
Section 2

Assessment of Existing Conditions

The assessment of existing conditions included an extensive data collection process and operational analysis to establish the current condition of the transportation system in the Study Area. The data has been reviewed and analyzed by the study team. The purpose of the existing condition assessment is to identify existing needs and deficiencies and begin the process of identifying opportunities for improvements to the transportation system in the study area. This section describes the assessment of the study area transportation system as it exists in 2010.

2.1 Roadway Characteristics

The main roadways in the Study Area were reviewed in the field by the study team to observe the condition of the roadway network. These roadways are classified as either Urban Minor Arterials or Urban Local Roadways by the Connecticut Department of Transportation in its functional classification system in the Town of Rocky Hill. Based on the classifications of the Study Area roadways, a review of roadway characteristics was conducted to determine if deficiencies exist. The following sections summarize the results of the observations.

2.1.1 Cromwell Avenue (Route 3)

Cromwell Avenue is classified as an Urban Minor Arterial by the Connecticut Department of Transportation, and is designated as Connecticut State Route 3. Cromwell Avenue runs north-south in the west half of the Town of Rocky Hill, between the Town of Cromwell, at the south end, and the Town of Wethersfield, at the north end. The roadway continues into each of the abutting Towns, providing regional access, in addition to local access in the Route 3 Study Area. Cromwell Avenue intersects with West Street (SSR 411), in the center of the Study Area. West Street provides a full interchange with Interstate 91, further serving the regional use of Cromwell Avenue. Cromwell Avenue also intersects New Britain Avenue and Elm Street (Route 160) at the north end of the Study Area. Route 3 and Route 160 have a short overlap section between Elm Street and New Britain Avenue. Elm Street and New Britain Avenue provide an east-west connection between the Town of Rocky Hill, Berlin, Newington and beyond. Elm Street traverses the Town of Rocky Hill, ending at the intersection with the Silas Deane Highway (Route 99) on the east side of Town. Cromwell Avenue between the Cromwell-Rocky Hill Town Line and New Britain Avenue, within the Study Area, is approximately two miles long. The roadway cross section varies from two lanes wide, to seven lanes wide at the intersection with West Street, including exclusive turn lanes, but primarily provides a four lane cross section north of Inwood Road.

Between the Cromwell-Rocky Hill town line and Inwood Road, Cromwell Avenue is approximately 31± feet wide with one 12-foot travel lane in each direction. There is a 2± foot shoulder on the southbound side, and a 5± foot shoulder on the northbound side. Posted speed limit is 40 miles per hour in this section of the Route 3 corridor.

Between Inwood Road and Brook Street, Cromwell Avenue is 40 to 48 feet wide. In the southbound direction, Cromwell Avenue has two 12-foot travel lanes, and a 2-foot shoulder between the intersections. Heading south from Brook Street on Cromwell Avenue, the right southbound travel lane becomes a right turn only lane into Inwood

Road. This lane use geometry requires through traffic to merge into the left travel lane to continue south on Cromwell Avenue towards the Town of Cromwell. In the northbound direction, Cromwell Avenue has one 12-foot travel lane, and a shoulder between 2 to 5 feet wide. The northbound section widens from one lane to two 12-foot travel lanes and a 2-foot shoulder 330 feet south of Brook Street. Posted speed limit is 40 miles per hour in this section.

Between Brook Street and New Britain Avenue (Route 160), Cromwell Avenue is generally a four-lane roadway with two 12-foot travel lanes and 2 to 5 foot wide shoulders on either side. There are several intersections with both Town and State Roadways along Cromwell Avenue where right turn only lanes and/or left turn only lane are provided, at four of the five signalized intersections within this 1.5 miles long section. The widest section of Cromwell Avenue is just south of its intersection with West Street (SSR 411) where the Cromwell Avenue is 90± feet wide. The existing roadway cross section in this segment includes three 12-foot southbound travel lanes, four 11 or 12-foot northbound travel lanes, including turning lanes, and a 2 to 4 foot wide shoulder on either side. Posted speed limit is 40 miles per hour in this section.

The character of Cromwell Avenue varies significantly across the 2 mile corridor. Near the Town of Cromwell Town Line land use is light industrial, and existing development are lower traffic generating uses, primarily during the peak hours. North of Brook Street, from south to north the corridor transitions from the light industrial land uses to primarily commercial-retail uses. The retail uses are predominately small strip shopping centers with multiple tenants. Additionally, several smaller commercial office buildings exist along the corridor, at a significantly smaller scale as compared to buildings in some of the nearby office parks like Corporate Ridge.

2.1.2 West Street (SSR 411)

West Street is classified an Urban Minor Arterial by the Connecticut Department of Transportation, and is designated as a Special Service Road (SSR 411). West Street runs in an east-west direction between Cromwell Avenue (Route 3) and Main Street (Route 99.) West Street provides a full interchange with Interstate 91 (I-91) at Interchange 23. West Street serves as a primary east-west route in Town.

The primary function of West Street is an arterial roadway that provides access to several significant commercial and governmental developments along the roadway. The Corporate Ridge Office Park, Century Executive Park, Veterans Affairs Hospital, Connecticut Department of Transportation Research and Materials Laboratory, and new State of Connecticut Laboratory are the major developments along the roadway. In general, residential use is very limited and primarily located at the east end of the street, in addition to a small residential development on Pearl St.

Between Cromwell Avenue and Capital Boulevard, West Street is generally 60 to 65 feet wide, with two 12-foot travel lanes and 2-foot shoulder on either side; 12-foot left turn and right turn only lanes are provided at the four signalized intersections along the roadway. The posted speed limit is 45 miles per hour in this section.

Between Capital Boulevard and Main Street, West Street is generally 28 feet wide, with one 12-foot travel lane and a 2-foot shoulder in each direction. Turning lanes are not provided at the three signalized intersections in this section of West Street. The posted speed limit is 45 miles per hour in this section.

2.1.3 Brook Street

Brook Street is classified as an Urban Local Street by the Connecticut Department of Transportation. Brook Street runs in east-west direction between Cromwell Avenue and Main Street. Brook Street is generally 28 to 30 feet wide, with one 14 - 15-foot travel lane in each direction. Posted speed limit on Brook Street is 40 miles per hour between Cromwell Avenue and Henkel Way in the western section of Brook Street, and is 35 miles per hour between Henkel Way and Main Street in the eastern section.

Adjacent land uses along Brook Street are significantly different east and west of Henkel Way. Beginning at Main Street, Brook Street maintains the setting of a residential roadway. The road is lined with single family houses along both sides and several residential subdivisions intersect Brook Street. Henkel Way signifies the transition between the residential character on the east end, with the commercial/industrial uses on the west end of the street. The majority of land along Brook Street west of Henkel Way is in the Business Park zone. Consequently, this segment of Brook Street features large commercial/industrial developments, including Burris Logistics, Inwood Office Park, and the I-91 Tech Center.

2.2 Intersection Traffic Control

Within the study area, Cromwell Avenue intersection traffic control is generally signalized at public street intersections, and unsignalized at private driveway intersections. Cromwell Avenue features eight signalized intersections at the major roadway intersections and one unsignalized intersection. There are no traffic signals located exclusively at the driveways to any of the small strip malls; however, one driveway for the Shunpike Village Shopping Plaza is aligned at the signalized Cromwell Avenue intersection with West Street. West Street also provides traffic control signals at the major local road intersections, I-91 ramp intersections, and one signal at the VA Hospital driveway, which is aligned with the driveway to the Connecticut Department of Transportation laboratory facility. Brook Street features one signalized intersection at the intersection with Cromwell Avenue. The remaining Brook Street intersections operate under two-way stop sign control, including the intersection with Main Street, where Brook Street operates under stop sign control. Table 2-1 summarizes the existing intersection traffic control along the three primary study area roadways, Cromwell Avenue, West Street and Brook Street.

The traffic control signals along Cromwell Avenue, along with several intersections along West Street between Capital Boulevard and Cromwell Avenue, operate within a closed loop traffic control signal system owned and operated by the Connecticut Department of Transportation. The system's function is to provide coordination between several intersections to promote efficient traffic operations along Cromwell Avenue and West Street, and in cases of I-91 diversions to manage traffic flow diverted from the highway during emergency situations. The closed loop signal system includes 13 intersections. Closed loop signal system settings related to cycle lengths, time of day signal patterns, and traffic control signal phasing information was obtained from the Connecticut Department of Transportation. The settings provided by the Connecticut Department of Transportation were utilized in the traffic model to analyze existing traffic control signal operations.

The Cromwell Avenue intersections with West Street and France Street operate with one traffic signal controller in a cluster intersection configuration. These intersections are not coordinated with the adjacent signals; they operate freely (uncoordinated) as an isolated intersection throughout the day. This isolated operation is due to the longer cycle length at this intersection needed to process the traffic volumes, relative to the shorter cycle lengths at adjacent intersections. Coordination of the West Street intersection with the adjacent traffic signals may be warranted in the future and will be considered under future tasks during the Study.

Along West Street, the Corporate Place, I-91 Southbound Ramps, I-91 Northbound Ramps, and Capital Boulevard intersections operate in another closed-loop traffic signal system. The Gilbert Avenue intersection and the ConnDOT Transportation Lab / Veteran Hospital driveways intersection operate as isolated intersections. The Main Street intersection is part of a system along Main Street. Intersections to the south at Locust Circle and Old Forge Road and to the north at Dividend Road operate in the Main Street coordinated system.

TABLE 2-1

Study Area Intersections Traffic Control Devices

Intersection	Traffic Control
Cromwell Ave at Inwood Road ¹	Traffic Control Signal
Cromwell Ave at Brook Street ¹	Traffic Control Signal
Cromwell Ave at Cold Spring Road ¹	Traffic Control Signal
Cromwell Ave at West Side Market ¹	Traffic Control Signal
Cromwell Ave at West Street ^{1, 2}	Traffic Control Signal
Cromwell Ave at France Street Residence Inn ^{1, 2}	Traffic Control Signal
Cromwell Ave at Rhodes Road	Two-way Stop Sign (Rhodes Rd)
Cromwell Ave at Elm Street/Elm Street Extension ¹	Traffic Control Signal
Cromwell Ave at New Britain Avenue ¹	Traffic Control Signal
West Street at Corporate Place ¹	Traffic Control Signal
West Street at I-91 Southbound Ramps ¹	Traffic Control Signal
West Street at I-91 Northbound Ramps ¹	Traffic Control Signal
West Street at Capital Boulevard ¹	Traffic Control Signal
West Street at Gilbert Avenue	Traffic Control Signal
West Street at Pearl Lane	Two-way Stop Control (Pearl Lane)
West Street at ConnDOT / VA Hospital Driveways	Traffic Control Signal
West Street at Carillion Drive	Two-way Stop Control (Carillon Drive)
West Street at Main Street (Route 99)	Traffic Control Signal
Brook Street at Cromwell Avenue ¹	Traffic Control Signal
Brook Street at Henkel Way	Two-way Stop Control (Pearl Lane)
Brook Street at Farms Village Road	Two-way Stop Control (Farms Village Road)
Brook Street at Southbrook Road	Two-way Stop Control (Southbrook Road)
Brook Street at Westbrook Road	Two-way Stop Control (Westbrook Road)
Brook Street at Main Street	Two-way Stop Control (Brook Street)

¹ Intersections operating in a closed loop system along Cromwell Avenue and West Street

² Intersections operate in a cluster under one traffic signal controller

Currently, only the Cromwell Avenue intersections with New Britain Avenue (Route 160) and Elm Street (Route 160) intersections are designed to have push-button actuated exclusive pedestrian crossing phase. All other signals are equipped with pedestrian push buttons to actuate the minor street green time in order to allow pedestrians to cross concurrently with turning traffic. These push buttons are generally difficult to reach by pedestrian or no sidewalk is available.

Brook Street is a local Town road and intersection traffic control along the street is reflective of the lower traffic volumes on this street. There is one signalized intersection on Brook Street, at the intersection of Cromwell Avenue. All other intersections on Brook Street are stop sign controlled, including the intersection with Main Street, where the Brook Street eastbound approach operates under stop sign control. The side streets intersections in the residential section of Brook Street operate under two-way stop sign control on the side streets.

2.3 Traffic Volumes

2.3.1 Historical Traffic Conditions

A significant amount of traffic volume data was obtained from the Town of Rocky Hill, CRCOG, and ConnDOT during the Data Collection task. In addition, several traffic counts were conducted as part of the Scope of Work of the Study, supplementing the other available data. Data sources include:

- ConnDOT triennial 24-hour continuous automatic traffic recorder (ATR) (tube count) data between 1990 and 2009. The most recent count year for the Town was 2009
- Several recent Traffic Studies for proposed developments provided by the Town. Data included morning and afternoon intersection turning movement count data and 24 hour ATR count data at several locations throughout the Study Area
- Morning and afternoon peak hour turning movement volume data and ATR data from other developments currently under review by the Town
- Manual turning movement counts and automatic traffic recorders deployed in December 2010 as part of the Study data collection effort

FIGURE 2-1

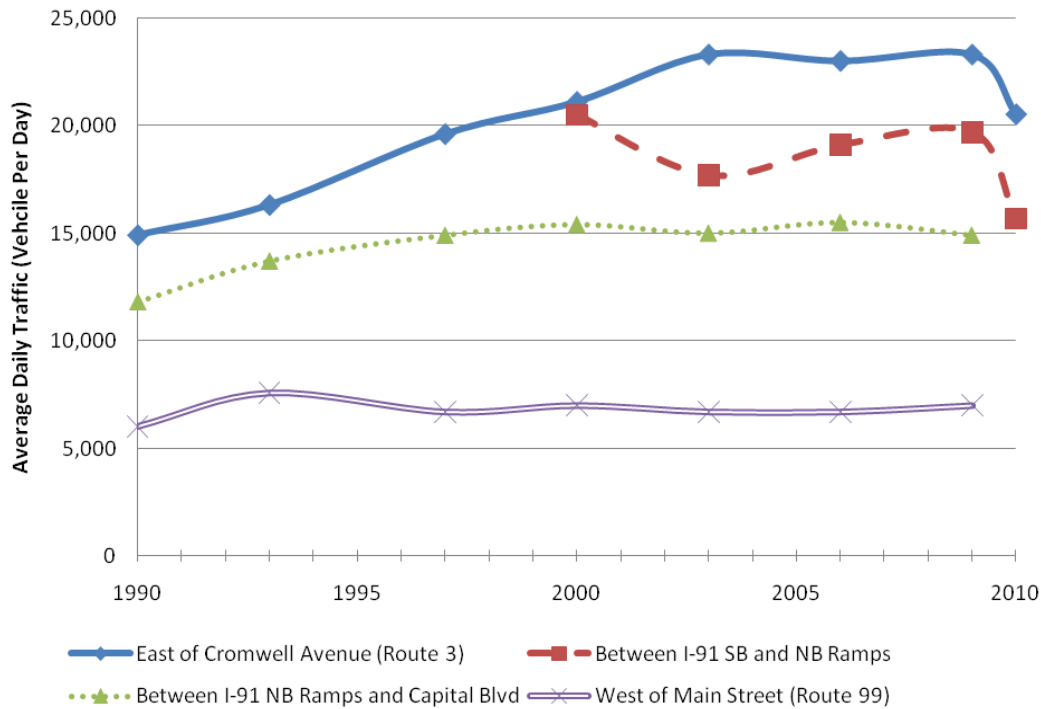
Cromwell Avenue Historical Average Daily Traffic



A review of the historic average daily traffic volume data collected for the primary study roadways, Cromwell Avenue, West Street, and Brook Street, indicates daily traffic volumes along Cromwell Avenue and West Street peaked in the mid-2000's, and has dropped off since then, coincident with the economic recession during the latter half of the decade. Cromwell Avenue just south of West Street carried 24,000 vehicles per day in 2003, and 22,000 vehicles per day in 2009; West Street just west of Cromwell Avenue carried 23,000 vehicles per day in 2003, and 20,500 vehicles per day in 2010. Conversely, Brook Street average daily traffic volume near Cromwell Avenue has increased from 4,300 vehicles per day in 2003 to 5,100 vehicles per day in 2010 as development along Brook Street expanded with Burris Logistics and Inwood Business Park. Traffic in the residential segment of Brook Street, on the east end of the street has remained fairly consistent, with ADT volumes around 2,500 vehicles per day during the decade. Figures 2-1, 2-2, and 2-3 show the change in average daily traffic at multiple locations along Cromwell Avenue, West Street, and Brook Street. Figure 2-4 summarizes the 2010 Average Daily Traffic Volumes at count locations throughout the Study Area.

FIGURE 2-2

West Street Historical Average Daily Traffic



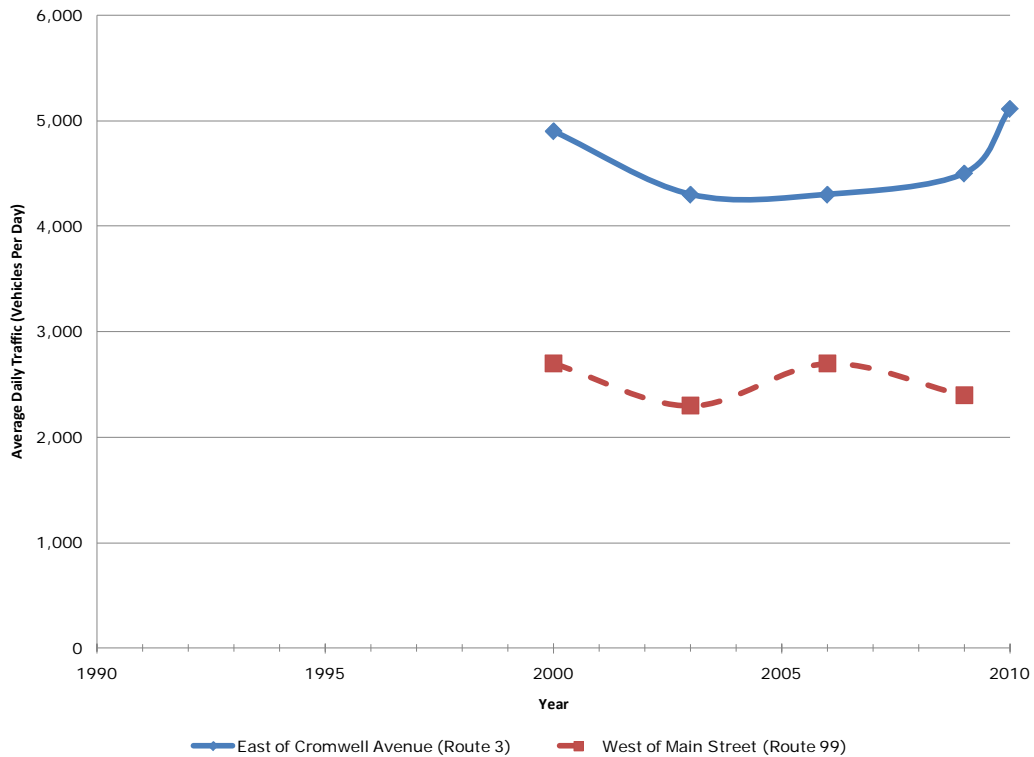
Source: ConnDOT, Connecticut Counts

Table 2-2 summarizes the various average daily traffic data at select locations along each of the primary Study Area roadway corridors, and Figure 2-4 depicts the ADT data on a diagram of the overall Study Area. The table provides the Average Daily Traffic, Morning and Afternoon Peak Hour Traffic (including a directional distribution of the volume during the peak hour when available) and the peak hour “K” factor. The “K” factor is calculated by determining the percentage of the ADT that occurs during the peak hour period.

A review of Table 2-2 exhibits the highest volumes in the Study Area are centered around the I-91 Interchange, with the highest observed volumes travelling through the West Street intersection with Cromwell Avenue. The “K” factors indicate that about 2% more of the total daily traffic is occurring during the afternoon peak hour than during the morning peak hour, indicating heavier, and more concentrated traffic volumes during in the afternoon peak when commuters are leaving work and arriving home. Additionally, a review of the morning and afternoon peak hour “K” factors indicate that traffic is most concentrated in the Interchange 23 area, relative to the other Study Area roadways. These observations are indicative of the significant peak hour/commuter rush hour of traffic volume in the Interchange 23 area, primarily due to the office workers in the Corporate Ridge office park.

FIGURE 2-3

Brook Street Historical Average Daily Traffic



Source: Connecticut Counts, ConnDOT

Table 2-2 also indicates that Cromwell Avenue carries about 10,000 more vehicles per day south of New Britain Avenue, than observations north of New Britain Avenue. This indicates that New Britain Avenue provides a significant amount of traffic entering the Study Area from the northwest end of the Town, in addition to the Towns of Wethersfield and Berlin. Figure 2-4 provides a graphical summary of the ADT data collected along study roadways under the most recent ATR counts. Additionally, a review of the morning and afternoon peak hour “K” factors indicates that traffic is heavier in the afternoon peak hour, as some locations exhibit 3%- 4% higher “K” factors. These results indicate that there is a significant peak hour/commuter rush hour of traffic volume along West Street, primarily due to the office workers in the Corporate Ridge office park.

TABLE 2-2

Existing Average Daily Traffic Volumes Summary (2007 – 2010)

Location	ADT	Morning Peak Hour		Afternoon Peak Hour	
		Vehicles Per Hour	Directional Distribution	Vehicles Per Hour	Directional Distribution
Cromwell Ave (Rte 3)					
Cromwell Town Line	10,900	1,060		1,162	
South of West St	22,100	1,675	54% NB	2,066	50%
South of Elm St	18,300	1,364	51% SB	1,778	55%
South of New Britain Avenue	18,100	1,330	56% SB	1,811	56% NB
North of New Britain Avenue	8,500	678		835	
West Street (Rte 411)					
East of Cromwell Avenue	23,300	2,022	56% EB	2,095	56% WB
Between I-91 Ramps	19,900	1,889	52% EB	2,011	63% WB
East of I-91 NB Ramps	14,900	1,571	68% EB	1,569	57% WB
East of Gilbert Road	7,700	592		780	
West of Main Street	7,000	584		616	
Brook Street					
East of Cromwell Avenue	5,120	410	69% WB	597	50%
West of Henkel Way	3,500	292	56% EB	349	52% EB
East of Main Street	2,400	199		263	
Main Street (Rte 99)					
South of Brook Street	7,400	577		782	
North of West Street	12,300	934		1,127	

2.3.2 Heavy Vehicle Traffic

In combination with the traffic counting program conducted as part of the Route 3 Study data collection tasks, vehicle classification data was collected to measure the volume of heavy vehicles in the traffic stream on the primary Study Area roadways. Particular attention was focused on the percentage of heavy traffic occurring along Brook Street, as concerns exist in the residential area that heavy truck traffic is travelling along Brook Street through the neighborhood. The Town of Rocky Hill has enacted an ordinance prohibiting truck traffic along the segment of Brook Street between Main Street and Henkel Way.

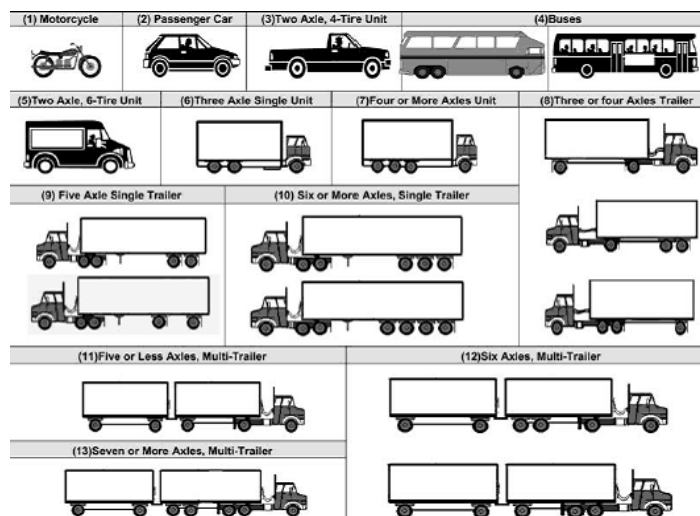


Table 2-3 summarizes the heavy vehicle data collected in the Study Area. For the purpose of the Study, a heavy vehicle is identified as all vehicles classified as Category 4 through 13 in the Federal Highway Administration 13-Category vehicle classification system.

TABLE 2-3

Heavy Vehicle Summary

Location	Total ADT	Heavy Vehicles	
		ADT	% Heavy Vehicles
Cromwell Ave (Rte 3)			
South of Rhodes Road			
Northbound	8,082	461	5.7%
Southbound	8,227	477	5.8%
West Street (Rte 411)			
East of I-91 NB Ramps			
Eastbound	8,189	565	6.9%
Westbound	7,335	359	4.9%
Brook Street			
East of Cromwell Avenue			
Eastbound	2,615	285	10.9%
Westbound	2,505	306	12.2%

Based on the observations, the Brook Street traffic stream near Cromwell Avenue has a significant volume of heavy vehicles relative to the overall ADT on this segment of Brook Street. This finding is not unexpected given the operations at Burris Logistics on Brook Street, which is a food distributor and primarily operates tractor-trailer trucks.

2.3.3 2010 Existing Morning and Afternoon Traffic Volumes

Based on the historical ADT data and current traffic count data, 2010 Existing Morning Peak Hour and 2010 Existing Afternoon Peak Hour intersection turning movement counts were compiled and balanced for the Study Area roadways. The general approach used to develop the 2010 Existing Traffic Volumes methodology is as follows:

- Traffic volume data collected in the middle of the decade (2005-2007) was used as the traffic volume datum for traffic data collected at the end of the decade. This approach was taken to capture traffic conditions during times of normal economic activity in the study area
- Traffic study data from approved developments were included in the 2010 Existing Traffic Volumes regardless of the operating status of the development. Approved developments include Modern Tire on Cromwell Avenue; strip mall at 581 Cromwell Avenue; Inner Circle Foods on the corner of Brook Street and Henkel Way; and the Connecticut State Laboratory on West Street

- Intersection turning movement volumes obtained in 2009 – 2010 were generally increased and balanced against the data and studies from the middle of the decade
- Where turning movement data was unavailable, intersection turning movements were calculated using trip generation rates from the ITE Trip Generation Information Report, 8th Edition based on the existing land uses in those developments. This trip generation methodology was used at the signalized intersections at Inwood Road and Cromwell Avenue and West Street and Corporate Place, intersections that both serve developments certified by the State Traffic Commission.

This approach to develop the 2010 Morning and Afternoon Peak Hour Intersection Turning Movement Volumes provides normalized traffic volume data based on a period of normal economic activity and a conservative analysis of existing traffic conditions in the Study Area. The 2010 Existing Morning Peak Hour Traffic Volumes are presented in Figure 2-5 and the 2010 Existing Afternoon Peak Hour Traffic Volumes are presented in Figures 2-6.

2.4 Travel Speeds

Travel speed data was collected along Cromwell Avenue, West Street, and Brook Street during the traffic data collection activities in conjunction with the Automatic Traffic Recorder (ATR) traffic counts. Speed data was collected in December 2010. Table 2-4 summarizes the results of the speed observations along the Study Area corridors.

In general, travel speeds along Cromwell Avenue are similar to the posted speed limit. The 85th percentile speed, the speed at which 85% of all traffic is travelling at or below, is less than the posted speed limit for northbound traffic and five miles per hour over the speed limit for southbound traffic. The contributing factors to the five mile per hour difference between northbound and southbound travel near Rhodes Road likely include the presence of several curb cuts along the northbound side of Cromwell Avenue in this area, including a small retail plaza, a gas station, and other commercial developments to the north of Rhodes Road, and the slight uphill grade in the northbound directions. These driveways on Cromwell Avenue create “friction” in the traffic stream resulting in slightly lower overall travel speeds. Additionally, heading in the southbound direction, traffic is traveling slightly downhill, producing relatively higher travel speeds for southbound traffic.

Observations along West Street were collected at the I-91 Interchange. Speed data was collected using an ATR between the I-91 northbound ramps and Capital Boulevard. Speed data for both travel directions was similar, with average speeds of 38 mph and 39 mph, for westbound and eastbound traffic respectively, and 85th percentile speed of 45 miles per hour, for both directions. The 85th percentile speeds on West Street are indicative of the character of the roadway in this area, featuring no curb cuts, multiple travel lanes, and coordinated traffic control signals to encourage progression. Additionally, during off-peak hours, traffic signals are set to flash yellow for South West Street intersections, allowing for uninterrupted flow in the area of the ATR data collection machine.

Travel speed data was collected on Brook Street just to the east of the intersection with Cromwell Avenue, in the vicinity of the driveway to the I-91 Tech Park office complex. The posted speed limit on Brook Street between Cromwell Avenue and Henkel Way is 40 miles per hour. East of the industrial/ business parks, in the residential section of Brook Street, the posted speed limit is reduced to 35 miles per hour. The observed 85th percentile speeds are 38 miles per hour for eastbound traffic and 40 miles per hour for westbound traffic, generally in line with posted speed limits. Given the proximity of the traffic count location to the intersection with Cromwell Avenue, the observed travel speeds may be slightly lower than speeds that might be observed to the east, closer to Henkel Way; however, travel speeds are generally in line with posted speed limits.

TABLE 2-4

Travel Speed Observations (MPH)

Location	Posted Speed Limit	Average Speed		85 th Percentile Speed	
		NB/EB	SB/WB	NB/EB	SB/WB
Cromwell Avenue					
South of Rhodes Road	40	33	41	39	45
West Street					
East of I-91 NB Ramps	45	39	38	45	45
Brook Street					
East of Cromwell Avenue	40	32	33	38	40

2.4.1 Travel Time Study

Travel time studies were conducted along Cromwell Avenue and West Street to measure average travel time to traverse the study corridor during the morning peak hour (7:30 am-8:30 am,) midday peak hour (12 pm-1 pm), and afternoon peak hour (4:30 pm-5:30 pm) in December 2010. Travel time data was recorded three times per travel direction during each of the three peak hours. The average travel time between intersections, traffic signal related delay at each intersection, and average travel speed per segment are presented in the tables and graphically represented in the respective figures. Signal delay equates to the total time observed following the study vehicle coming to a complete stop due to a red light at the traffic signal and the additional time required to pass through the intersection due to the traffic signal.

Travel time studies were not conducted along Brook Street due to the relatively low traffic volume, lack of traffic signals, the free flow condition and functional classification of the street as a local road. In addition, travel studies were not conducted along Main Street due to the relatively short segment of the Main Street corridor that is included in the Study Area and relatively low traffic volumes relative to Cromwell Avenue and West Street.

2.4.2 Cromwell Avenue

Observations along Cromwell Avenue indicated similar performance during the morning, midday, and afternoon peak hours. Travelling in the northbound direction the observed travel time was about 4 min 15 sec during the morning and afternoon peak hours, with an average travel speed of 27 miles per hours. Travelling in the southbound direction along Cromwell Avenue the average total trip time was 4 min 00 sec during the morning peak hour and 4 min 43 sec during the afternoon peak hour. A review of the chart of the travel time data indicates good progression along the corridor, both south and north of West Street. The West Street intersection traffic signal delay accounted for a significant portion of the stopped time during each of the peak periods. This is due to the long cycle length and the complex traffic signal phasing at the intersection. Figures 2-7 and 2-8 graphically represent the directional average travel time study observations during each of the peak periods. Tables 2-5 and 2-6 present the details of the recorded travel study data along Cromwell Avenue.

FIGURE 2-7

Cromwell Avenue Travel Time Study – Northbound Direction

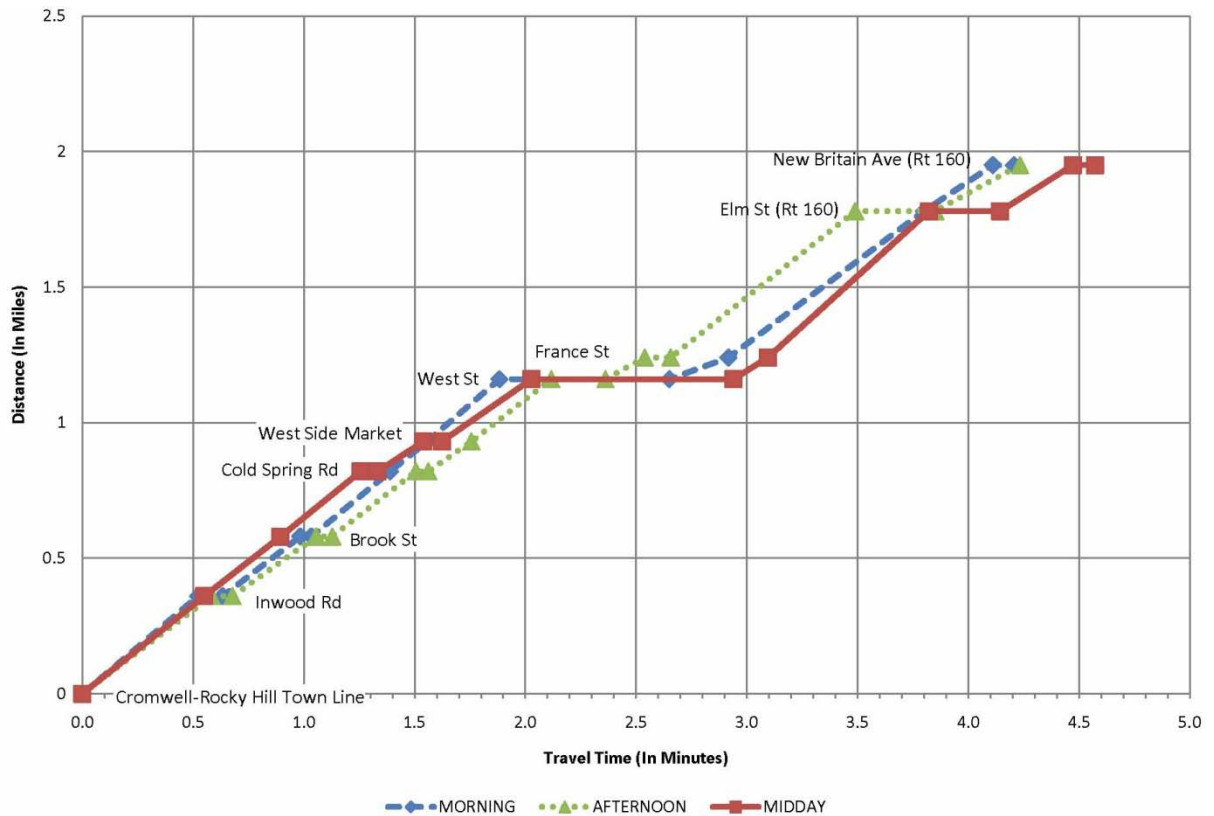


FIGURE 2-8

Cromwell Avenue Travel Time Study – Southbound Direction

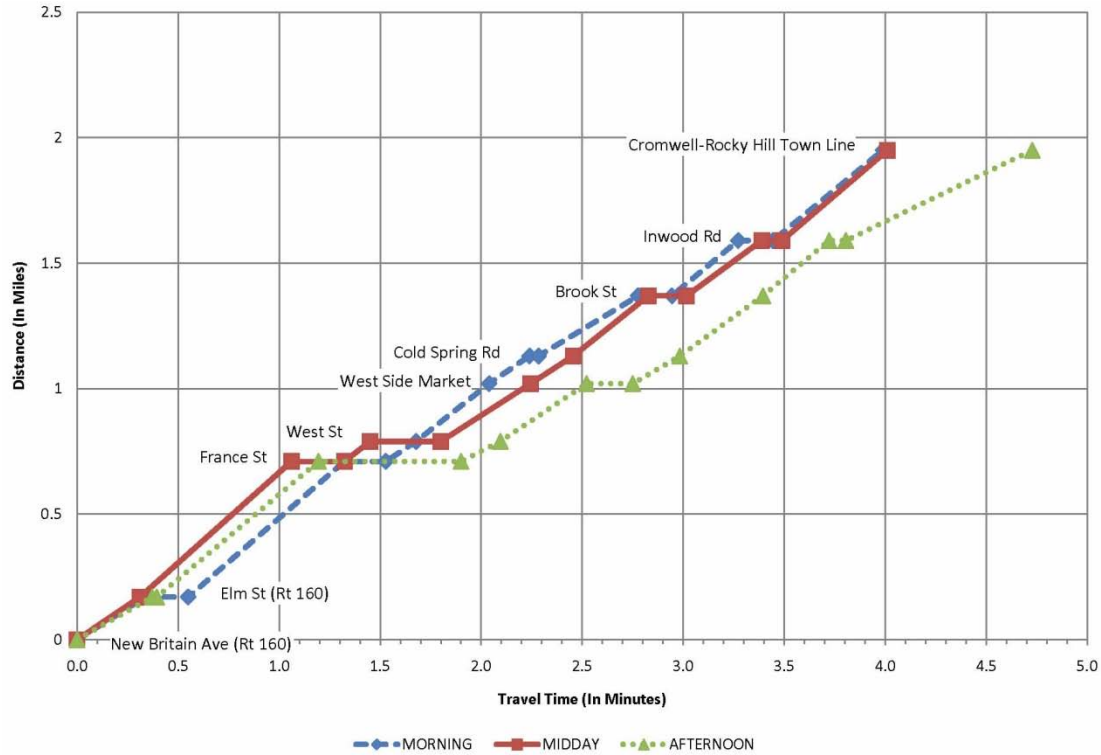


TABLE 2-5

Cromwell Avenue Average Northbound Travel Time Study Summary

Intersection	Distance (Miles)	Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)
Cromwell Town Line	0.00	0.0	--	0.0	--	0.0	--
Inwood Road	0.36	38.0	34.1	33.0	39.3	40.7	31.9
Brook Street	0.22	24.0	33.0	20.7	38.3	27.0	29.3
Cold Spring Road	0.24	21.3	40.5	26.3	32.8	26.0	33.2
West Side Market Drive	0.11	10.0	39.6	17.3	22.8	11.7	33.9
West Street	0.23	65.7	12.6	79.0	10.5	36.3	22.8
France Street	0.08	16.0	18.0	9.3	30.9	17.7	16.3
Elm Street	0.54	53.0	36.7	63.0	30.9	71.7	27.1
New Britain Avenue	0.17	24.3	25.2	25.7	23.8	23.0	26.6
OVERALL	1.95	252.3	27.8	274.3	25.6	254.0	27.6

TABLE 2-6

Cromwell Avenue Average Southbound Travel Time Study Summary

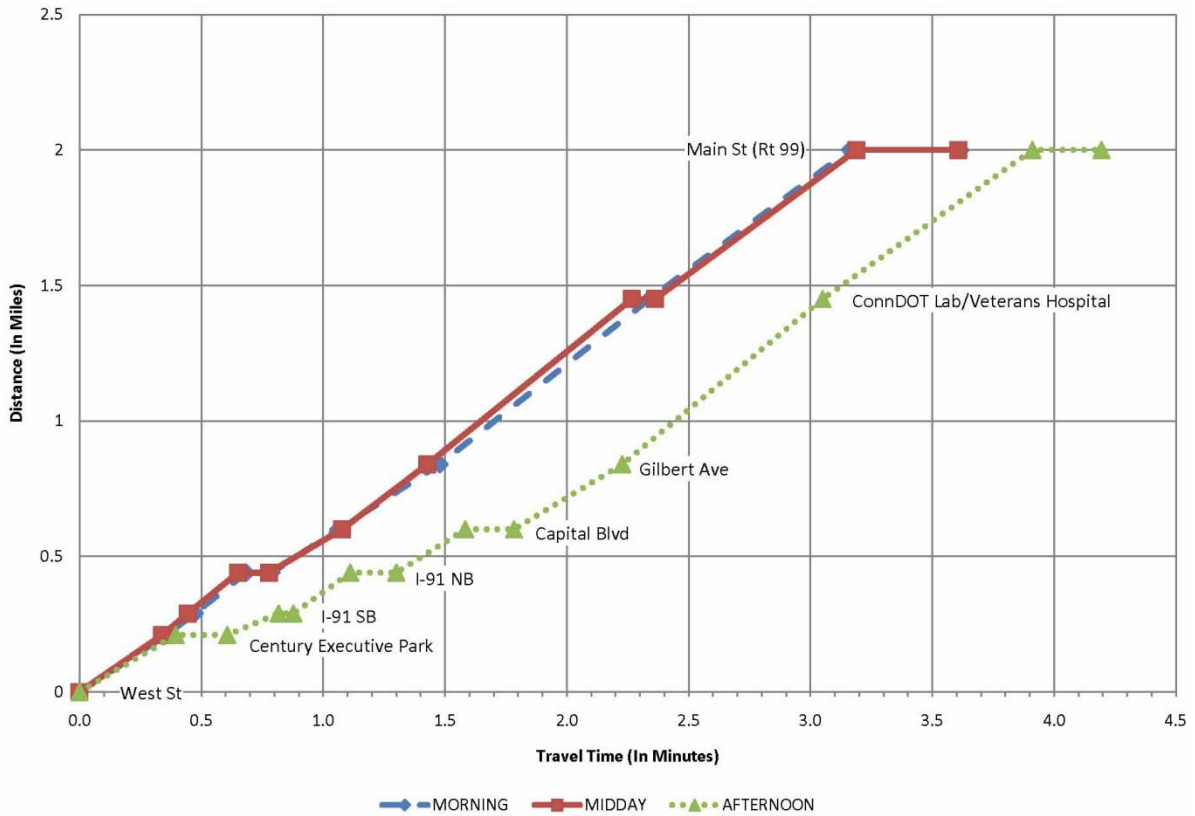
Intersection	Distance (Miles)	Morning Peak Hour		Midday Peak Hour		Afternoon Peak Hour	
		Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)
New Britain Avenue	0.00	0.0	--	0.0	--	0.0	--
Elm Street	0.17	33.0	18.5	18.7	32.8	23.7	25.9
France Street	0.54	58.7	33.1	60.7	32.0	90.3	21.5
West Street	0.08	9.0	32.0	28.7	10.0	11.7	24.7
West Side Market Drive	0.23	21.7	38.2	26.7	31.1	39.3	21.1
Cold Spring Road	0.11	14.7	27.0	12.7	31.3	14.0	28.3
Brook Street	0.24	39.7	21.8	33.7	25.7	24.7	35.0
Inwood Road	0.22	30.0	26.4	28.3	28.0	24.7	32.1
Cromwell Town Line	0.36	32.7	39.7	31.3	41.4	55.3	23.4
OVERALL	1.95	239.3	29.3	240.7	29.2	283.7	24.7

2.4.3 West Street

Observations along West Street indicated similar performance during the morning, midday, and afternoon peak hours for traffic travelling in the westbound direction. During each of the periods, as exhibited by the Cromwell Avenue studies, the intersection of West Street and Cromwell exhibits a long stopped delay waiting to pass through the intersection. In the eastbound direction, morning and midday traffic exhibited similar performance. During the afternoon peak hour, traffic experienced a longer average travel time, affected by the intersections between Cromwell Avenue and Capitol Boulevard. The delay during the afternoon can be attributed to the heavy left turn traffic movements from West Street at the I-91 southbound ramp, I-91 northbound ramp and Capitol Boulevard. Figures 2-9 and 2-10 graphically represent the directional average travel time study observations during each of the peak periods. Table 2-7 and Table 2-8 presents the details of the recorded travel study data along West Street.

FIGURE 2-9

West Street Travel Time Study – Eastbound Direction



Observed travel time for eastbound traffic was about 3 min 37 sec during the morning, 3 min 36 sec during the midday, and 4 min 12 sec during the afternoon peak hour. In the westbound direction, the travel study recorded average travel times of 4 min 16 during the morning peak hour, 4 min 4 sec during the midday peak hour, and 4 min 7 sec in the afternoon peak hour. A review of the westbound data indicates that approximately one minute of travel time elapsed stopped and waiting to move through the Cromwell Avenue intersection. Average travel speeds were in a range of 28 – 33 miles per hour, including both moving and stopped time.

FIGURE 2-10
West Street Travel Time Study – Westbound Direction

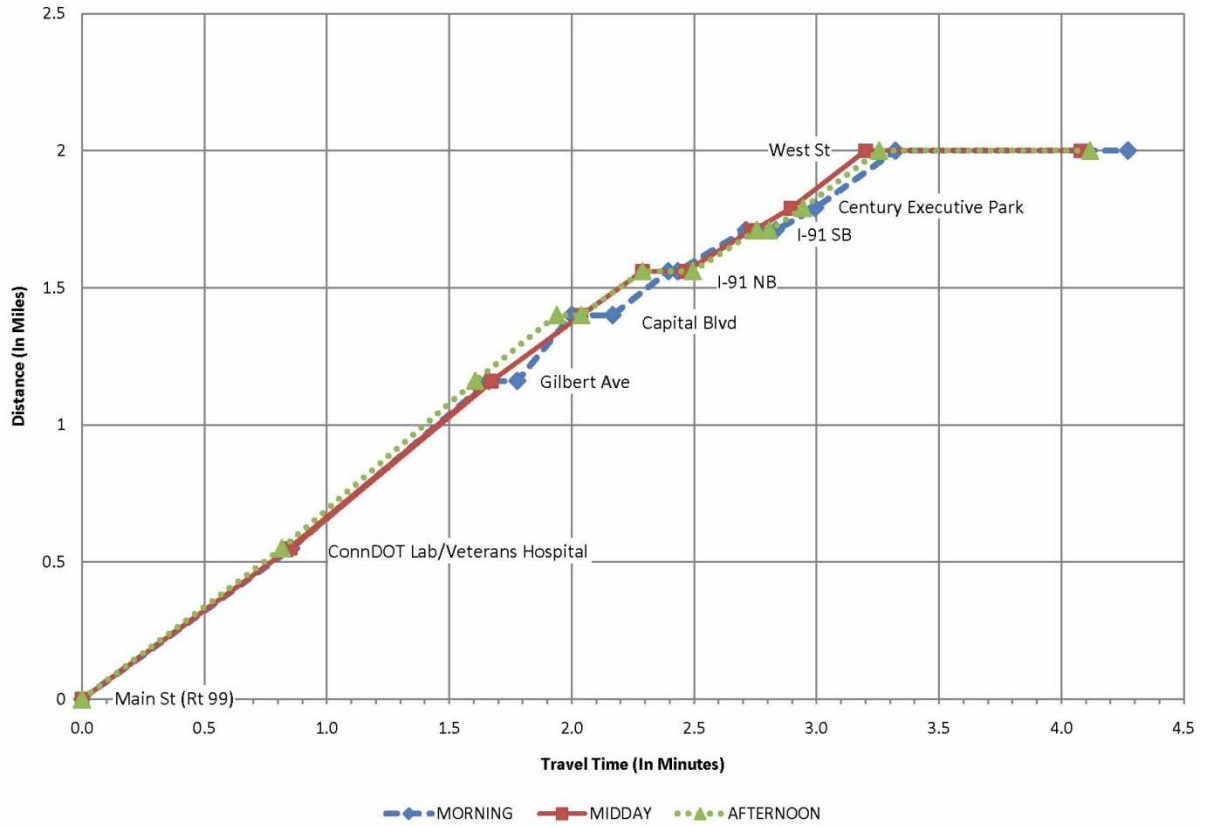


TABLE 2-7

West Street Average Eastbound Travel Time Study Summary

Intersection	Distance (Miles)	Morning Peak Hour		Midday Peak Hour		Afternoon Peak Hour	
		Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)
Cromwell Ave	0.00	0.0	--	0.0	--	0.0	--
Corporate Place	0.21	21.3	35.4	20.3	37.2	36.3	20.8
I-91 SB Ramps	0.08	7.0	41.1	6.3	45.5	16.3	17.6
I-91 NB Ramps	0.15	19.0	28.4	20.0	27.0	25.3	21.3
Capital Boulevard	0.16	16.3	35.3	18.0	32.0	29.0	19.9
Gilbert Ave	0.24	25.0	34.6	21.0	41.1	26.7	32.4
ConnDOT Lab / Vet. Home	0.61	51.7	42.5	56.0	39.2	49.3	44.5
Main St	0.55	76.7	25.8	74.7	26.5	68.7	28.8
OVERALL	2.00	217.0	33.2	216.3	33.3	251.7	28.6

TABLE 2-8

West Street Average Westbound Travel Time Study Summary

Intersection	Distance (Miles)	Morning Peak Hour		Midday Peak Hour		Afternoon Peak Hour	
		Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)
Main St	0.00	0.0	--	0.0	--	0.0	--
ConnDOT Lab / Vet. Home	0.55	51.3	38.6	51.0	38.8	49.0	40.4
Gilbert Ave	0.61	55.3	39.7	49.3	44.5	47.3	46.4
Capital Boulevard	0.24	23.3	37.0	22.0	39.3	26.0	33.2
I-91 NB Ramps	0.16	16.0	36.0	25.7	22.4	27.3	21.1
I-91 SB Ramps	0.15	24.0	22.5	16.7	32.4	18.7	28.9
Corporate Place	0.08	9.7	29.8	9.0	32.0	8.3	34.6
Cromwell Ave	0.21	76.7	9.9	71.0	10.6	70.3	10.7
OVERALL	2.00	256.3	28.1	244.7	29.4	247.0	29.1

2.5 Traffic Operations

Traffic operations were evaluated for sixteen intersections within the study area during the morning and afternoon peak hours. The capacity and queue analyses were computed using Trafficware's *Synchro plus SimTraffic 7 – Traffic Signal Coordination Software*, based on the *2000 Highway Capacity Manual* methodology.

The intersection qualitative operational condition is described by Level of Service (LOS). LOS is defined in the Highway Capacity Manual using grades A through F. Each category indicates a different range of average delay per vehicle measured in seconds for an intersection.

In general intersections that exhibit a LOS A or B are considered to have excellent to good operating conditions with little congestion or delay. LOS C indicates an intersection with acceptable operations. LOS D indicates an intersection that has tolerable operations with average delays that are approaching one minute. Intersections with Levels of Service E and F are operating with poor or failing conditions and typically warrant a more thorough review and possible improvement to mitigate the capacity issues. Improvements can include geometrics, lane use, timing modifications, or different forms of traffic control to mitigate the operational issues and reduce average delay. In the context of

this planning process, during the analysis of both existing and future conditions, intersections exhibiting LOS E and F will be identified for further analysis and potential improvements to mitigate poor or failing operations. Table 2-9 below summarizes the intersection operations along Cromwell Avenue; Table 2-10 summarizes the intersection operations along West Street; Table 2-11 summarizes the intersection operations along Brook Street.

Table 16-2
LEVEL OF SERVICE CRITERIA
Signalized Intersections

Level of Service	Average Control Delay (Seconds per Vehicle)
A	0 - 10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 - 80
F	>80

Source: *Highway Capacity Manual 2000*, Transportation Research Board, National Research Council, Washington D.C., 2000

Table 17-2
LEVEL OF SERVICE CRITERIA
Two-Way Stop Controlled Intersections

Level of Service	Average Control Delay (Seconds per Vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	> 50

Source: *Highway Capacity Manual 2000*, Transportation Research Board, National Research Council, Washington, D.C., 2000

2.5.1 Cromwell Avenue Peak Hour Traffic Conditions

TABLE 2-9

Cromwell Avenue Intersection Operational Summary

Study Intersection	2010 Morning Peak Hour		2010 Afternoon Peak Hour	
	LOS	Average Delay (s/veh)	LOS	Average Delay (s/veh)
Cromwell Avenue at New Britain Avenue	C	30.7	C	31.9
Cromwell Avenue at Elm Street	B	18.8	D	47.4
Cromwell Avenue at France Street	C	25.3	B	18.6
Cromwell Avenue at West Street	D	41.3	D	39.2
Cromwell Avenue at West Side Market	A	3.2	A	6.8
Cromwell Avenue at Cold Spring Road	C	22.5	B	12.5
Cromwell Avenue at Brook Street	A	7.4	B	14.9
Cromwell Avenue at Inwood Road	A	4.6	B	17.3

2.5.2 West Street Peak Hour Traffic Conditions

TABLE 2-10

West Street Intersection Operational Summary

Study Intersection	2010 Morning Peak Hour		2010 Afternoon Peak Hour	
	LOS	Average Delay (s/veh)	LOS	Average Delay (s/veh)
West Street at Corporate Place	A	4.7	B	12.7
West Street at I-91 Southbound Ramps	C	23.9	C	28.6
West Street at I-91 Northbound Ramps	C	26.7	B	13.2
West Street at Capital Boulevard	B	11.1	C	25.4
West Street at Gilbert Avenue	A	8.7	A	7.3
West Street at ConnDOT Lab / Veteran Home	A	4.2	A	6.8
West Street at Main Street (Route 99)	C	26.6	E	67.1

Traffic Operations Summary Notes:

< Shared left turn and through lane

> Shared through and right turn lane

m Queue metered by upstream signal

Queue exceeds capacity. Queue shown is after two cycle, and queue may be longer

2.5.3 Brook Street Peak Hour Traffic Conditions

Traffic operations at the intersection of Brook Street and Henkel Way were recently analyzed in support of a proposed development located in the northwest corner of the intersection, Inner Circle Foods. Based on the traffic study prepared by Traffic Engineering Solutions, and submitted to the Town of Rocky Hill this unsignalized intersection will operate with Levels of Service A during the morning peak hour and or B for the intersection during the morning and afternoon peak hour

TABLE 2-11

Brook Street at Henkel Way Two-Way Stop Controlled Operational Summary

Lane Use		Morning Peak Hour		Afternoon Peak Hour	
		LOS	Average Delay (s/veh)	LOS	Average Delay (s/veh)
Brook St (EB)	TH/LT	A	5.8	A	4.0
Brook St (WB)	TH/RT	A	0.0	A	0.0
Henkel Way (SB)	LT	B	14.6	C	16.7
Henkel Way (SB)	RT	B	10.5	B	10.6

As shown in the tables above, most of the intersections operate at tolerable to good, overall LOS D or better, during the morning and afternoon peak hours respectively under the existing condition. However, arterial left turns, and the minor street approaches experience tolerable, poor, and failing LOS D, E or F as select intersections. This is because the traffic signals are designed to favor the arterial movement to maximize the traffic throughput in north-south direction along Cromwell Avenue, and east-west direction along West Street. Along Brook Street, traffic operations are good with LOS C or better at the intersection of Henkel Way for southbound traffic turning left onto Brook Street.

2.6 Traffic Safety

Motor vehicle accident history data for Cromwell Avenue and West Street were collected from the Connecticut Department of Transportation *Traffic Accident Viewing System (TAVS)*, Version 2.1, and from data provided by the Town, for the latest three-year period between January 1, 2006, and December 31, 2008. Summaries and details of the accident history are included in the Appendix.

2.6.1 Cromwell Avenue

Table 2-12 summarizes the number, type, and the contributing factors for collisions recorded along the Cromwell Avenue corridor between the Cromwell-Rocky Hill Town Line and New Britain Avenue between 2006 and 2008. During the three-year period, 205 collisions were recorded. Rear-end type collision was the most common type of collision with 75 crashes (37%) recorded; the second most common type of collision was Turning - Intersecting Paths with 53 crashes (26%.)

The most common contributing factor to collisions was drivers Followed Too Closely with 69 crashes (34%) recorded over the three-year period. The second most common contributing factor was drivers Failed to Grant Right-Of-Way (ROW) with 62 crashes (30%.)

Twenty-three crashes were recorded at the signalized Cromwell Avenue and West Side Market Drive intersection over the three-year period, with 11 Turing type collisions. A further review of the collision detail indicated majority of the turning collisions involved with north or southbound travelling vehicles collided with vehicles exiting from the commercial driveway. Table 2-13 summarizes the Cromwell Avenue collisions by intersection.

TABLE 2-12
Cromwell Avenue Collisions Summary

Collision Type	Number of Collisions	
	Total	Percentage
Rear-end	75	37%
Turning - Intersecting Paths	53	26%
Turning - Opp. Direction	20	10%
Sideswipe - Same Direction	21	10%
Fixed Object	18	9%
Turning - Same Direction	6	3%
Other	12	5%
Total	205	100%
Contributing Factor	Total	Percentage
Following Too Closely	69	33%
Failed to Grant ROW	62	30%
Speed Too Fast for Conditions	11	5%
Violated Traffic Control	8	4%
Improper Lane Change	9	4%
Slippery Surface	8	4%
Driver Lost Control	9	4%
Improper Turning Maneuver	8	4%
Improper Passing Maneuver	4	2%
Other	17	10%
Total	205	100%

Source: ConnDOT, Town of Rocky Hill

A review of statewide data indicates that the Cromwell Avenue / New Britain Avenue intersection should be evaluated in more detail as it relates to opportunities to improve safety. Likewise, Cromwell Avenue between Cold Spring Road and West Street, and Cromwell Avenue between Elm Street and New Britain Avenue should be evaluated. Although one may feel the numbers of accidents in other locations are high, analysis of the local accident data does not suggest a deficiency in vehicular safety when compared to statewide data.

TABLE 2-13

Cromwell Avenue Intersections Collisions Summary

Cross Street	Total Collisions	Most Common Collision	Most Common Contributing Factor(s)		
New Britain Avenue	11	Rear-end	7	Following Too Closely	7
Elm Street	16	Rear-end	12	Following Too Closely	10
France Street	11	Turning - Intersecting Path	6	Violated Traffic Control	5
West Street	20	Rear-end	8	Failed To Grant ROW	8
West Side Market	23	Turning - Intersecting Path	11	Failed To Grant ROW	12
Cold Spring Road	10	Rear-end	5	Following Too Closely	5
Brook Street	8	Sideswipe - Same Direction	3	Following Too Closely	2
		Sideswipe - Same Direction	4	Following Too Closely	4
Inwood Rd	13	Rear-end	4	Driver Lost Control	4
		Fixed Object	4		

2.6.2 West Street

Table 2-14 summarizes the number, type and the contributing factors for collisions recorded along the West Street corridor between Cromwell Avenue and Main Street between 2006 and 2008. During the three-year period, 135 collisions were recorded. Rear-end type collisions were the most common type of collision with 51 occurrences (38%) recorded; the second most common type of collision was Opposite Direction Turning with 32 incidents (24%).

The most common contributing factor to collisions was drivers Followed Too Closely with 46 collisions (34%) recorded over the three-year period. The second most common contributing factor was drivers Failed to Grant Right-Of-Way (ROW) with 31 occurrences (23%).

A review of statewide data indicates that the West Street / I-91 Southbound Ramps intersection should be evaluated in more detail as it relates to opportunities to improve safety. Although one may feel the

numbers of accidents in other locations are high, analysis of the local accident data does not suggest a deficiency in vehicular safety when compared to statewide data. Table 2-15 summarizes the Cromwell Avenue collisions by intersection.

TABLE 2-14

West Street Collisions-Type Summary

Collision Type	Number of Collisions	
	Total	Percentage
Rear-end	51	38%
Turning - Opp. Direction	32	24%
Fixed Object	17	13%
Turning - Intersecting Paths	11	8%
Moving Object	7	6%
Sideswipe - Same Direction	8	6%
Turning - Same Direction	9	5%
Total	135	100%

Contributing Factor	Total	Percentage
Following Too Closely	46	34%
Failed to Grant ROW	31	23%
Violated Traffic Control	12	9%
Animal/Foreign Object in Rd	7	6%
Driver Lost Control	8	6%
Speed Too Fast for Conditions	6	4%
Under the Influence	4	3%
Unknown	4	3%
Improper Lane Change	3	2%
Improper Passing Maneuver	3	2%
Other	11	8%
Total	135	100%

TABLE 2-15
West Street Intersections Collisions Summary

Cross Street	Total Collisions	Most Common Collision	Most Common Contributing Factor(s)
Cromwell Avenue	17	Rear-end	11 Following Too Closely 8
Corporate Place	11	Rear-end	9 Following Too Closely 9
I-91 SB Ramps	34	Turning - Opp. Direction	20 Failed to Grant ROW 17
I-91 NB Ramps	19	Turning - Opp. Direction	10 Failed to Grant ROW 8
Capital Avenue	7	Rear-end	5 Following Too Closely 5
Gilbert Avenue	5	Turning - Same Direction	1 Violated Traffic Control 1
		Turning - Opp. Direction	1 Failed to Grant ROW 1
		Turning - Intersecting Paths	1 Improper Passing Maneuver 1
		Sideswipe - Same Direction	1 Unsafe Tires 1
		Fixed Object	1 Unsafe Right Turn on Red 1
ConnDOT Lab	2	Turning - Opp. Direction	1 Failed to Grant ROW 1
		Rear-end	1 Following Too Closely 1
Main Street	13	Rear-end	4 Following Too Closely 3

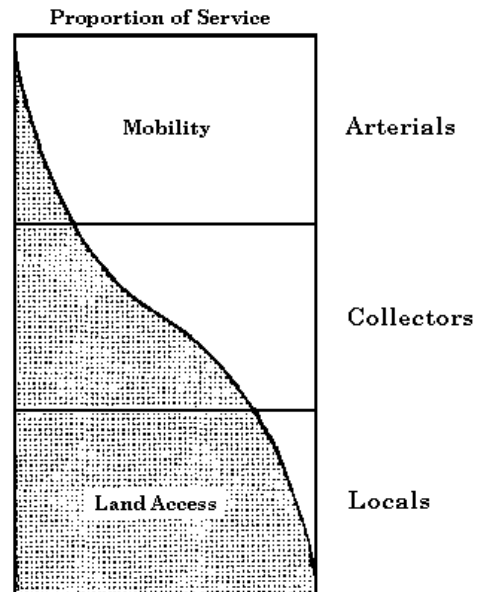
2.7 Access Management

The ability to regulate, manage, modify, limit, and control access and plan for future access along a corridor can provide significant benefits to the operational characteristics of a roadway system. Roadways operate in a hierarchal system according to functional classification. The Connecticut Department of Transportation classifies all roadways in the State based on several factors, including land use, traffic volumes, and function of the roadway within the roadway network. Within the classification hierarchy, different roadways are intended to serve different functions within a complex transportation system. ConnDOT classifies roadways as Arterials, Collectors, or Local Roads.

Figure II-4, from the Federal Highway Administration Functional Classification Guidelines, graphically depicts the relationship between mobility, the movement of cars, and land access via site driveways. Arterials reside at the top of the roadway functional classification system, as their primary function is to move vehicles on a regional basis. Driveway access along arterials should be limited to roadway

Figure II-4

Relationship of functionally Classified Systems in Serving Traffic Mobility and Land Access



Source: Federal Highway Administration

intersections and major site driveways, if possible. In Connecticut, the Interstate System and Limited Access State Highway system represent the roadways that provide maximum mobility functioning as regional arterials moving people and goods. Collector roadways are intended to serve a dual purpose, balancing access to adjacent land uses, while still maintaining a high level of mobility. The most important function of the Collector roadway system is to provide a connection between the regional roads and the local roads, while maintaining access to adjacent development. Finally, local roads serve the communities, with the primary function of providing access to adjacent land uses and mobility within a more localized area.

Reviewing the Functional Classification Map of Rocky Hill, published by the Connecticut Department of Transportation, indicates that Cromwell Avenue (Route 3), Elm Street (Route 160), New Britain Avenue (Route 160), West Street (SSR 411) and Main Street (Route 99) are all classified as a minor arterial roadways. These roadways, as classified, are primarily intended to provide town and regional mobility with a limited focus on land access. Cold Spring Road, which intersects Cromwell Avenue south of West Street, is classified as an urban collector, as this roadway provides increased direct connectivity to residential and small commercial developments. Cold Spring Road intersects with Woodfield Crossing, also classified as an urban collector. To the north Woodfield Crossing eventually intersects with France Street at New Street, where New Street continues north to the intersection with New Britain Avenue (Route 160). This completes the urban collector loop from New Britain Avenue to Cromwell Avenue. The remaining roadways in the Study Area are classified as local roadways, including Brook Street.

2.7.1 Cromwell Avenue

The Cromwell Avenue corridor serves different land uses across the study corridor from south to north, and the character of the roadway relative to access changes accordingly. Parcels in the southern portion of the corridor between the Cromwell Town Line and Brook Street are sizable, typically featuring one driveway curb cut or two well spaced driveway curb cuts. There are fifteen existing driveway curb cuts along this southern segment. The majority of the curb cuts serve light industrial uses. In addition, Inwood Drive, which intersects Cromwell Avenue at a traffic control signal, serves several small industrial parcels and Sysco Food Services.

Heading north from Brook Street the character of the corridor transitions from the light industrial uses to the south to commercial/retail uses north of Cold Springs Road extending to the Study Area limit at New Britain Avenue. The segment of Cromwell Avenue between Brook Street and West Street features fifteen driveway curb cuts. Several of the existing developments provide two curb cuts for each site, including the small strip shopping plaza across from Cold Springs Road, Mobil gas station, the new Modern Tire site, and the Shunpike Village Shopping Plaza. It is worth noting that recent Planning and Zoning decisions resulted in the implementation of access management under the recent development of the Dunkin Donuts site, located across from West Street. Under that site plan approval, the Town of Rocky Hill and the developers were able to reconfigure existing driveways and parking areas for the Shunpike Village Shopping Plaza and install a new site driveway that serves both the Dunkin Donuts and Shunpike Village Shopping Plaza at the existing traffic control signal with West Street. By combining the new site driveway, sharing access with the existing shopping plaza and aligning the driveway with an existing traffic signal the Town and the Developer were able to provide a more appropriate driveway curb cut for the development expansion.

The segment of Cromwell Avenue to the north of West Street features almost exclusively small commercial developments. There are twenty driveway curb cuts along the segment of Cromwell Avenue between West Street and New Britain Avenue, not including the Residence Inn by Marriott site driveway at the signalized intersection with France Street and the Rhodes Road intersection with Cromwell Avenue. Except for the most recent developments, driveways do not align with driveways across the street, contributing to difficulty in egress movements from the driveways. There are limited cases where access management principles were implemented during the development process. One location where the method of inter-parcel connections were used to join abutting sites includes the Cold Springs Plaza shopping center and the Pazzo Café site, which are connected by a rear driveway link between the two sites. This type of access management measure can allow complimentary and adjacent business to provide improved access to patrons, while reducing the number of short trip and turning maneuvers that have to take place on the shopping center roadways.

In general, a review of the overall corridor indicated that better access management principles could be applied along Route 3 to reduce the total number of curb cuts. Improvements to current access may include limiting the number of driveways to one per site along Cromwell Avenue to consolidate turning movements. This method could be very effective when the driveway can be located at a traffic signal, promoting a safe and well-controlled driveway. Opportunities to implement inter-parcel connections during redevelopment could be explored with abutting property owners. However, this process can be difficult if a property owner deems that the desired changes might have a negative impact to access. Finally, aligning driveways across from each other gives drivers the best opportunity to safely enter and egress from sites when opposite turning vehicles have clear sight lines.

2.7.2 West Street

West Street features two very different and distinct characters along the roadway travelling from west to east, away from Cromwell Avenue. The section of West Street surrounding Interstate 91 Interchange 23 features limited curb cuts. All site access is provided at traffic control signalized intersections, including the Century Executive Park site, located on the west side of the interchange and the Capital Boulevard intersection on the east side of the interchange, serving the Corporate Ridge Office Park. Access management in the interchange area is a typical application of best practices with all access provided through actively controlled intersections. As future development occurs in this area, limiting the access to West Street to signalized intersections should be the preferred Town and State practice.

It is worth noting that the large vacant parcel of undeveloped land located in the southeast quadrant of the Cromwell Avenue intersection with West Street will likely become developed within the 20 year time horizon that is being analyzed under this study. The Town and the Connecticut Department of Transportation should attempt to require that any site access to a future development of that parcel occur at either the existing traffic control signal at Century Executive Park on West Street or at the existing traffic control signal at the Westside Market site driveway. The locations of the driveway fall within the jurisdiction of the Connecticut Department of Transportation under the Encroachment Permit process, as both roads are State Highways.

Transitioning away from the interchange area towards the east, the land uses change from office park development to a mix of residential, recreational, and governmental facilities, including the Connecticut Department of Transportation laboratory facility, the

new State of Connecticut Health Laboratory, and the Veteran Affairs Facility. Driveways to the large state facilities, Dinosaur State Park, and the new cul-de-sac, Pearl Street, are well spaced in the section of West Street between Gilbert Road and the eastern driveway of the VA Hospital, which is used by service vehicles only. The two driveways for the primary traffic generators, the VA Hospital and the Connecticut Department of Transportation Laboratory and the new State Health Laboratory are well separated. The VA Hospital and the Connecticut Department of Transportation Lab driveways operate under traffic signal control, while the new Health Laboratory driveway will provide a bypass lane for eastbound traffic. Once opened, the new State Laboratory driveway will include the construction of a bypass lane for eastbound traffic, to minimize impacts to east-west traffic flow on West Street. Overall, given the mix of uses, the well spaced driveways, and the generally low traffic generation access along West Street is sufficient and does not require further review or improvement at this time.

The remaining segment of West Street is primarily residential in nature, including an apartment complex on the south side of West Street, Forest Park Apartments, a condominium complex on the north side located along Carillion Drive, and several detached single family houses located along both sides of West Street between Carillion Drive and Main Street. In general, in this segment of West Street, driveways are well spaced and available land is largely built-out with residential uses.

2.7.3 Brook Street

Brook Street is comprised of a residential section east of Henkel Way, and light industrial/business park uses west of Henkel Way. The residential section of the street features several subdivision local streets that intersect Brook Street. These subdivision streets are well-spaced. The areas between the local side streets include detached single family houses, each with a driveway connecting to Brook Street. The Brook Street frontage in the residential section is generally built-out with limited vacant land fronting the street. If future subdivisions are planned or proposed, the opportunity to align proposed streets with existing side streets should be the preferred approach to permitting access to Brook Street.

In the industrial section of Brook Street, several large office and industrial complexes exist along both sides of the street. Given the size of the parcels and the developments, sites typically have one or two driveways on Brook Street to serve the developments. Driveways are currently not aligned with opposite driveways, and whenever possible, during Site Plan reviews the Town should seek to align access locations. However, given the limited number of current curb cuts and potential future curb cuts in this section of Brook Street, strict access management principles are not required to ensure a high level of efficiency of traffic operations.

A vacant tract of land located to the east of the Burriss Logistics site, zoned for residential uses, could develop in the future as a new residential development/subdivision. Access to this area should be aligned with the existing intersection of Henkel Way. Potential alternatives that will be developed in a future phase of the study may recommend modifications to this intersection to implement a "gateway" treatment for traffic entering the residential section. Concepts for this intersection will seek to accommodate a future connection to the vacant parcel.

2.8 Alternative Transportation Modes

The study area is typical of a low to mid density suburban setting: sidewalks are intermittent, with pedestrians walking in the shoulder of the roadway or on lawns where no sidewalk is present. Cyclists ride on the shoulder of the roadway as bike lanes or paths are not available for their use.

The lack of bicycle and pedestrian facilities within the study area act to discourage, rather than encourage non-motorized travel. Additionally, the Route 3 corridor is generally hostile to pedestrian crossing, and West Street from Route 3 to the Marriot Hotel is a hostile environment for walking. That being said, it should be noted that hundreds of feet of relatively new sidewalk were noted within the study area.

A review of statewide, regional, and local transportation plans and maps show no designated bicycle routes, pathways or recreational trails within the study area.

2.8.1 Pedestrians and Sidewalk Infrastructure

Given the suburban setting, and low to mid density land uses, few pedestrians were observed in the study area during several site visits. A contributing factor to these observations may also be an incomplete sidewalk network along the study area's roadways. Existing sidewalks are shown in Figure 2-11, Bicycle, and Pedestrian Facilities.

Seven miles of roadway were inventoried including Cromwell Avenue (Route 3), New Britain Avenue (Route 160), Main Street (Route 99), West Street, and Brook Street. Of these 7 miles (which equals 14 miles of roadside) only 3 miles of sidewalk exists, with two miles of the sidewalk located on Cromwell Avenue. This represents approximately 20% sidewalk coverage on the inventoried routes.

Sidewalks appear to have been constructed parcel by parcel as new developments were built, hence the disjointed network. Sidewalks are in good condition, sidewalk width typically ranges between four to five feet.

Rocky Hill's Subdivision Regulations require new sidewalks for developments. The language reads as follows: *"Sidewalks shall be required except when waived by the Commission if in its opinion such improvements will not be necessary or desirable."* This stipulation explains the parcel by parcel development pattern of the sidewalk network.

Marked crosswalks were noted at six locations, at three locations on Cromwell Avenue, and at three locations on Main Street. The quality of the facilities varied, with those on Cromwell Avenue being the most up to date. These locations are:

- Cromwell Avenue at New Britain Avenue: Two crosswalks, pedestrian actuated with signal head, curb ramps. Note: crosswalk on north side of intersection is not aligned with pedestrian signal head and button.
- Cromwell Avenue at Elm Street: Pedestrian actuated with signal heads, curb ramps.
- Cromwell Avenue at Inwood Road: Pedestrian actuated with signal heads, curb ramps, tactile warning strip on east side curb ramp.
- Main Street at West Street: Two crosswalks, pedestrian actuated, no ADA accessible curb ramps, no pedestrian signal heads.

- Main Street at Locust Circle Pedestrian actuated with signal head, button not accessible by curb ramp or walk.
- Main Street at Old Forge Road: Pedestrian actuated, no signal head or ramps.

Locations where marked crossings were notably absent include:

- Cromwell Avenue at France Street
- Cromwell Avenue at West Street
- Cromwell Avenue at Cold Spring Road
- Across Inwood Road at Cromwell Avenue

These intersections are signalized with both the France Street and West Street intersections having sidewalks at or approaching the intersection.

2.8.2 Bicycle Facilities

While portions of West Street, Brook Street, and Main Street are relatively bicycle friendly, the study area lacks facilities for bicyclists. There were no signed routes, designated bike lanes, or bicycle racks noted within the study area.

Due to heavy traffic, multiple traffic lanes, and narrow shoulders, West Street west of Capital Boulevard and Cromwell Avenue (Route 3) are not currently suitable for most cyclists. The state bicycle map (www.ctbikemap.org) lists Cromwell Avenue as “less suitable” whereas Main Street is rated as “suitable and more suitable”. Main Street has wide shoulders (3-5’, although a 4’ wide or wider shoulder is generally preferred on a non-curbed roadway) and is the most suitable north/south route for bicycling within the study area. Brook Street, relative to West Street, is the most suitable east/west bicycling route.

2.8.3 CT Transit Bus Services

Connecticut Transit Routes 47R, 55, and 10 traverse the Route 3 Study Area. Route 47R provides service to Hartford while Route 55 provides service to both Middletown and Hartford. Route 10 provides express service to Hartford via I-91. While there are several signed stops, no bus shelters were observed in the study area.

Route 47R provides only weekday service, with the bus travelling through once per hour between approximately 8:00 am and 6:00 pm. Route 47R approaches Rocky Hill from Hartford on the following route: south on Cromwell Avenue east on Brook Street north on Trout Brook Crossing (listed on CT Transit maps as Henkel Way), north on Capitol Boulevard, east on West Street, and north on Gilbert.

Route 55 also provides only weekday service, although service is provided between 6:00 A.M. and 6:00 P.M. with peak hour service every half hour. This route travels north and south through the study area via Main Street (Route 99).

Route 10 Century Hills Express provides weekday morning and afternoon commuter peak service between the Century Hills development at the Rolling Green Golf course in Rocky Hill and Downtown Hartford via I-91.

2.9 Transportation System Condition

During the data collection task, the Study Team conducted observations of the existing roadway network seeking to identify deficiencies or areas of concern that warrant a more details review during the Analysis of Alternative task. The observations are described in each of the sections below and graphically represented on Figures 2-12 through 2-16.

2.9.1 Cromwell Avenue

Cromwell Avenue between the Cromwell town line and New Britain Avenue was reviewed and the following deficiencies were observed.

- A non-standard left-turn bypass lane is provided on Cromwell Avenue on the northbound approach to the signalized intersection at Inwood Place.
- Cromwell Avenue narrows from two lanes to one lane on the southbound approach to Inwood Place, as the existing right hand southbound lane becomes a right turn only lane. This lane reduction results in heavy southbound merging activity as through traffic merges into the inside lane in the southbound direction.
- During traffic peaks on Cromwell Avenue, the left lane on the southbound approach on Cromwell Avenue at Brook Street becomes a defacto left turn lane, forcing all through traffic into the right lane. The right lane becomes a right turn only lane just south of Brook Street.
- Statewide data indicates that the segment of Cromwell Avenue between Cold Spring Road and West Street should be evaluated to improve safety.
- Prior to the installation of the traffic control signal at the Westside Market intersection on Cromwell Avenue, this intersection exhibited a high rate of collisions. The installation of the traffic control signal appears to have mitigated the issues at this intersection.
- Field observations identified a queuing issue at the Dunkin Donuts at the intersection of Cromwell Avenue and West Street. During the morning peak hours, traffic in line at the Dunkin Donuts was observed queuing back into the intersection and onto Cromwell Avenue. The public also noted this issue at the Public Information Meeting.
- The long cycle length at the cluster intersections of Cromwell Avenue at West Street and France Street results in long queues on both West Street and France Street. Field observations also indicate that insufficient bypass area on France Street effectively restricts Right Turn On Red movements from France Street to Cromwell Avenue when a left-turning vehicle is stopped at the traffic signal.
- Public comments indicate that the installation of a traffic signal at Rhodes Road should be considered to facilitate safe egress from the street. A small development conducted a traffic control signal warrant analysis at this intersection to determine if a traffic control signal is warranted. A review of the current traffic volume data indicated that the intersection is not currently

meeting the warrants to install a traffic control signal. A request for a signal was made to ConnDOT and rejected.

- Long vehicle queues develop during the afternoon peak hour on the Cromwell Avenue northbound approach at New Britain Avenue, caused by the heavy left turning volume at this intersection.
- Statewide data indicates that the section of Cromwell Avenue from Elm Street to New Britain Avenue should be evaluated for safety improvements.

2.9.2 West Street

West Street was reviewed and the following deficiencies were observed.

- The intersection of the I-91 Southbound ramps and West Street exhibited a high number of collisions and a review of statewide data indicates that this intersection should be evaluated for safety improvements.
- Due to the location of the bridge parapet along the north side of West Street, and the geometry of the intersection of the I-91 Southbound exit ramp, poor intersection sight lines are available for traffic attempting to make a right turn on red.
- The traffic analysis exhibited and field observations confirm long queues for left turning traffic oriented to the I-91 ramps on West Street .
- Due to the location of the bridge parapet along the eastbound side of West Street, a very short channelized right turn lane is provided for traffic heading to I-91 North. Queue lengths at the signalized intersection of the I-91 North ramps with West Street backup beyond the channelized lane and block access during the peak hours.
- Observation of the destination signs located on the I-91 North exit ramp indicated difficulty reading sign messages at the higher rate of speeds on the ramp.
- During the afternoon commuter peak hour for the Corporate Ridge office park, typically occurring around 5 PM, long queues were exhibited on Capitol Boulevard for the left turn movement heading towards the I-91 interchange.
- Field observations indicate poor intersection sight distance from the stop bar looking left from Gilbert Avenue for traffic making a right turn on red.
- Steep downhill gradient on West Street on the eastbound approach to the Main Street intersection.
- Offset intersection alignment at the intersection with Main Street, West Street, and Forest Street requires a split signal phase, resulting in poor afternoon peak hour traffic operations.

2.9.3 Brook Street

Brook Street was reviewed and the following deficiencies were observed.

- The existing truck restriction sign located at the intersection with Henkel Way is difficult to see and read. A similar observation was made at the intersection of Brook Street and Main Street.

2.10 Existing Land Use and Economic Trends

To estimate the future development potential of the Route 3 Study Area, a clear understanding of existing land use and economic conditions in the Study Area is needed. This section documents current conditions and recent demographic, land use and economic trends for the Study Area.

2.10.1 Demographics

Basic demographic data including population, median household income, median home price, and household size is shown in Table 2-16 for Rocky Hill, Hartford County, and the State of Connecticut. Data is presented for both 2000 and 2010. The data show that Rocky Hill is a growing community, and residents are, on average, more affluent than both the County and the State. In 2010, the population of Rocky Hill was estimated at 18,731, a 4.3% increase since 2000. Over that period, the population of Rocky Hill grew more than twice as fast as Hartford County (+2.0 percent) and almost twice as fast as the State of Connecticut (+2.6%.) Median household size in Rocky Hill is 2.26, lower than both the County and the State. Household size in Rocky Hill has remained stable over the past ten years, while it has increased slightly in the County and State.

TABLE 2-16

Demographic Profile, Rocky Hill, Hartford County, and State of Connecticut, 2000, 2010

	Town of Rocky Hill			Hartford County			State of Connecticut		
	2000	Current Estimate	% Change	2000	Current Estimate	% Change	2000	Current Estimate	% Change
Population	17,966	18,731	4.3%	857,183	874,409	2.0%	3,405,565	3,494,487	2.6%
Median HH Income	\$60,247	\$71,856	19.3%	\$50,756	\$62,829	23.8%	\$53,935	\$67,721	25.6%
Median Housing Price (Median value owner-occ)	\$165,400	\$270,900	63.8%	\$147,300	\$242,900	64.9%	\$166,900	\$295,800	77.2%
Household Size	2.26	2.26	0.0%	2.48	2.50	0.8%	2.53	2.55	0.8%

Source: US Census Bureau; American Factfinder

The 2010 estimated median income in Rocky Hill was \$71,856, 14.4% higher than the median income of Hartford County, and 6.1% higher than the median income for the State. While median income in Rocky Hill grew by 19.3% between 2000 and 2010, growth did not keep pace with the County (+23.8 percent) or the State (+25.6 percent.)

The median price of a house in Rocky Hill was \$270,900 in 2010, an increase of 63.8% since 2001. Home prices in Rocky Hill are 11.5 % higher than the median price for Hartford County, although prices in the County rose at a faster rate since 2000. The median home price in the State is 9.2% higher than that of Rocky Hill, and has been growing more rapidly.

2.10.2 Plan of Conservation and Development

The Plans of Conservation and Development for most towns and regions within Connecticut outline goals and objectives for future land use and development. For this study, the plans for Rocky Hill, Cromwell, and the CROG Region were reviewed with a focus on development goals affecting Rocky Hill and the Route 3 corridor. All three plans recognize that the growth in the region requires goals and policies aimed at sustaining and managing development over the next several years. Key goals and policies specifically related to the objectives of the Study are summarized below.

In addition, the Capitol Region Council of Governments completed a new Plan of Conservation and Development (POCD) for the region in 2009. The CROG POCD includes several goals and policy recommendations relevant to the Study.

Three Land Use and Zoning goals are included in the Plan:

- Guide growth to regional centers and areas of established infrastructure. This goal calls for steering development to established corridors where adequate infrastructure is available, such as the Route 3 Study Area with access to I-91 and several state highways.
- Increase redevelopment and infill development efforts. This goal includes policy recommendations aimed at supporting redevelopment in established corridors.
- Revise zoning and subdivision regulations to address local and regional land use concerns. Policy recommendations that support this goal include supporting infill and mixed-use development, and supporting zoning regulations and other efforts to increase pedestrian and bicycling as transportation options.

Two of the Economic Development goals included in the Plan are germane to the Study Area:

- Coordinate and promote regional land use, infrastructure, and fiscal policies for economic development. Policy recommendations included for this goal that will be addressed through the Study include encouraging development in corridors with infrastructure adequate to support such development, and providing leadership in identifying key areas of regional economic significance and growth potential.
- Support and improve regional business development strategies and efforts. One policy that addresses this goal is supporting efforts to attract new businesses in several target industries such as health care, distribution and logistics, and information technology. Distribution and logistics, and information technology are industries that have shown some strength in Rocky Hill (see economic trends, below.)

Transportation goals related to the Route 3 Corridor Study include:

- Provide a range of viable transportation options within the region. Relevant policies include coordinating local, regional, and state efforts to improve traffic flow in key corridors, and supporting efforts to improve walking and bicycling as viable transportation options.
- Improve inter-regional and interstate transportation. One key policy recommendation under this goal is to improve truck transportation through the region.
- Coordinate land use, environmental, and transportation efforts. This goal recommends combined local, regional, and state efforts for transportation improvements that are auto, bicycle, pedestrian, and business friendly. The goal also recommends in-fill development near existing or proposed transit.
- Anticipate and plan for future transportation needs. Recommendations in support of this goal call for tracking economic growth and encouraging local officials to plan transportation investments in anticipation of economic growth, a key component of the mission statement of the Route 3 Traffic and Development Study.

CRCOG's POCD identifies areas targeted for development. The Plan identifies most of the Route 3 Corridor as a High Intensity Development Area. This designation calls for mixed uses, dominated by larger commercial and office developments, and residential uses. A portion of the northern part of Route 3 within the Study Area, and the north side of West Street is designated as Middle Intensity Development Area 2, which supports potential office, retail, and residential mixed use development on a village center scale. The land on the south side of Brook Street is designated Middle Intensity Development Area 1, which is focused on single family development, neighborhood commercial, and some industrial development.

The Rocky Hill POCD was last updated in 2001. Some of the goals and policies included in the 2001 POCD are worth noting with regard to the Study. These are bulleted below:

- Improve traffic circulation in western Rocky Hill. The provision of adequate circulation in the western side of town is noted as a key issue to support future development.
- Attract more economic development to provide jobs, goods and services, and more tax revenue. The Plan calls for the simplification of the number and variety of business zones to facilitate appropriate economic development in different parts of the community. It also recommends expansion of the economic development area on Brook Street, improved access to business areas, and aesthetic and functional (parking and access) improvements to commercial areas like Silas Deane Hwy (Route 99) and Cromwell Avenue. Further, the Plan recommends restricting commercial zones to their current extent unless significant community benefits can be demonstrated.
- Encourage nodal development, with one focus being the area encompassing the intersections of Cromwell Avenue with New Britain Avenue and Elm Street. The POCD notes that nodes should have identifiable focal points, defined edges, and strong structures. Compact development, mixed uses with pedestrian traffic and multi-purpose trips should be encouraged and sprawl and strip development discouraged.

- Establish a design review process. The Town is interested in maintaining the community's character by making buildings more important than roads and autos. A design board has been established since the 2001 plan was approved.

Cromwell's 2007 Plan of Conservation and Development was also reviewed. Key goals and policies that pertain to the Study Area are highlighted below:

- Allow land development at a level that is consistent with the transportation network's ability to provide an acceptable level of mobility. Policies that support this goal include coordinating with state and regional agencies to maintain the existing roadway system, encouraging developers to make necessary improvements to accommodate new traffic or mitigate traffic impacts, and encourage developers to provide road and utility connections, particularly along the Shunpike Turnpike (Route 3) between Main Street and the Rocky Hill town line. The Plan further promotes allowing development only where adequate roadways exist.
- Expand the economic base to better serve residents, businesses, and visitors. A key policy recommendation is the development a Premier Business Park Master and Marketing Plan for land located on the northern border of the community, adjacent to Rocky Hill and the Route 3 Study Area. The Town is currently in the process of completing such a plan.

2.10.3 Town of Rocky Hill Zoning

Town zoning regulations dictate where specific land uses can occur and how developments are built. The regulations for both Rocky Hill and Cromwell were reviewed to identify 1) the types of development that can happen within the Study Area, 2) the density that is allowed for each type of development, and 3) the degree to which the regulations support the types of development targeted in the Plans of Conservation and Development. This information will be critical input future growth forecasts in subsequent study phases to identifying the potential build-out in the corridor and the likely level of development that will occur within the next 20 years.

Figure 2-17 displays the current zoning map for Rocky Hill. Four zoning districts dominate the Study Area. Table 2-17 shows key zoning requirements for these four districts. Table 2-18 shows the uses allowed in each of the zones.

The area south of Brook Street between Henkel Way and I-91 is the predominant area zoned Business Park (BP) in the Town.¹ The BP zone allows the following uses with an approved site plan: office; manufacturing and assembly; warehousing and distribution of goods produced on the premises; and farms, orchards and crop assembly.

¹ There is another small area zoned BP extending along Forest Street to the Connecticut River.

TABLE 2-17

Key Requirements for Key Study Area Zoning Districts

Zone	Minimum Lot Area	Maximum Building Coverage	Maximum Total Impervious Surface	Minimum Lot Frontage	Minimum Depth, Front	Maximum Building Height
BP	20,000 sf	40%	75%	125'	50'	55' (4 stories); 75' (6 stories) (a)
OP	3 acres	30%	55% multi-story, 65% single story	300' state or arterial; 200' town or internal road	50'	55' (4 stories)
C	20,000 sf	30%	75%	175', 125' existing and new shared access	35'	35'
R20	20,000 sf	20%		100' (b)	40'	35'

(a) Max. bldg. height may be increased to 75' or six stories with the provision of structured parking that, at a minimum, accommodates floor area above four stories.

(b) The regulations include separate frontage requirements for Cul-de-Sac and Corner Lot frontages.

Key: BP=Business Park; OP=Office Park; C=Commercial; R20=Residential - 20,000 ft min. lot size, sf = Square Feet

Source: Rocky Hill Zoning Regulations

The Office Park (OP) zone is located between Brook Street and West Street, as far east as the Corporate Ridge Development. It extends as far west as Cromwell Avenue at the intersection of West Street and Cromwell Avenue, and from West Street north along the west side of I-91 to Elm Street, incorporating Corporate Place and parcels to the north of Corporate Place but east of commercial development along Cromwell Avenue. Allowable uses with site plan approval include offices, research and development, light assembly, mixed uses, and farms, orchards and raising of crops. These uses must exceed 15,000 square feet, unless a special permit is sought. Table 2-18 lists additional uses allowed with a special permit in the predominant Study Area zones.

The commercial zone is located on the east and west sides of Cromwell Avenue north of I-91, with the exception of a small area of OP-zoned land at the West Street intersection. Commercial uses allowable with site plan approval include retail stores, personal services, offices, financial institutions, single family dwellings, mixed commercial/residential, and farms, orchards and the raising of crops. Additional uses allowed with a special permit are listed in Table 2-18.

Residentially-zoned land in the study area is found along Brook Street to Main Street east of the Corporate Ridge development and the Burriss logistics property, and along both sides of West Street east of I-91 on the north side and east of Corporate Ridge on the south side. There is also residentially-zoned land at the northern end of the study area and west of the Cromwell Avenue commercial district.

TABLE 2-18

Allowable Uses - Key Zoning Districts in Rocky Hill Study Area

Zone	Allowed Uses	Special Permit Uses (a)
OP	In structures 15,000 sf or greater: Office; Research and Development; Light Assembly; Mixed Uses; Farms, Orchards and raising crops, but excluding raising livestock	Hotels/Motels; Warehousing and Distribution; Retail Sales Accessory to allowable uses; alcohol sales; funeral parlors; public utilities and transportation facilities; public schools; pub/private recreation; places of worship; community buildings for non-profits; Site Plan uses < 15,000 sf; assisted living
BP	Offices; manufacturing; assembly; warehousing and distribution of goods manufactured or assembled on premises; farms, orchards and raising crops, excluding livestock	Wholesale commercial; general warehousing and distribution; research and development; hotels/motels; contractor and lumber yards; public/private recreation; funeral parlors; public utilities and transportation facilities; retail sales accessory to allowable uses; public schools; private schools; places of worship; community buildings for non-profits
C	Retail stores; personal services; offices; financial institutions; single-family residences; mixed commercial and residential uses; farms, orchards, and raising crops but not livestock	Restaurants; hotels/motels; sales of alcohol; shopping centers; auto service stations; commercial greenhouses; elderly housing; funeral parlors; public utilities and transportation facilities; public schools; private schools; public/private recreation; places of worship; community buildings for non-profits; site plans exceeding 10,000 sf; any retail or service proposing drive-thru; assisted living facilities
R20	Single family; multi-family built prior to Feb. 1, 2006; farms, orchards, raising of crops (including livestock); public schools; cemeteries; accessory apts. (b)	Commercial greenhouses as part of existing nursery; places of worship; community and municipal buildings for non-profits; public utilities; public/private recreation facilities; group day care homes; elderly housing and assisted living; active adult housing

(a) See regulations for more restrictions on these uses.

(b) The first three uses listed are allowed as of right.

Key: BP=Business Park; OP=Office Park; C=Commercial; R20=Residential - 20,000 ft min. lot size

Source: Rocky Hill Zoning Regulations

In Cromwell, this study is concerned with the land immediately south of the Rocky Hill town line between Main Street and the west side of Cromwell Avenue. The land on the west side of Cromwell Avenue is zoned Industrial, which allows a broad range of manufacturing, warehousing and distribution, research and development, and commercial uses. It does not allow some retail and service uses, restaurants, or residential development. Between Cromwell Avenue and Main Street, Cromwell has a large area zoned Business Park. This zone allows research and development, office and some retail uses, but not industrial and warehouse uses.²

Table 2-19 shows land area by zoning for both the Study Area and the Town of Rocky Hill. Within the Study Area, 58% of the land area is zoned residential³, 17% Office Park (OP), 16% Business Park (BP), and 7% commercial (C). Comparatively, 69% of the Town’s land is zoned residential, 8% Office Park, 5% Business Park, and 4% commercial. In addition, 12% of the land within the Town is zoned for agriculture, while none of the land in the Study Area is so zoned, despite large tracts of land in agricultural use. These parcels within the study are zoned BP, OP and residential.

² Town of Cromwell, *Zoning Regulations*, Revised through November 20, 2003.

³ This includes all land zoned R20, R40 and RC.

TABLE 2-19

Parcels and Acreage by Zoning Category, Study Area and Rocky Hill, 2010

Zoning	Route 3 Study Area				Town of Rocky Hill			
	No. of Parcels	% Total Parcels	Land Area (Acres)	% Total Land Area	No. of Parcels	% Total Parcels	Land Area (Acres)	% Total Land Area
A					169	2%	911	12%
BP	39	7%	375	16%	93	1%	420	5%
C	74	13%	169	7%	287	4%	374	5%
FP		0%		0%	12	0%	42	1%
OP	42	7%	376	17%	71	1%	699	9%
R20	401	71%	1,330	58%	6,567	88%	4,308	55%
R40		0%		0%	231	3%	1,015	13%
WF		0%		0%	10	0%	54	1%
Unspecified	5	1%	25	1%	29	0%	52	1%
Total	561	100%	2,275	100%	7,469	100%	7,875	100%

Source: Rocky Hill CAMA Database; Tighe and Bond; Rocky Hill Assessor's Office; Susan Jones Moses and Associates

The importance of the Study Area as a center of commerce in the Town is reflected in the concentration of the Town's land zoned for business uses within the Study Area. Table 2-20 shows the proportion of Town land in each zoning category found in the Study Area. The Study Area has 89% of all the land in the Town that is zoned BP, 54% of all commercially-zoned land, and 57% of all OP zoned land. It has only 31% of the land in Town zoned R20.

TABLE 2-20

Study Area Percent of Total Town Land by Zoning Category

Zoning District	Total Parcels	Acreage
BP	42%	89%
C	38%	55%
OP	60%	57%
R20	6%	31%
Unspecified	17%	49%
Total	8%	29%

Source: Rocky Hill CAMA Database; Tighe and Bond; Rocky Hill Assessor's Office; SJM and Associates

2.10.4 Land Use

Rocky Hill has a land area of 7,375 acres. The study area comprises 29% of the land area of the town (2,275 acres.) The current number of parcels, land area, and building square footage by land use designation⁴ are shown for both the Town of Rocky Hill and the Study Area in Table 2-21. The percentage of parcels and land area by use for both the Town and the Study area are shown in Table 2-21 and depicted in Figure 2-18.

TABLE 2-21

2010 Land Use, Rocky Hill and Route 3 Study Area

Land Use	Study Area		Rocky Hill		Study Area Land Uses as % of Town	
	Parcels	Land Area (acres)	Parcels	Land Area (acres)	Parcels	Land Area
Commercial ^(a)	78	526	252	728	31%	72%
Commercial Vacant	17	98	31	142	55%	69%
Industrial ^(a)	27	373	70	556	39%	67%
Industrial Vacant	5	32	20	118	25%	28%
Commercial/ Industrial	5	36	8	41	63%	89%
Residential ^(a)	367	499	6,588	3,394	6%	15%
Municipal ^(b)	5	87	69	551	7%	16%
State ^(b)	9	329	22	520	41%	63%
Tillable	13	81	102	799	13%	10%
Raw Acreage	15	34	174	493	9%	7%
Woodland	3	8	9	128	33%	7%
Other	16	139	124	406	13%	34%
Total	560	2,242	7,469	7,876	7.5%	29%

(a) Includes private as well as federal, state and municipal properties.

(b) Except commercial, industrial, and residential properties.

Source: Rocky Hill CAMA Data & Assessor; Tighe & Bond; Susan Jones Moses and Associates

The Town's land area is divided into 7,469 parcels, for an average land area per parcel of 1.05 acres. The Study Area has 560 parcels (7.5% of the Town's total parcels) with an average size of 4.06 acres, or approximately four times the town-wide average. The difference in average parcel size reflects the mix of land uses within the Study Area relative to the overall mix of uses throughout the Town, where a significant number of relatively small residential parcels make up the majority of parcels. While the predominant land use within the Town is residential (43% of all land area), only 22% of the land within the Study Area is residential use. Conversely, 23% of the Study Area is in commercial uses, 17% industrial, and 15% State compared to 9%, 7%, and 7%, respectively, in the Town as a whole. Commercial and industrial land uses typically have larger parcels than residential uses, accounting for the difference in average parcel size between the Study Area and the Town. Cromwell Avenue is one of two major commercial corridors in Rocky Hill (along with the Silas Deane corridor), and West Street/Brook Street is the predominate area for office parks.

⁴ The land use designations are those assigned to each parcel in the Town's CAMA database.

The Study Area has 98 acres of vacant commercial land on 17 parcels, equaling 69% of the vacant commercial land in the Town. Five vacant industrial parcels (32 acres) comprise 28% of vacant industrial land in the Town. The Study Area has 81 acres of tillable land (10% of the Town total), 34 acres of raw acreage (7% of the Town total), and 8 acres of woodland (7% of the Town total.) There are 34 acres designated raw acreage and zoned for residential use. The data suggest that the majority of future development in the Study Area will be either commercial (office and retail) or industrial (warehousing, distribution, manufacturing), with some residential development also expected.

Table 2-22 summarizes the distribution of land uses within the Study Area and the Town. The Town is predominately residential in both percentage of parcels and land use, where residential land makes up 43% of the Town and 22% of the Study Area. A review of the Study Area indicates that that commercial and industrial land totals approximately 48% of the land, roughly double the residential land area. In general Cromwell Avenue and West Street act as the commercial hub of the Town with the mix of retail, office, and industrial uses along those corridors. Land Use in the rest of the Town is predominately residential, with limited retail focused along the Silas Deane Highway corridor.

TABLE 2-22

Land Use Percent of Total within Study Area and Town, 2010

Land Use	Study Area		Town of Rocky Hill	
	Parcels	Land Area	Parcels	Land Area
Commercial (a)	13.9%	23.5%	3.4%	9.2%
Commercial Vacant	3.0%	4.4%	0.4%	1.8%
Industrial (a)	4.8%	16.6%	0.9%	7.1%
Industrial Vacant	0.9%	1.4%	0.3%	1.5%
Commercial/Industrial	0.9%	1.6%	0.1%	0.5%
Residential (a)	65.5%	22.2%	88.2%	43.1%
Municipal (b)	0.9%	3.9%	0.9%	7.0%
State (b)	1.6%	14.7%	0.3%	6.6%
Tillable	2.3%	3.6%	1.4%	10.1%
Raw Acreage	2.7%	1.5%	2.3%	6.3%
Woodland	0.5%	0.4%	0.1%	1.6%
Other	2.9%	6.2%	1.7%	5.2%
Unspecified	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

(a) Includes private as well as federal, state and municipal properties.

(b) Except commercial, industrial, and residential properties.

Source: Rocky Hill CAMA Data & Assessor; Tighe & Bond; Susan Jones Moses and Associates

2.10.5 Industrial Real Estate Market

Table 2-23 presents information about the industrial market in Rocky Hill, the four Greater Hartford suburban markets (of which Rocky Hill is part of the South Suburban market), and the Greater Hartford Region. Table 2-24 shows the change in the amount of industrial space, available square footage, and vacancy rates for these markets between the second quarters of 2000 and 2010. In the second quarter of 2010, Rocky Hill had 1,626,176 square feet of industrial and flex space, an increase of 140,435 from the second quarter of 2000 (+9.5%). This represented 14% of the space available in the South Suburban market and 2% of the space in the Greater Hartford market area. The Town's share of industrial/flex space in the South Suburban market increased by 1% from 2000, and remained constant relative to the region as a whole.

The increase in industrial space in Rocky Hill has not been met with an increase in demand. In 2000, only 10,500 square feet (0.7%) of the industrial space was available, and none was vacant. In contrast, 258,459 square feet of space was available and vacant (15.9%) in 2010. However, Rocky Hill's market is tighter than either the South Suburban market (20.2% available, 20% vacant) or the Greater Hartford Region (17.3% available, 16.8% vacant.) The higher vacancy rates throughout the region reflect the downturn in the economy in the past few years, and these rates will likely decrease as the economy recovers. In terms of absorption rates, the Rocky Hill market appears to be more stable than the region as a whole, with negative absorption during the first two quarters of 2010 of 4,000 square feet (0.2%) compared to -566,586 (0.8%) for the region as a whole, and -660,137 (-5.8%) for the South Suburban market.

According to CB Richard Ellis, the average rental rate for industrial space in the Greater Hartford region in the second quarter of 2010 was \$5.01 per square foot. The average rate in the South Suburban market was considerably higher at \$5.28. Within the South Suburban market, rates in Rocky Hill were the highest, at \$8.03 per square foot.

TABLE 2-23

Industrial Market Activity, Hartford Area, South Suburbs and Rocky Hill, 2nd Quarter 2000, 2010

2nd Quarter 2000						
	Total Square Feet	Available Square Feet ^(a)	Vacant Square Feet ^(b)	Available % of Total	Vacant % of Total	YTD Absorption
Rocky Hill	1,485,741	10,500	0	0.7%	0.0%	
South Suburbs	11,009,735	1,489,984	1,262,739	13.5%	11.5%	147,190
North Suburbs	19,998,763	1,524,073	1,275,504	7.6%	6.4%	513,999
West Suburbs	8,078,168	1,387,876	1,069,424	17.2%	13.2%	403,668
East Suburbs	8,749,000	1,765,390	1,420,690	9.4%	7.6%	(120,258)
Total Hartford Area	61,762,522	6,685,097	5,520,231	10.8%	8.9%	935,131
2nd Quarter 2010						
	Total Square Feet	Available Square Feet	Vacant Square Feet	Available % of Total	Vacant % of Total	YTD Absorption
Rocky Hill	1,626,176	258,459	258,459	15.9%	15.9%	(4,000)
South Suburbs	11,297,061	2,285,440	2,260,471	20.2%	20.0%	(660,137)
North Suburbs	27,276,412	4,957,808	4,659,923	18.2%	17.1%	(195,371)
West Suburbs	10,802,763	1,160,835	1,149,159	10.7%	10.6%	(212,316)
East Suburbs	7,183,764	3,362,594	3,308,866	19.6%	19.3%	(413,817)
Total Hartford Area	71,377,263	12,351,852	11,963,594	17.3%	16.8%	(566,586)

(a) Available space includes both vacant space and space that is currently occupied but available for lease in the near future.

(b) Vacant space includes space which is physically vacant.

Source: CB Richard Ellis, SJM Associates

TABLE 2-24

Change in Industrial Space, Rocky Hill, Suburban Markets and Hartford Region (2000-2010)

Market	Square Footage Absolute Change (% Change)		
	Total SF	Available SF	Vacant SF
North Suburbs	7,277,649 (36.4%)	3,433,735 (225.3%)	3,384,419 (265.3%)
West Suburbs	2,724,595 (33.7%)	-227,041 (-16.4%)	79,735 (7.5%)
South Suburbs	287,326 (2.6%)	795,456 (53.4%)	997,732 (79.0%)
East Suburbs	-1,565,236 (-8.3%)	1,597,204 (90.5%)	1,888,176 (132.9%)
Hartford Region	9,614,741 (15.6%)	5,666,755 (84.8%)	6,443,363 (116.7%)
Rocky Hill	140,435 (9.5%)	247,959 (2361.5%)	258,459 (a)

(a) Rocky Hill had no vacancy in industrial space in 2000 and vacancy of 258,459 sf in 2010. Thus, the % change in vacancy cannot be calculated.

Source: CB Richard Ellis, SJM Associates

2.10.6 Office Real Estate Market

Table 2-25 provides information about the office market in Rocky Hill, the City of Hartford, the four suburban market areas, and the total Hartford Region for the second quarters of 2000 and 2010. Table 2-26 shows the percentage change for key office market indicators for these areas between the two periods. Table 2-27 shows the percentage of the South Suburban and Greater Hartford Region's office space located in Rocky Hill. In the second quarter of 2010, Rocky Hill had a total of 1,570,383 square feet of office space, an increase of 289,077 square feet (+23%) from 2000. Comparatively, the South Suburban market grew by 17% and the Greater Hartford region by 10% over the same period. Thus, Rocky Hill's share of the office market has increased over the past ten years. As shown in Table 2-27, Office space in the Town now comprises 58% of the total South Suburban market (up from 43% in 2000) and 12% of the Greater Hartford Region (up from 6% in 2000.)

Similar to the industrial market, the increase in office space has not been met by an equal increase in demand. In 2000, only 88,238 square feet of office space were available for lease in Rocky Hill (7% of the total space), while this number had increased to 371,544 square feet (24% of the total space.) This compares to a total availability of 21% for the South Suburban market and 20% for all suburbs. The high rate of availability is in large part due to the ongoing recession, and will likely tighten as the economy improves. However, it may take some time for the Town and region to recover, limiting the amount of new space that can be built and absorbed. Despite the weak market, Rocky Hill did see positive absorption (44,513 square feet) in the first two quarters of 2010, more than all the space absorbed in the South Suburban market. The Greater Hartford Region as a whole had negative absorption of 239,243 square feet, with the Hartford CBD, West Suburban, and east suburban markets accounting for most of the negative absorption.

TABLE 2-25

Rocky Hill and Hartford Area Office Market, 2nd Quarter 2000, 2010

2nd Quarter 2000							
Market Area	Total Square Feet	Available Square Feet	Vacant Square Feet	Available % of total	Vacant % of Total	YTD absorption	Avg Asking Rent/ SF
Rocky Hill	1,281,306	88,238	60,704	6.9%	4.7%	(11,934)	\$18.08
Hartford CBD	7,728,982	1,878,277	1,629,800	24.3%	21.1%	(1,250)	\$19.63
Outside CBD	2,297,970	235,752	97,524	10.3%	4.2%	113,680	\$14.69
City of Hartford	10,026,952	2,114,029	1,727,324	21.1%	17.2%	112,430	\$19.08
Total North Market	2,634,064	413,557	339,167	15.7%	12.9%	114,029	\$16.41
Total West Market	4,418,337	260,352	163,383	5.9%	3.7%	(17,554)	\$18.11
Total South Market	2,950,054	255,946	218,412	8.7%	7.4%	(8,961)	\$15.42
Total East Market	3,127,826	225,793	214,948	7.2%	6.9%	159,054	\$16.56
Total Suburban	13,130,281	1,155,648	935,910	8.8%	7.1%	272,143	\$16.60
Greater Hartford	23,157,233	3,269,677	2,663,234	14.1%	11.5%	384,573	\$18.20
2nd Quarter 2010							
Market Area	Total Square Feet	Available Square Feet ^(a)	Vacant Square Feet ^(b)	Available % of total	Vacant % of Total	YTD absorption	Avg Asking Rent/ SF
Rocky Hill	1,570,383	371,544	352,044	23.7%	22.4%	44,513	\$19.87
Hartford CBD	7,949,124	2,294,260	1,800,320	28.9%	22.6%	(218,906)	\$20.49
Outside CBD	2,257,144	195,644	195,644	8.7%	8.7%	22,687	\$17.07
City of Hartford	10,206,268	2,489,904	1,995,964	24.4%	19.6%	(196,219)	\$20.16
Total North Market	3,235,160	800,320	735,854	24.7%	22.7%	186,262	\$16.25
Total West Market	5,420,322	1,134,993	1,073,282	20.9%	19.8%	(231,176)	\$19.44
Total South Market	3,447,770	732,842	694,898	21.3%	20.2%	10,766	\$17.63
Total East Market	3,234,883	497,683	378,731	15.4%	11.7%	(8,876)	\$20.27
Total Suburban	15,338,135	3,165,838	2,882,765	20.6%	18.8%	(43,024)	\$18.28
Greater Hartford	25,544,403	5,655,742	4,878,729	22.1%	19.1%	(239,243)	\$19.04

(a) Available space includes both vacant space and space that is currently occupied but available for lease in the near future.

(b) Vacant space includes space which is physically vacant.

Source: CB Richard Ellis, SJM and Associates

TABLE 2-26

Change in Office Market in Rocky Hill and Hartford Region, 2nd Quarter 2000-2010

Market Area	Absolute Change Office Market			% Change Office Market		
	Total Square Feet	Available Square Feet	Vacant Square Feet	Total Square Feet	Available Square Feet	Vacant Square Feet
Rocky Hill	289,077	283,306	291,340	23%	321%	480%
Hartford CBD	220,142	415,983	170,520	3%	22%	10%
Outside CBD	(40,826)	(40,108)	98,120	-2%	-17%	101%
Total City of Hartford	179,316	375,875	268,640	2%	18%	16%
Total North Market	601,096	386,763	396,687	23%	94%	117%
Total West Market	1,001,985	874,641	909,899	23%	336%	557%
Total South Market	497,716	476,896	476,486	17%	186%	218%
Total East Market	107,057	271,890	163,783	3%	120%	76%
Total Suburban	2,207,854	2,010,190	1,946,855	17%	174%	208%
Total Greater Hartford	2,387,170	2,386,065	2,215,495	10%	73%	83%

Source: CB Richard Ellis; SJM and Associates

According to CB Richard Ellis, the average asking rate for office space in Rocky Hill in 2010 was \$19.87/sf, an increase of \$1.79/sf since 2000. Rocky Hill commands higher rates than either the south Suburban market as a whole (\$18.28/sf) or the Greater Hartford Region (\$19.04/sf.) Only the Hartford CBD and the East Suburban market command higher rents, indicating that Rocky Hill is a competitive location for office users in the Hartford region.

TABLE 2-27

Rocky Hill Office Space as a Percentage of the Hartford Region

Market Area	2nd Quarter 2000			2nd Quarter 2010		
	Total Square Feet	Available Square Feet	Vacant Square Feet	Total Square Feet	Available Square Feet	Vacant Square Feet
South Suburban	43%	34%	28%	58%	59%	61%
Total Hartford Region	6%	3%	2%	12%	12%	13%

Source: CB Richard Ellis; SJM and Associates

2.10.7 Retail Real Estate Market

In addition to a high concentration of office uses, the Study Area is home to many retail establishments. Table 2-28 summarizes parcels with retail uses by type in both the Town of Rocky Hill and the Route 3 Study Area⁵, and includes acreage and building square footage for each use. There are 29 parcels within the study area that are designated for retail use in the Town's CAMA database. There are 10 local/strip retail centers within the Study Area with 411,870 square feet of space. These centers comprise 91% of all local/strip centers in Rocky Hill, and 69% of the square footage of local/strip center space. There are four parcels designated as retail stores (14% of the Town total), and 3 each of gas/marts and combined office/retail uses. The Study Area is home to two supermarkets, Big Y Market and Westside Market, with a total of 172,509 square feet of space. In total, the Study Area has 32% of the Town's retail parcels, 27% of the retail acreage, and 36% of the square footage of retail uses within the Town.

TABLE 2-28

Retail Space by Type of Retail, Rocky Hill, and Route 3 Study Area, 2010

Type of Retail Use	Town of Rocky Hill			Route 3 Study Area		
	Parcels	Acres	Building (SF)	Parcels	Acres	Building (SF)
Local/ Strip Center	11	33.83	597,398	10	25.03	411,870
Regional Shopping Mall	2	17.53	119,764	0	0	-
Restaurants	10	78.92	91,626	2	1.63	7,320
Retail Store	28	24.83	331,584	4	4.83	27,000
Office and Retail	8	9.17	182,630	3	3.11	69,419
Apartment over Retail	4	3.03	33,093	0	0	-
Convenience Store	2	0.96	9,394	1	0.45	5,200
Drug Store	2	2.58	43,984	1	1.31	22,994
Fast Food	6	3.62	27,546	1	0.52	3,656
Gas/Mart	6	3.67	20,917	3	1.68	7,781
Department Store	1	38.81	184,149	0	0	0
Supermarket	2	17.58	172,509	2	17.58	172,509
Other Retail	9	29.82	253,543	2	14.46	9,132
Total Retail	91	264.36	2,068,137	29	70.61	736,881
Hotel/Motel	4	19.58	365,339	2	14.91	281,858

Source: Rocky Hill CAMA data; SJM Associates

Table 2-28 also reports the number of hotels in the Town and Study Area. The Study Area houses two of Rocky Hill's four hotel/motel establishments, totaling 78% of all of the hotel/motel square footage in the Town. The Marriot, the largest hotel in the Town, which includes conference space, is located at the entrance to the Corporate Ridge Office Park on West Street. This facility accounts for 52% of all the hotel/motel space in Rocky Hill.

⁵ The retail data for the study area only includes parcels within the Rocky Hill portion of this economic analysis.

The data collected and described above for the industrial, office and retail markets will form the basis for the development market analysis to be conducted in Task 3.

2.11 Environmental and Natural Resources

The Study Area was screened for the following natural and cultural resources and physical environment features:

- Surface Water Resources
- Ground Water Resources
- Floodplains
- Wetlands
- Threatened and Endangered Species and Critical Habitats
- Historic Register Properties
- Section 4(f) and 6(f) Properties
- Sensitive Noise Receivers
- Hazardous Risk Sites

In addition to reviewing aerial images of the Study Area, current Geographic Information Systems (GIS) data from the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Town were obtained and reviewed during this screening analysis.

2.11.1 Surface Water Resources

The Study Area lies within the Connecticut River watershed. The Connecticut River is located about one-half mile east of the study area and flows from north to south toward Long Island Sound.

Surface water resources within the Study Area include an unnamed pond in the southwestern portion of the Study Area near the Rocky Hill-Cromwell town line, as well as Dividend Brook which runs west to east through the center of the Study Area. In addition, there are several unnamed smaller streams in the Study Area. Figure 2-19, Environmental Resources, displays the surface water resources, as well as the environmental resources identified and screened in the Study Area.

2.11.2 Groundwater Resources

Most of the groundwater in the Study Area is designated by the CTDEEP as Class GA. Designated uses of Class GA groundwater include existing private and potential public or private supplies of water suitable for drinking without treatment. The base flow is connected to nearby surface water bodies. Discharges to Class GA groundwater is restricted to treated domestic sewage, certain agricultural wastes, and certain water treatment discharges.

A few locations in the Study Area are listed as GA impaired, meaning that the actual quality of the groundwater does not currently meet the assigned GA classification. In addition, there is one area designated as GAA-Well Impaired located in the southeast corner of the Study Area; a Class GAA-Well-Impaired area is an impaired area that surrounds a public water supply well. The areas of impaired groundwater are displayed in Figure 2-19.

2.11.3 Wetlands

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

Based on a review of CTDEEP GIS mapping, there are a number of wetland areas within the Study Area. Wetlands are located along the Dividend Brook corridor; the area totals about 58 acres. A linear wetland (about 8 acres) runs north-south to the east of Route 3 between West Street and Elm Street. Another area of wetlands (about 17 acres) is associated with an unnamed stream near Westbrook Road and West Street in the northeast corner of the Study Area. A larger wetland (about 75 acres) associated with an unnamed stream connecting several small surface water bodies is located in the southern portion of the study area, running east-west along the Cromwell town border. Figure 4-1 displays potential wetlands as identified by NRCS.

2.11.4 Floodplains and Stream Channel Encroachment Lines

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

There are 100-year floodplains and 500-year floodplains within the Study Area associated with Dividend Brook, which runs through the center of the Study Area. In addition, there are 100-year and 500-year floodplains associated with an unnamed stream connecting small surface water bodies located along the Cromwell town line. Along the southeastern boundary of the Study Area, there are 100-year and 500-year floodplains associated with an unnamed stream which runs parallel to Pleasant Valley Road. The floodplains are delineated in Figure 2-19.

There are no Stream Channel Encroachment Lines within the Study Area.

2.11.5 Threatened and Endangered Species and Critical Habitats

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

The CTDEEP NDDDB GIS data layer was consulted to determine if there were any records in the Study Area. Due to the sensitivity of the information, the GIS data layer only depicts approximate locations of protected species, their habitats, and/or significant natural communities. The GIS data review revealed NDDDB records in the southernmost portions of the Study Area.

2.11.6 Historic Register Properties

There are no properties listed on the 2008 National Register of Historic Places within the project Study Area.

2.11.7 Section 4(f) and 6(f) Properties

There are a number of parks and open space properties that could potentially be adversely affected by improvement alternatives. These include Section 4(f) properties, Section 6(f) properties, and private open space. Section 4(f) of the Department of Transportation Act of 1966 protects historic resources eligible for listing or listed on the National Register of Historic Places, as well as public parks, recreation areas, and wildlife/waterfowl refuges from adverse impacts. All park and open space properties that have the potential to be affected are displayed in Figure 2-20.

There are four 4(f) properties that are all or partially within the Study Area. All 4(f) properties are open to the public without a fee. The schools listed below are identified as 4(f) sites due to the on-site playgrounds / athletic fields that are open for public recreation outside of school session hours. The properties include:

- Dinosaur State Park (82 acres)
- Hoyle Memorial Field (6 acres)
- Moser School (6 acres)
- Dividend Pond Open Space (121 acres)

In addition, Dinosaur State Park is listed as a Section 6(f) property, and is the only 6(f) property in the Study Area. Section 6(f) of the Land and Water Conservation Funding Act of 1965 (LWCFA) states that any lands purchased or improved with Federal LWCFA funding may not be "converted" to another use without being replaced in kind by land of like size and value.

2.11.8 Sensitive Noise Receivers

The Federal Highway Administration's Noise Abatement Criteria (NAC) documented in 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise is based on Land Use Activity Categories. Land uses considered most sensitive to highway/roadway noise are designated as either Land Use Activity Category A or B. Land Use Activity Category A includes lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such uses include outdoor amphitheatres, outdoor concert pavilions, and National Historic Landmarks with significant outdoor use. There are no Category A land uses in the project Study Area.

Land Use Activity Category B includes picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. For this planning study, Category B land uses were identified using existing land use maps and GIS data. Noise sensitive land uses, such as schools, churches, hotels, and hospital facilities, are listed below and are depicted on Figure 2-20, Community Resources. Section 4(f) properties, which are public parks and recreational areas in the Study Area, should also be considered noise sensitive land uses for the purpose of this evaluation. In addition, the existing neighborhoods located in the eastern portion of the Study Area on either side of Main Street are sensitive noise receptors. They should be considered when evaluating roadway improvements and development proposals, especially for noise impacts during construction.

- Veterans' Home & Hospital, 287 West Street
- Residence Inn, 680 Cromwell Avenue
- Hartford Marriott, 100 Capitol Boulevard
- St. Elizabeth Seton Church, 280 Brook Street
- Stork Club Daycare., 558 Cromwell Avenue
- Dr. Oran A. Moser School, 10 School Street
- KinderCare Learning Center, 303 Cromwell Avenue
- West Hill School, 95 Cronin Drive

2.11.9 Hazardous Risk Sites

Data sources that were reviewed to identify potential hazardous materials and environmental risk sites within the study area include the Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) GIS database, and the CTDEEP GIS coverage entitled Landfill Leachate and Wastewater Discharges.

According to these sources, there is one location listed as a hazardous materials site located at 485 West Street in the northeast corner of the Study Area (see Figure 2-20). The site is the Connecticut Department of Transportation Research and Materials Laboratory.