of the six locations analyzed, three were at 4-lane sections and 3 were at 2-lane sections. Figure 5 graphically depicts the traffic volume over each hour of the day at each location.

Figure 5: Daily Traffic Volume Patterns



Source: FHI - ATR counts conducted November 2009

From the figure, predominate morning peak period traffic is within the two hours from 7:00 to 9:00. In the afternoon, predominate peak period traffic is within the three hours from 4:00 to 7:00. Two locations in particular, north of Druid Lane and south of Mountain Road have peak periods that lag the other locations by one hour. That is, the morning peak period seems to

be from 8:00 to 10:00 and the afternoon peak period is from 5:00 to 8:00. It is unclear as to the reason for this peak period time shift at these two locations.

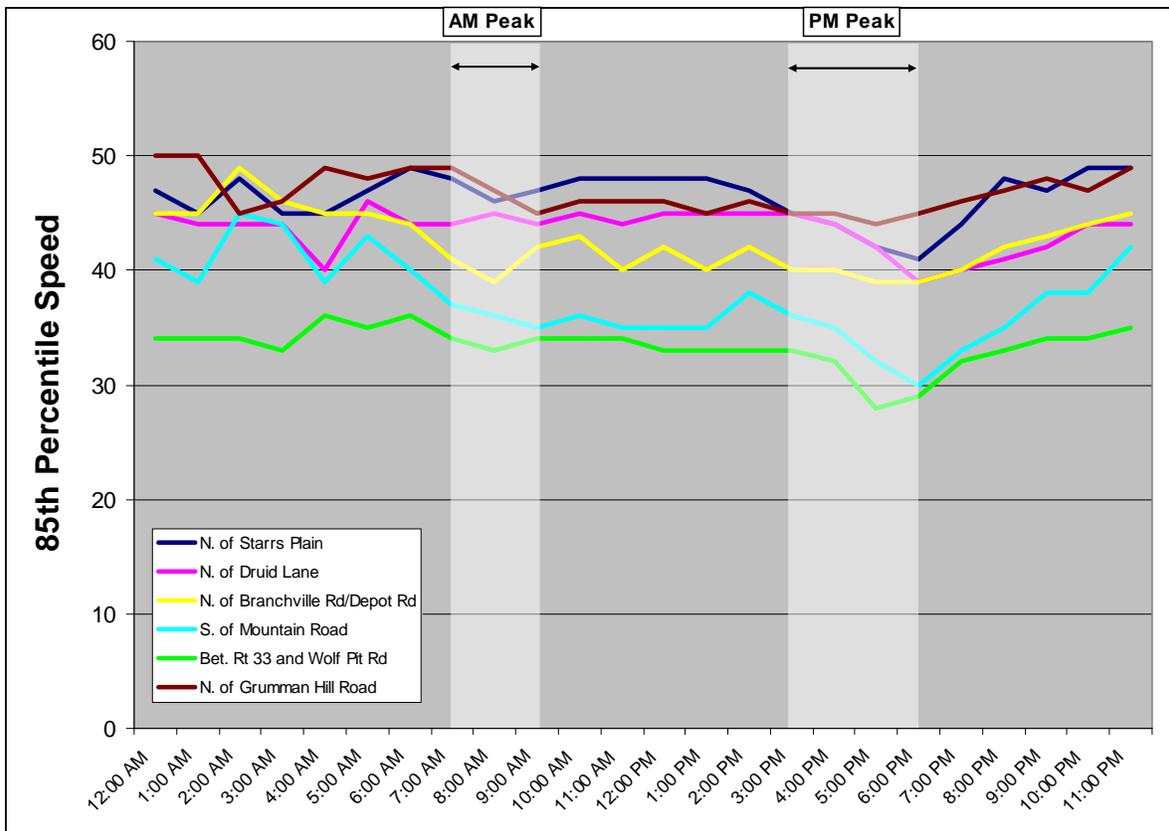
At the northern and southern ends of the corridor, the locations closest to the expressway portions of Route 7 exhibit afternoon levels that are significantly high over several hours. This is typical for urban sections of highway that serve a multitude of trip purposes in addition to the more time dependent commuters. In general, however, the daily traffic volume patterns reflect a typical commuter corridor; with strong peak period peaking characteristics; along with relatively busy and steady day-long traffic demand. Volumes drop off steadily after 7 PM to very low levels at all count locations during the early morning hours.

Vehicle Speed

Each of the six ATR count stations also collected 85<sup>th</sup> percentile speed. The ATR tubes were placed far enough from major intersections to capture the prevailing speed of traffic. The 85<sup>th</sup> percentile speed means that 85% of the traffic was recorded at or below the speed indicated.

Figure 6 graphically depicts the 85<sup>th</sup> percentile speeds for the six ATR locations.

Figure 6: 85th Percentile Speed



Source: FHI - ATR speed counts conducted November 2009

The ATR location with the slowest speed is between Route 33 and Wolf Pit Road in Wilton. This is an area of heavy traffic and peak period congestion so it is not surprising to measure lower travel speeds here. During the afternoon peak period, speeds drop below 28 MPH along this section.

Conversely, the highest recorded speeds were north of Starrs Plain Road in Danbury at the opposite, northern, end of the corridor. The transition from high speed expressway to rural arterial results in a more free flowing condition. Less development and fewer curb cuts allows traffic to move at higher speeds in the northern portion of the corridor.

### Travel Time

Travel time data along the Route 7 corridor was collected by SWRPA on November 4<sup>th</sup> and 5<sup>th</sup> of 2009. Global Positioning System (GPS) units were used during travel time vehicle runs to record location data at fixed time intervals, resulting in a digital file that illustrates segments of highway at predetermined speed ranges. The speed data is illustrated by direction and time of day in the Appendix C. It should be noted that the travel time data was collected while construction along Route 7 was nearing completion resulting in some delay which is anticipated to be alleviated once construction is complete.

In the morning, travel speed is generally lower in the southbound direction. Average speed for the entire corridor is about 25 MPH in the southbound direction versus 34 MPH in the northbound direction. The slowest segment is southbound between Seeley Road and Ridgefield Road in Wilton. Over this segment of Route 7 the travel speed is less than 20 MPH. In the northbound direction, the same general segment operates between 20 and 40 MPH.

In the mid-day, average travel speed for the entire corridor is about 30 MPH in either direction. Mid-day, travel speeds are lowest in the southbound direction in Wilton, generally between Seeley Road and Ridgefield Road. Speeds along this segment range from under 20 MPH to 30 MPH. In the northbound direction the slowest segment of Route 7 is between Route 35 and Starrs Plain Road. Speeds along this segment range from under 20 MPH to 30 MPH.

In the afternoon, travel speed is generally lower in the northbound direction. Average speed for the entire corridor is about 32 MPH in the southbound direction versus 30 MPH in the northbound direction. The slowest segment is northbound between Route 33 (south junction) and Cannon Road in Wilton. Over this segment of Route 7 the travel speed is generally between 20 and 30 MPH. In the northbound direction, the same general segment operates between 20 and 40 MPH.

### Signalized Intersection Operations

Traffic signals control the flow of traffic on Route 7 at 29 intersections with local and state roads. The CTDOT operates and maintains these signals. Based on a field survey of the corridor, a list of signalized intersections within the project limits was determined. Several of these intersections are currently under construction as part of the ongoing road widening improvements in Wilton. Several others have been analyzed as part of other study/design efforts.

Overall, 11 of the 29 intersections are being upgraded as part of current construction projects. Another 7 intersections have been advanced through a preliminary design (CT Project # 102-305) but at this time are not programmed for construction. Finally, 2 additional intersections have been studied as part of the Georgetown Land Development Project. The signalized intersections in the study area, in order from south to north, include:

#### **Norwalk:**

1. Route 7 and Grist Mill / DMV Driveway\*\*

#### **Wilton:**

2. Route 7 and West Rocks Rd/LA Fitness Driveway\*\*
3. Route 7 and Foxboro Drive\*\*
4. Route 7 and Kent Rd.\*\*
5. Route 7 and Kensett Ave/Plaza Driveway\*\*
6. Route 7 and Wilton Corp. Park/Self Storage Driveway\*\*
7. Route 7 and Grumann Hill Rd./ASML Driveway\*\*
8. Route 7 and Route 33 (South Junction)\*\*
9. Route 7 and Wolfpit Rd. \*
10. Route 7 and Sharp Hill Rd. \*
11. Route 7 and Wilton Fire/Ambulance Driveway \*
12. Route 7 and Cricket Lane/Wilton Police Dept. Driveway \*
13. Route 7 and Old Highway Road \*
14. Route 7 and Ridgefield Rd. (Route 33 North Junction) \*
15. Route 7 and Wilton Train Station Driveway \*
16. Route 7 and School Rd./ Office Driveway \*
17. Route 7 and YMCA Driveway \*
18. Route 7 and Drive to Wilton HS \*
19. Route 7 and Cannon Rd. \*
20. Route 7 and Mountain Rd./School St.\*\*\*
21. Route 7 and Driveway to Georgetown Market Plaza\*\*\*

#### **Ridgefield:**

22. Route 7 and Branchville Rd./Depot Rd.
23. Route 7 and Topstone Rd./Cains Hill Rd.
24. Route 7 and New Rd.
25. Route 7 and Haviland Rd./Great Pond Rd.
26. Route 7 and Route 35

**Danbury:**

27. Route 7 and Bennetts Farm Rd.
28. Route 7 and Triangles Plaza
29. Route 7 and Starrs Plain Rd.

\* *Under Construction*

\*\* *Intersection improvements under State Project 102-305*

\*\*\* *Studied in the Georgetown Land Development Project*

In addition, the intersection of Route 7 and North Main Street is programmed to be signalized as part of the Georgetown Redevelopment project, resulting in a total of 30 signalized intersections along the study roadway corridor.

A capacity analysis was conducted for the study intersections not currently undergoing reconstruction (a total of 18 intersections). Methodologies presented in the *Highway Capacity Manual 2000* (Transportation Research Board) were followed. Synchro software (version 7), which implements the HCM methodologies, was used to perform the analyses. The analyses were performed for the weekday AM and PM peak hours under existing conditions (2009).

Level of Service (LOS) for an intersection is rated in a range from A to F, with A being the best operating conditions and LOS F being the most congested. LOS F represents long delays and generally unacceptable conditions. For signalized intersections, LOS is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, LOS criteria are stated in terms of average stopped delay per vehicle for the peak 15-minute period of the peak hour for the entire intersection and by approach. Table 3 provides a summary of the LOS for the 18 signalized study area intersections that are currently not under construction.

Table 3: Capacity Analysis Summary

Route 7 Signalized Intersections	Existing Conditions (2009)	
	AM Peak Hour	PM Peak Hour
Grist Mill Rd/DMV Driveway	F	F
West Rocks Rd/I-Park	C	F
Foxboro Drive	A	A
Kent Rd	A	B
Kensett Ave/Plaza Driveway	B	B
Wilton Corp. Park (50 Danbury Rd)/Self Storage Dr.	A	A
Grumann Hill Rd/ASML Dr.	C	B
Route 33 (South Junction)	E	E
Mountain Rd/School St	C	D
Georgetown Market Plaza	B	D
Branchville Rd/Depot Rd	C	B
Topstone Rd/Cains Hill Rd	B	C
New Rd	B	C
Haviland Rd/Great Pond Rd	B	B
Route 35	B	B
Bennetts Farm Rd	A	B
Triangles Plaza Dr.	A	A
Starrs Plain Rd*	A	A

Source: Fitzgerald & Halliday, Inc., January 2010

Additionally, widening of Route 7 from Wolfpit Hill Road to Cannon Road was completed in early 2010 in conjunction with CTDOT projects 161-118 and 161-124. Nine of the study area intersections in Wilton were upgraded through these projects. As a part of the design of these projects, capacity analyses were conducted for these nine intersections under both base year and future conditions. Base year analyses were conducted based on 1999 volumes. As indicated in the review of historical traffic counts, volumes on Route 7 in 1999 are comparable to 2009 volumes.

Table 4 provides a summary of the LOS for these intersections. The analysis provided by CTDOT also indicated that under future conditions following the completion of the reconstruction of the intersections, all nine intersections will operate at LOS C or better during both morning and afternoon peak hours.

Table 4: Capacity Analysis Summary

Route 7 Intersections within CTDOT Projects 161-118 and 161-124					
Intersection	Movement	Base Year (1999)		Future Build (2020)	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Sharp Hill Road*	Westbound	F	F	-	-
	Northbound Left	B	C	-	-
	Overall Intersection**	N/A	N/A	A	B
Cricket Lane		C	C	A	A
Old Ridgefield Road/Old Highway Road*	Eastbound	E	E	-	-
	Westbound	F	F	-	-
	Northbound Left	B	B	-	-
	Southbound Left	B	B	-	-
	Overall Intersection**	N/A	N/A	A	B
Route 33 (North Junction)		E	E	B	B
Station Access Road*	Eastbound Left	F	F	-	-
	Eastbound Right	C	B	-	-
	Northbound Left	C	B	-	-
	Overall Intersection**	N/A	N/A	B	A
School Road/Wilton Plaza		F	F	C	A
Kiwanis Park/Wilton HS		B	B	A	B
Cannon Road*	Westbound Left	F	F	-	-
	Westbound Right	B	C	-	-
	Southbound Left	A	C	-	-
	Overall Intersection**	N/A	N/A	B	B
Olmstead Hill Road*	Eastbound	F	F	-	-
	Northbound Left	B	B	-	-
	Overall Intersection**	N/A	N/A	B	B

Source: CTDOT, 2002

\* Intersections were un-signalized prior to construction project. LOS by approach is provided.

\*\* LOS after signalization for overall intersection

NOTE: Because the transportation network was modeled in 2002, the projections do not account for projects which are no longer programmed as of 2010

Finally, a Preliminary Design (PD) Report for the Reconstruction of US Route 7, State Project # 102-305, dated September 2004 was provided by CTDOT. This project is not currently on the STIP or LRTP. The purpose of this project was to improve traffic flow from the Route 7 Expressway terminus to the intersection of Route 7 and Route 33. Overall, the project would have widened the existing roadway to provide two lanes of traffic in each direction with an additional operational lane at major intersections.

Figure 7 illustrates the Level of Service for the signalized intersections within the study corridor.

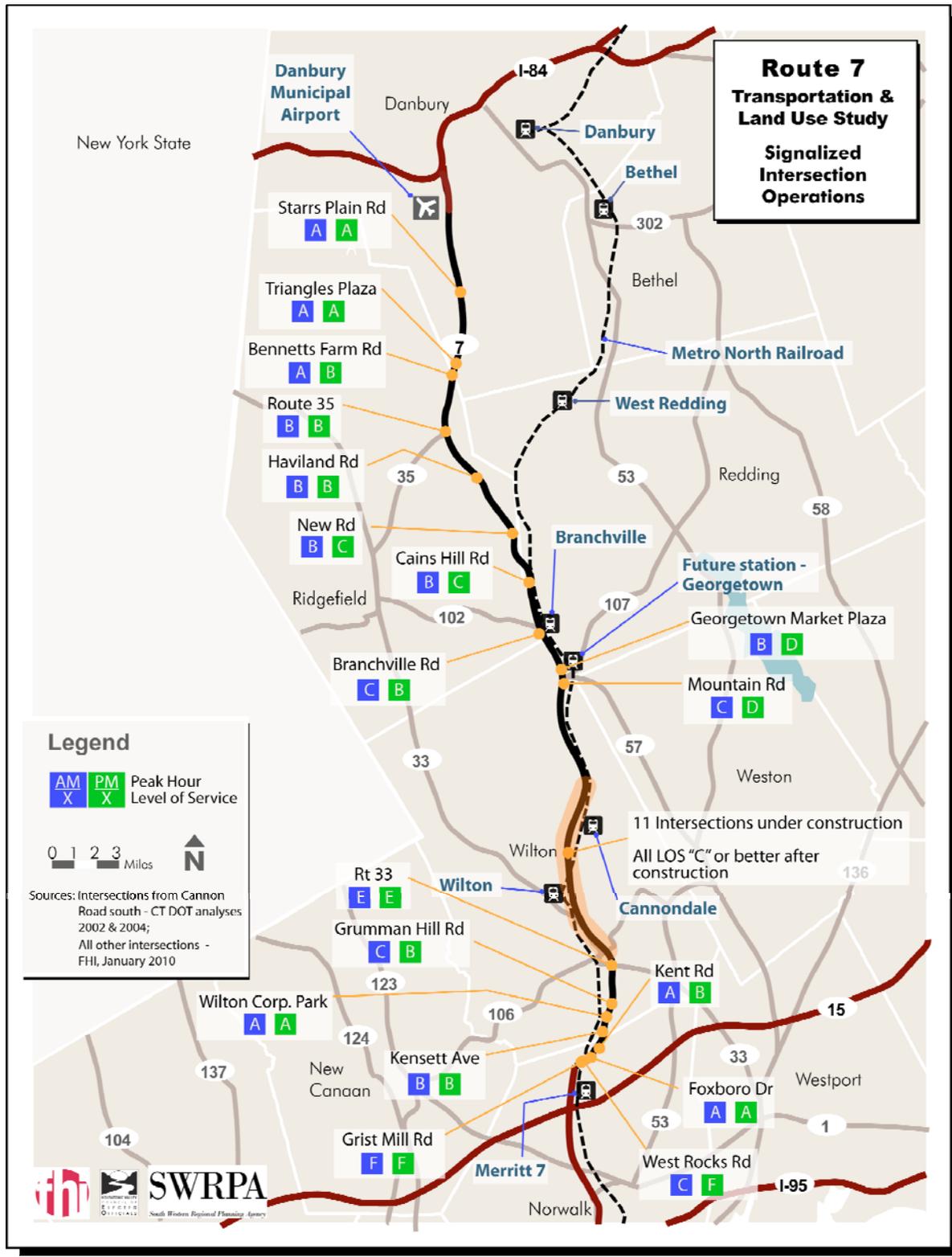
Specific intersection improvements included as part of the project are as follows:

- Grist Mill Road: Two alternatives were considered, each involving a different configuration of turn lanes.
- West Rocks Road: Two alternatives were considered, each involving a different configuration of turn lanes.
- Grumman Hill Road: The addition of northbound and southbound exclusive left turn lanes was proposed. Allowing protected left hand turns for both northbound and southbound traffic was considered.
- Route 33: A new alignment was proposed that would make Route 7 the primary movement. Three alternative lane configurations were considered.

Operations for the year 2025 were provided in the PD Report and the results indicate general improvement over this section of Route 7; however, poor LOS would still result at the Grist Mill Road and West Rocks Road intersection with Route 7. According to the CTDOT, the project lacks funding necessary to design and construct the improvements.

Without improvements, this segment of Route 7 represents a gap in terms of mobility in the corridor. It is recommended that improvements to this section of the highway remain a high priority and either be addressed by forwarding State Project 102-305 or by considering additional capacity improvements here. This will be further discussed in subsequent tasks in this study.

Figure 7: Signalized Intersection Baseline Peak Hour Level of Service Ratings



Sources: All intersections from Cannon Road south – CTDOT analyses 2002 and 2004;  
All other intersections - FHI, January 2010

### High Accident Locations

Crash data were obtained from CTDOT for Route 7 in the study area for the most recent three-year period available (June 30, 2005 – June 30, 2008). A total of 1,503 crashes were recorded along this 16.5-mile length of Route 7 during this timeframe, including 511 which resulted in injuries.

Additionally, there were two fatal accidents. One fatal accident occurred at the intersection of Route 7 and Grumman Hill Road; this was a turning collision in which the two vehicles were on intersecting paths. The contributing factor for this collision was a violation of traffic control. The other fatal accident was a fixed-object collision between Simpaug Turnpike and Ashbee Lane; the contributing factor for this collision was a vehicle operating on the wrong side of the road.

The most prevalent type of accident was the rear-end collision, representing 53 percent of all reported accidents, typically caused by following vehicles too closely. Most of the rear-end collisions occurred on a weekday either between 8:00 and 10:00 a.m. or from 12:00 noon to 6 p.m. This pattern of accidents coincides with periods of peak traffic congestion during the morning and afternoon commuting hours as well as during the start and end of the school day.

Overall, ten percent of all reported accidents were turning collisions involving vehicles on intersecting paths. The typical contributing factor for turning collisions is failure to grant right-of-way. Nine percent of all reported accidents were sideswipe collisions between vehicles heading the same direction. The most prevalent contributing factor for sideswipes is an improper lane change. Nine percent of all reported accidents were fixed-object collisions. The common contributing factors to fixed-object collisions include driving too fast for conditions or losing control.

Locations exhibiting a higher proportion and pattern of accidents along the corridor are described in the following paragraphs.

#### *Kensett Ave & Wilton Common Shopping Center Driveway:*

A total of 36 accidents occurred at this location during the three-year period analyzed. Fifteen of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (25), typically resulting from drivers following too closely. Opposite-direction turning collision (6) was the second most common collision type at this intersection/segment. This collision type is characterized by a vehicle failing to grant right-of-way. This area features a number of closely-spaced commercial driveways. Rear-end collisions along this type of roadway typically occur when a vehicle is traveling too fast or is following too closely behind a vehicle which stops to make a left turn into a driveway. Turning collisions in an area of this type typically are caused by a left-turning motorist misjudging a gap between thru-traveling vehicles; high speeds exacerbate this situation.

#### *Mobil Gas Station Driveway to and including the intersection with Grumman Hill Road:*

A total of 74 accidents occurred along this 0.25-mile segment during the three-year period analyzed. Twenty-three of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (30), typically resulting from drivers following too closely. Intersecting-path turning collision (12) was the second

most common collision type at this intersection/segment. This collision type is characterized by a vehicle failing to grant right-of-way. The southbound direction transitions from 1 lane to two lanes in this location and likely accounts for the high occurrence of rear-end collisions as vehicles slow suddenly to merge from two to one lane.

*Wilton Hills Condos Driveway to and including the intersection with Rt. 33:*

A total of 32 accidents occurred on this 0.2-mile segment during the three-year period analyzed. Nine of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (25), typically resulting from drivers following too closely. This is also a complex intersection with a four-lane section transitioning to a three lane section. Route 7 has numerous curb cuts along this stretch which could have also contributed to the sudden slowing and prevalence of rear-end collisions.

*Pimpewaug Road to Catalpa Road, including the intersection with School Road:*

A total of 89 accidents occurred along this 0.58-mile segment during the three-year period analyzed. Twenty-one of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (68), typically resulting from drivers following too closely. School Road provides access to two Wilton elementary schools. In addition, access to Wilton High School and the Wilton YMCA are located just to the north of this segment. The majority of the rear-end collisions occurred between 3 p.m. and 6 p.m., a timeframe which begins with school dismissal and the start of after-school activities and ends with the evening commute. The rear-end collisions in this segment were typically a result of motorists traveling too fast or following too closely in congested conditions.

*Rt. 35 to Laurel Lane:*

A total of 47 accidents occurred on this 0.25-mile segment during the three-year period analyzed. Eleven of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (18), typically resulting from drivers following too closely. Same-direction sideswipe collision (12) was the second most common collision type at this intersection/segment. Sideswipe collisions are typically characterized by a driver making an improper lane change. Intersecting-path turning collisions (9) were also common at the intersection, which often reflects drivers failing to grant right-of-way. This is a busy intersection in which 4 lanes transitions down to 2 lanes south of Route 35.

*At Route 7 NB On-Ramp and Backus Ave:*

A total of 46 accidents occurred at this location during the three-year period analyzed. Nine of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (27). This is a signalized intersection located at Backus Avenue and the entrance to the Danbury Mall. Most of the rear-end collisions were caused by a driver following another vehicle too closely, often colliding as the leading vehicle attempted to stop at the traffic signal.

#### *At Route 7 SB Off-Ramp and Backus Ave:*

A total of 47 accidents occurred at this location during the three-year period analyzed. Ten of the accidents resulted in injuries but there were no fatalities. The most prevalent accident type was rear-end collision (17). Angle collision (11) was the second most common collision type at this intersection/segment. This signalized intersection is located at Backus Avenue and the entrance to the Danbury Mall. The Route 7 southbound off-ramp brings vehicles to the traffic signal as they are decelerating from a high speed. Most of the rear-end collisions were caused by a driver following another vehicle too closely, often colliding as the leading vehicle attempted to stop at the traffic signal. The angle collisions typically involved the at-fault driver violating traffic control, such as trying to proceed through the intersection as the light turns from yellow to red.

Figure 8 illustrates the locations of the corridor with the highest occurrence of accidents.

### **Bicycle, Pedestrian, and Transit Modes**

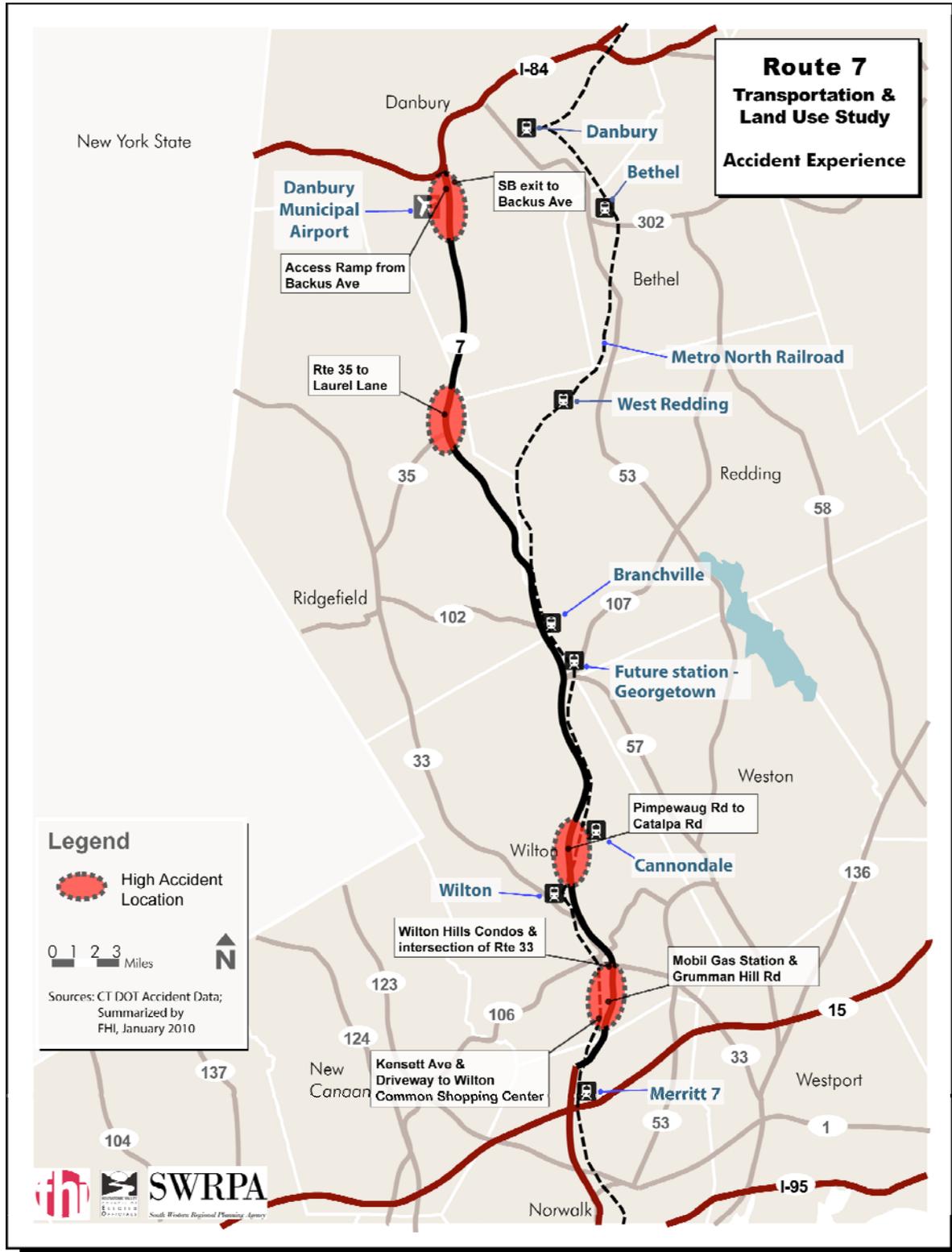
#### **Bicycling**

The Connecticut 2009 Bicycle Map classifies state highways in terms of suitability for bicycling. The suitability is based on the shoulder width as well as the motor vehicle traffic volumes of various segments of the roadway. The majority of Route 7 in the project area has a classification of “less suitable for bicycling”, as indicated by the orange coloring on the 2009 Bicycle Map.

This classification appears appropriate. In much of the corridor, the shoulder is less than three feet wide and the traffic volumes are at or above 16,000 vehicles per day. A more appropriate alternative bicycling route in this area of the state, according to the 2009 Bicycle Map, is Route 53. Route 53 parallels Route 7 to the east and is classified as a cross-state bicycle route.

Bicycling is generally more appropriate and safe on Route 7 north of Cannon Road than it is in the southern portion of the corridor. The northern portion of the corridor generally has wider travel lanes and shoulders. Even though the traffic may be traveling at higher speeds, there is more space for bicyclists and for cars to maneuver around them when needed. In contrast, the southern portion of the corridor has narrower shoulders, greater congestion, and more development. This higher density of development results in numerous driveways that provide vehicular access into the businesses. These turning movements are dangerous for bicyclists (as well as pedestrians) who motorists often don't watch for when making these turning movements.

Figure 8: Accident Experience



Sources: CTDOT Accident Data (June 2005-June 2008); Summarized by FHI, January 2010

## Sidewalks

The northern portion of the corridor has the lowest demand for walking. Much of this land is undeveloped. In these areas, the pedestrians, if present, walk in the wide shoulders.

Walking is a desirable form of transportation within the villages along the corridor. The villages of Branchville, Georgetown, and Cannondale, as well as the area of Wilton near the train station, have small businesses, schools, shopping, eateries, and community centers located within them. In such areas, pedestrians may park one time and walk from place to place within the village if they are able. While some of these areas have sidewalks, there are critical areas that do not.

One such area is in the village of Branchville. It is difficult for pedestrians to travel from the train station on the east side of Route 7, to the local businesses on the west-side of the highway. While there is a footbridge from the station to Route 7, it is dangerous to cross Route 7 at the footbridge location, which is south of the Branchville Road/Depot Road intersection. From the footbridge, it is also dangerous to walk along Route 7 to get to the pedestrian crossing signal at Branchville Road/Depot Road, which is on the north side of the four-leg intersection. There is no sidewalk or shoulder on the northbound side of the highway and the travel lanes are narrow and carry high traffic volume (greater than 28,000 vehicles per day).

Walking is also desirable in portions of Wilton where there are small businesses, schools, and community centers. There is on-going construction of sidewalks, ramps, and pedestrian walk buttons and signals from Wolfpit Rd to Cannon Rd in Wilton. This construction should greatly improve the pedestrian mobility in the areas around the high school, YMCA, and many of the local businesses in this section of the corridor.

In the southernmost portion of the corridor, there are a number of businesses, offices, and commercial areas. This area also poses the highest risk for pedestrians because of the large number of driveways to businesses as well as the gaps in the sidewalk network here.

## Bicycling and Walking Near Train Stations

Three of the train stations, Branchville, Cannondale, and Wilton, are directly within the Route 7 study area (1/4 mile distance from Route 7). Conditions for walking and biking around these stations are detailed below:

### Branchville Station

The Branchville Station is located on Depot Road just east of Route 7 in Ridgefield. There are small businesses and shops on the west side of Route 7 across from the station. A pedestrian desire line exists from the train station to the intersection and to the local businesses on the west side of Route 7.

The Depot Road bridge over the Norwalk River is very narrow. To get between the train station and the Branchville Road/Depot Road signalized intersection at Route 7, pedestrians must walk along the very narrow roadway with motor vehicle traffic.



An alternative route for a pedestrian coming from the rail station is to use a footbridge over the Norwalk River south of the intersection. This footbridge, however, is not directly accessible to the Branchville Road/Depot Road intersection because the shoulder of Route 7 is much too narrow for a pedestrian or a bicyclist. The footbridge could use some repairs, such as replacing the wiring along the sides and railing. In addition, there is no location south of the signalized intersection to cross Route 7 safely. This section of Route 7 also has high vehicular crash rates, as described previously in this memorandum.



The Branchville Station has no bicycle parking or bicycle storage facilities. Numerous bicycles were observed locked to various fences and posts illustrating a demand for bicycle parking. If bicycle parking and a shelter from rain and snow were constructed, more users would likely bike to the station and existing bicyclists would be better served.

The Branchville Station is handicapped accessible. A person in a wheelchair can park close to the sidewalk and train platform in the handicapped spaces. The sidewalk, however, is littered with excessive clutter, news boxes, and locked bicycles near the handicapped spaces. A person in a wheelchair would be required go behind the parked cars in the parking lot to get to the handicapped accessible ramp to the train platform.



### Cannondale Station

The Cannondale Station is located on the north side of Cannon Road between Route 7 and Pimpewaug Road. In addition to the rail station, there are a handful of small businesses / shops near and on Cannon Road. There are no sidewalks on this stretch of Cannon Road with the exception of the Cannon Road Bridge over the Norwalk River.

The station has no bicycle parking or bicycle storage facilities. Numerous bicycles were observed locked to various fences, posts, and other fixed objects illustrating a demand for bicycle parking. If bicycle parking and a shelter from rain and snow were constructed, more users would likely bike to the station and existing bicyclists would be better served. The station is handicap accessible.



### Wilton Station

The Wilton Station is located on Train Station Drive just west of Route 7. There are no sidewalks on Train Station Drive from Route 7 to the train station. While the portion of Route 7 near the train station is currently being upgraded with significant pedestrian improvements, it does not appear that the sidewalk construction will extend down Train Station Drive to the station.

The station has no bicycle parking or bicycle storage facilities. Numerous bicycles were observed locked to various fences, posts, and other fixed objects illustrating a demand for

bicycle parking. If bicycle parking and a shelter from rain and snow were constructed, more users would likely bike to the station and existing bicyclists would be better served. The station is handicap accessible.

In addition to the sidewalks and bicycle facilities noted above, the Norwalk River Trail extends into the corridor in Wilton, offering a multi-use path for walkers and bicyclists. The Ives Trail crosses the corridor in Ridgefield and Danbury. The Town of Ridgefield is working to extend this trail across the entire community from north to south.

In summary, opportunities to enhance access for pedestrians and bicyclists at these rail stations exist within the corridor. It should be noted that the Federal Transit Administration (FTA) makes enhancement funds available for the purchase and installation of bicycle racks at rail stations.

### **Americans with Disabilities Act (ADA) Review**

Ensuring that all persons, including persons with disabilities, have access to public transportation facilities is a Federal law. A cursory ADA review was undertaken to assess the condition of highway crossings for persons with disabilities. The table "Pedestrian Facility Inventory" (see Appendix C) provides information, as it relates to meeting the needs of disabled users, for the intersections in the corridor.

Where there are pedestrian push buttons in the corridor, the pedestrians are generally required to cross with the light and they do not have a protected signal with an exclusive pedestrian crossing phase. The three intersections that do have protected pedestrian signals include:

- YMCA driveway,
- Wilton Corporate Park / Self Storage Driveway, and
- West Rocks Rd / LA Fitness Driveway.



Many of the pedestrian push buttons in the corridor are not accessible to persons with disabilities. These buttons are located in places that pose serious challenges for those that are blind or in wheelchairs, such as behind guiderails, on steep embankments, and/or in tall brush. Examples of intersections with poor pedestrian button placement include:

- W. Starrs Plain Rd
- Route 35
- Haviland Rd / Great Pond Rd
- New Rd
- Topstone Rd / Cains Hill Rd
- Drive to Georgetown Market Plaza
- Grist Mill Rd / DMV Driveway



These intersections with poor pedestrian button placement are also often lacking ramps, detectible warning surfaces, and appropriate sidewalks connecting to the buttons. In addition, there are no audible pedestrian signals in the corridor for the blind.

From Wolfpit Road to Cannon Road in Wilton, the on-going construction of sidewalks, pedestrian walk buttons, ramps, and detectible warning surfaces are improving the accessibility and travel experience for persons with disabilities. These, once completed, appear to provide a complete network for pedestrians with disabilities.

### **Public Transit System**

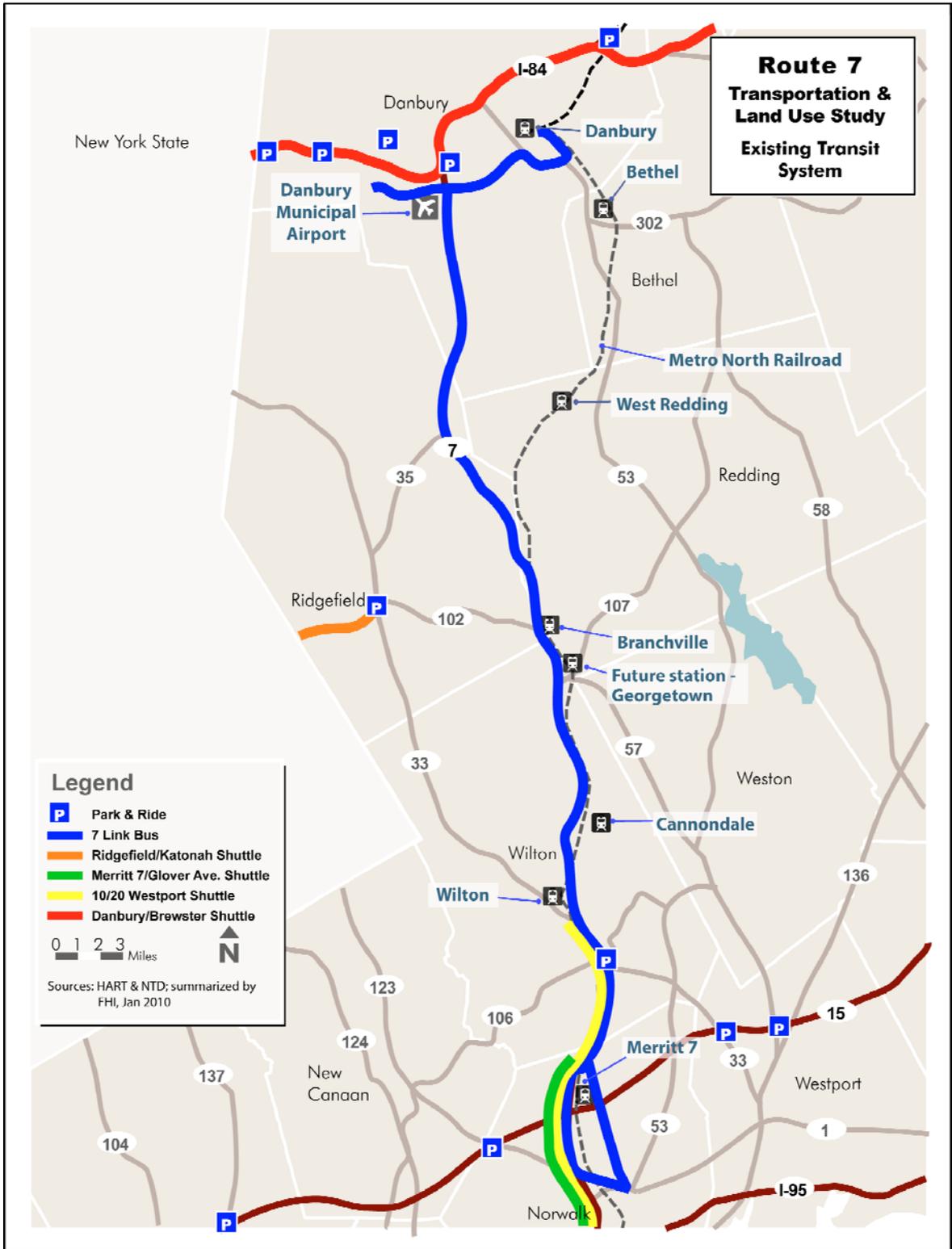
There are a number of transit service providers and routes that serve the Route 7 corridor. These include the Danbury Branch Rail Line, the 7-LINK bus service, employer and commuter shuttles, and paratransit service. The Danbury Branch Rail Line and the 7-LINK bus service run the span of the regional corridor and service north-south trips. The HART commuter shuttles serve east-west trips in the northwestern portion of the corridor, between northwestern Fairfield County and eastern Westchester County, New York. The Norwalk Transit District (NTD) commuter and private employer shuttles serve north-south trips in the southernmost portion of the corridor. Paratransit buses provide service to the individual locations requested by the users. Figure 9 displays existing transit services. More details about the services are described below.

#### Commuter Rail Service: Danbury Branch Line

The Danbury Branch of the New Haven Metro-North Rail Line parallels the Route 7 corridor. It provides service from Danbury to Downtown Norwalk (South Norwalk Station). The Danbury Branch is a single track and largely functions as commuter service to South Norwalk with connections to other commuter rail service on the Metro North main line. In total, there are 11 round trips between Danbury and South Norwalk on weekdays and six round trips on weekends. There are three daily peak-hour (weekday AM) through trains into Grand Central Terminal, as well as four through trains to Stamford. There are four peak-hour (weekday PM) through trains from Grand Central Terminal to Danbury. Danbury Branch trains operate from 5:30 AM to 1:30 AM.

In general, the Danbury Branch Line schedule provides four peak hour direction trains (southbound in the morning and northbound in the evening) with headways of about 30-45 minutes. Off peak trains are less frequent with headways ranging from 1 ½ hours to almost 4 hours. As a result, this service is primarily designed to serve peak hour commuters in the peak direction and could discourage commuters who require more flexibility in travel from choosing this transit service.

Figure 9: Existing Transit System



Sources: HART and NT; Summarized by FHI, January 2010

Currently, the following stations exist on the Danbury Branch Line:

- Danbury (northern terminus) – 3-car platform capacity
- Bethel - 5-car platform capacity
- Redding - 2-car platform capacity
- Branchville - 3-car platform capacity
- Cannondale - 2-car platform capacity
- Wilton - 4-car platform capacity
- Merritt 7 -7-car platform capacity
- South Norwalk - Pocket tracks with 2-car platform for Danbury shuttle, and 7-car platform on the New Haven Line

Parking utilization counts were conducted in 1999, 2003, and again in 2010 and are summarized in Table 5. The counts show that parking supply is not fully utilized at the most Danbury Branch stations, though parking relatively well used. The counts also show variation in use over this 11-year time period with overall use actually declining. The rail stations in the Route 7 corridor averaged between 69 and 76% utilization rate over this period. Branchville operates at the highest capacity (103% in 1999, 91% in 2003, and 82% in 2010) and Danbury operates at the lowest (50% in 1999, 58% in 2003, and 53% in 2010). Overall parking utilization has declined overall by 7% over this 11-year period.

With that said, however, improved service on the branch line is expected to increase demand for commuter rail in the corridor and subsequently result in higher parking demand. A new parking garage is planned at the Wilton Station that will add about 100 additional spaces. In addition, the current automated centralized train control (CTC) signal system project will allow for some increase in train speed along the branch line.

More significant improvements are being considered in the Danbury Branch Study and include the potential to improve track geometry, add passing sidings, extend service north to New Milford, and partially electrify the branch line. The Danbury Branch improvement program does call for increasing the parking at existing stations as well as at proposed new stations. Without parking space expansions at the rail stations, it is expected that future parking demand will quickly exceed capacity once service improvements are implemented.

Table 5: Danbury Line Station Parking Capacity and Utilization (1999, 2003 and 2010)

Station	Parking Capacity	1999 Utilization*	1/03 Utilization**	1/10 Utilization***	Utilization Rate (range)
Danbury	147 <sup>+</sup>	60	85	78	50-58%
Bethel	197	105	144	155	53-79%
West Redding	82	40	52	44	49-63%
Branchville	168	173	152	138	82-103%
Cannondale	140	133	106	116	76-95%
Wilton	212	185	154	118	57-87%
Merritt 7	88	73	72	66	75-83%
<b>TOTAL</b>	<b>1,034</b>	<b>769</b>	<b>765</b>	<b>715</b>	<b>69-76%</b>

Sources: \* VHB Route 7 Corridor Travel Options Plan, June 2000; \*\* Urbitran CT Rail Governance Study, January 2003; SWRPA counts, January 2010. + Parking capacity at Danbury Station was 119 spaces in 1999.

Three of the train stations, Branchville, Cannondale, and Wilton, are directly within the Route 7 study area (1/4 mile distance from Route 7). These stations have no bicycle parking or bicycle storage facilities. All stations, with the exception of the Merritt 7 station, are wheelchair accessible.

There is currently a proposal to extend rail service to New Milford, adding stations in Danbury, Brookfield, and New Milford. In addition, a new station in Georgetown is planned. The CT DOT 2009 *Rail Passenger Survey Report* highlighted the origin and destination characteristics on New York-bound trains and intra-state shuttles. It found the following trends related to train passenger travelers origins:

- For the New York-bound trains, the distribution of station boardings was spread somewhat evenly across five stations, including Danbury, Bethel, Cannondale, Wilton, and the Merritt 7 stations.

For shuttle trains, nearly 80% of respondents stated that they boarded at either the Danbury or Bethel station.

In addition, the survey found the following trends related to travelers destinations:

- For the New York-bound trains, approximately 70% of all respondents stated that they disembarked at Grand Central Terminal in New York City. Another 18% of respondents were destined for Stamford. Only 5% of respondents on New York-bound trains were destined for South Norwalk.
- For shuttle trains, nearly 44% of respondents stated they disembarked at Stamford, 19% at Merritt 7 station, and 15% at the South Norwalk station. Only 15% of shuttle respondents disembarked at Grand Central Terminal as this destination requires a transfer to travel to Grand Central Terminal.<sup>1</sup>

<sup>1</sup> Connecticut Department of Transportation, Rail Passenger Survey Report, January 2009,

<http://www.danburybranchstudy.com/documents/Scoping%20Document/090219%20Final%20Draft%20Passenger%20Survey%20report.pdf>

- Ridership counts conducted in 2001 and again in 2007 are shown in Table 6. As shown, ridership has grown 13% since 2001 for inbound (southbound) trips over this 6 year period. Outbound (northbound) boardings have grown primarily at the Merritt 7 station from 17 to 91 daily boardings (435%) over this period. Based on the *Danbury Branch Rail Study*, if no improvements are made to the line, CTDOT estimates that daily ridership will increase by 40% by 2020. If the rail line is extended to New Milford, CTDOT estimates the daily ridership on the branch line will increase by 111%.<sup>2</sup>

Finally, a number of respondents to the Route 7 Intercept Interviews, conducted by FHI in October 2009, noted the inconsistent service on the branch line to be a deterrent to rail travel in the corridor. One severely delayed or canceled train in the rush hour, when there is one train per hour, could (and has) ruined the rail travel experience permanently for a commuter.

Table 6: Danbury Branch Line Ridership – Daily Boardings

Station	Parking Supply	2007		2001		Percent Change	
		SB*	NB**	SB	NB	SB	NB
Danbury	147	242	0	236	0	3%	0%
Bethel	197	267	0	172	1	55%	-100%
Redding	82	58	2	53	0	9%	200%
Branchville	168	157	4	191	2	-18%	100%
Cannondale	140	163	1	108	5	51%	-80%
Wilton	212	181	7	219	1	-17%	600%
Merritt-7	88	134	91	87	17	54%	435%
<b>Total</b>	<b>1,034</b>	<b>1,202</b>	<b>105</b>	<b>1,066</b>	<b>26</b>	<b>13%</b>	<b>304%</b>

\* Southbound; \*\* Northbound

Source: CTDOT ridership counts, 2001 and 2007

#### Corridor Bus Service: Danbury-Norwalk 7 Link

Since 2002, the Danbury-Norwalk 7 LINK bus, operated jointly by HART and WHEELS, has provided service along Route 7 to employment areas along the Route 7 corridor and in the downtowns of Danbury and Norwalk. Buses originate and terminate at the HART and WHEELS (Norwalk Transit District) pulse points. Locations served include Cartus, Branchville Station, Wilton Center, Redding, Merritt 7 and 10/20 Westport Road in Wilton. Access for buses into the Branchville Station is constrained by poor sight lines and tight turning radii. Consequently, buses must stop on Route 7 to pick up passengers in this locale rather than pull into the station parking area.

The 7 LINK bus provides approximately one-hour headway peak period service Monday through Friday. It provides four round trips in the morning and evening peak travel periods. HART and WHEELS each provide 50% of the LINK service. Passengers can make free

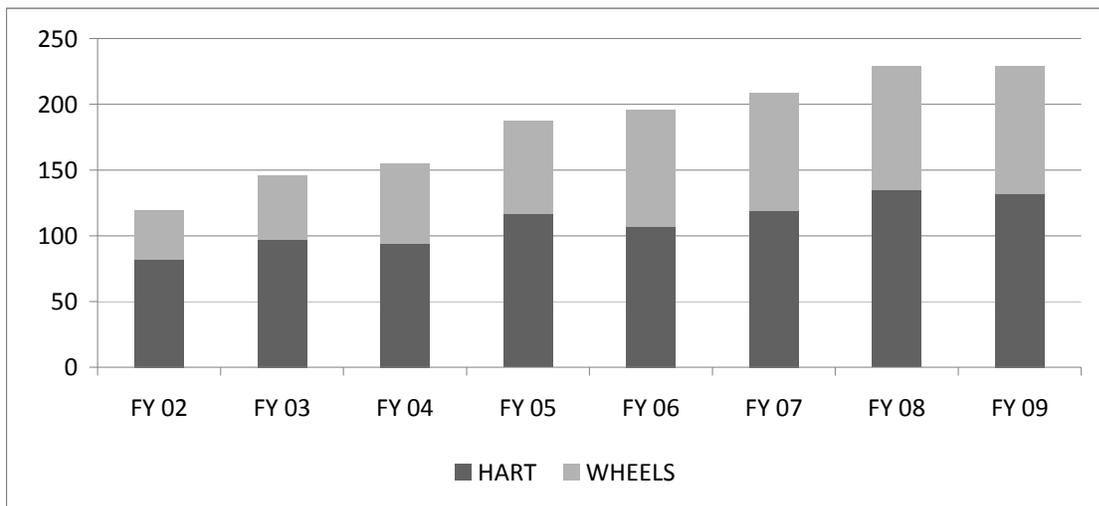
<sup>2</sup> Washington Group International, Danbury Branch Rail Study Phase 1 Report, May 2006.

transfers to HART buses in Danbury and WHEELS buses in Norwalk, as well as CT Transit Route 41 to Stamford and the Coastal Link to Milford. The one-way base fare is \$1.25. Both WHEELS tokens and HART passes are accepted.

Bicycles may be carried on buses equipped with bike racks. Standard bicycles are not permitted inside HART vehicles. Folding bicycles, as long as the passenger maintains control over them, are permitted inside vehicles.

7 LINK ridership averages 230 trips per day and has grown steadily since its inception in 2002 as shown in Figure 10.

Figure 10: Average Weekday Danbury-Norwalk 7 LINK Ridership, FY 02 - FY 09<sup>3</sup>



Source: HART

**Commuter Shuttles**

The Ridgefield-Katonah Shuttle meets seven morning southbound train departures between 6:20 and 8:30 a.m. and nine northbound evening arrivals between 4:54 and 8:24 p.m. One morning arrival and three evening departures provide some opportunity for reverse commutes. Shuttle runs originate at the Jessie Lee Memorial Methodist Church or Bark Park lots in Ridgefield and follow Route 35 westerly to New York State. In the Town of Lewisboro, NY, buses make a stop at the South Salem Municipal lot on Spring Street.

The Danbury-Brewster Shuttle meets nine morning departures between 5:55 a.m. and 8:31 a.m. and 14 arrivals between 4:00 and 9:10 p.m. Four morning arrivals and five evening departures allow for reverse commute trips. Vehicles serve park and ride lots off I-84 Exits 2, 1 and 7 and travel locally down Route 6 to the Village of Brewster. Several trips provide connections to the HART Pulse Point and the Danbury Fair Mall.

The 10/20 Westport Road Shuttle, operated by NTD, provides service along Route 7 north of the Department of Motor Vehicles to 10/20 Westport Road in Wilton. The primary focus of the shuttle is to get passengers to their jobs from the South Norwalk train station. The shuttle

<sup>3</sup> Rick Schreiner, HART, Email Correspondence, November 2009.

meets passengers at the railroad station in the morning and returns them to the station in the late afternoon or evening. The 10/20 Westport Road Shuttle had a peak daily ridership of about 110 passengers in September 2008. The boarding are currently about 38% less as a result of the recent economic downturn. NTD expects that ridership will rise as the economy improves<sup>4</sup>.

Another shuttle, the Merritt 7 Shuttle, operated by NTD, provides service to major work sites north of the Merritt Parkway along Glover Avenue and Route 7. The primary focus of this shuttle is to provide a link between the South Norwalk Train station and the major work sites in the Merritt 7 area. The shuttle meets passengers at the South Norwalk railroad station in the morning and returns them to the station in the late afternoon or evening. The Merritt 7 Shuttle had a peak daily ridership of about 400 passengers in September 2008. The boarding are currently about 30% less as a result of the recent economic downturn. Norwalk Transit District expects that ridership will rise as the economy improves.<sup>5</sup>

The NTD shuttles provide peak period service Monday through Friday between 6:30 AM and 9:30 AM and 3:30 PM to 7:30 PM. Shuttle frequencies are every half hour and coincide with Metro-North Rail schedules (northbound and southbound).

#### Other Employer Shuttles / Vanpools

MetroPool provides free commuter services to employers and commuters with the support of the Connecticut and New York Departments of Transportation. MetroPool tracks these services in Fairfield County as part of its efforts. A representative at MetroPool provided the following information.

There are few employer shuttles in the Route 7 corridor. Many employers rely on the extensive commuter shuttles, operated by the NTD, that run between the South Norwalk Rail Station and various employer sites. Three employers, however, do provide their own shuttles to and from the South Norwalk Rail Station and their work locations (in parentheses below). They are:

- AD Phelps, Inc. (Merritt 7 area),
- Davis Marcus Management, Inc. (10, 50, 64 Danbury Road), and
- Tracy-Locke (14 Danbury Road).

There are no known vanpools in the Route 7 corridor<sup>6</sup>.

---

<sup>4</sup> Nancy Carroll, Norwalk Transit District, Phone Interview, December 4, 2009.

<sup>5</sup> Nancy Carroll, Norwalk Transit District, Phone Interview, December 4, 2009.

<sup>6</sup> Marcia Aarons, MetroPool, Phone Interview, December 8, 2009.

### Paratransit Service

SweetHART is a door-to-door transportation service (Dial-A-Ride) provided by HART. Seniors age 60 or older or persons of any age with disabilities may access the service in Danbury, Bethel, Brookfield, New Fairfield, Newtown, Ridgefield, and Roxbury.

Those with profound mobility disabilities may qualify for ADA priority service. ADA priority service allows passengers to make trips anywhere within  $\frac{3}{4}$  of a mile of the HART fixed route bus system and on evenings and weekends. In addition, ADA trips have the highest priority, require less scheduling time, and can bump other already scheduled Dial-A-Ride trips. ADA priority service is available in Danbury, Bethel, Brookfield, and New Milford.

SweetHART service polices and availability varies by town. In Danbury, the Dial-A-Ride service is available from 7:00 AM-6:00 PM on Monday through Friday, ADA service in Danbury is available from 6:05 AM to 10:30 PM on Monday through Friday, 8:15 AM-10:30 PM on Saturday, and 9:00 AM-7:00 PM on Sunday. In Ridgefield, the Dial-A-Ride and ADA services are available from 8:45 AM-4:45 PM on Monday through Friday.

Trips within one town cost 60 cents. Trips between two towns cost 75 cents. ADA priority trips cost \$1.25.

NTD operates Dispatch-A-Ride, a door-to-door transportation service within the City of Norwalk required by the Americans with Disabilities Act (ADA). In addition, NTD, in cooperation with the municipalities of Westport, Norwalk, Wilton, and New Canaan, provides inter-town door-to-door transportation service to qualified elderly and disabled residents of these communities who wish to travel between towns in Southwestern Connecticut.

This service is generally offered from 6 AM to 7:30 PM on Monday through Saturday. Fare tickets are valued at \$2.50 individually or discounted at 10 tickets for \$22.50. Passengers traveling in more than one town pay two tickets for a one-way trip across one town line and three tickets for a one-way trip across two or more town lines.

### **Park & Ride Inventory**

Commuters who want to avoid traffic congestion and save on commuting costs can leave their cars in commuter parking lots and use carpools, vanpools, buses, or trains for their trips to work. Connecticut maintains Park & Ride lots in and near the study corridor as shown in Table 7.

In the table, parking utilization from 2006 through 2009 is provided. Parking at lots is generally down from 2008 levels, but relatively consistent over the 4-year period.

Overall, Park & Ride lots in and near the corridor are underutilized. Exceptions are the I-84 lot at Exit 2 which offers access to the Danbury-Brewster shuttle, and the Route 15 lot at Exit 23 which connects to the #2 bus route in Norwalk.



Table 7: Park and Ride Facility Inventory and Utilization

Town	Location	Capacity	Code	2006	2007	2008	2009
				Utilization			
Danbury	Route 7 @ Miry Brook Road	171	PLT	NA	NA	NA	NA
Danbury	I-84 @ Exit 1	160	PLTS	59	76	69	57
Danbury	Route 7 @ Federal Road	115	PLTB	31	25	44	30
Danbury	I-84 @ Routes 6 & 202 (Exit 2)	112	PLSB	17	96	107	99
Danbury	Route 7 @ White Turkey Road	75	PL	35	29	37	33
Danbury	I-84 @ Segar St. (Exit 4-Chuck's)	50	LTB	6	8	7	5
Ridgefield	Main St (Rt. 35) @ King Lane, United Methodist Church	48	PLB	41	30	32	50
Wilton	Rt. 7 @ Wolfpit Road	85	PL	18	35	28	12
Norwalk	Route 15 @ Route 123 (Exit 38) (2 Lots)	40	PLTB	39	31	39	41
Norwalk	I-95 @ Hendricks Avenue (Exit 16)	34	PLB	23	16	19	17

Source: CTDOT, Annual Parking Utilization Counts 2006-2009; additional data from Rick Schreiner Jan 2010

Key To Codes:

- P : Paved
- L : Lighted
- T : Telephone
- S : Shelter
- E : Express Bus Service
- B : Local Bus Service
- R : Rail Service
- RRS : Railroad Station

**Transportation Gaps and Deficiencies – General Observations**

A primary focus of the Route 7 Transportation and Land Use Study is to consider the integration of all of travel modes and travel choices in the corridor, and develop a plan that fills gaps in the transportation system and optimizes the effectiveness of the entire transportation system for a wide range of users.

**Gaps within Modes**

Throughout this data collection and analysis task, it has been observed that the Route 7 corridor serves a broad travel market. It is the primary north-south regional linkage from I-84

to I-95 and the shoreline communities in southwestern Connecticut. It also provides local travel needs for short-distance trips within the study area.

One observed gap in the highway system is inadequate network redundancy. This means that the roadway network in parts of the corridor does not provide alternate routes in the event that the highway cannot handle the traffic demand or when an incident forces the closure of lanes.

Additionally, the transition of Route 7 from a limited access expressway in Norwalk to a full access highway at Grist Mill Road is operationally deficient. At this location Route 7 dog legs using Grist Mill Road for a short stretch and requiring a heavy traffic volume to make a left turn at the intersection of Route 7 and Grist Mill Road.

This section of Route 7 between Grist Mill Road and the southern junction of Route 33 experiences the heaviest volume of traffic in the corridor. Combined with a high frequency of driveways and a lane restriction southbound between Route 33 and Grumman Hill Road, this stretch of Route 7 is characterized by traffic congestion and a greater occurrence of traffic accidents.

Other options exist within the corridor to accommodate existing travel demand. The Metro North Railroad offers intra-state commuter rail shuttle service along the corridor and longer distance commuter service oriented toward New York City. Other transit agencies and private shuttles fill a growing need for shorter distance transit connections. Still there seem to be gaps in the transit system that, if filled, would make the system more seamless and convenient for a larger variety of travelers.

Survey results from the Danbury Branch EIS indicate that a majority of passengers that use the commuter rail shuttle service board at either the Bethel or Danbury stations. On the other hand, the vehicular trip analysis indicated that a sizable travel market between Brewster, NY to Norwalk and lower Fairfield County exists. These two pieces of information indicate that travelers east of Route 7 are well served by the rail line, but trips starting west of Danbury may find that access to the rail system is limited by station location and congestion within Danbury.

Additionally, the reliability of the rail service at the Branchville Station was noted as a problem in the Route 7 Intercept Interviews, conducted by FHI in October 2009. The inconsistent service, delays and cancellations at the Branchville Station is a deterrent for some to using rail service in the corridor.

Finally, travel demand to and from Ridgefield from both ends of the Route 7 corridor is significant. Currently, transit service is not provided to serve that demand. A shuttle from Ridgefield to Katonah, NY exists, but there seems to be a gap in service from Ridgefield east to the Route 7 corridor. Expansion of service to and from Ridgefield has some potential and should be explored further.

From a non-motorized perspective, bicycle and pedestrian travel in the corridor is limited by the physical geometry of Route 7, including narrow shoulders for much of the corridor; and the high volume and speed of traffic. In addition, the excessive driveway and local business access in the southern portion of the corridor is hazardous to pedestrians as well as bicyclists. Motorists, turning into these driveways, often do not look for bicyclist and

pedestrians using the right-of-way. Route 7 was designed for the car and truck, and in areas where bicycle and pedestrian activity is desirable the environment is unfriendly to those users.

### **Gaps between Modes**

A number of “connectivity gaps” in the transportation system poses limitations to the effectiveness of the individual modes of travel.

A conclusion of the branch line rider survey was that 1% of commuter rail shuttle users arrived at a train station via bus. The Danbury-Brewster Shuttle and the LINK bus system do not offer connections to the Danbury rail station. Local bus routes operated by HART do not connect the park and ride lots west of Danbury to the rail station. There is limited accessibility to rail service for the eastern NY to Norwalk/Fairfield County travel market, representing a potential system gap.

A 2003 inventory of parking at commuter rail stations indicated that parking was not at capacity at most of the train stations, with the exception of the Branchville Station. Recent anecdotal evidence suggests that parking is becoming more difficult to find at several stations due to more recent increases in rail ridership. Additional improvements proposed for the Danbury Branch are expected to generate ridership that will require the construction of additional parking spaces. Currently, Branchville has a number of constraints relative to the expansion of parking in that area.

Three of the train stations, Branchville, Cannondale, and Wilton, are directly within the Route 7 study area (1/4 mile distance from Route 7). These stations have no bicycle parking or bicycle storage facilities. Many bicycles were observed locked to fences, posts, and other fixed objects because of the lack of storage facilities. Improved bicycle parking and/or a shelter from rain and snow could encourage more users to bike to the stations.

There are also significant gaps in the sidewalk networks around the train stations. Most notable are the gaps in Branchville on Route 7 and Depot Road and Train Station Drive in Wilton. In both of these areas, the existing sidewalk network is not adequately serving the walking public, and does not encourage potential or borderline walkers.

Finally, there are deficiencies in access to an adequate sidewalk network and crossing area amenities for persons with disabilities. Where there are pedestrian push buttons in the corridor, the pedestrians are generally required to cross with the light and they do not have a protected signal with an exclusive pedestrian crossing phase. Many of the pedestrian push buttons in the corridor are not accessible to persons with disabilities. These buttons are located in places that pose serious challenges for those that are blind or in wheelchairs, such as behind guiderails, on steep embankments, and/or in tall brush. These intersections with poor pedestrian button placement are also often lacking ramps, detectable warning surfaces, and appropriate sidewalks connecting to the buttons. All stations, with the exception of the Merritt 7 station, are wheelchair accessible.

---

## Land Use and Development Potential

---

Information on land use and development potential provides an understanding as to how the Route 7 roadway influences the quality of life in the corridor communities and conversely how the distribution and character of development affects travel demand and patterns and ultimately overall travel conditions such as travel times and areas of heavy traffic congestion.

### Land Use Analysis Methodology

Existing land use, land use regulations and policy, and environmental constraints on development were assessed for this study in order to identify the potential for change in future distribution and intensity of development in the corridor. The existing conditions land use analysis included the following steps:

- Identification of existing land use patterns and developable parcels
- Assessment of environmental constraints to development
- Consideration of land use policy and zoning within the corridor
- Identification of potential Transit-Oriented Development (TOD) sites
- Synthesis of the foregoing information to formulate findings on development opportunities and constraints

The analysis isolated out the parcels of land that have some potential for development or redevelopment in the future. Each parcel's potential was then further defined in terms of developable land or land without limiting environmental factors. Current zoning was then used to define how the developable land could be used within the existing regulatory allowances. Data on land use and development potential was derived from interviews with local professional planning staff of each study area town, field observation, development of Geographic Information System (GIS) mapping of the corridor, and literature review and analysis.

One objective of this study is to identify opportunities for Transit Oriented Development (TOD). This contemporary approach to land development is based on the concept of mixing a variety of land uses, particularly residences, office and retail, at a relatively high density within a ¼ to ½ mile walking radius of a train station or other public transit hub. As cohesive TOD 'villages' develop, they create dynamic environments offering a number of environmental, social, and economic benefits including;

- Discouraging sprawl,
- Facilitating sustainable use of resources,
- Creating a walkable, pedestrian-friendly area with connections to transit that allows for reduction single-occupant automobile trips, and
- Encouraging vibrant, sustainable communities.

This assessment of existing land use conditions includes identification of four potential TOD locations and their characteristics based on existing or planned train stations.

### **Existing Land Use**

Figure 11 at the end of this section summarizes existing clusters of mixed-land use, development opportunity sites, and potential Transit Oriented development (TOD) areas. More detail on existing land use patterns are provided in Figures B1 - B3 in Appendix B. A description of how this information was generated is as follows.

#### **Existing Land Use Classification**

There is a wide diversity of land uses along the entire length of the Route 7 study corridor. Offices are mixed with clusters of homes and retail outlets. There are stretches of woodland intermingled with spot locations of small businesses. Public uses, such as schools, are surrounded by office buildings, small manufacturers, and retail outlets. Typically, land use maps pinpoint the locations of each residential, commercial, office, or industrial parcel. Due to the mixed nature of activity along Route 7, this approach did not offer much insight into patterns of land use or the character of development in the corridor. As a consequence, a different method of viewing land use was used.

Land use was defined by the character of the mix, intensity, and density of development in a given area. This is similar to the 'transect' approach to understanding land use. The transect concept is one of "considering and organizing the human habitat in a continuum of intensity that ranges from the most rural condition to the most urban" (Parolek and Crawford, *Form-Based Codes*, 2008). The organizing land use categories used for this study are listed in Table 8 with representative photos from the corridor following.

Table 8: Route 7 Existing Land Use Categories

Acronym		Title	Description- Predominant Use
<b>RR</b>		Rural Or Rural Residential	Open space or very low density single family residential – homes on lots of 2 acres or more and including farmland
<b>C-LD</b>		Commercial – Low Density	Areas predominantly of very low density commercial land use; where small businesses are scattered and relatively far apart along Route 7 and mixed with a limited number of single-family homes or former homes reused as small offices
<b>T/V</b>		Town/Village Center	Cohesive cluster of mixed-uses - an area that serves as a destination, meeting neighborhood or community needs for goods and services as well offering gathering places, opportunities for social interaction, and community resources (such as libraries, schools, or senior centers). Development is dense with parking shared both on and off-street. It is also as area perceived and identified by community residents as cohesive and creating a neighborhood.
<b>SM</b>		Suburban – Mixed-Use	Areas of mixed development in what is commonly thought of as a suburban setting; individual uses are physically separated by being set back from the street and away from other uses on side and rear yards. These suburban mixed-use areas occur at three density levels.
<b>SM-L</b>		Suburban – Mixed Use Low Density	Low density; individual uses in their own structure; generally on ½ to 1 acre parcels or more; and physically separated by parking lots or by virtue of setting on the lot – generally up 2 stories
<b>SM-M</b>		Suburban – Mixed Use Medium Density	Suburban development with lots of ½ to 1 acres or consolidated lots with multiple uses –some connectivity among parcels; or within a small planned development such as strip commercial plaza – generally up to 4 stories
<b>SM-H</b>		Suburban – Mixed Use High Density	Suburban development with zero lot lines – individual uses generally on ¼ acre or less with some connectivity among parcels; individual structures are very close to one another, but there remains physical separation among buildings set back from the street; includes planned development such as commercial plazas – generally up to 6 stories

Acronym		Title	Description- Predominant Use
SG		Suburban Gateway	Very dense development with both large and small structures – less than 10 stories – individual uses are still physically separated by parking and access drives; transitions to urban core.

Source: FHI January 2010

**Vacant –Developable Land Classification**

Developable land was classified in three ways:

- Undeveloped land – has never been developed
- Redevelopment Opportunity Site/Vacant land – the site was developed and in use at one time, but structures are currently vacant and the site is unused
- Underutilized – land that is currently being used but a substantial component is still available for use. This can include multi-family developments with a substantial number of vacant units or office or commercial buildings with a substantial amount of available square footage. The amount of vacant space or units determined to be substantial is relative to the building total square footage and based on professional judgment and consideration of the average for that market sector. For example, since the current office vacancy rate in the market area is at 13 percent, an office building with more than 13% vacant space can be considered underutilized.

A tabular listing of developable land with associated acreages is included in Appendix B.

A unique category of developable land has also been called out on mapping for this study; categorized as “Developable State-owned land”. At the time that the State explored adding capacity to Route 7 with a new limited-access portion (often referred to as “Super7”) the Connecticut Department of Transportation (CTDOT) acquired a significant number of parcels to accommodate this new roadway, should it be built. Those parcels all fall into one of the three categories noted above. The status of the availability of this land for future development is, however, undetermined at this time. These parcels are noted as potentially developable for the purposes of the land use analysis for this study and understanding of the range of what *could* happen in terms of land use in the future. These parcels are identified separately on the Existing Land Use maps.

**Existing Land Use Patterns**

The existing land use mapping shows an uneven pattern of land use. While the transect concept considers land use both by character and on a continuum, the range of land uses for Route 7 do not show a steady and continuous transition from most rural to most intense development. Rather, the density and intensity of land use appears to grow and shrink somewhat randomly along the corridor. The exception is the area from Wilton center south, which shows a steady increase in density and intensity as Route 7 approaches and enters the City of Norwalk. The seemingly random pattern of land use within the Route 7 corridor can be explained by historic settlement patterns and by zoning constraints, as well as environmental constraints that have hindered development in many locales in the past.

These environmental and zoning constraints are considered in more depth in the following sections.

Even with the overall uneven pattern of land use, locations of somewhat distinct clusters of development do occur in the following general locations:

- Suburban low density in the vicinity of Starrs Plain Road at the border of Danbury with Ridgefield
- Suburban medium density in the vicinity of Route 7 at its junction with Route 35
- Village center/neighborhood at the Branchville train station and Route 7
- Suburban medium density in the vicinity the junction of Route 7 and Route 107; adjacent to the Georgetown new-urbanist/TOD development soon to be constructed on the former Gilbert and Bennett Wire Factory site
- Town center in Wilton at Route 7 and Route 33

### **Potential Transit Oriented Development (TOD) Locations**

As noted above, one of the objectives of this study is to identify potential TOD locations in the study area. Four (4) potential TOD locations have been identified to be evaluated including: Branchville, Georgetown, Wilton, and the I-Park area. Two of these locations have existing train stations (Branchville and Wilton); Georgetown has a station planned, and I-Park currently does not have a station. In order to do this, the first step was to create a circle around each existing train station (including the pending Georgetown station) showing the area within  $\frac{1}{4}$  and also  $\frac{1}{2}$  mile radius. These areas are shown on the Existing land Use Figures B1 - B3 in Appendix B. The four (4) areas identified were then further evaluated to get a preliminary sense of how well-suited they may be for successful TOD. It should be noted that TOD potential was not evaluated at the existing Cannondale station in response to concerns about additional development there.

Successful TOD requires the following basic conditions. Most can be met by virtue of market conditions and/or land use policy or zoning:

- Mixed-use potential
- Density potential
- Developable land
- Potential to aggregate parcels
- Walkability
- Multimodal access – connections to transit, pedestrian ways, as well as by automobile
- Infrastructure – water and sewer; community resources

The following matrix (Table 9) provides a preliminary assessment of the TOD potential for each of the four sites identified.

Table 9: TOD Matrix – Route 7 Sites

TOD Features	I-Park	Wilton Center	Georgetown	Branchville
Mixed-use permitted	Yes	Yes	Yes	No
Max density allowed	Up to 25,000 SF without Special Permit; 3 units/acre	30,000 SF– # residential units not specified	Max density aligned with redevelopment plans	6,0000 SF bldg or 1 house/acre
Market Demand	Yes	Yes	Yes	Yes
Local government receptiveness	Yes	Yes	Yes	Yes
Developable Acreage	None- one underutilized site – 300,000 SF	Yes – west of Old Danbury Rd	Existing 52-acre redevelopment plan	Very limited
Walkable	Auto-oriented	Yes	Yes	Auto-oriented
Existing community resources	No	Yes – Library	Planned community space	Yes - Elementary school
Multimodal Access	Some bus service	Yes – lacks connectivity	Yes	Yes
# Property owners	Numerous	Numerous	Limited	Numerous
Utilities	Yes	Yes	Yes	No

Source: FHI, January 2010

### **Constraints to Development**

#### **Environmental Constraints**

Environmental constraints to development are those features of the land that would effectively prohibit development except under extraordinary circumstances. Those factors include:

- Wetlands, water bodies, and water courses such as rivers
- Floodplains – inside the Zone A floodplain as mapped by the Federal Emergency Management Agency (FEMA)
- Steep slopes in excess of 25% grade

### Community Resource Constraints

Community resource constraints to development are those lands, structures, or institutions that are important to the community character and valued by residents. It is assumed these resources will not be replaced by redevelopment. They include:

- Permanently preserved open space including state forests, wildlife refuges, and local parks, land trust lands, or other open spaces
- Historic structures or sites on the State or National Register of Historic Places

It is notable that both Ridgefield and Wilton allow the adaptive re-use of historic period structures for small office or retail businesses. However, the historic aesthetics and integrity of the exterior of the structure must be maintained and the site use cannot be expanded with additional buildings.

A composite map of constraints to development is shown in Appendix B.

### Water and Sewer Availability

The potential for TOD and/or other more intense development within the Route 7 corridor will be tempered by the availability of public water and sewer service. These utilities are somewhat limited in the corridor today. They generally occur:

- Danbury: Both water and sewer extend to the vicinity of Miry Brook Road but not beyond.
- Wilton:
  - Both water and sewer run from Olmstead Hill Road south along the Wilton River to downtown Wilton, then east to Rt. 7, running along Rt. 7 south to the Norwalk town line.
  - Water only runs north along Rt. 7 from Olmstead Hill Road to Honey Hill Road, then along Mather Hill Road north to Georgetown.
- Ridgefield:
  - Water and sewer are available in the vicinity of the junction of Route 7 and Route 35 – there are no plans to extend service further along the corridor.
  - Water only is available from the Wilton town line north along Route 7 to the intersection with Route 102, then west along Route 102 .
- Redding: The only sewer and water in Redding are in the Georgetown neighborhood – there is no service along Route 7.

### Visual Resources

The visual resources along Route 7 form an aesthetically rich backdrop for this approximately 300-year-old roadway. The Route 7 study corridor includes historic buildings, forested ridges, and an interesting mix of 20<sup>th</sup> century architecture that currently blend together almost naturally. The current setting offers a variety of opportunities for preserving the existing visual assets and enhancing the highest-value visual resources through prudent planning.

An inventory of visual resources in the corridor was obtained through a windshield survey. The visual characteristics of the natural landscape and built environment were identified based on the visual assessment methodology developed by the Federal Highway Administration (FHWA). The assessment focused on views *from* the road while moving through the corridor, reflecting the essential experience of commuters, local residents, and businesses.

#### Visual Character through the Corridor

The southern end of the corridor is anchored by office parks on each side of the Route 7 in northern Norwalk. These are the largest building-parking lot complexes in the corridor. The iPark office complex on the west side is partially screened from the road by a fringe of trees along the Norwalk River, which allow glimpses of the clean and distinctive architecture. The forested ridge to the west of Route 7 is visible beyond the large clearing of the parking lot. The ridge is a constant feature which moves in and out of view along the corridor, sometimes blocked by trees or buildings and other times very dominant in view.

North of Norwalk, the smaller-scale office and retail buildings and office parks in Wilton are scattered along the road, punctuated by clusters of tall native trees (largely maples and oaks) which provide visual interest, seasonal color, and a reminder of the former more rural thoroughfare. This pattern of Route 7 office parks situated within or in front of substantial stands of native trees continues through much of southern Wilton.

Approaching the Cannondale area of Wilton, office complexes give way to historic homes, historic building complexes, stone walls, and cemeteries within the backdrop of trees. This highly intact historic scenery characterizes much of this mid-section of the corridor through Cannondale, with just a few exceptions.

North of Cannondale, natural features become more prominent in the views from Route 7. Expansive tree canopies border the road on both sides, obscuring power lines. Natural rock cuts flank the route in places and forested ridges provide depth to the view. At the same time, low stone walls along this area provide a human-scaled element to the roadside landscape.

The vicinity around the Branchville Railroad Station (in Ridgefield) is a visually cohesive, pedestrian-scaled village. A row of historic buildings to the east of the Branchville Railroad Station is perched on a ridge and very visible from Route 7. North of Branchville to the corridor limit in Danbury, visual resources along Route 7 include predominantly the rocks, ridges, and forests of the natural landscape. Wooster Mountain State Park abuts the west side of Route 7 for over a mile along this stretch. Its landscape offers close-up views of stunning rock formations which dwarf the driver. The upslope forest groves are large blocks of intact and intricate foliage. Near the intersection of Starrs Plain Road are scenic views of the forested ridge to the west. Periodically, ponds and wetlands occur along the road, presenting diverse foliage, color, and texture.

A detailed list of visual resources and their potential for preservation can be found in the table of Route 7 Visual Resources in the Appendix B.

Key Opportunities for Preservation

The following is a summary of key visual resources and key opportunities for preservation:

- Historic architecture, building, and cemeteries – maintain and enhance visual access (lines of sight) to these resources to the extent possible; encourage preservation of historic structures and resources.
- Preserve groupings of native hardwood trees (oaks, maples) adjacent to the roadway. These approximately 80-year old trees are stately elements of interest that provide historic connotations, beauty, and environmental integrity to the corridor which (if removed) are difficult to replace by landscaping. Consider preserving roadside trees as buffer to any new development.
- Views of the ridge-line to the west of the corridor – design roadway improvements and private development to take advantage of ridgeline views, while encouraging preservation of the unbroken forested character of the ridgeline itself.
- Norwalk River riparian area – the meandering river and its adjacent trees provide visual relief from development and visual interest, color, and life. Preserve the river corridor and incorporate design to enhance views.
- Curves in Route 7 roadway offer continuously changing snapshots of scenery – planning could take advantage of these transition points to identify and preserve key visual features.



The iPark office complex in Norwalk



Native vegetation surrounds the office parks in Wilton.



Historic cemetery near 224 Danbury Road in Wilton



Historic building complex in Wilton



Tree canopy between Cannondale and Georgetown



This forested ridge on the west side of Route 7 is visible because of the low scale of the foreground.



An historic commercial building behind the Branchville Railroad Station.



Low scale buildings near Branchville Railroad Station.



Views of the tree ridge and natural rocks along the northern end of the Route 7 Project Area.

### Summary Findings – Constraints to Development

As noted, the combined areas that are limited for development by virtue of environmental or community resource constraints are shown in Figure B4 in Appendix B. The locations of developable parcels are also called out on these maps along with CTDOT lands. A tabular listing of developable parcels with useable acreage is also provided in Appendix B. The total developable area is approximately 112 acres.

The patterns depicted on the constraints map series clearly show that opportunities for new development on unconstrained land are very limited. Development has occurred on the majority of available acreage. The strongest development potential generally occurs in the following locales:

- Route 7 in the vicinity of Starrs Plain Road – Ridgefield/Danbury line
- Junction of Route 7 and Route 35 – with area immediately north of that junction - Ridgefield
- Wilton Center
- Vicinity of Route 7 and Grumman Hill Road - Wilton

### Land Use Policy and Zoning

#### **Land Use Policy**

The current pattern of land use is directly influenced by municipal policies regarding development and associated land use regulations. An overview summary of guiding policy via the local plan of conservation and development and zoning for each community for lands within the Route 7 corridor is as follows:

#### Danbury

The *2002 Plan of Conservation and Development* (POCD) future land use map and policy in the text shows a vision for the Route 7 corridor as essentially maintaining current development patterns. According to the POCD, the lands abutting Route 7 should be used for limited commercial purposes with activities that do not generate significant traffic or have adverse effects on sensitive environmental resources. The 2005 city-wide transportation plan points to the need for access management on Route 7 to improve the interface between access to development and the roadway.

Since the 2002 Plan of Conservation and Development was adopted, the City of Danbury has rezoned the entire Route 7 corridor from Miry Brook Road south in a new Limited Roadside Commercial-Industrial category. A variety of uses are permitted on lots 1 acre in size or larger. The only residential uses allowed, however, are two-family homes. No fast food restaurants or drive-thrus are permitted. The maximum allowable lot coverage is 30%, effectively limiting the scale of any buildings on the lot.

#### Ridgefield

The new 2009 Ridgefield Plan of Conservation and Development is currently being finalized. The Town Planner reports that the vision it contains for Route 7 is essentially a continuation of current development conditions. The Town supports more commercial uses along Route 7 in existing commercially zoned areas, excluding retail, and with limited building size. The New POCD will also have a policy supporting completion of a greenway the length of the

corridor from Wilton to Starrs Plain Road in Danbury. This greenway would intersect with the corridor study area at Starrs Plain Road.

Branchville is acknowledged as a distinctive neighborhood or village in the Plan of Conservation and Development. This area is noted as special in that it provides a gateway into Ridgefield from the south. It is also noted, however, that the area is mostly built out, development is not interconnected, and additional development is constrained by the Norwalk River, Metro-North rail line, steep topography to the east, and lack of sewer service. A special study of Branchville completed in 2002 resulted in a concept plan for the area, but the Town Planner noted it did not account for some environmental constraints on development.

Zoning along Route 7 in Ridgefield is predominantly for low-density, single family residences. Residential zoning allows for adaptive reuse of historic (and soon change to include architecturally) significant structures for small office/commercial use; keeping the architectural qualities of the existing structure. The exceptions to this zoning are the area of Route 7 at the junction with Route 35 and Branchville at the town line with Wilton. The junction of Route 7 and 35 is zoned as a mix of residential, age-restricted housing, commercial design districts, and general business zones. The area of Branchville is a mix of residential and general business zones.

It is also notable that Ridgefield has designated a large (153 acres) tract for affordable housing just west of Route 7 along Bennett's Farm Road. The site was rezoned to a housing-opportunity overlay with capacity for 309 units.

### Redding

There is a very limited area of Redding that occurs within the Route 7 study corridor. Nonetheless, Route 7 is critical to access to the center of Redding and provides the main regional access to the single largest redevelopment site in the community. The town has endorsed a comprehensive re-use plan for the former Gilbert & Bennett Wire Factory. In 2003, after a week-long "charrette" a master plan for a mixed-use, pedestrian-friendly, new village center was developed. It includes 416 units of diverse housing (loft-style apartments, townhouses, single-family homes), over 300,000 SF of commercial space (offices, restaurants and shops as well as light manufacturing), a performing arts center, a health club, a bed and breakfast, and a reconstructed and reactivated commuter rail station with structured parking. By 2004, the master plan was unanimously approved by the town's zoning commission. The site has its own zoning designations tied to the redevelopment plan.

The Plan of Conservation and Development for Redding was updated in 2008. It considered the need for and potential locations of high density, affordable housing. There is Planning Commission support for locating some of this housing along Route 7, if suitable sites can be found. The future land use map for Redding shows the Route 7 area as commercial with village residential in keeping with the Georgetown concept plans. Zoning between the Georgetown site and Route 7 in Redding is for service businesses and suburban residential.

### Wilton

The 2008 update to the Wilton Plan of Conservation and Development is undergoing the approval and adoption process. Themes for the updated plan include retaining the current character of the town, particularly Wilton Center, and creating housing choices for all residents. The draft future land use map shows a continuation of current development conditions along Route 7.

The Route 7 corridor in Wilton has a variety of zoning that is reflective of existing development. The northern end of Route in Wilton is zoned predominantly for low-density residential use. Wilton Center has a special zone intended to foster the mixed-use environment there. South of Wilton Center are a mix of general business, designed enterprise (commercial), designed retail, and high-density residential districts.

Figures B5 - B7 in Appendix B show generalized zoning for the study corridor. The categories were generalized based on common types of uses allowed in each zone in each community. The zoning was generalized to allow patterns of zoning to be more easily recognized when compared graphically. The pattern of zoning fairly closely mirrors the patterns of existing land use and/or known future land uses.

### State Conservation and Development Policies Plan [2005-2010] (C&D Plan)

It is important to note how Connecticut's C&D Plan views the corridor today. It contains economic, environmental quality, and public service infrastructure guidelines and goals for the State of Connecticut. Local plans of development must be consistent with the Connecticut C& D Plan or the community risks becoming ineligible for some funding streams.

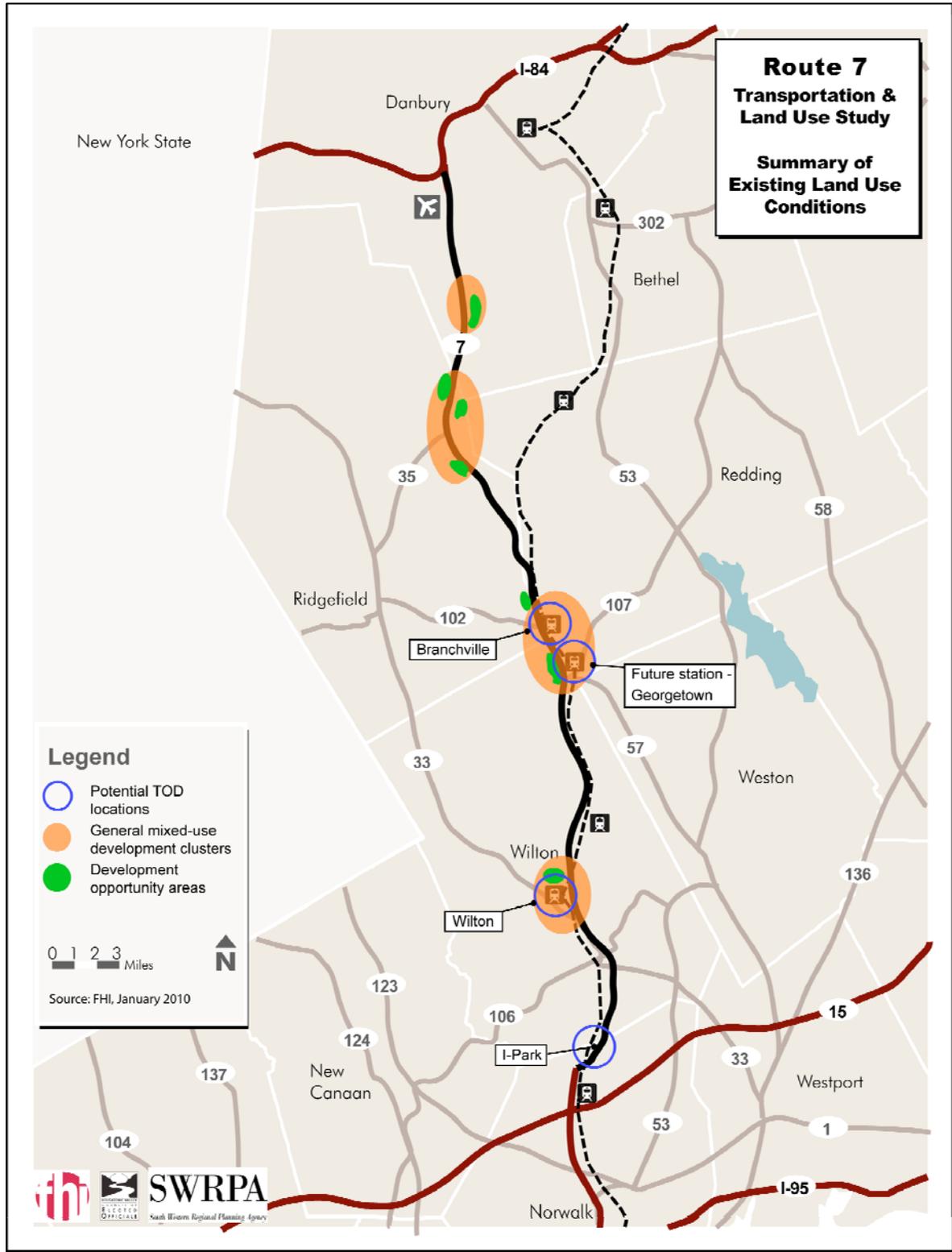
The overall strategy of the Connecticut C&D Plan is to reinforce and conserve existing urban areas, to promote staged, appropriate, sustainable development, and to preserve areas of significant environmental value. The *Locational Guide Map* which accompanies the C&D Plan provides a geographical interpretation of the state's conservation and development policies. The Route 7 corridor in the study area is intended to remain as predominantly rural with 'Neighborhood Conservation' classification in already developed areas such as the Branchville to Georgetown area, Wilton Center, and all of Route 7 south of that point to the Norwalk city line. The one exception is the junction of Route 7 and Route 35. This is shown as a Growth Area. The State Action Strategy for Neighborhood Conservation Areas is to promote infill development and redevelopment in areas that are at least 80 percent built up and have existing water, sewer, and transportation infrastructure to support such development.

### **Existing Land Use and Development Potential Findings - Issues and Opportunities**

An assessment of the existing land use conditions in the corridor, and the development potential, sets the groundwork for evaluating the future conditions. A summary of the development potential findings from the existing land use analysis follows. Figure 11 summarizes the development opportunities within the corridor.

- Development currently exists on most of the land that is suitable for development. The remainder tends to have substantial environmental constraints or is already preserved as open space. Consequently, the corridor is largely built-out. The majority of development opportunities will come from infill, maximizing use of underutilized parcels, and redevelopment. A tabular listing of developable parcels with useable acreage is provided in Appendix B. The total developable area is approximately 112 acres.
- Zoning is mostly traditional Euclidian in approach (separation of uses) throughout the corridor with some application of contemporary techniques such as adaptive re-use of historic buildings and Wilton's mixed-use village center zone.
- Land use policy as contained in the current municipal plans of development favor keeping the development patterns in the corridor as they exist today. This may be an issue for a more regional approach to land use and creating a well-structured transect form of development along the corridor in the future.
- Conversely, interviews with local officials suggest that the corridor communities are receptive to the idea of cohesive mixed-use development in nodes along the corridor with transition to less intense development away from these nodes; such nodes would contain commercial development in well-defined areas and help preserve the rural character of the balance of the corridor.
- There are very limited opportunities for high-density residential development that could support workforce housing, such as townhouses (commonly at 15 to 30 units per acre).
- There are some loosely formed development clusters existing today that offer an opportunity for creation of more distinct and better defined development nodes within the corridor.
- Four locations in the corridor offer opportunity sites for TOD, yet each is constrained in some way by lack of development sites, infrastructure, current zoning, walkability, or multi-modal connectivity.

Figure 11: Existing Land Use Conditions and Development Opportunity Areas



Source: FHI, January 2010



---

## Existing Market and Socioeconomic Conditions

---

An understanding of market trends for housing, office, and retail forms the foundation for understanding existing development patterns and land uses along Route 7. In addition, an analysis of these three real estate market sectors serves to identify unmet market demand in the study area. Identifying unmet market demand will in turn identify those land uses expected to be the most sustainable over time and will help inform local land use and regulatory decisions and policies. This section documents the market assessment methodology and results for the existing market conditions in the corridor. As described in the introduction, the study area for this market study was expanded slightly to the north (to include Danbury Mall and environs) and to the south (to include the area that includes Merritt 7 and other major developments) given the strong influence these two areas have on the market conditions in the corridor.

However, an understanding of the defined market study area does not fully describe the region's demographics, real estate markets nor the nature and magnitude of potential development. As such, we have also prepared an analysis of the three principal communities within the study area – Ridgefield, Wilton and Redding (Tri-town area). An analysis of these three communities provides a more complete understanding of the region than is achievable by an analysis of the Route 7 corridor alone. Overall, the three towns are, and will remain, considerably more affluent, less diverse, and with an older population than the corridor as a whole.

### **Market Assessment Methodology**

The market analysis included four steps:

- 1) Define the relevant market areas; in this case for residential, office and retail,
- 2) Profile the current resident population in the area,
- 3) Profile the existing supply of residential, office, and retail development, and
- 4) Define existing market demand for different development types based on demographics, an inventory of space, current occupancy trends, and extensive interviews with Town representatives, real estate agents/brokers, property managers, and developers.

In addition a “surplus/leakage” study was conducted to identify those areas of the retail market that are either overbuilt on the corridor (indicating a “surplus” or potential for failure) or underserved (indicating a “leakage” of spending into other areas that could be spent locally supporting local retail).

The analysis of current socioeconomic conditions and market potential in the study area considered the following factors:

- Demographics; including age, income, and households. This was analyzed as a tapestry. A “tapestry”, combines the “who” of lifestyle demography with the “where” of

local neighborhood geography to create a model of various lifestyle classifications with distinct buying behaviors.

- Residential market; including median house prices, rental prices, and sales trends.
- Office Market; including typical range of costs per square foot for rental and available space for rent.
- Retail market; including available retail space, household spending trends, and unconstrained demand for retail services.

The resources consulted to prepare the market analysis are listed in Appendix A and many are presented in Appendix B. In addition to a literature search, the analysis used findings from a series of interviews with local town staff, real estate brokers, and the local development community, including local developers with large scale projects in the corridor.

### **Residential Analysis Methodology**

Residential real estate is comprised of the following components:

- Single Family
- Multifamily
- Rental Properties
- Workforce housing
- Senior housing – equity and rental

The Fairfield County Board of Realtors was contacted to create an overview of the residential market in the corridor. From the demographic reports of the market area, the residential components were then analyzed and compared. As was done with the other market segments, interviews of key owner/ developers/ brokers and planners were conducted. The owners (or their representatives) of each major apartment, condominium, and senior housing development were also interviewed. Additional data was also obtained from public internet sources such as Rents.com and Realtor.com.

### **Office Analysis Methodology**

A database of available and leased properties in the market area was created to analyze current market conditions. This was accomplished by developing a physical survey of the corridor, contacting landlords and brokers of available space, contacting leading brokers, and using web-based listing services (LoopNet, CERC, CoStar). In addition, an analysis of regional market reports by leading national real estate brokerage firms was completed. Town planners also provided valuable background information and context with respect to office space demand.

### **Retail Analysis Methodology**

To determine current market conditions, two approaches were used:

- A database was created consisting of available retail properties in the market area. This was completed by undertaking a physical survey of the corridor, through contacts with landlords and/or brokers representing properties, consulting leading brokers, and using web-based listing services (LoopNet, CERC, CoStar). Town

planners were interviewed and they provided valuable background information and context.

- ESRI's database was also consulted in order to determine the unconstrained demand for retail opportunities compared with the available supply. A measure of the difference between retail supply and demand known as the "Leakage/ Surplus Factor".

Data for the estimates of sales in the retail market begin with a benchmark, the Census of Retail Trade (CRT) from the U.S. Census Bureau. In addition to the 1997 CRT, ESRI uses a 2002 CRT statistics in the 2009 update. Trends from the economic census are used to update the base along with ESRI's extensive portfolio of demographic and business databases including commercial and government sources such as the info/USA business databases and Bureau of Labor Statistics (NES division). Smaller establishments without payrolls, such as self-employed individuals and unincorporated businesses, account for a small portion of overall sales. However, these businesses represent more than 55% of all retailers in the United States. Their inclusion completes the report of industry sales.

To complete the profile of the retail market, ESRI estimates consumer demand - or retail potential. This is the amount expected to be spent by consumers on products in the retail market if the services are available. ESRI's 2009 consumer spending data provides expenditures estimates for more than 700 products and services consumed by U.S. households.

ESRI estimates consumer spending from the Bureau of Labor Statistics' annual Consumer Expenditure Surveys, which provide consumer-spending information for hundreds of goods and services by households, not by source. The 2009 Consumer Spending model incorporates ESRI's Tapestry Segmentation system. This yields improved differentiation of spending particularly for smaller markets where distinctions can be difficult to measure and for big-ticket items where consumer preferences are more pronounced. The 2002 Product Line Sales from the Census of Retail Trade are updated to provide the crosswalk to market demand by establishment, four-digit NAICS industry groups from the Consumer Expenditure data.

The comparison of supply and demand is derived from the Leakage/ Surplus Factor. This index measures the balance between the volume of supply (retail sales) generated by the retail industry and the demand (spending by households - i.e., retail potential) within the same industry. Leakage within a market study area occurs when a market's supply is less than demand. That is, retailers outside the market area are fulfilling the demand for retail products that could be met locally. Therefore, demand is "leaking" out of the trade area. Surplus in an area represents the opposite condition: supply exceeds the area's demand. Retailers are attracting shoppers that reside outside the trade area, so the "surplus" is in market supply.

## Current Socioeconomic and Market Conditions/Demand

### Demographics

Demographic data provides insights into the types of goods and services that might be in demand within the study area. Table 10 summarizes key demographic data for the corridor study area and the Tri-town area.

The following table compares the corridor study area to the Tri-town area:

Table 10: Selected Demographic Data – Route 7 Corridor

	2009		Projected - 2014		5 -Year Change	
	Corridor	Tri-town	Corridor	Tri-town	Corridor	Tri-town
Population	72,883	51,361	80,117	51,871	+ 10%	+1%
Households	28,364	17,856	29,044	18,027	+ 2.4%	+1%
Families	17,852	14,293	17,898	14,359	> -1%	>+1%
Housing Units	29,458	19,142	30,500	19,342	+ 3.5%	+1%
% Owner occupied	62.7%	81.1%	61%	80.9%	- 1.7%	<-1%
% Renter occupied	31.4%	12.2%	31.2%	12.4%	> -1%	>+1%
% Vacant	5.9%	6.7%	7.8%	6.7%	+ 1.9%	same
Average household size	2.7	2.84	2.7	2.84	same	same
Median Age	39.1	43.3	40.1	45.5	+2.6%	+5%
Median Household Income	\$88,316	\$152,283	\$93,121	\$155,248	+5%	+2%

Sources: Business Analyst Online, CERC, 2000 US Census

Summary level demographic data:

- The population is expected to grow by 10 percent between 2009 and 2014 within the corridor, yet with slower rate of growth in the Tri-town area overall (at 1 percent). The average household size is expected to remain the same, suggesting population growth will be largely from in-migration.
- The median age is 39.1 and the average household size is 2.7 persons. Sixty-three percent of the households define themselves as a family (source: US Census). The study area population is largely made up of families with children. The median age is expected to rise by 5 percent in the tri-town area as compared with remaining static within the corridor. The median age within the corridor is already higher than in the Tri-town area, however, at 43.3 years of age.
- The percentage of residents that are 55 or older is also significant at 24.2%.
- Within the study area, 62.7% of the 29,458 housing units are owner-occupied; 31.4% renter occupied, and 5.9% are vacant; the majority of residents/families own their own home and vacancies are low.
- The area is affluent with a median annual household income of \$88,316 as compared to \$67,176 for the State of Connecticut and \$53,154 for the United States as a whole.

The median household income for the Tri-town area is considerably higher than the corridor at \$152,283.

- Consistent with high-income levels, the residents are highly educated with 45% of the adult population having earned bachelor's degrees or higher as compared with 31% for Connecticut as a whole.
- The average commute time for employed persons in the study area is 29.4 minutes, compared to the U.S. average of 25.5 minutes.

When analyzed as a "Tapestry" the demographics are as shown in Table 11. As noted above, a "tapestry" is methodology to describe demographic cohorts including their purchasing, lifestyle and entertainment patterns. A tapestry analysis combines the "who" of lifestyle with the "where" of local geography to create a model of various lifestyle classifications with distinct buying behaviors. The Route 7 corridor communities' residents fall in the "tapestry" categories shown in Table 11.

The study area has two predominant market forces: the high income/low diversity segment (16.3%) and conversely, a segment (20.3%) that is highly diverse. This table indicates that 44.4% of the families living in the communities that are part of the Route 7 study corridor fall within the most affluent spending categories.

The tapestry for the Tri-town areas is similar excepting the absence of International Market Place category from among the top three categories. The three largest categories in the Tri-town area are Top Rung, Connoisseurs, and Urban Chic.

### **Residential Market Conditions**

For the corridor as a whole residential market conditions are as follows:

#### Single Family

The National Board of Realtors reports that housing markets and therefore housing values generally peaked in 2006. Today, most markets are clearly in decline as a result of the current economic recession, problems in the mortgage markets, and lingering results from sub-prime lending practices. Since its peak, prices nationally have fallen 23.5%. Over the last 12-month period, the median home price has fallen 15.7% nationally.

Locally, the Fairfield County housing market reached its peak in the second quarter of 2007 with an average price of \$769,311. Eight quarters later in mid-2009, the average housing price was at \$498,354, a peak-to-date decline of 35.2%. Over the last twelve months the average house price has fallen over \$180,000. Sales are down 55.2% since their peak in the second quarter of 2005 through the second quarter of 2009. Over the last 12 months, sales have fallen 25.1%. Yet, there is no consensus as to whether the seasonally adjusted pattern of local decline is over.

Nationally, neither sales nor prices appear yet to have clearly defined a bottom. However, as of the end of October 2009, national economists reported stabilization in some markets. The local residential market has been strongly influenced by credit liquidity issues (ability to borrow mortgage money). As noted by the Fairfield County Board of Realtors, the prices and number of homes sold have dropped significantly in the last year. These trends are true for the corridor study area indicating a strong single-family housing market for buyers with significant inventory.

Table 11: Route 7 Corridor Communities Tapestry

Tapestry Category	Route 7 Communities' Residents	Description of Tapestry Category
International Marketplace	20.3%	<i>International Marketplace</i> neighborhoods are developing urban markets with a rich blend of cultures and household types. It is one of the top five most diverse markets. Family is their first priority
Top Rung	16.3%	<i>Top Rung</i> residents are uniformly mature, married, highly educated and wealthy. They have the purchasing power to indulge any choice. It is the wealthiest consumer market, representing less than 1% of all U.S. households. This is a monochromatic market with little diversity.
Connoisseurs	13.1%	<i>Connoisseur</i> segment is second only to Top Rung in affluence, but they rank first in conspicuous consumption. The neighborhoods tend to be older bastions of affluence. 91% own their homes. Commuting is a way of life.
Urban Chic	12.2%	<i>Urban Chic</i> residents are professional who live a sophisticated, exclusive lifestyle. 20% earn incomes from self-employment; 55% receive additional income from investments. They focus on lifestyle more than ambience.
Wealthy Seaboard Suburbs	6.8%	<i>Wealthy Seaboard Suburbs</i> are older, established quarters of affluence characteristic of U.S. coastal metropolitan areas. There is very little ethnic diversity. The median net worth is more than 2.5 times that of the U.S. median. Ranks in the top five for out-of-state commutes to work.
Other Category	31.3%	

Source: Business Analyst Online

Workforce Housing

While single-family housing prices have dropped, homes in the study area remain out of reach to many segments of the population. A concern in the corridor marketplace is the lack of workforce housing. Workforce housing is defined by four principal factors including:

- **Affordability:** Based on criteria set by mortgage lenders, the U.S. Department of Housing and Urban Development (HUD) concludes that no more than 30% of household income should be allocated to housing. Typically, pricing calculations that define workforce-housing use 30% of household income as the maximum threshold of affordability. Ideally, workforce housing aims at satisfying the housing needs of family households earning 50% to 150% of median household income in a given SMSA (Standard Metropolitan Statistical Area).

- **Home Ownership:** Workforce housing is generally single-family detached homes for sale at prices that workforce families can afford. While workforce families often seek rental housing and alternatives such as co-ops and shared housing, the most socially valuable definition of workforce housing is considered to be ownership of single-family homes with yards.
- **Critical Workforce:** Most appropriately, "workforce housing" consists of housing intended to serve and appeal to gainfully employed and essential workers in the community, i.e. police officers, firemen, teachers, nurses and medical technicians, office workers, etc. Workforce families are generally younger and often include or plan to include children. Workforce housing is for a different demographic than the one commonly associated with the social condition that warrants a need for 'affordable housing'.
- **Proximity:** Most appropriately, "workforce housing" is located in or near employment centers (as opposed to in distant suburbs).

As an example of the need for more diversity in home prices, a single family residence in Ridgefield that has a value of \$811,200, financed at 6.75% for 30 years has annual debt service of \$63,737, plus taxes of \$15,000 for a total of \$78,737 before utilities. Based on a median income of \$88,316 in the market area, 89% of a median income would be in home ownership costs. Even if the median household value of \$612,000 (2008) for the entire corridor is used, annual debt service remains high at \$47,633 plus taxes of \$11,000 for a total of \$57,633 before utilities or 65% of median annual income.

### Rental Property

Approximately 31% of the housing units in the market area are rental properties (only 12.2% of the units in the Tri-town area are rentals). Only three larger development projects were advertised with available rentals within the study corridor. The apartment managers interviewed said that the market demand for rentals is strong, even in this soft economy.

The highest rental demand is for larger units that can be occupied by families. Large apartment complexes have a 20% set-aside for affordable units (based on State of Connecticut requirements), but they seldom have any vacancies in these affordable units. Table 12 summarizes average apartment rental costs in the study area.

Table 12: Sample Representative Rents – Route 7 Corridor

Type	Rent (Avg.)	Size in SF (Avg.)	Cost per Square Foot (SF) (Avg.)
1 Bedroom	\$1,593	745	\$2.12
2 Bedroom	\$2,026	1,223	\$1.74
3 Bedroom	\$2,583	1,490	\$1.78

Source: Rent.com and interviews

The research showed that there are a relatively large number of single-family homes in the rental pool in the Route 7 Corridor communities. This results from a stagnant sales market

and owners looking to rent their property until such time as sale prices increase. Because of the type of homes (typically large) and size of the lots in those markets, the rents are significantly higher than apartments. Sample listings are shown in Table 13 and include:

Table 13: Sample Home Rental Listings – Route 7 Corridor Communities

Bedrooms	Size SF	Monthly Rent	Acres
5 Bedrooms	5,940	\$8,900	5.34
5 Bedrooms	4,500	\$3,800	2.5
3 Bedroom	2,997	\$7,000	3.8

Source: Realtor.com

### Senior Housing

Data was collected from the four major senior housing communities in the corridor for this analysis. As noted earlier, while seniors may want to move to a continuum of care retirement community (CCRC or Assisted Living), many are unable to sell their primary residence and cannot move. In turn, this has decreased demand for both sales of housing targeted to those 55 and older and relocations to assisted living facilities.

Regardless, three major assisted living rent-based facilities in the study area reported very high occupancy. There are usually 1 or 2 units available at any time, as reservations are typically made six months in advance of a desired occupancy date, new residents can be accommodated at the time they want to move in.

### **Residential Market**

Data for the corridor as a whole by demand in each residential market segment is summarized as follows:

#### Single Family

- The market for single-family homes is weak. Residential home prices in the study area have not reached bottom and have been negatively influenced by credit liquidity issues or the inability for individuals to secure a mortgage. Price levels have dropped from 4.7% (Ridgefield) to 32.7% (Wilton) in the twelve-month period that ended June 30, 2009.
- Median home value in the market area is \$511,032, compared to a median home value of \$192,285 for the entire United States. During the period from 2000 to 2009, median home value increased 7.7% annually. In another five years (2015), the median home value is projected to increase by 0.69% annually to \$528,973.

#### Apartments & Rentals

- The overall multi-family rental market is strong, even in the soft economy. This is due, in large part, to the limited number of multi-family developments that have been built in the study area in recent decades resulting in low vacancy rates.
- The lack of sales activity for single-family homes has in turn created a large number of single-family homes now available for rent. (By way of example, there are 50 in Wilton and 80 in Ridgefield).

### Workforce Housing

- Local employers report difficulty retaining good service industry and health care workers due to the lack of workforce housing and long commute times for potential employees.
- All of the town staff interviewed noted there is a demand for affordable workforce housing. A major hurdle to the construction of more affordable units is zoning regulations that limit higher density development.

### Senior Housing

- Equity-based senior housing is weak with sales targeted to individuals 55 and older are not selling as quickly as expected. This is reportedly due to the inability of potential residents to sell their existing homes.
- Rental-based senior housing demand is in balance as the few vacancies that come onto the market are filled quickly. Waiting lists, while not uncommon, are very short.

### **Office Market**

#### Office Market Conditions

The Route 7 corridor is located in the Central and North Fairfield County sub-markets within the Fairfield County market area. Brokers report that this is one of the strongest market areas in Fairfield County for office space. The Central sub-market had a loss of available office space at negative 220,000 square feet (SF) and the North Fairfield County sub-market had slightly under a negative 200,000 SF for the same time period. This means that space, previously leased, has been vacated and put back on the market. Office market conditions are not expected to change in the near-term.

Office space is concentrated at the southern end of Route 7. This is due to the proximity to Norwalk, limited opportunity sites for new office complex development in the northern end of the corridor, and the market demand for convenient highway access to other business locations (particularly from I-95 and the Merritt Parkway). Several of the existing complexes within (or just adjacent to) the corridor are large. Merritt 7, located at the intersection of the Merritt Parkway and Route 7, has six buildings and a total of over 1.1 million SF of office space. Wilton Corporate Park has 650,000 SF of office space in five buildings.

Table 14 catalogs the office buildings over 100,000 SF within the study corridor, their vacancies, and asking rates. It demonstrates that as of October 2009 the corridor had approximately 3.7 million SF of office space, a vacancy rate of 13%, and asking rates in dollars per SF that ranged from the upper teens to the low thirty-dollar range per year. The largest single office vacancy is outside of the corridor market area itself. It is 36 Old Quarry Road or the 128,132 former Schlumberger office complex located on about 45.5 acres close to Ridgefield center.

Table 14: Major Office Space Vacancies- Route 7 Corridor

Building	Town	Size (SF)	Available (SF)	Rate	Comments
301 Merritt 7	Norwalk	211,000	91,389		They quote rates in response to proposals
401 Merritt 7	Norwalk	248,000	54,556		
501 Merritt 7	Norwalk	210,000	76,596		
Wilton Corporate Center	Wilton	161,222	70,000	\$32	Part of a large office park. Shuttle to train, many amenities. Rate was \$41 before the financial market troubles
20 Westport Rd	Wilton	340,000	25,869	\$17.50 + electric	Sublease space
Merritt on the River	Norwalk	232,000	25,709	N/A	Sublease space
11-15 River Rd	Wilton	116,000	18,560	\$30 +	Part of a mixed use complex with Stop & Shop, Gap, Starbuck's

Sources: Fall 2009 Broker Interviews, CERC, CoStar, Loopnet

### Office Market Demand

The office market is moderately weak. As noted above, as of October 2009, the Route 7 corridor had a vacancy rate of 13%. Yet, in Fairfield County as a whole, the office segment is out performing all other market segments. A 7% vacancy rate is considered a balanced market. That is, supply and demand are comparable. A 9% vacancy starts to advantage the tenant and their ability to negotiate a more favorable lease price agreement. Market conditions for office space are not expected to change in the near-term for the County as a whole.

Considerations for office demand include supply, size of spaces available, cost per square foot, location, and relevant employment sectors. Although there is relatively good availability of office space in the corridor, they are smaller spaces with few opportunities for potential tenants requiring a larger block of space. Asking rates in dollars per SF are within a range from the upper teens to the low thirties. The largest single vacancy in the study area is 70,000 SF at Wilton Corporate Center. The asking rate was \$41 per SF though it is now on the market for \$32 per SF. The largest number of establishments, as well as jobs, in Wilton is found in the services sector at 49% and 51% respectively (2006). Service industries include everything that is not related to producing goods including banking, communications, retail trade, all professional services such as engineering and medicine, all consumer services, and all government services. This sector can be associated with demand for office space.

## Retail Market

### Retail Conditions

The retail market is strong. Route 7 has traditionally served as the retail service corridor for the surrounding towns. Retail space in the corridor includes older, freestanding buildings, first floor mixed-use buildings, community strip shopping centers, areas like Wilton Center with its “village” environment, and a major regional mall in Danbury included in the study corridor.

The assessment of available retail space indicates that the market is very tight. The lack of available space may be largely due to restrictive zoning. That is, current zoning accommodates mostly non-retail or only small-scale retail land uses through much of the corridor. For example, Ridgefield does not allow new retail on Route 7, though existing businesses are “grandfathered”. Both Ridgefield and Wilton only encourage new retail as an adaptive re-use of pre-existing historic structures; usually small historic homes. Danbury recently changed zoning to restrict retail along Route 7 to small scale commercial and industrial activity that are low traffic generators.

The largest retail vacancy within the Route 7 corridor is 20,000 SF located in Wilton. This site is not on the market as Stop & Shop signed a long-term lease, though we understand it does not intend to occupy the building. Sample retail space availabilities within the corridor are shown in Table 15.

Table 15: Data on Sample Available Retail Sites – Route 7 Corridor

Address/Building	Town	Size (SF)	Available (SF)	Rate	Comments
Ethan Allan Building	Redding	8,000	3,000	\$12	
21 River Rd	Wilton	72,000	2,394	\$45	Neighbors are Gap and Starbucks
22 Danbury Rd	Wilton	8,293	8,293	\$30	Free standing – 2 story Cape

Sources: Fall 2009 Broker Interviews, CERC, CoStar, Loopnet

### Retail Market Demand

The Spending Potential Index (SPI) shown in Table 16 is household-based, and represents the amount spent for a product or service by buyers in a specific geographic area related to a national average of 100. The SPI reflects the “Tapestry” characteristics detailed in Table 11. The data indicates a very wealthy area that purchases on all categories of goods. The data also indicates that local buyers have the potential to spend more in many categories of goods. The high SPI’s for the corridor study area are even higher for the Tri-town area.

Table 16: Route 7 Corridor Communities – Representative Spending Potential Index

Category	Spending Potential Index - Corridor	Spending Potential Index- Tri-town
Apparel & Services	132	199
Computer	190	286
Entertainment & Recreation	185	297
Financial	210	407
Health	165	266
Home	187	307
Household Furnishings & Equipment	172	274
Travel	204	337

Source: InfoUSA

Another indicator of market demand for retail goods is the Leakage/Surplus analysis described above. The following are the top ten categories of retail goods in demand by area buyers and underserved by existing businesses within the corridor. They are shown in order of magnitude starting with number one as most underserved or with greatest 'leakage':

1. Electronic shopping and mail order houses/outlets
2. Drinking places (bars or places with a focus on serving alcohol)
3. Shoe stores
4. Specialty food stores
5. Auto parts/tire stores
6. Lawn and garden equipment/sales – retail stores
7. Clothing stores
8. Health and personal care (beauty salons and pharmacies)
9. Consignment shops/used merchandise
10. Other general merchandise stores (goods in value range of Target)

Conversely, there is a surplus in just seven of 32 categories of goods and services within the corridor. For five of the seven, there is just a minor surplus. The two exceptions are automobile dealerships and liquor stores.

For the Tri-town area, there is leakage in each of the major categories which further evidences the capacity of the region to support more local retail.

The findings demonstrate that the corridor could support more retail businesses to meet the demand for products that buyers are now purchasing elsewhere. These are generally goods people prefer to buy locally as opposed to large ticket items such as furniture which buyers will drive some distance to purchase.

### **Overall Market Demand – Findings**

- The overall multi-family housing market remains strong, despite the soft economy. This is due, in large part, to the small number of available multi-family units.
- The largest sector of unmet market demand is for workforce housing. Zoning regulations that limit higher density development are a major hurdle to the construction of more affordable units.
- Equity senior housing is not expected to evidence increased demand until the single-family housing market strengthens, as most seniors require the proceeds from the sale of their existing home in order to purchasing a new residence. Market demand for rental senior housing is in balance.
- The demand for office space in Fairfield County has sharply dropped and as a result vacancies have risen. Upper Fairfield County, including the Route 7 study area, has fared better than the lower County. The available space within the corridor is well suited to smaller professional offices. There are very limited options for tenants looking for a large block of space, especially in the Tri-town area, but the overall Fairfield County market has many opportunities for larger space units.
- Route 7 is the service corridor for the region. Local consumers look for a full range of goods and services.
- The corridor could support more retail businesses to meet the demand for products and services now purchased elsewhere. These are generally goods people prefer to buy locally as opposed to large ticket items, like furniture, which they are willing to drive some distance to purchase.
- Categories with strong unmet retail demand within the corridor are for drinking places, shoe stores, specialty food stores, and auto parts/tire stores.
- There is also a strong unmet demand for moderately priced goods found in general merchandise stores and medium-box pharmacies.
- Current zoning and land use policies limit the potential for the market to meet these retail demands.

Findings on market demand suggest the potential areas for economic growth in the corridor. These potential market sectors include workforce housing, convenience goods, and certain age-targeted housing. All of these should be supplied through a future land use pattern of cohesive mixed-use and economically sustainable development.



---

## Conclusions and Next Steps

---

The assessment of existing transportation, land use, and market conditions in the study area highlighted a number of areas for improvement and opportunities to enhance the quality of life along the corridor. All three of these factors influence each other, and as this project moves into the future conditions and development of recommendations phases, they all need to be considered jointly. Based on the existing assessment presented in this report, a number of areas of focus and opportunities begin to emerge that will be explored in the next phase of this study. These include:

- Development clusters are basically already formed but require enhancements with respect to providing the ideal mix of uses that the market can sustain and that provide a comprehensive sense of place. These locations include: Branchville, the Georgetown section of Route 7, Wilton Center, and the iPark area at the south end of the corridor. The market assessment provides insight into the types of development that are in demand in the corridor and would be sustainable. The mix of development type that the market area demands: particularly more workforce housing, convenience goods and some office space, are very compatible uses with successful transit oriented development (TOD).
- Enhancement to the transportation system entering and within these clusters (or nodes) may provide the opportunity to better define them and make them more functional. Gateways, signage, landscaping, improved internal circulation, parking, and accommodation of bicycle and pedestrian facilities are ways to use transportation strategies to develop this sense of place.
- The transportation system, and consequently mobility and safety for its users, will benefit from enhancements to bicycle and pedestrian facilities at train stations, in areas of higher concentration of activity, and at potential transit oriented development (TOD) locations. In addition, the opportunity for corridor-wide bicycle trails or lanes will be explored.
- Some transit enhancements, whether it be enhancements to existing bus or rail services, or new services may help fill some gaps in the transit system to give travelers more choices and to make transit more accessible to more people. Access to transit, on foot, bicycle, shuttle, or car can be enhanced in some locations to provide better interaction between travel modes.
- Geometric improvements have the opportunity to increase safety and reduce some congestion. In particular, access management strategies in areas of denser development will be developed in the next phase of the study.
- Finally, the opportunity, and possibly the need, for additional vehicular capacity in the corridor appear to be very limited with most capacity enhancements already completed or underway. The southernmost end of the corridor (from Grist Mill Road to Route 33 in Wilton) has been identified for capacity enhancements that have not been funded. This appears to be the largest “gap” in future traffic capacity and

operations and should be a high priority for improvements. Other locations in the corridor are less congested but might benefit from minor Transportation System Management (TSM), or “spot”, improvements. These will be better defined during later phases of this study, particularly when traffic growth is better projected.

The next steps in this study will look at how future growth (locally and regionally) and land use assumptions affect the transportation system. Now that a base level of performance is established, the future scenario may present additional system gaps and opportunities, not only from a transportation perspective, but between the transportation system and the development and quality of life vision for the corridor.