

WALLINGFORD CONNECTICUT



ROUTE 68 CORRIDOR STUDY



Prepared for



South Central Regional
Council of Governments



In Association with:
Nelson\Nygaard Consulting Associates

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Executive Summary

The Route 68 Corridor Study was funded by the South Central Regional Council of Governments (SCRCOG) through the Unified Planning Work Program (UPWP). This study focused on safety, traffic operations and strategies to reduce congestion and minimize delays. The Study Area encompasses Connecticut Route 68 (Church Street) in the Town of Wallingford from Hanover Street, on the west, to North Main Street Extension, on the east.

Route 68 is a major east-west arterial in Wallingford used by residents to access the Wilbur Cross Parkway and Interstate 91. It is also used by vehicles passing through Wallingford to and from destinations in Cheshire to the west and Durham to the east. It is one of only a few east-west roads that traverse the entire town. Regionally Route 68 plays a key role in providing access by way of connections to I-91, U.S. Route 5, and Route 15 via U.S. Route 5.

The study area consists of the 1.1 mile section of roadway that extends from North Main Street Extension to Hanover Street. It

serves numerous businesses and neighborhoods, and acts as an important emergency Route for Wallingford's Fire and Police Departments. The Route 68 Corridor transitions in use from office and industrial parks at its eastern end to neighborhood residential uses at its western end. East of Route 15, it provides access to Research Parkway and Barnes Road. At the center of the study area Route 68 provides access to North Plains Industrial Park and also bisects an intensively developed retail section of U.S. Route 5. The western end of the study area is a densely developed single family residential area centered around Yalesville.

There are numerous traffic issues within the corridor. Certain sections of the corridor are at or over capacity during peak periods with significant queuing and delays at several key intersections. The westbound approach of Route 68 at Route 150, for example, experiences considerable backup during the weekday commuter peak periods. While the total amount of traffic through the corridor during the most congested periods has not significantly changed over the last two decades, congestion has seemingly become much worse.

Despite being a relatively short stretch of roadway there are a host of constraints that contribute to the traffic congestion. The bridges and underpasses severely limit the improvement options in this stretch. The potential to increase the capacity of the Route 68/150 intersection is limited by bridges over the Quinnipiac River in close proximity to the intersection. There is a further constraint to the east on Route 68 where it passes under the Wilbur Cross Parkway. Additionally, the tunnel under the Amtrak rail line along Route 150 north of Route 68 reduces the road to one way alternating traffic.

In recognition of these constraints, and the cost implications of removing them, this study focuses on short and mid-term solutions to improve public safety and traffic mobility in the area. The goal of the Route 68 Corridor Study is to focus on broad creative solutions to quantify the type, location and cost for conventional long-term highway improvements and to develop other short- to mid-term strategies that would address identified safety and operational issues.

The draft “Existing Conditions Report” was the first step in the study. The report focused on the street network, land use impacts, traffic volumes, accidents, observed operations and other operating characteristics of the Route 68 Corridor Study Area. The second product was the “Development Impact Analysis”. This analysis included 3-Year, 10-Year and 20-Year traffic volume and improvement scenarios, which were based upon ConnDOT, regional and municipal data sources. The final component of the study was the Recommended Initiatives and Improvements for the corridor.

Route 68 Looking West at Route 150 – Weekday Afternoon Peak Hour



Recommended Initiatives and Improvements

The criteria for selecting the proposed initiatives and improvements were:

- Efficacy: Does it address the problem?
- Public Input: What are the public's priorities?
- Feasibility: Is it achievable from a financial, physical and political/jurisdictional perspective?

Input from town and SCRCOG staff and the public generated a number of ideas for initiatives and improvements to the Route 68 Corridor study area. These ideas were explored and evaluated, and based upon the criteria for selecting improvements, some of them were eliminated.

There were three main types of improvements proposed. These included:

- Operational and congestion management.
- Safety improvement.
- Pedestrian and bicycle improvements.

There were three time frames developed for the improvements:

- Short-Term: less than 3 years
- Mid-term: 3-10 year
- Long-Term: more than 10 years

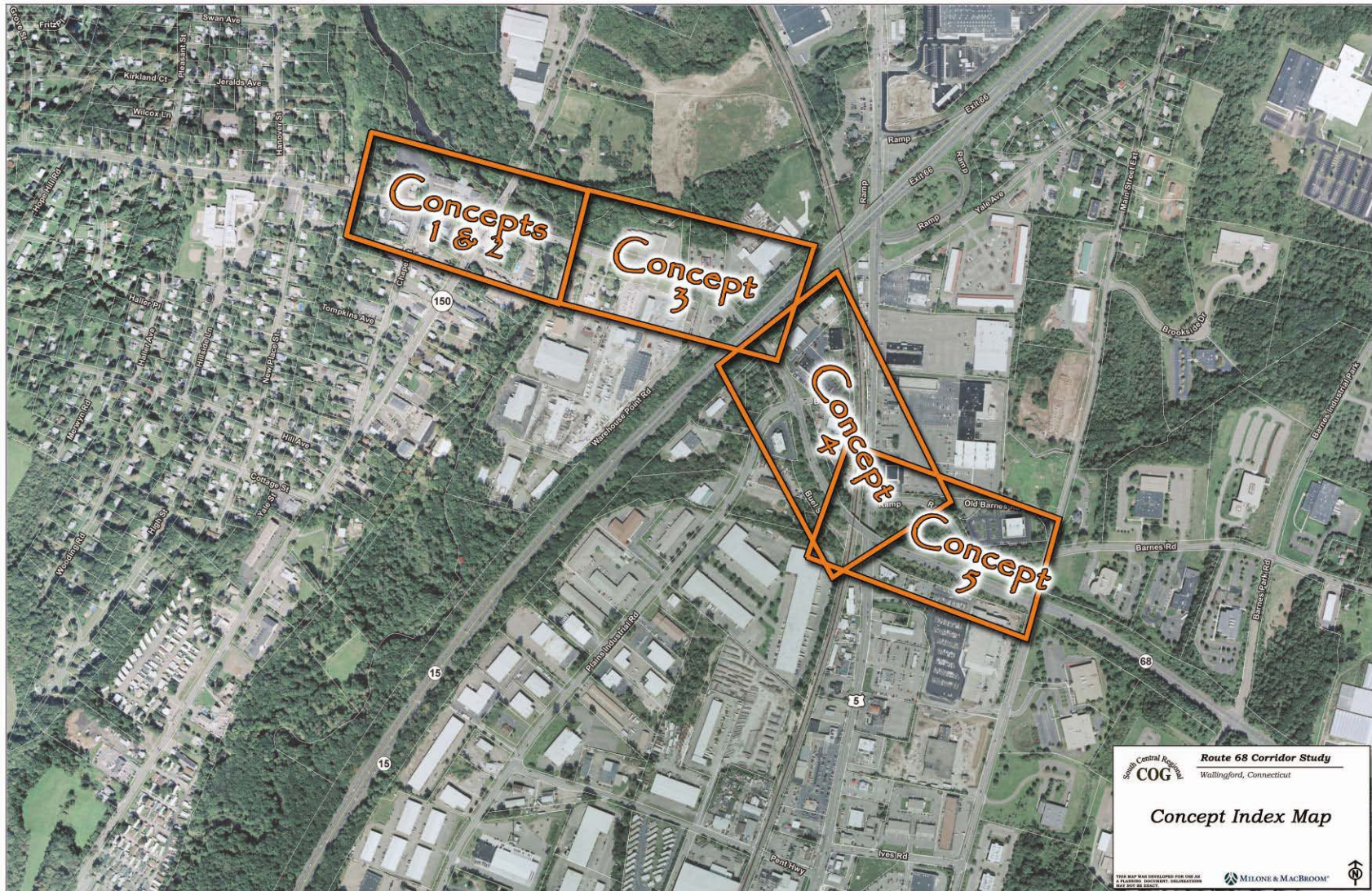
Three cost levels were developed:

- Low-cost (less than \$100,000)
- Medium-cost (\$100,000-\$500,000)
- High cost (more than \$500,000)

The recommended improvements focused on eliminating bottlenecks within the corridor, improving safety and improving conditions for pedestrians in the western portion of the corridor. The emphasis was on low-cost, achievable, high-impact improvements. The Route 68 Corridor study area was divided into five geographic areas as shown on the "Concept Index Map". These five areas are as follows:

- Hanover Street to Route 150
- Route 68 at Route 150
- Route 68 between Route 150 and Warehouse Point Road
- Route 68 at North Plains Industrial Road
- Route 68 at the Barnes Road Connector

CONCEPT INDEX MAP



The major issues at each area were analyzed, solutions and recommendations were developed to address these issues, and ultimately developed concept plans based upon those recommendations. A brief statement on the benefits and impacts of the proposed recommendations and associated concept plan was prepared for each area.

Hanover Street to Route 150

Issues: The portion of Route 68 from Hanover Street to Route 150 serves the Yalesville neighborhood. The sidewalks on both sides of Route 68 are intermittent and end just before Chapel Street. The pedestrian accommodations at the intersection of Route 68 and Hanover Street, at the driveway to Yalesville Elementary School, and at the intersection of Route 68 and Route 150 all require upgrades to the pedestrian ramps, pushbuttons, and crosswalks.

Closer to Route 150, the intersection of Route 68 at Chapel Street is marked by long delays on the side-street approach and there were a significant number of collisions (16) reported during the latest three-year period available. Based on conversations with ConnDOT, it was agreed that both congestion as well as the

number of collisions at Chapel Street could and should be reduced through the elimination of some movements at that location. Chapel Street was also examined as a potential on-street section of the Quinnipiac Linear Trail.

Recommendations:

Concept 1-A – A pedestrian improvement/streetscape plan from Yalesville School to Main Street that will connect the gaps in the sidewalks (Concept 1-A, part 1), extend the sidewalks to Main Street and make the necessary upgrades to the pedestrian accommodations (Concept 1-A, part 2).

Concept 1-B – Concept 1-B entails the installation of a raised island on the northbound approach of Chapel Street to reduce the number of conflict points at that location. It should be noted that this improvement would require motorists currently making left-hand turns onto Route 68 to utilize alternative routings. It is anticipated that most of these motorists would opt to utilize Route 150. This would significantly increase the number of northbound left-turn movements onto Route 68 from 150. For this reason, it is not recommended that this improvement move forward unless there are also capacity improvements to the

northbound approach of the intersection for Route 68 at Route 150.

Concept 1-C – Concept 1-C results in converting Chapel Street to one-way street serving southbound automobile traffic. This would eliminate all turning movements onto Route 68 at this location, reducing the number of conflict points. Additionally, the excess roadway width resulting from the one-way conversion could be used for an on-street section of the Quinnipiac Linear Trail

Benefits and Impacts: The proposed improvements will add to pedestrian comfort and safety and create better pedestrian connectivity between Yalesville School and the neighborhood. The proposed improvements will provide pedestrian access from the adjoining neighborhood to the businesses along Route 68. The streetscape improvements will enhance the aesthetic quality of the neighborhood. **These are short-term to mid-term, low to medium-cost, high-impact improvements.**

Limiting or restricting turns (Concepts 1-B and 1-C) onto Route 68 from Chapel Street reduces the likelihood of collisions at that location. When combined with capacity improvements to Route

68 at Route 150, delays for northbound vehicles turning onto Route 68 will be reduced. It should be noted that Converting Chapel Street to one-way southbound will create space on Chapel Street accommodate the Quinnipiac Linear Trail. This improvement would have a significant impact on the travel patterns of residents and regular visitors on Chapel Street. Therefore, such an improvement would only move forward after meeting with residents and other stakeholders to obtain the buy-in of those most affected.

Route 68 at Route 150

Issues: The intersection of Route 150 at Route 68 is heavily congested during peak periods. Due to the high volume of traffic on all approaches and the numerous constraints to widening, the intersection often exhibits the longest delays of any location in the corridor. Each approach at the intersection typically experiences vehicle queuing that is quite notable, with westbound approach queues routinely extending over 500 feet. The Route 68 / Route 150 intersection also experiences one of the highest accident rates within the Town of Wallingford. According to the latest three years of data obtained from ConnDOT, most accidents at the intersection are rear-end

collisions. This type of accident generally corresponds with high rates of vehicle queuing.

Recommendations: State Project 148-202 will widen Route 68 in front of the Westbrook Lobster House Restaurant and install associated east-west restriping to provide two (2) westbound lanes at Route 150. The Connecticut Department of Transportation is expected to begin construction of the project in 2011.

Three different conceptual improvements were recommended for this roadway area. Each one of these proposed improvements compliments the State Project.

Concept 2-A - Restripe the northbound approach to create an exclusive left turn lane.

Concept 2-B - Widen northbound approach to create exclusive right and left turn lanes.

Concept 2-C - Add right turn lane to west bound approach to supplement State Project

Benefits and Impacts: Concept 2-A will reduce delays caused by northbound motorists turning left. Concept 2-B will reduce delays caused by the heavy volume of northbound motorists turning right. Concept 2-C will reduce westbound traffic queues by allowing higher volume of right turns during red lights. **Concept 2-A is a low-cost, short-term improvement; while Concept 2-B is a mid-term, mid-cost/high impact improvement and Concept 2-C is a mid-cost, mid-term improvement.**

Route 68 Between Route 150 and Warehouse Point Road

Issues: This area contains multiple closely-spaced driveways and curb cuts, and has historically experienced a high rate of rear-end vehicle collisions. This section of Route 68 contains a single travel lane in each direction with striped shoulders that generally provide sufficient width for by-pass of vehicles that have stopped to turn left into driveways. At the eastern end of this stretch of Route 68, approaching the Wilbur Cross Parkway overpass, the roadway shoulder decreases in width. This narrowing limits the extent for vehicle by-pass for the westbound travel direction near the Gigante's Deli and Warehouse Point Road. Similarly, at the western end of this section, the shoulder width decreases

over the Quinnipiac River Bridge and approaching Route 150. Additional delays result between these two points when the occasional motorist stops to turn left off the roadway and does not pull close enough to the centerline to provide the sufficient width for by-pass along their right side.

Recommendations: The proposed improvements (Concept 3-A) are to restripe the roadway and slightly widen as necessary to provide exclusive left turn lanes. These improvements will better organize the roadway space and aid overall travel flows, creating less opportunity for confusion on the part of turning versus non-turning motorists. Overall lane use will be better defined in terms of separating out left turning vehicles from through traffic along this portion of Route 68.

Benefits and Impacts: The better organization of the roadway space will improve flow and reduce driver confusion. This improved organization will reduce the rear-end collision accident rate and reduce overall delays for motorists traveling on Route 68. **These are short-term, low-cost, high-impact improvements.**

Route 68 at North Plains Industrial Road

Issues: At the intersection of Route 68 at North Plains Industrial Road, motorists traveling on Route 68 experience excessive queuing and associated delays during peak periods. During the peak periods it was observed that vehicle queues would often block turn lanes. This exacerbates the excessive vehicles queues, as vehicles intending to enter the turn lanes are instead forced to remain the through lanes until queued vehicles begin to clear. Furthermore, in the case of the exclusive left turn lane on the Route 68 westbound approach, it was observed that vehicles would often block the turn lane and few motorists were able to enter the turn lane and make the turn during the exclusive left turn phase. In other words, the excessive vehicle queues at this location effectively reduce the capacity of the intersection at precisely those times at which it is most need.

In additional the excessive vehicle queues, the turn lanes at the Route 68 approaches to the intersection are not well-identified to roadways users unfamiliar with the corridor. Specifically, motorists on the Route 68 westbound approach intending to travel straight through the intersection may inadvertently find themselves in the exclusive left turn lane, as the lane shift at this

location is not clearly delineated. A similar situation exists on the Route 68 eastbound approach.

Recommendations: To address the issues described above, three conceptual improvements are recommended for the intersection of Route 68 with North Plains Industrial Road.

Concept 4-A - Restriping of the Route 68 eastbound approach to delineate when the exclusive turn lanes begin and separate from the through-movement travel lane.

Concept 4-B - Restriping of the Route 68 westbound approach to extend the left turn lane. This restriping will reduce occurrences where motorists intending to enter the exclusive turn lane become blocked by queues that develop along the shared through/right turn lane.

Concept 4-C - Widening of the Route 68 eastbound approach in order to extend the right turn lane. This widening will produce a similar result to Concept 4-A, with the additional benefit of providing more storage for queued vehicles in the exclusive right turn lane.

Benefits and Impacts: The more intuitive lane shifts will reduce driver confusion and improve safety. The reduction in turn lane blockages will reduce delays and queuing. **The proposed restriping under Concepts 4-A and 4-B are short-term and low-cost improvements. The proposed widening and restriping under Concept 4-C are mid-term and low-cost improvements.**

Route 68 at the Barnes Road Connector

Issues: The Barnes Road Connector is an important link between Route 68 and US Route 5. It carries a large amount of traffic between these two important state routes. During the analysis of existing conditions, a number of safety issues were identified at this location. Similar to other locations along Route 68 in the study area, the eastbound approach to the Barnes Road Connector lacks sufficient delineation of lane shifts. Motorists may unclear as to when the exclusive eastbound left turn lane becomes a separate and distant lane from the through movement lane. Drivers unfamiliar with the area are susceptible to following the double yellow centerline intending to continue through along Route 68 and drifting into the left turn lane. The single through lane also widens to two through lanes near this

point, adding to potential confusion on the part of motorists who do not travel the corridor regularly.

During the initial public input meeting, numerous residents identified the confluence of left and right turning vehicles from Route 68. That is, the Barnes Road Connector receives eastbound left turning vehicles and westbound right turning vehicles from Route 68 and the receiving lane is wide enough to accept two vehicles side by side. However, the lane decreases in width quickly. Two side by side vehicles must quickly merge. This occurs when left turning vehicles are given the green arrow to proceed and right turning motorists proceed at the same time under a “right-on-red condition”.

On the westbound approach of the intersection, motorists approach from the North Main Street Extension intersection to the east in the outer westbound through lane intending to continue straight along Route 68 find that the lane they are in becomes a right turn only lane at the connector. This right-turn-only lane is not well marked ahead of time. Realizing late that they are “trapped”, these motorists either accept the right turn onto the Barnes Road Connector or attempt to switch lanes at

the last second to continue through and potentially cause a side-swipe collision.

At the US Route 5 end of the Barnes Road Connector, the westbound left turn lane becomes blocked during peak periods by vehicle queuing in the right turn lane. Similar to the queuing situation along Route 68 at the North Plains Industrial Road mentioned earlier, when a queue of significant length develops within the connector right turn lane at US Route 5, the left turn lane gets cut-off. Vehicles intending then to enter the left turn lane cannot do so and end up further extending the overall queue.

Recommendations: To address the issues outline above, five conceptual improvements, identified as Concepts 5-A through 5-E, are recommended for this roadway area. With each concept, a recommendation is included to install advance warning signs and new pavement markings ahead of the westbound Route 68 approach to the Barnes Road Connector to signify the lane change where the outer lane becomes a right turn only lane. This includes installing signage which would read “Right Lane Must Turn Right Ahead.”

Concept 5-A - Restripe the eastbound approach to extent the left turn lane and delineate lane shift.

Benefit and Impacts: The more intuitive lane shifts will improve safety. **The restriping is a low-cost, short-term improvement.**

Concept 5-B - Install a raised island to separate the right and left turns onto the connector; realign the intersection; install advance warning signs and improve pavement markings to signify lane change ahead.

Concept 5-C - Install raised island to separate the right and left turns onto connector; maintain the current intersection alignment; install advance warning signs and improve pavement markings to signify lane change ahead.

Benefit and Impacts: The pavement markings will improve safety. The raised island will separate left- and right-turning vehicles and will reduce the potential for side-swipes. The longer merge area on the connector will also reduce the potential for

side-swipes. **5B is a high-cost, mid-term improvement and 5C is a mid-cost, mid-term improvement.**

Concept 5-D - Extend the left turn lane on the Barnes Road Connector at Route 5.

Benefit and Impacts: The extension of the left turn lane will decrease the number of left turn lane blockages at the westbound approach to US Route 5. **This is a low-cost, mid-term improvement.**

Concept 5-E - Install advance warning signs and improve pavement markings to signify lane change ahead. Widen connector to provide two lanes from Route 68 to US Route 5.

Benefit and Impacts: The warning signs, improved pavement markings and widened connector will eliminate lane overflows and blockages at US Route 5. These improvements will also reduce delays and queuing. **These are high-cost, long-term improvements.**

Corridor-Wide Issues and Constraints

There are a number of issues and constraints at the corridor-wide level that negatively influence traffic flow and operations along Route 68. In addition to the physical constraints of the roadway system such as the bottlenecks at bridges and underpasses, there is an issue of existing uncoordinated traffic control signal systems. Currently, there are multiple signal systems within this corridor and non-uniformity in terms of the signal cycle lengths as measured in seconds.

Corridor-Wide Improvements

Signal System

The Route 68 intersection with Hanover Street, at the western end of the study area, operates on a coordinated system with the Route 68/Hope Hill Road intersection further west. The Route 68 intersection with Route 150 to the east is not currently included in this coordinated signal system. It instead functions independently of the two aforementioned signals. The intersection also operates on a significantly longer cycle length than the Hanover Street and Hope Hill Road signals.

The next traffic signal to the east within the Route 68 study area is almost one-half mile away at North Plains Industrial Road. This signal operates independently; not coordinated with any other traffic control signals; it also has a different cycle length than the Route 150 and Hanover Street signals.

Farther east, the two intersections of Route 68 at the Barnes Road Connector and North Main Street Extension operate separately and have yet another cycle length that differs from the other signals within the study area.

Recommendations: Multiple measures to improve traffic flows along the Route 68 study area through modifications to traffic control signals are recommended.

- Short-term, low to medium-cost improvements include establishing a uniform cycle length across the multiple signals, coordinating the signals into two systems and optimizing each signal's timings, phasing and offsets.
- The two signal coordination systems that are recommended are:

- Include the Route 68 at Route 150 signal in the Route 68 at Hanover Street system.
- Include the Route 68 at North Plains Industrial Road signal in the Route 68 at Barnes Road Connector system.
- The limited nature of the primarily two-lane roadway throughout the corridor is an issue in itself. A long-term, high-cost measure to improve traffic flows along Route 68 through the study area would be to provide four travel lanes throughout the entire corridor.

Benefits and Impacts: The coordinated signal systems will reduce overall east-west travel times along Route 68 throughout the study area by 10% to 20%. This will result in a reduction of queuing, particularly at the Route 150 intersection. **These are short-term, low-cost improvements.**

Roadway Widening

The construction of a four-lane roadway throughout the corridor would significantly reduce east-west travel time, reduce queuing and remove the numerous identified physical constraints. As

previously mentioned, removing the major constraints to widening within the corridor would be a very expensive, costing between 43 and 55 million dollars. Given the high cost and current and projected constraints to state and local budgets, the above mentioned improvement is likely not feasible in the foreseeable future barring any major changes to state and federal revenue streams for transportation funds. Additionally, the widening of the corridor to provide two travel lanes in each direction could have negative impacts on a number of property owners along Route 68, which would have to be addressed prior to moving forward.

Summary

The Route 68 Corridor is widely perceived as having numerous traffic issues. The total amount of traffic through the corridor has not significantly changed over the last two decades but congestion has become worse. The goal of the Route 68 Corridor study was establish a baseline of existing conditions and to focus on traffic operations and safety along with strategies to reduce congestion, minimize delays and to enhance safety for all roadway users. The selected recommended improvements aim to achieve this goal through

a series of improvements that range from near-term, low cost to long-term, high cost improvements. These improvements listed in the following table will ultimately reduce congestion, minimize delays and enhance safety for all roadway users within the corridor.

Route 68 Corridor Study

RECOMMENDED IMPROVEMENTS

Concept	Location	Description	Timeframe	Cost	Cost - Low Est.	Cost - High Est.
-	Corridor-Wide	Corridordinate and Retime Traffic Signals throughout corridor	Short	Low	\$ 20,000	\$ 30,000
-	Corridor-Wide	Provide four (4) through travel lanes with strategic turn lanes throughout the corridor	Long	High	\$ 43,000,000	\$ 55,000,000
1-A	Hanover to Route 150	Add streetscape elements, rebuild sidewalk section from Chapel to Route 150, and install ADA compliant	Short	Low	\$ 78,000	\$ 95,000
1-A	Hanover to Chapel Street	replace sidewalk, stripe crosswalks at all approaches, install pedestrian pushbuttons and pedestals at	Short	Medium	\$ 159,000	\$ 192,000
1-B	Hanover to Chapel Street	Eliminate northbound left turns at Chapel Street	Short	Low	\$ 56,000	\$ 68,000
1-C	Hanover to Chapel Street	Construct bike trail on Chapel Street - convert Chapel Street to one-way southbound	Mid	Medium	\$ 357,000	\$ 432,000
2-A	Route 150 at Route 68	Restripe northbound approach to create exclusive left turn lane and through/right lane	Short	Low	\$ 27,000	\$ 33,000
2-B	Route 150 at Route 68	Widen Roadway to provide exclusive left turn lane, through, and exclusive right turn lane	Mid	Medium	\$ 424,000	\$ 513,000
2-C	Route 150 at Route 68	Install westbound right turn lane to supplement state project	Mid	Medium	\$ 146,000	\$ 177,000
3-A	Route 150 to Warehouse Point Road	Widen and restripe roadway to create left turn lanes at key locations	Short	Low	\$ 38,000	\$ 46,000
4-A	N. Plains Industrial Road at Route 68	Restripe eastbound approach to clearly delineate lane shift	Short	Low	\$ 3,000	\$ 3,000
4-B	N. Plains Industrial Road at Route 68	Extend westbound left turn lane on Route 68 at N. Plains Industrial Road	Short	Low	\$ 6,000	\$ 7,000
4-C	N. Plains Industrial Road at Route 68	Widen eastbound approach to extend right turn lane	Mid	Low	\$ 75,000	\$ 91,000
5-A	Barnes Road Connector at Route 68	Extend eastbound left turn lane on Route 68 at Barnes Road Connector	Short	Low	\$ 57,000	\$ 69,000
5-B	Barnes Road Connector at Route 68	Separate right and left turns onto connector w/raised island, Square up intersection	Mid	High	\$ 809,000	\$ 979,000
5-C	Barnes Road Connector at Route 68	Separate right and left turns onto Connector w/raised island, Leave current alignment	Short	Medium	\$ 260,000	\$ 314,000
5-D	Barnes Road Connector at Route 68	Extend westbound left turn lane on Connector at U.S. Route 5	Mid	Low	\$ 25,000	\$ 30,000
5-E	Barnes Road Connector at Route 68	Widen connector to provide two lanes northbound/westbound	Long	High	\$ 1,135,000	\$ 1,373,000

1. Introduction

1.1 STUDY AREA

The Route 68 Corridor study area is located in the Town of Wallingford as shown in Figure 1-1. It consists of the 1.1 mile section of Connecticut Route 68 (Church Street) that extends from North Main Street Extension, on the east to Hanover Street, on the west. It serves numerous businesses and neighborhoods, and acts as an important emergency route for Wallingford's Fire and Police Departments. The Route 68 Corridor transitions in use from office and industrial parks at its eastern end to neighborhood residential uses at its western end. Route 68 east of Route 15 provides access to Research Parkway and Barnes Road. At the center of the study area Route 68 provides access to North Plains Industrial Park and also bisects an intensively developed retail section of U.S. Route 5. The western end of the study area is a densely developed single family residential area centered around Yalesville.

Route 68 is a major east-west arterial in Wallingford used by residents to access the Wilbur Cross Parkway and Interstate 91. It is also used by vehicles passing through Wallingford to

destinations in Cheshire to the west and Durham to the east. It is one of only a few east – west roads that traverses the entire town. Regionally Route 68 plays a key role in providing access by way of connections to I-91, U.S. Route 5, and Route 15 via U.S. Route 5.

1.2 OBJECTIVES

The Route 68 Corridor Study was funded by the South Central Regional Council of Governments (SCRCOG) through the Unified Planning Work Program (UPWP). This study focused on traffic operations and safety, along with strategies to reduce congestion, minimize delays and enhance safety for all roadway users.

The Route 68 corridor is widely perceived as having numerous traffic issues. Certain sections of the corridor are at or over capacity during peak periods with significant queuing and delays at several key intersections. The westbound approach of Route 68 at Route 150, for example, experiences considerable backup during the weekday commuter peak periods. While the total amount of traffic through the corridor during the most congested periods has not significantly changed over the last two decades,

congestion has seemingly become much worse. Despite being a relatively short stretch of roadway there are a host of constraints that contribute to the traffic congestion. The bridges and underpasses severely limit the improvement options in this stretch of the corridor. The potential to increase the capacity of the Route 68 and Route 150 intersection is limited by bridges over the Quinnipiac River in close proximity to the intersection. There is a further constraint to the east on Route 68 where it passes under the Wilbur Cross Parkway. Additionally, the tunnel under the Amtrak rail line along Route 150 north of Route 68 reduces the road to one way alternating traffic.

In recognition of these constraints, and the cost implications of removing them, this study focused on creative solutions to improve public safety and traffic as well as mobility in the area. The goal of the Route 68 Corridor Study was to focus on broad creative solutions to quantify the type, location, and cost for the conventional long-term highway improvements and then develop other near to mid-term strategies that could be employed to address identified safety and operational issues.

1.3 TRAFFIC FORECASTING AND CAPACITY ANALYSIS

The 3, 10, and 20-year traffic volume projections and the set of short, mid, and long-term improvements were used to analyze future traffic conditions in the Route 68 corridor. The purpose of this analysis was to evaluate the impact of the proposed capacity improvements on traffic operations within the study area. The potential improvements were evaluated with respect to the traffic volumes anticipated at the year around which the improvements would be expected to be completed should the town or state decide to implement them as recommended. Therefore, the short-term improvements were evaluated with respect to the three-year traffic volume projections, the mid-term improvements with respect to the 10-year traffic volume projections, and the long-term improvements with respect the 20-year traffic volume projections. The scenarios analyzed are described below.

Existing Conditions – The existing traffic volumes were analyzed with respect to current roadway conditions including roadway geometry and signal timings.

Timing Changes Only – The 3-year (2012) traffic volumes were analyzed assuming that the traffic signals within the corridor were coordinated and the signal timings were optimized to minimize overall delays within the corridor.

Short-Term Improvements – The 3-year (2012) traffic volumes were analyzed assuming the potential short-term improvements, including the signal improvements described above, were implemented. For this scenario it was also assumed that the proposed state project at the intersection of Route 68 at Route 150 was completed.

Mid-Term Improvements – The 10-year (2019) traffic volumes were analyzed with respect to the recommended mid-term improvements. It was assumed that under this scenario the recommended short-term improvements had also been implemented or superceded.

Long-Term Improvements – The 20-year traffic volumes were analyzed assuming that Route 68 had been widened to provide four through-travel lanes (two in each direction) throughout the

length of the corridor with additional turn lanes at key intersections.

1.4 PUBLIC INVOLVEMENT

A key component of the Route 68 Corridor Study was the active participation of the municipal officials, Town, SCRCOG, ConnDOT staff and the public. It was imperative to the success of the study that each of these groups was involved throughout the process. This insured that the existing conditions, issues and concerns in the study area were understood and were addressed. The active participation of all was encouraged throughout the study and following is a summary of the public outreach process.

The kick off meeting with the Route 68 Corridor Working Group, (WG) which included, local officials, municipal and SCRCOG staff was held on November 20, 2009.

Meetings with the WG were held in December 2009 and January, March and April 2010 at key study milestones. The initial findings were presented at the first public information meeting held on January 21, 2010 at the Wallingford Town Hall. After the presentation the floor was opened to members of the public who

were encouraged to provide their input on the study including their concerns, experiences and suggested solutions with respect to the corridor. Public comments were focused on traffic congestion and safety issues.

The draft “Recommended Improvements” were discussed at the second public information meeting held on May 19, 2010 at the Wallingford Town Hall. After the presentation, the floor was opened to members of the public who were encouraged to comment on the study. Public comments focused on the proposed pedestrian and bicycle access, the shoulder and travel lane reconfigurations, congestion safety and the impact the proposed improvements may have on adjoining properties.

Meetings with ConnDOT, SCRCOG and Wallingford staff were held on April 13, and April 22, 2010 at the ConnDOT Newington office.

2. Existing Conditions

2.1 THE STREET NETWORK

Route 68 at the eastern end of the study area generally consists of two through lanes in each direction with exclusive turning lanes at the signalized intersection of North Main Street Extension and the intersection at the connector to U.S. Route 5. Moving west, the roadway width decreases to a single lane in each direction due to U.S. Route 5 and the Amtrak railroad overpass. Exclusive turn lanes are also present at the signalized intersections with North Plains Industrial Road and Route 150.

Route 68 Looking West at North Main Street Extension



Route 68 Looking East at Hanover Street

Route 68 between Route 150 and Warehouse Point Road does not include separate turn lanes, but there is sufficient shoulder width for by-pass of left turning vehicles. West of Route 150, the corridor generally contains two travel lanes in the westbound direction and one travel lane in the eastbound direction. This configuration is present at the two unsignalized intersections with Chapel Street and New Place Street, and the signalized intersection of Hanover Street at the Yalesville Elementary School. There are also approximately 30 private driveways in the corridor operating under implied stop sign control. The figure titled “*Lane Arrangement and Traffic Controls*” illustrates the lane arrangements and traffic controls throughout the study

area. The posted speed limit through most of the study area is 30 miles per hour. At the eastern end of the study area, near North Main Street Extension, the speed limit increases to 45 miles per hour. Near the Yalesville Elementary School, there is a 25 mile per hour advisory speed limit.

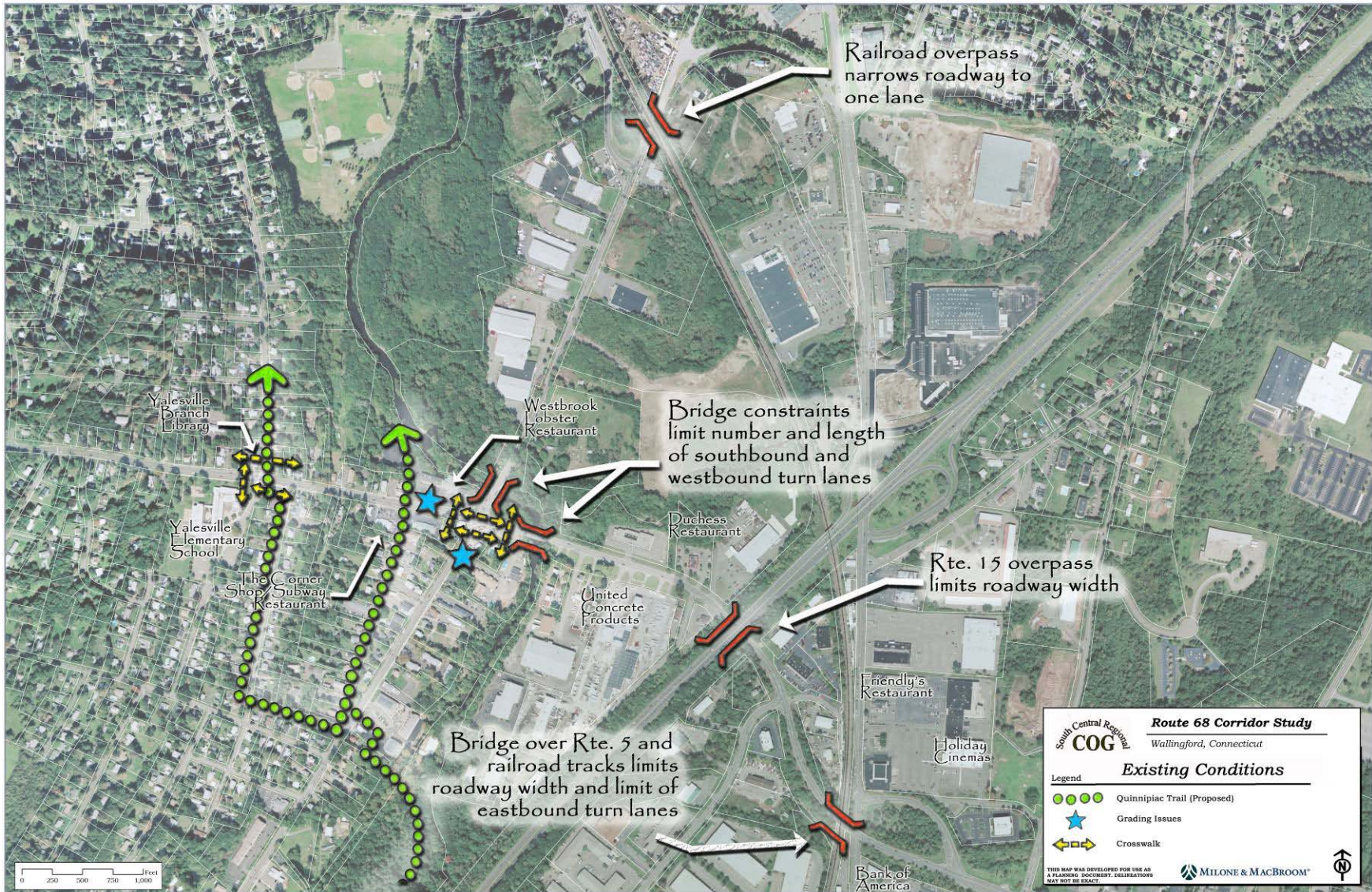
Sidewalks are sparingly provided along westernmost portions of the study area in the vicinity of Chapel Street to Hanover Street. Some areas lack sidewalks but are clearly well traveled by pedestrians, evident by worn footpaths. Pedestrian crossings are only present at the Route 68 intersection with Hanover Street and the Yalesville Elementary School, across New Place Street, and at the Route 68 intersection with Route 150. The Hanover Street intersection contains pedestrian crossings of the north and west legs. Pedestrian crossings at the Route 68 and Route 150 intersection are located on all legs, but are difficult to access due to incomplete infrastructure and the length of the crossings.

Due to right-of-way constraints and existing grade changes in this area, Route 68 is not well suited for bicycling. There are right-of-way constraints along much of the north side of the corridor and parts of the south side between Chapel Street and Route 150.

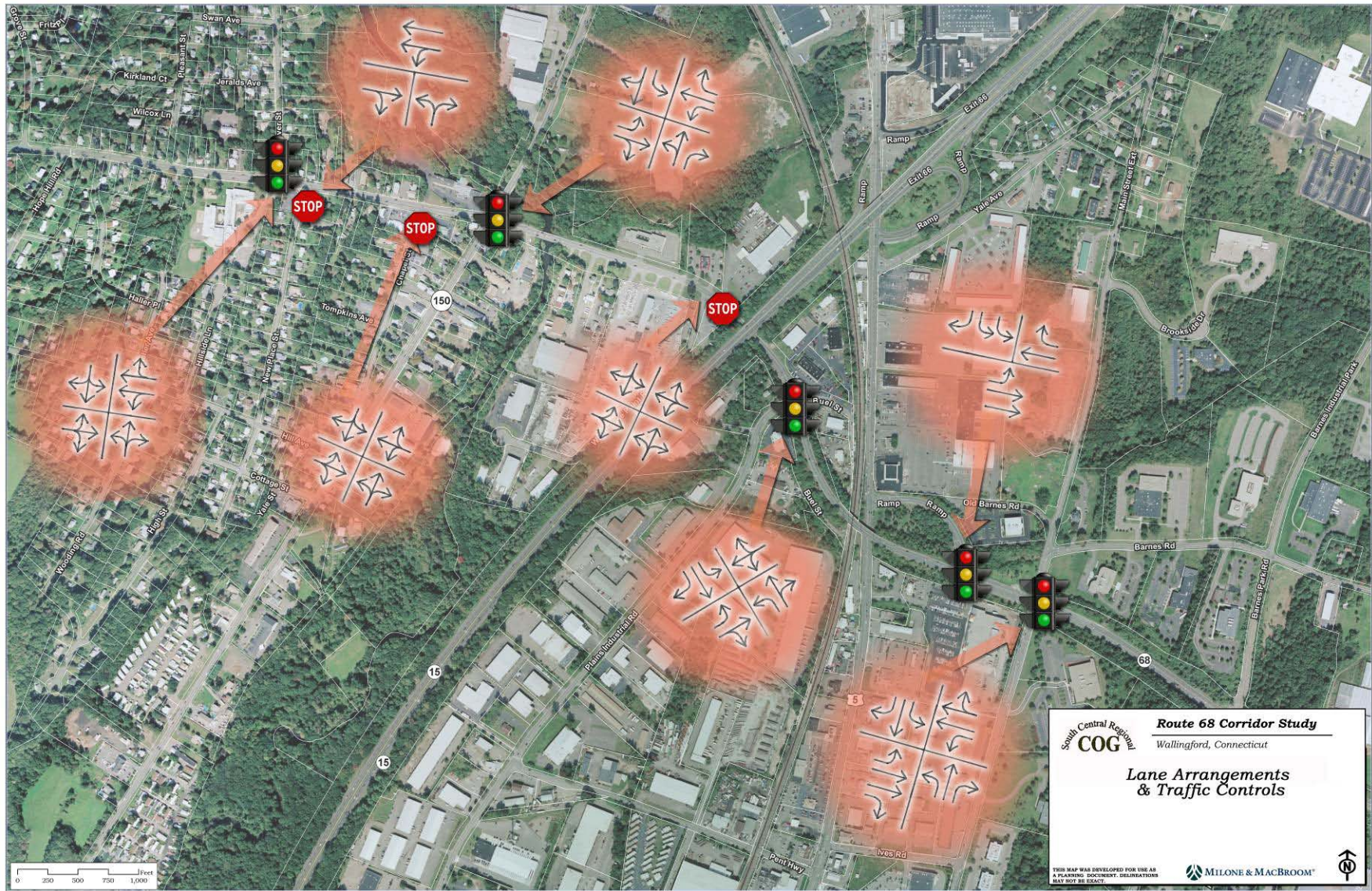
The locations of these constraints are shown on the map titled “Existing Conditions”. The following images show pedestrian conditions along Route 68 in the vicinity of Route 150 to Hanover Street.



EXISTING CONDITIONS



LANE ARRANGEMENTS AND TRAFFIC CONTROLS



2.2 LAND USE IMPACTS

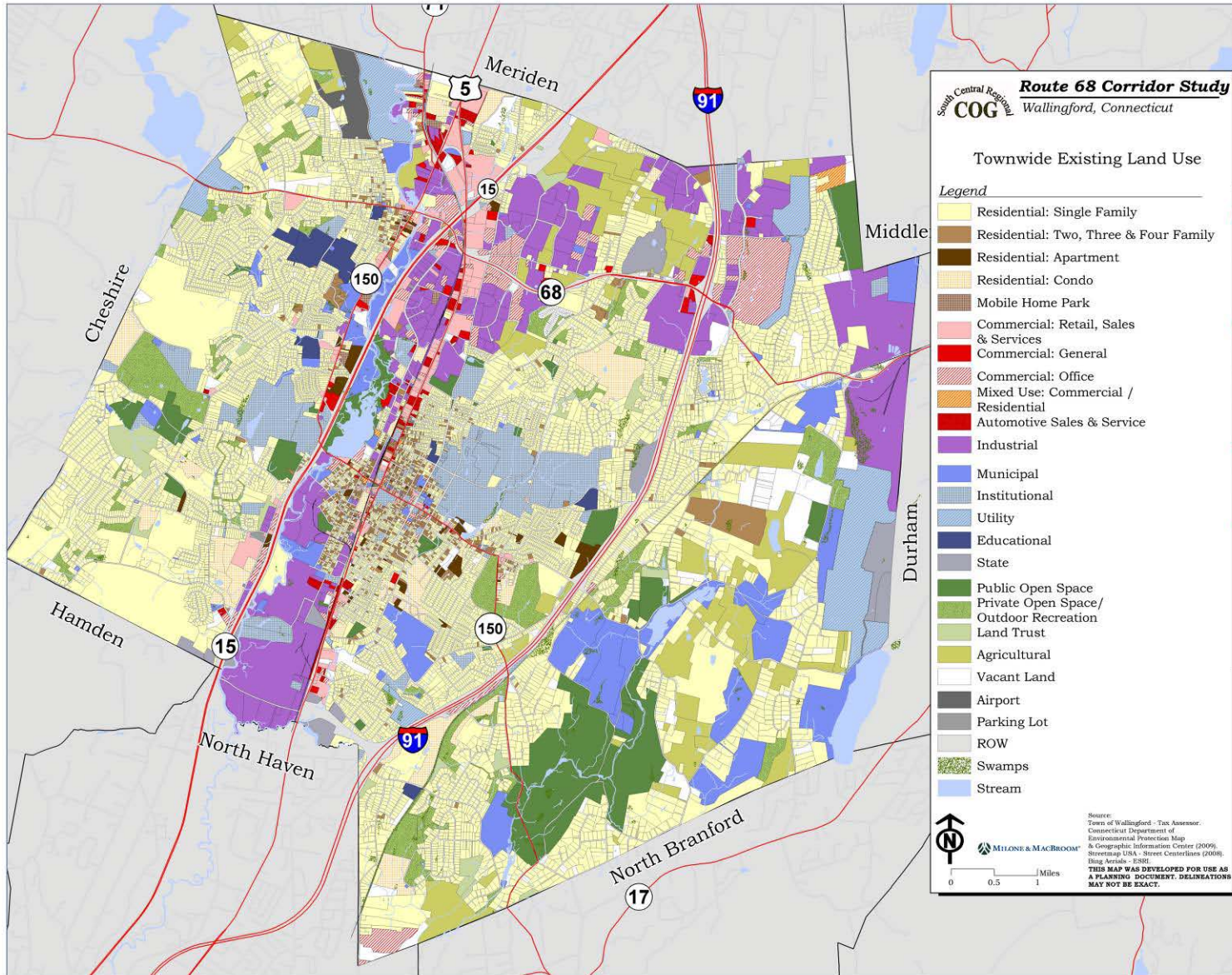
The Route 68 Corridor is impacted by land use patterns at several levels. These levels range from the impact of parcels with frontage on Route 68 within the study area to regional land use patterns. Route 68 is also part of the road network providing access to both the Wilbur Cross Parkway (Route 15) and I-91 used by vehicles travelling to the larger region and beyond.

Within Wallingford, at its eastern end, Route 68 provides access to the Barnes Road and Research Parkway areas with over 4 million square feet of industrial, office, research and development and distribution establishments. At the western end Yalesville and “The Ridges” are densely developed residential areas. At the center of the corridor, Route 68 passes through the U.S. Route 5 corridor within its most densely developed retail segment. The map titled “*Townwide – Existing Land Use*” displays these land use patterns.

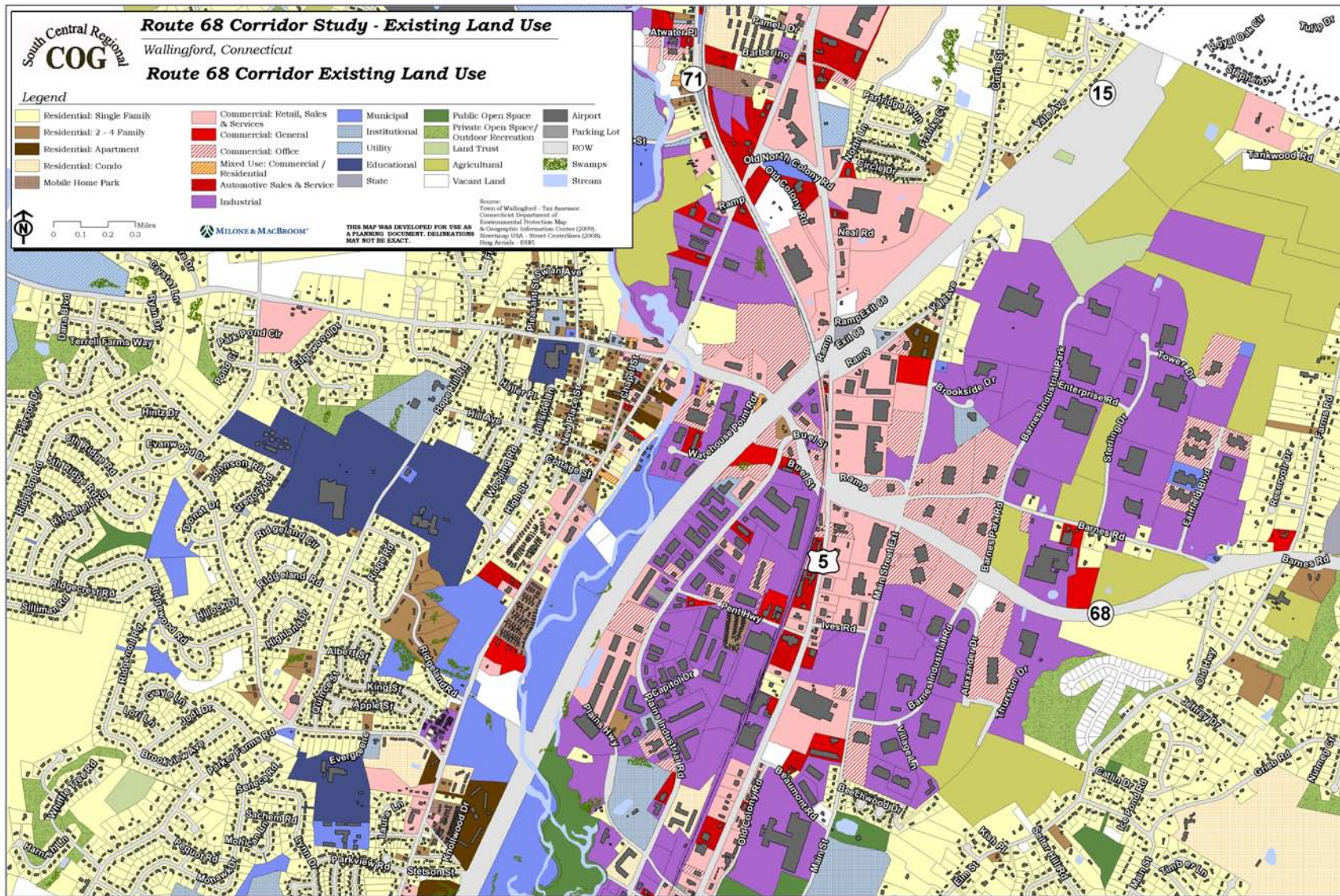
Within the defined study area, the mix of land uses reflects the mixed use character of the full length of the Route 68

corridor. The map titled “*Route 68 Corridor - Existing Land Use*” displays detailed land use information. The area has commercial properties fronting on Route 68 as well as direct access to 1.5 million square feet of industrial and heavy commercial uses on Plains Industrial Road and Warehouse Point Road. These uses generate a significant amount of traffic contributing to the high number of turning movements on Route 68. These turning movements, particularly left hand turns, are the cause of delays and can create unsafe traffic conditions. The western end of the study area is the Yalesville neighborhood which is primarily a residential neighborhood surrounding the Yalesville School. This area is impacted by the intersection of Route 150 and 68 which is a major traffic bottleneck. This bottleneck adversely impacts the residential neighborhood to the west as drivers use short cuts through local streets to avoid long queues of traffic on the approaches to the Route 150 intersection.

TOWNWIDE EXISTING LAND USE



ROUTE 68 CORRIDOR – EXISTING LAND USE

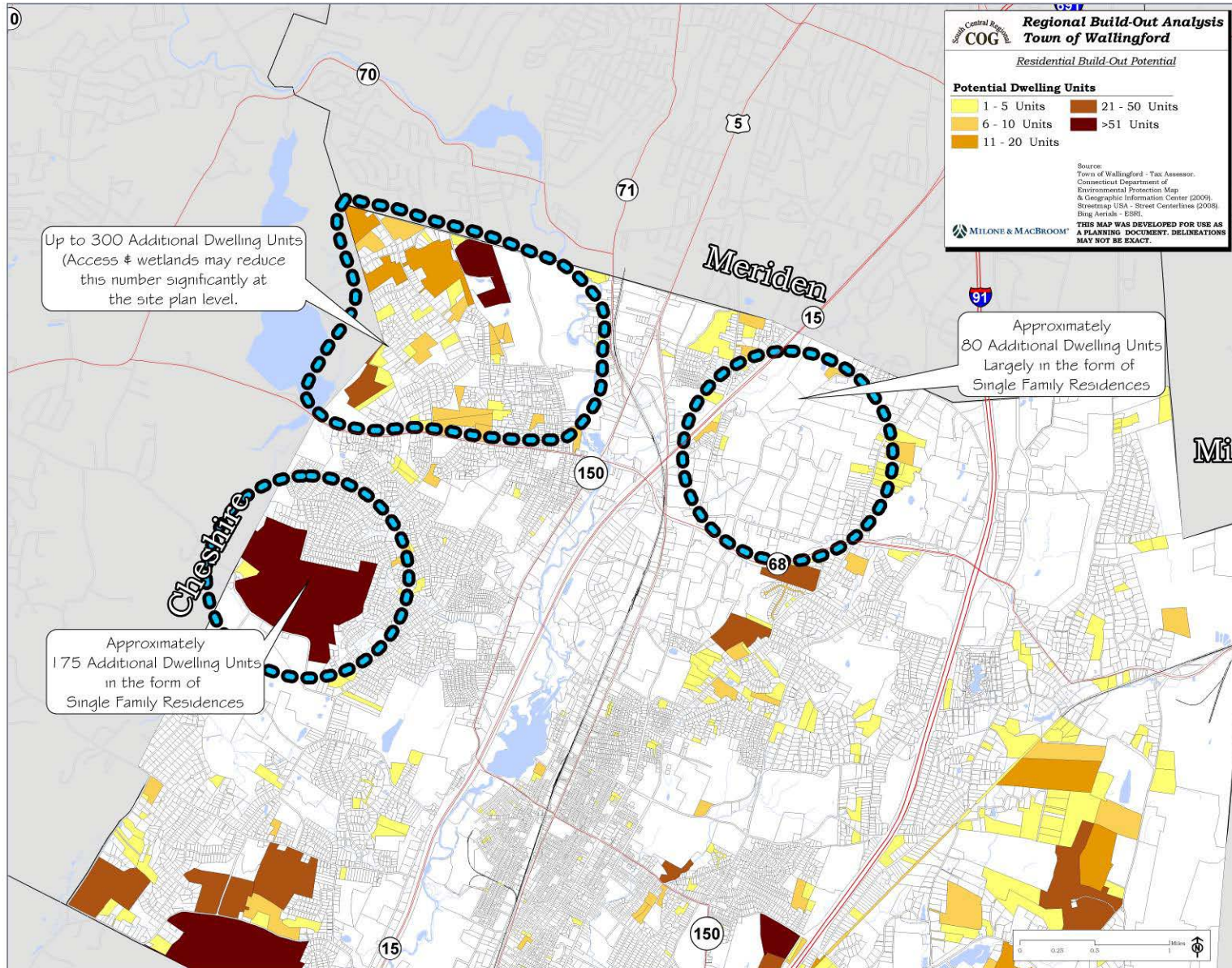


Looking to the future, it is expected that the land use patterns impacting Route 68 will continue to contribute to traffic congestion on Route 68. The maps titled “*Residential Build-Out Potential*” and “*Non-Residential Build-Out Potential*” present estimates of potential future development impacting the corridor. Based upon existing zoning and available land, it is estimated that some 380 dwelling units could be developed north of Route 68 in the central and western portions of the corridor. In the central and eastern portion of the corridor there are 13 properties that can accommodate approximately 200,000 square feet of non-residential development. While these estimates of development assume a long horizon, as development occurs incrementally, there will be additional traffic impacting the Route 68 corridor since it is the only viable direct east-west route through this portion of Wallingford.

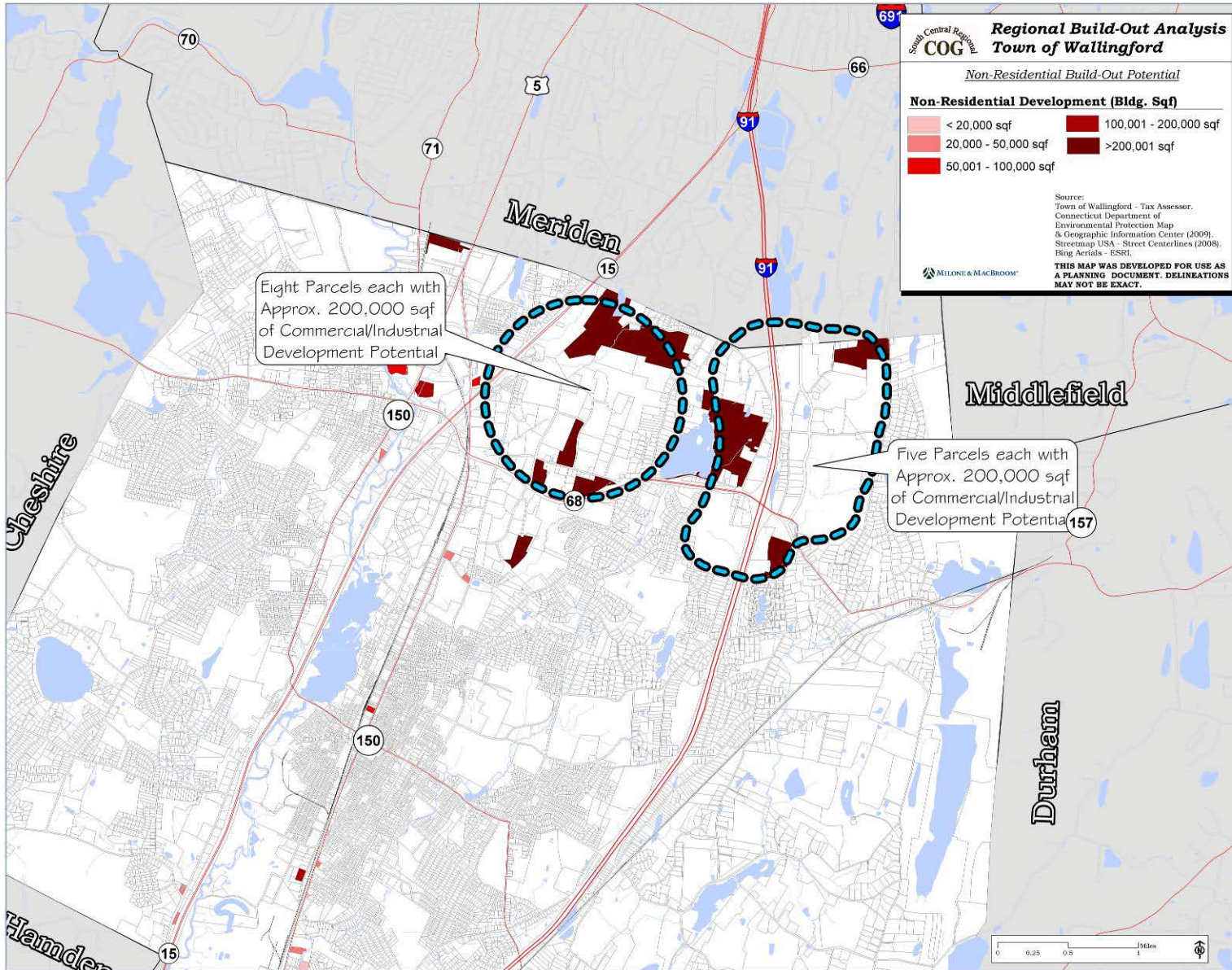
In summary, the land use pattern impacting the Route 68 corridor is firmly established. The corridor either contains or provides access to a range of land uses from convenience shopping and residential neighborhoods to regional and

super-regional uses accessed by the interstate highway system. The fact that the major traffic generators are located in the central and eastern portions of the corridor results in an unbalanced AM and PM peak hour traffic flow. The flow of this traffic is further impeded by the numerous access points from intersecting streets and driveways as well as constrictions created by bridges and tunnels. The traffic analysis which follows quantifies the extent of congestion in the corridor.

RESIDENTIAL BUILD-OUT POTENTIAL



NON-RESIDENTIAL BUILD-OUT POTENTIAL



2.3 TRAFFIC VOLUMES

Existing traffic volumes were collected in November of 2009. Turning movement counts were manually conducted at each roadway intersection with Route 68 from North Main Street Extension in the east to Hanover Street in the west. The counts took place over two-hour timeframes during the weekday morning commuter period, the weekday midday period, and the weekday afternoon commuter period. At several intersections, counts were also taken during the Saturday midday period. The peak hour of roadway traffic during each period was found to be 7:45 AM – 8:45 AM during the weekday morning period, 12:00 PM – 1:00 PM during the weekday midday period, 4:30 PM – 5:30 PM during the weekday afternoon period and 11:15 PM – 12:15 PM during the Saturday midday period.

The existing peak hour traffic volume flow diagrams are shown on the following pages. Commuter patterns observed during the weekday morning and afternoon peak hours, show the heaviest flow of traffic occurs during the weekday morning peak hour in the eastbound direction and the weekday afternoon peak hour in the westbound direction. Traffic flows are generally balanced during the weekday midday and Saturday midday peak hours.

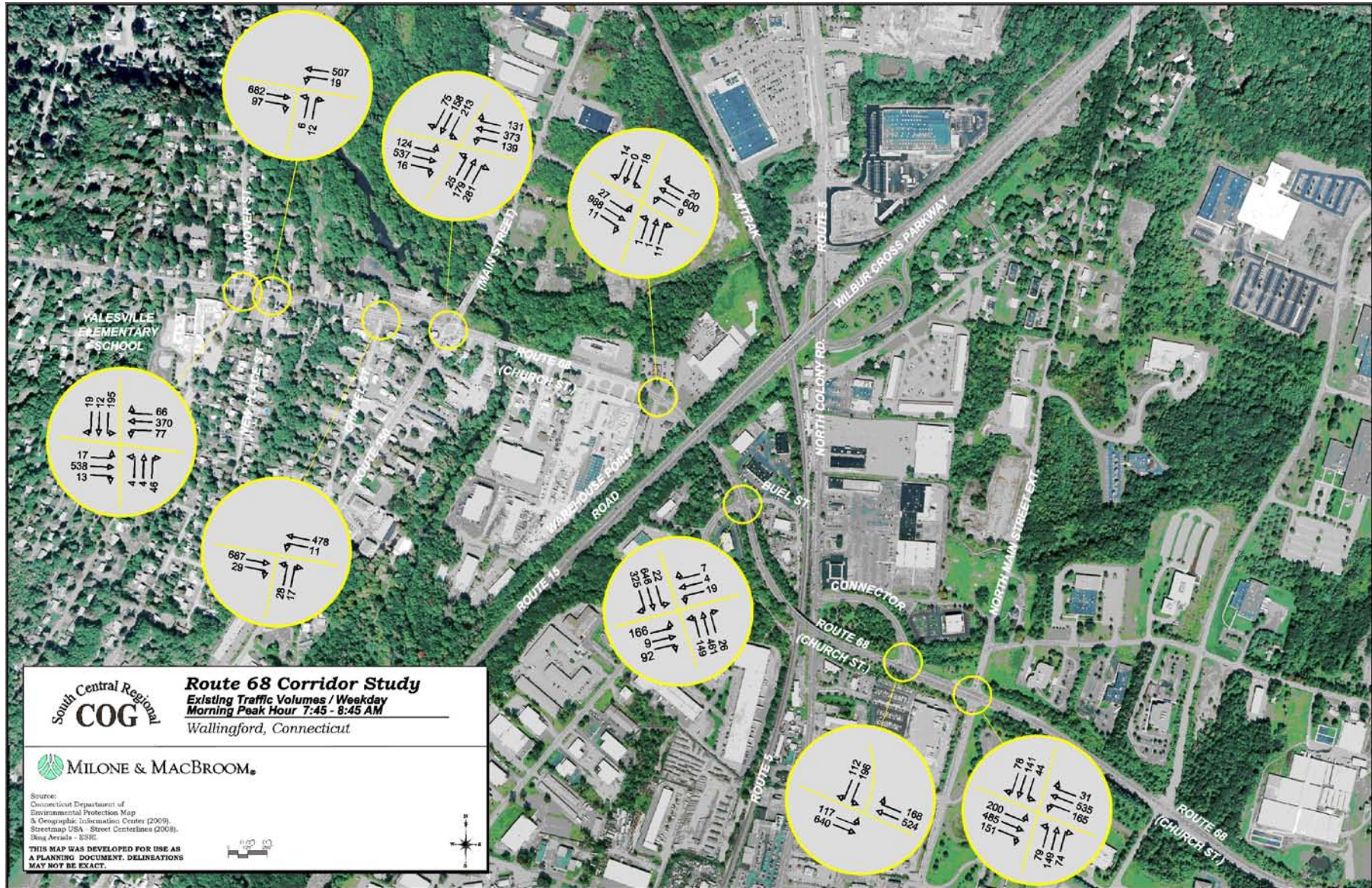
Traffic volumes from 2009 were compared with traffic volumes from a study prepared by Wilbur Smith Associates (WSA) in 1986. This comparison is illustrated on maps titled “*Difference in Traffic Volumes 2009 vs. 1986*”.

Westbound Traffic on Route 68

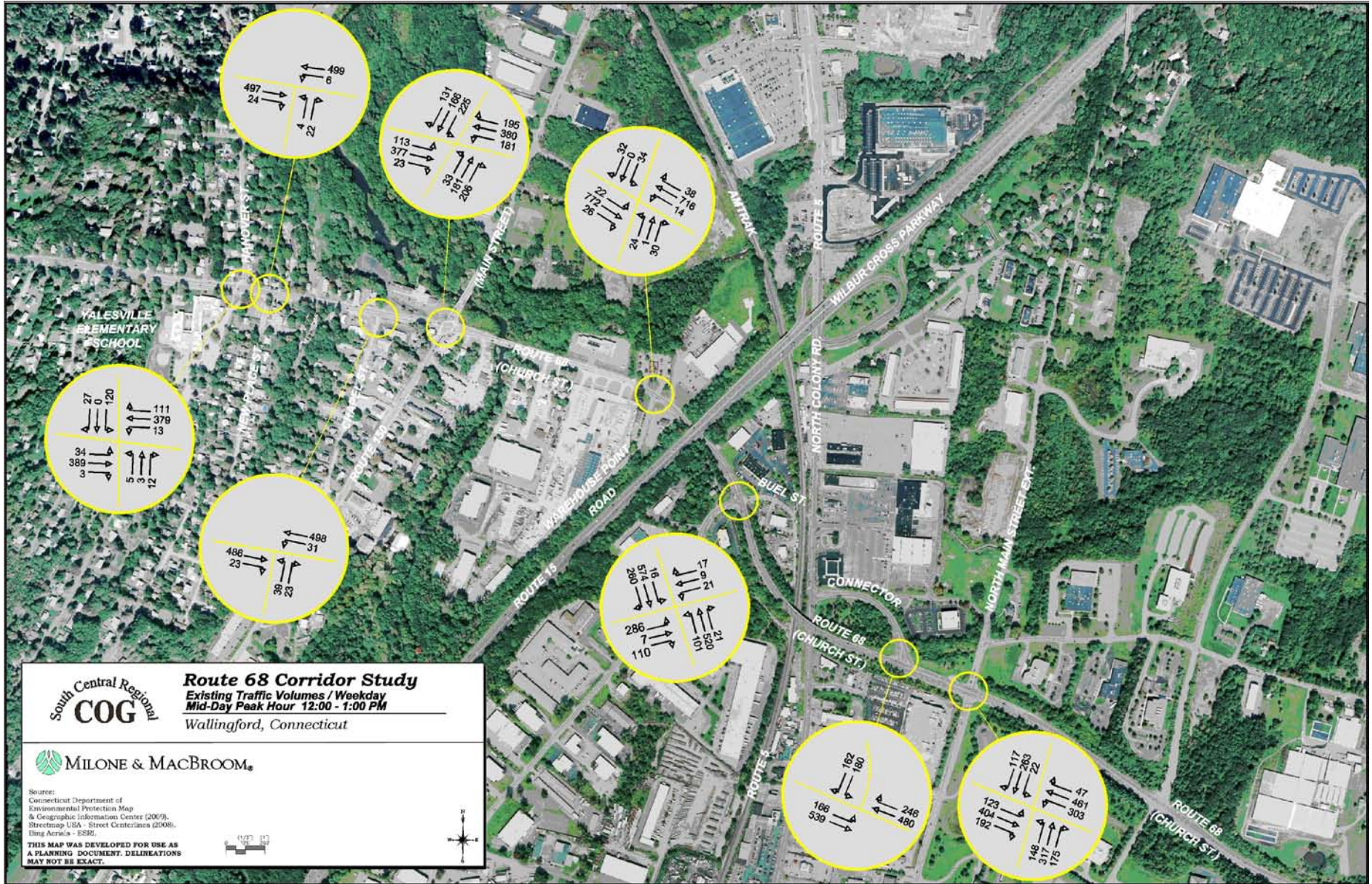


In general, intersection traffic during the morning peak hour has increased since 1986 throughout the study area. During the weekday afternoon peak hour, overall traffic has generally decreased. The differences in volumes, however, are not particularly significant given the 23 years between the two data sets; none of the study intersections had considerable changes in the overall percentage of traffic between 1986 and 2009.

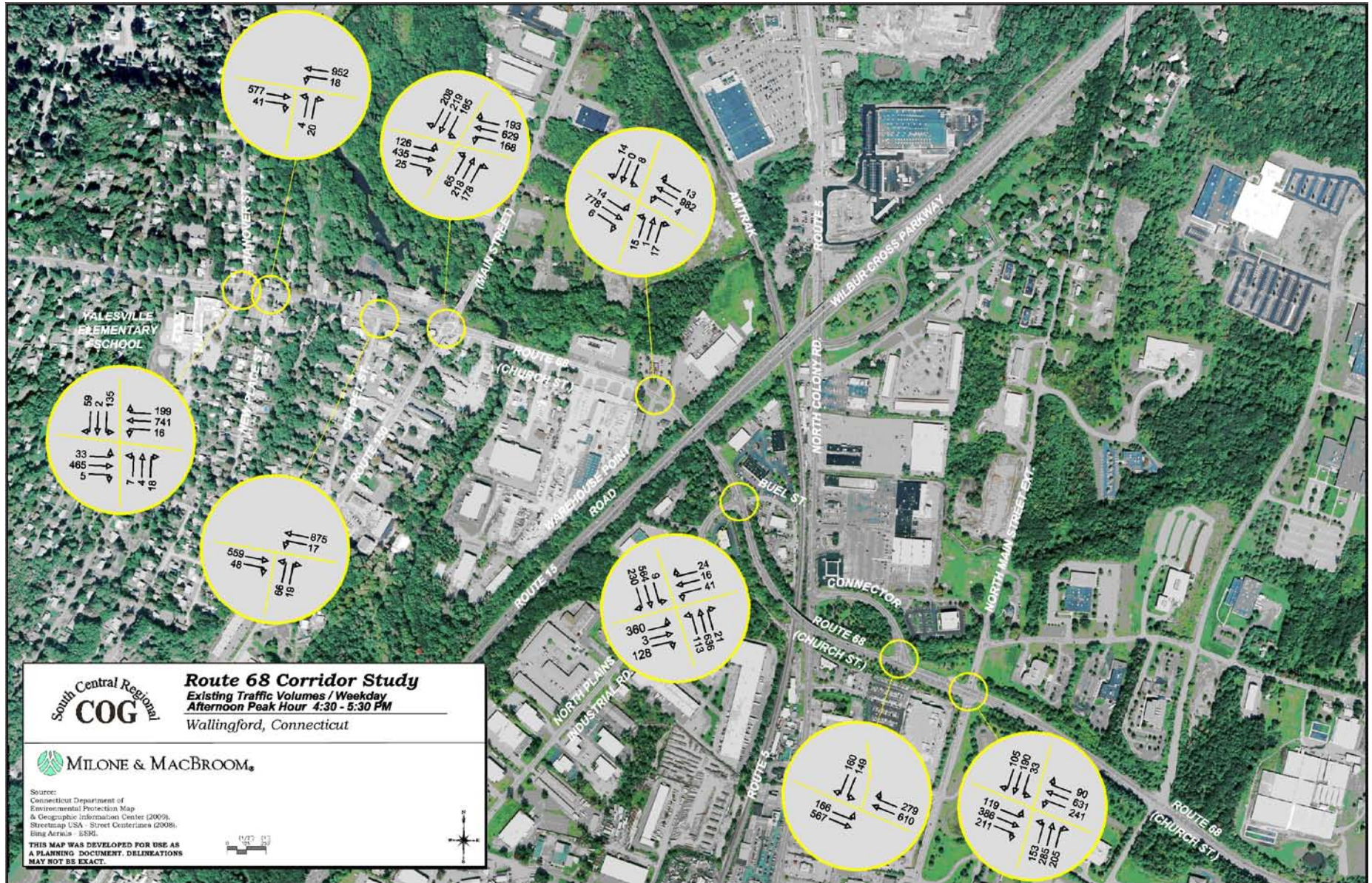
2009 WEEKDAY MORNING PEAK HOUR INTERSECTION TRAFFIC VOLUMES



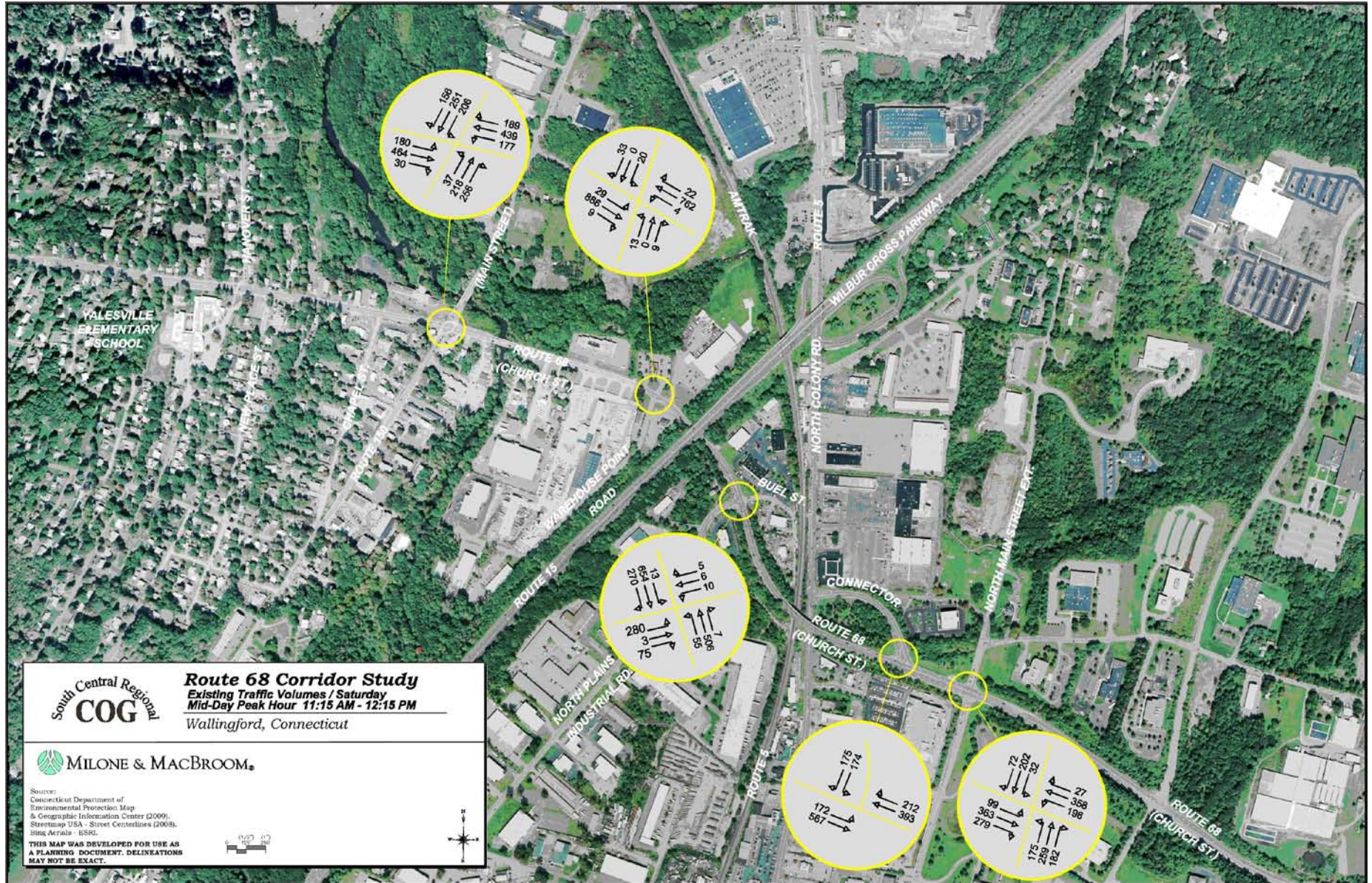
2009 WEEKDAY MIDDAY PEAK HOUR INTERSECTION TRAFFIC VOLUMES



2009 WEEKDAY AFTERNOON PEAK HOUR INTERSECTION TRAFFIC VOLUMES



2009 SATURDAY MIDDAY PEAK HOUR INTERSECTION TRAFFIC VOLUMES



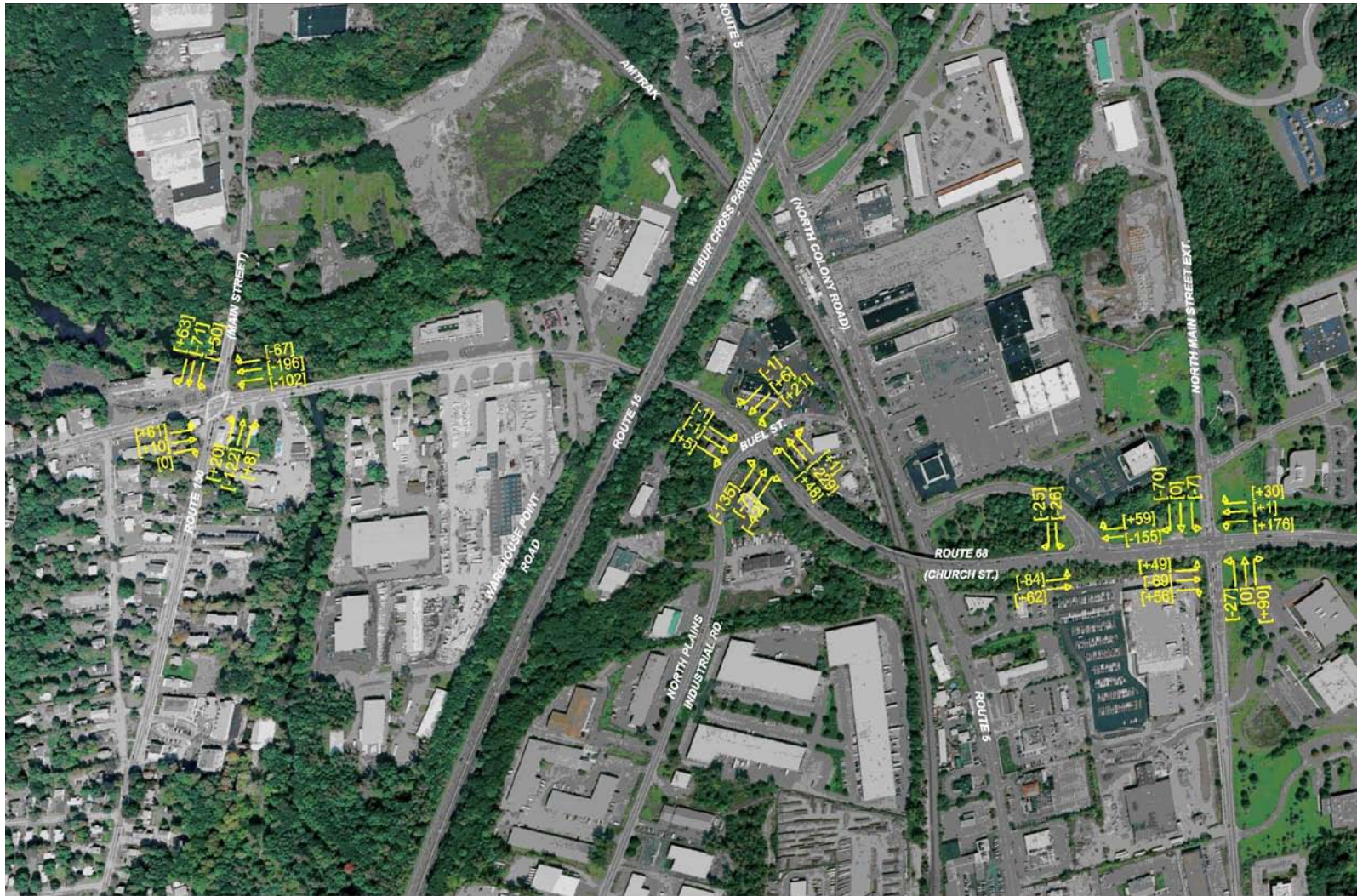


LEGEND:
 [+XXX] = POSITIVE DIFFERENCE IN TRAFFIC VERSUS 1986
 [-XXX] = NEGATIVE DIFFERENCE IN TRAFFIC VERSUS 1986

DIFFERENCE IN TRAFFIC VOLUME 2009 VS. 1986 WEEKDAY MORNING PEAK HOUR

**Route 68 Corridor Study
 Wallingford, Connecticut**





LEGEND:
 [+XXX] = POSITIVE DIFFERENCE IN TRAFFIC VOLUME VERSUS 1986
 [-XXX] = NEGATIVE DIFFERENCE IN TRAFFIC VOLUME VERSUS 1986

DIFFERENCE IN TRAFFIC VOLUME 2009 VS. 1986 WEEKDAY AFTERNOON PEAK HOUR

**Route 68 Corridor Study
 Wallingford, Connecticut**



In terms of annual percentage change, all of the intersections where comparisons were made had a less than one percent change. This characteristic can be considered rather typical. As illustrated in the table below, most intersections had annual percentage changes that were less than or around one-half percent.

It should be noted that certain turning movements experienced a considerable change in volume between 1986 and 2009. For example, the westbound left turn movement from Route 68 on

to North Main Street Extension increased from 65 vehicles in 1986 to 241 vehicles in 2009, corresponding with a 5.8% annual increase over this period during the weekday afternoon peak hour. Other movements have decreased in volume or remained unchanged. The same intersection during the same time period experienced a decrease in volume for the eastbound through movement and saw virtually no change in westbound through traffic volumes between 1986 and 2009. Similar characteristics are noted at several other intersections and indicate that while overall traffic has not significantly increased during the last

couple decades, congestion has noticeably increased. An increased proportion of turning movements relative to through movements, particularly at signalized intersections, can significantly impact the quality of operations even if overall traffic volumes remain relatively constant.

When comparing traffic volume change between the eastern and western ends of the corridor, the east end experienced the most growth over the last 23 years. Moving westward through the study area, the annual growth values generally decrease from

Average Annual Percent Change In Traffic 1986-2009

		1986 Traffic Volumes	2009 Traffic Volumes	Annual Percent Growth 1986- 2009	Percent Change 1986- 2009
Weekday Morning Peak Hour	Route 68 at North Main St. Ext.	1,765	2,132	0.82%	20.7%
	Route 68 at Route 5 Connector	1,490	1,757	0.72%	12.9%
	Route 68 at N. Plains Industrial Rd.	1,715	1,926	0.51%	12.3%
	Route 68 at Route 150	2,120	2,251	0.26%	6.3%
Weekday Afternoon Peak Hour	Route 68 at North Main St. Ext.	2,420	2,649	0.39%	9.5%
	Route 68 at Route 5 Connector	2,100	1,931	-0.36%	-8.0%
	Route 68 at N. Plains Industrial Rd.	2,480	2,145	-0.63%	-13.7%
	Route 68 at Route 150	2,995	2,649	-0.53%	-11.6%

intersection to intersection. This suggests that an increasing amount of motorists exit or turn off the Route 68 as they travel further west into the corridor. This may be an indication of driver frustration where motorists are seeking alternative routes to avoid areas of congestion in the vicinity of Route 150.

**Route 68 at North Main Street Extension
Bird's Eye View Looking North**



Source: Bing Maps, www.bing.com/maps, 2010

2.4 OBSERVED OPERATIONS

Vehicle Queuing

In addition to manually collecting traffic volume data, general observations were made of vehicle queuing along Route 68 during the peak hours of the corridor. The map titled *“Traffic Queues Along Route 68”* summarizes the field observations. Vehicle queuing is especially problematic when a queue stretches past driveways and other nearby intersections, adding to delays and causing safety issues. Queuing inundation along Route 68 is greatest at the intersections of Route 150 at North Plains Industrial Road, and to a lesser extent at Hanover Street.

The intersection of Route 68 at Route 150 routinely experienced queues that were greater than 20 vehicles during peak periods. In many instances, vehicles failed to completely clear out during each signal cycle. Turn lanes sometimes overflowed or were blocked by excessive queuing on through lanes. During the weekday morning peak hour, queuing was observed to be greatest on the eastbound and southbound approaches. The eastbound approach also experienced significant queuing during each study period. However, the westbound approach experienced the most problematic queuing during the weekday

afternoon peak hour. Northbound and southbound queuing was also notable during this period. Instances of queues backed up to adjacent intersections were observed at several times along portions of Route 68. At North Plains Industrial Road during the weekday afternoon peak hour, eastbound backups were observed stretching to Warehouse Point Road and to the Barnes Road Connector in the westbound direction. Motorists on side streets were also affected by eastbound queuing at the intersection with Route 150. Likewise, queuing along the section of Route 68 between Route 150 and Hanover Street affected motorists seeking to turn on to Route 68 from Chapel Street, New Place Street and nearby private driveways.

Route 68 at North Plains Industrial Road – Eastbound Queue Backing Up Towards the Route 15 Overpass



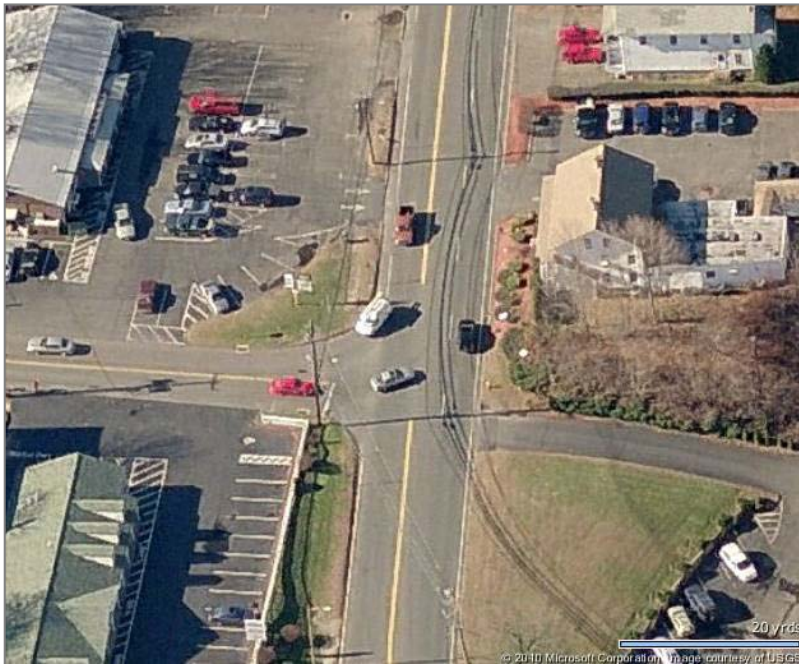
TRAFFIC QUEUES ALONG ROUTE 68



Gap Observations

Observations of gaps in the Route 68 traffic flow were made at the stop sign controlled intersections during the weekday peak hours. The gap time in the traffic flow determines whether the side street motorist will decide to egress or continue to wait for an adequate opening. The *Highway Capacity Manual*, published by the Transportation Research Board, was used as a reference to determine the critical gap or the minimum gap that is

Vehicle Turning Left From Chapel Street to Route 68

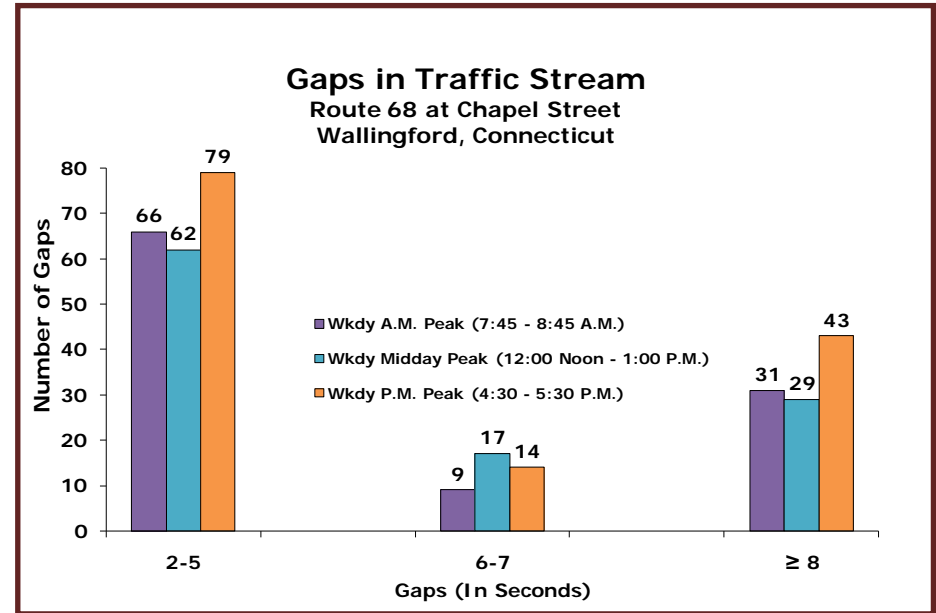
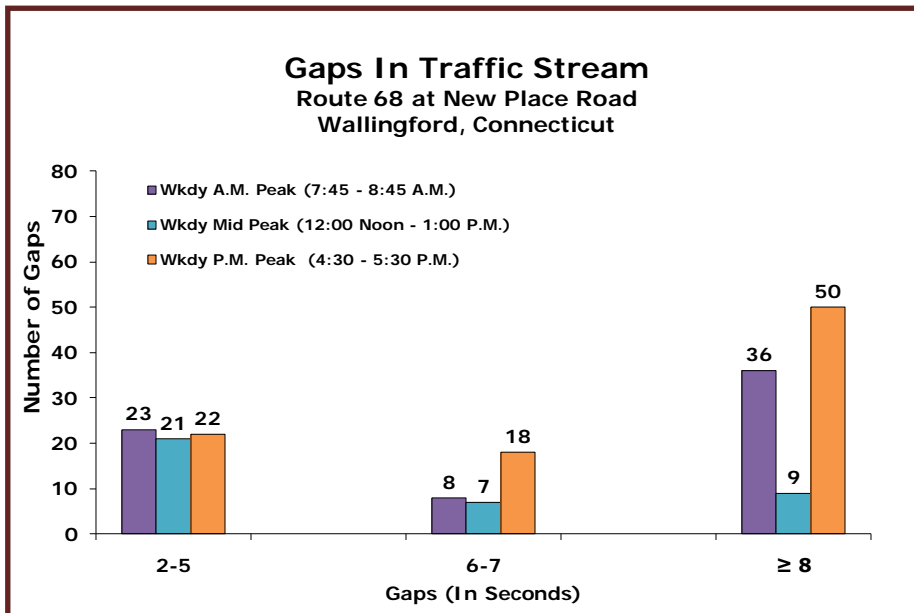
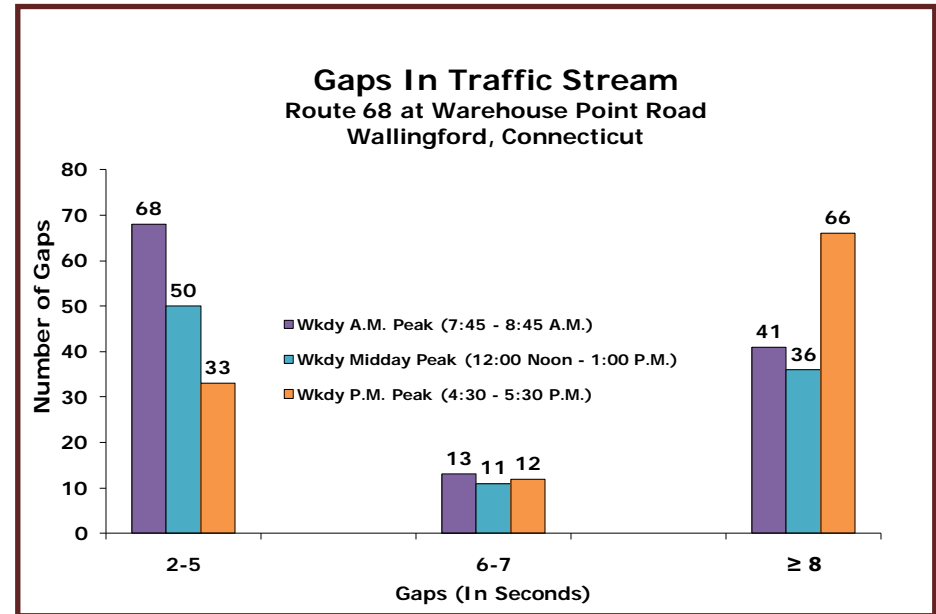


generally acceptable. The critical gap for a right turn from the

side street is just over six seconds. For a left turn from the side street, the critical gap is just over seven seconds.

Gap observations were collected at New Place Street, Chapel Street and Warehouse Point Road. The Figures titled “*Gaps In Traffic Stream*” show the number and length of gaps in which both the eastbound and westbound flows were clear. This data pertains directly to left turns from the side street and is separated into different intervals depending on the number of seconds of the gap. Traffic flow gaps of 2 -5 seconds are typically too short to allow for a left turn from a side street. Gaps of 6-7 seconds just meet the threshold for this movement. Gaps in excess of 8 seconds are more than sufficient to allow for a left turn movement from a side street. Gaps of one second or less are not shown, but indicate that there was either a steady flow of continuous traffic along Route 68 or standstill queuing of Route 68 traffic.

The total number of gaps in the Route 68 traffic at New Place Street is quite less than at the other two side streets observed. This is largely due to traffic queues on Route 68 from the nearby Hanover Street signal which often backs up past New Place Street. The total number of gaps in the Route 68 traffic is comparable between Chapel Street and Warehouse Point Road. However, Route 68 carries more traffic past Warehouse Point Road; therefore, motorists generally have greater difficulty egressing from Warehouse Point Road than from Chapel Street.



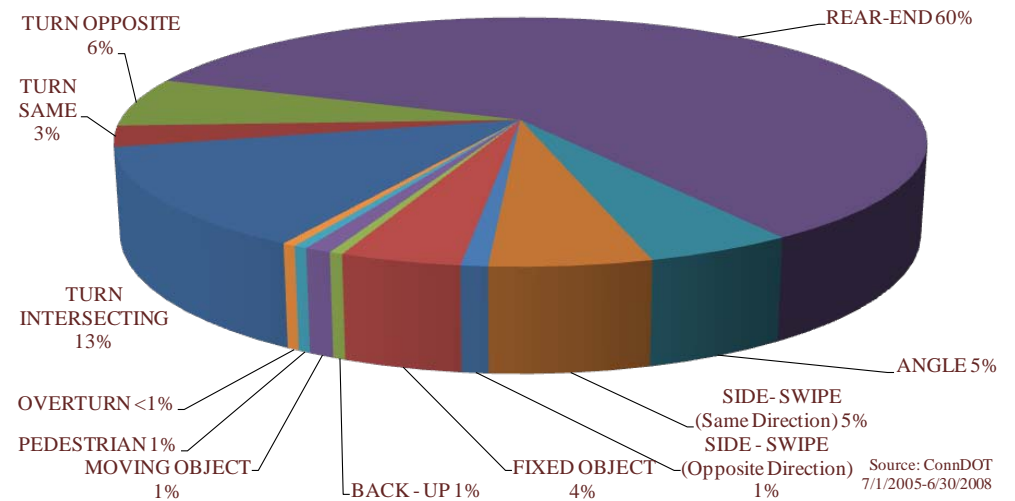
Accidents

Early in the study process, town officials indicated that traffic accidents are a major concern along the corridor. Specifically, the corridor has three of the top 25 high-accident locations town wide. A review of accident data obtained from the Connecticut Department of Transportation (ConnDOT) for the most recent three year period available confirmed this. The Figure titled “Accidents by Collision Type” shows the accident experience.

Over the three year study period there were 220 reported accidents. Of these, 67 resulted in injuries and 152 in property damage only. There was one traffic fatality in the corridor within the study period. On December 26, 2005 a motorist traveling eastbound on Route 68 lost control of the vehicle and struck a tree on the left-hand side of the road approximately 320 feet west of Chapel Street.

Rear-end collisions comprised the majority of reported accidents, accounting for 60% of all collisions. The next most common type of accident reported was turning collisions, which account for 22% of the accidents during the study period. Excessive queuing

Accidents By Collision Type



at signalized intersections can result in a high frequency of rear-end collisions.

The high-accident locations shown on the map titled “High Accident Locations” include: the intersection of Route 68 at Route 150, the intersection of Route 68 at North Plains Industrial Road, the Barnes Road Connector at Route 68 and the intersection of North Main Street Extension at Route 68.

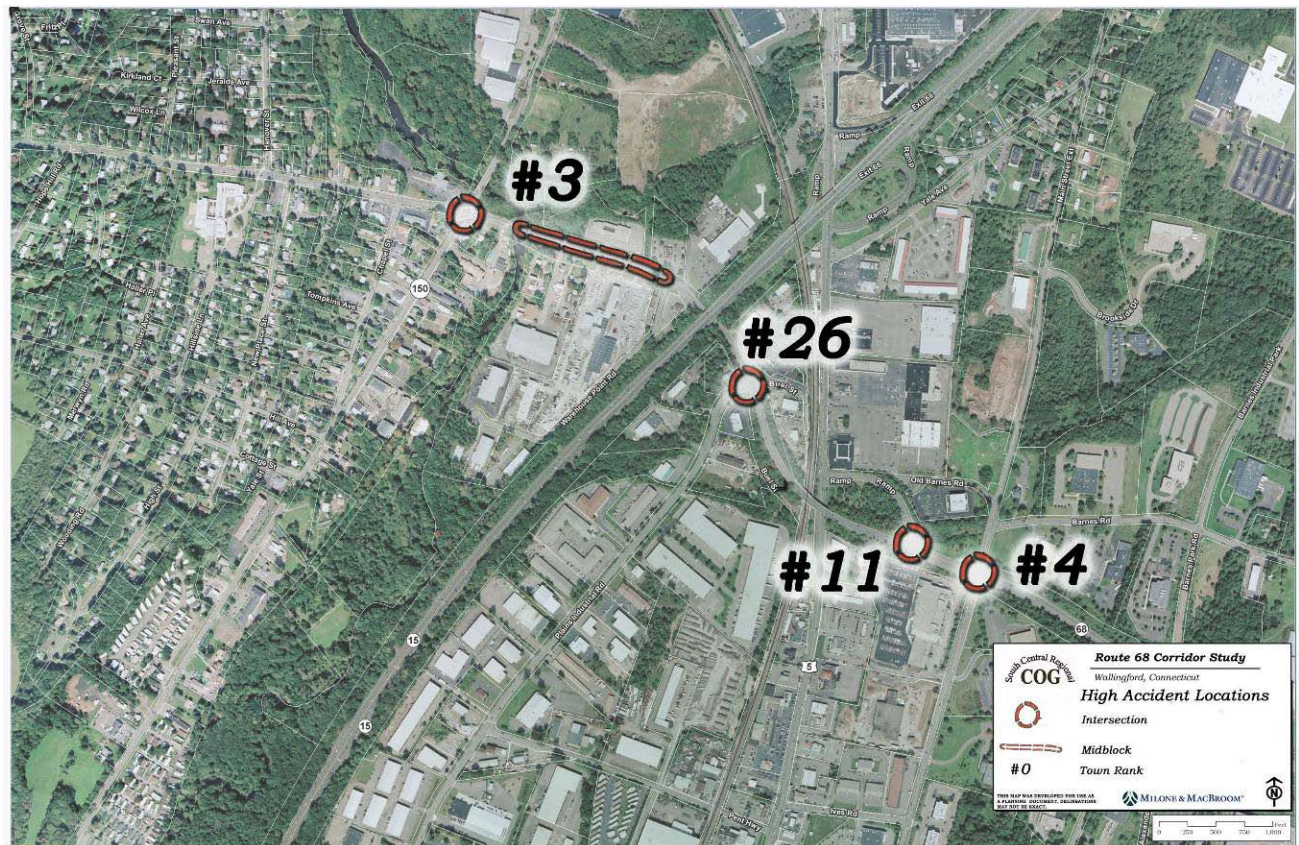
Additionally, there is a high frequency of accidents along Route 68 east of the Route 150 intersection. Although many of the collisions along this section of roadway are listed as occurring well away from the intersection of Route 68 at Route 150, many are rear-end collisions related to the excessive queuing at this location. At this intersection, vehicle queues during the weekday afternoon peak hour can extend well past the Route 150 overpass to the east. The intersections of Route 68 at Chapel Street and Route 68 at Hanover Street had relatively fewer crashes, but these locations are of concern given the presence of the elementary school and pedestrians walking to the nearby businesses.

Access Management

Access management controls the location, spacing, and operation of driveways, median opening, and

street connections to a main roadway. Route 68 contains multiple driveways and side streets between the Route 150 overpass and Hanover Street. Many of the driveways are closely spaced, exacerbating potential conflicts between through-moving vehicles and those attempting to make a turn.

HIGH ACCIDENT LOCATIONS



Vehicle queuing from nearby signals further compromises overall efficiency and safety. As previously mentioned, Route 68 between Route 150 and Warehouse Point Road experiences a

high crash rate that seems to correlate with the high number of curb cuts in this area.

3 YEAR ACCIDENT EXPERIENCE – ROUTE 68 BETWEEN NORTH MAIN STREET EXTENSION AND HANOVER STREET

LOCATION: Route 68	ACCIDENT SEVERITY				TYPE OF COLLISION												
	FATALITY	INJURY	PROPERTY DAMAGE	TOTAL	TURNS			REAR-END	ANGLE	SIDE - SWIPE (Same Direction)	SIDE - SWIPE (Opposite Direction)	FIXED OBJECT	BACK - UP	MOVING OBJECT	PEDESTRIAN	OVERTURN	TOTAL
					INTERSECTING	SAME DIRECTION	OPPOSITE DIRECTION										
At Hanover Street		7	15	22	2	1	5	11	1			1	1				22
Between Hanover Street and New Place Street			2	2				1		1							2
At New Place Street		1	5	6	3	1		1							1		6
Between New Place Street and Chapel Street	1	2	8	11	2	1		3		1		3		1			11
At Chapel Street		6	10	16	4			10	1	1							16
Between Chapel Street and Main Street (Route 150)			3	3	1			1		1							3
At Main Street (Route 150)		8	15	23	1		1	20			1						23
Between Main Street (Route 150) and Warehouse Point Road		10	22	32	3			27		2							32
At Warehouse Point Road		2	4	6				5						1			6
Between Warehouse Point Road and North Plains Industrial		4	5	9		1		5		1	1	1					9
At North Plains Industrial Road/Old Church Street		7	14	21	5			13	1			2					21
Between North Plains Industrial Road/Old Church Street and		2	5	7				5		1		1					7
At Connectors To and From Route 5		6	8	14	4			9				1					14
Between Route 5 Connectors and North Main Street Extension			4	4				2		2							4
At North Main Street Extension		12	32	44	4	2	8	19	8	2						1	44
TOTAL	1	67	152	220	29	6	14	132	11	12	2	9	1	2	1	1	220

Source: ConnDOT from 7/1/2005 to 6/30/2008



2.5 CAPACITY ANALYSIS

Intersections along the study corridor were evaluated by means of capacity analysis techniques through the use of Synchro 7/SimTraffic software. A computer model of the corridor was created to assess traffic flows and to allow for an analysis of different time periods, multiple scenarios and potential future outcomes. The 2009 existing traffic volumes for each time period counted were analyzed as part of this summary report.

Analyses were conducted for the study intersections and the Level of Service (LOS) was determined for each area. LOS is a qualitative measure of the efficiency of operations of intersections in terms of delay and inconvenience to motorists. The following section shows the results of the capacity analysis for the signalized and unsignalized intersections. A description of the various LOS designations, A through F, is given for each figure.

While the results for unsignalized intersections were generated through the use of Synchro 7, the signalized results have been

generated through the use of SimTraffic, a program used to generate simulations of traffic conditions.

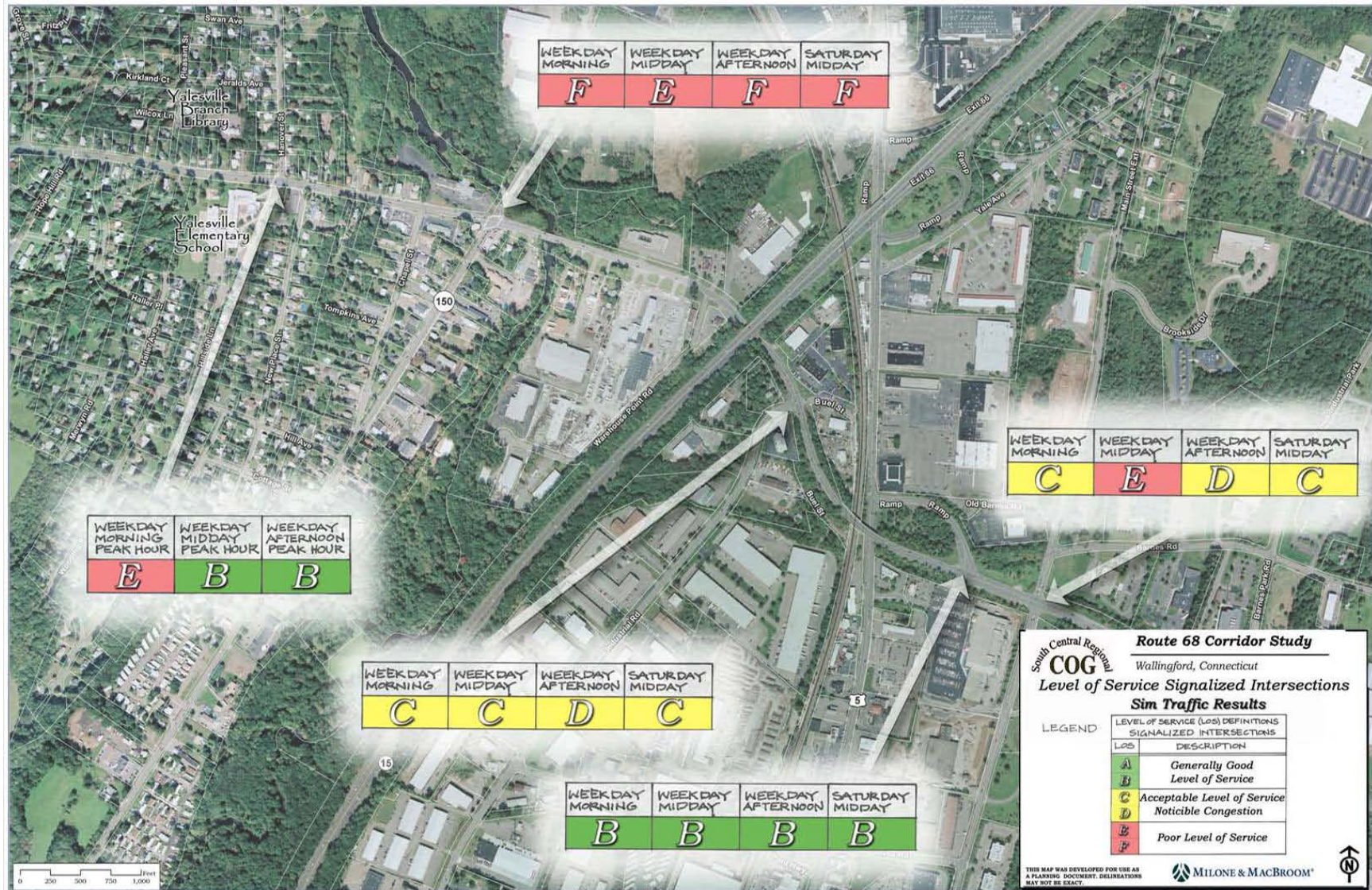
Initially, assessment was performed solely through the use of Synchro 7, one of the most commonly used tools for capacity analysis; however, review of the software's user guide reveals explanation as to why SimTraffic may be a more accurate and useful tool under certain circumstances.

“SimTraffic is especially useful for analyzing complex situations that are not easily modeled macroscopically including:

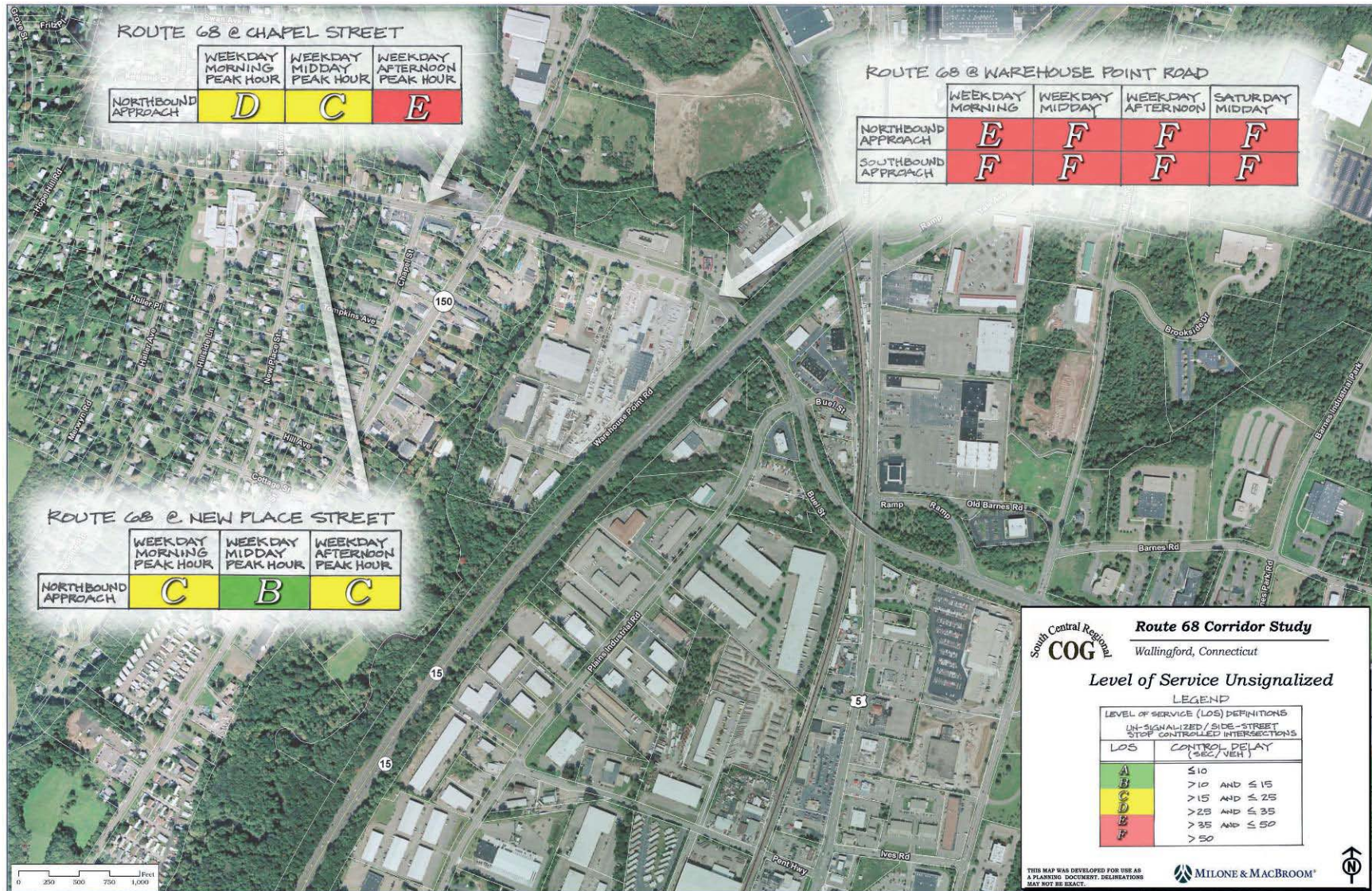
- *Closely spaced intersections with blocking problems*
- *Closely spaced intersections with lane change problems*
- *The affects of signals on nearby unsignalized intersections and driveways*
- *The operation of intersections under heavy congestion.”*

Each of these points pertains to the study corridor to some extent.

LEVEL OF SERVICE RESULTS – EXISTING TRAFFIC VOLUMES AT SIGNALIZED INTERSECTIONS



LEVEL OF SERVICE RESULTS – EXISTING TRAFFIC VOLUMES AT UNSIGNALIZED INTERSECTIONS



SimTraffic results differ from Synchro results in the sense that they can vary slightly each time the analysis is run. The results do not tend to vary considerably, though, and are typically within a small range of one another. While Synchro results are measured in terms aggregate movements through an intersection, a SimTraffic simulation individually tracks each vehicle in the model as it flows through the corridor. The SimTraffic model is comprised of several runs of the simulation that are averaged together. Each separate run has a stochastic component comprised of a random set of characteristics including differing arrays of driver types and behaviors.

Results of the analysis show that overall; Levels of Service are currently poor at the intersection with Route 150 during all study periods, with North Main Street Extension during the weekday midday peak hour and with Hanover Street during the weekday morning peak hour. Side street levels of service at unsignalized study intersections are poor for Chapel Street during the weekday midday peak hour and Warehouse Point Road during all study periods. Several locations are shown to operate at LOS D. This is an acceptable Level of Service characterized by noticeable congestion and just borders on poor operations. The locations

that currently operate at LOS D include the unsignalized northbound approach of Chapel Street at Route 68 during the weekday morning peak hour and the signalized intersections of Route 68 at North Plains Industrial Road and Route 68 at North Main Street Extension during the weekday afternoon peak hour.

The intersection of Route 68 at the Barnes Road Connector operates well, at LOS B, during all of the study periods. This intersection and the adjacent intersection of Route 68 at North Main Street Extension intersection function on a single controller. As a result, the two signals operate in a coordinated fashion where traffic is routinely cleared out between the intersections. Traffic progression is generally good along this section of Route 68, particularly at the Barnes Road Connector.

2.6 PUBLIC OUTREACH

The initial findings of this study were presented at a public meeting on January 21, 2010 at Wallingford Town Hall. After the presentation the floor was opened to members of the public who were encouraged to provide their input on the study including their concerns, experiences and suggested solutions with respect to the corridor. Public comment was focused on traffic congestion and safety issues.

Congestion

There was consensus among the members of the public in attendance that the level of congestion throughout the corridor has continually increased over the last two decades. As a result, this has led to widespread behavioral change among the motorists on Route 68 during peak periods. As motorists become increasingly frustrated, they seek alternative routes in an attempt to bypass the most heavily congested intersections; most notably the intersection of Route 150 at Route 68. The results of the manual turning movement counts support this theory. When compared with turning movement counts from 1986, the present traffic volumes for the weekday afternoon peak hour generally show a greater ratio of turning movements

to through movements. This suggests that motorists may indeed be turning onto and off of Route 68 more frequently in an attempt to avoid excessive delays at key intersections along the corridor.

Members of the public provided several examples of instances where motorists attempt to bypass areas of high congestion. Numerous individuals pointed out that very few people make left-hand turns out of Chapel Street onto Route 68 during peak periods, opting instead to travel south on Chapel to access Route 68 via the Route 150. Motorists going to/from “The Ridges” development routinely cut through the residential neighborhood south of the corridor to avoid the congestion on Route 68. During the weekday afternoon peak period, significant numbers of motorists cut through the southerly portion of Meriden to avoid Route 68.

During the weekday morning peak hour, eastbound queues associated with the Route 150/Route 68 intersection back up past Hope Hill Road, which is well outside of the study area.

Members of the public proposed solutions to improve traffic flow along Route 68 in the study area. A number of people

recommended looking for opportunities to create additional lanes by restriping the existing roadway. More than one person suggested restricting the turning movements of school buses onto Route 68 from Yalesville School opposite Hanover Street. Finally, one member of the public recommended that large employers in the area could stagger shift times to avoid creating sharp peaks in traffic volumes. Similarly, it was recommended that sporting events at nearby athletic fields be scheduled to begin and end at off-peak times to avoid further exacerbating the traffic congestion along the corridor.

The most common comment from the public was the need to coordinate traffic signals along the corridor. This would be an inexpensive and immediate improvement to the corridor that would result in improved traffic operations.

Safety

There were numerous concerns regarding safety at the Barnes Road Connector at Route 68. Presently, there is one receiving lane for vehicles turning onto the Connector from Route 68. At Route 68, there is sufficient pavement width for two vehicles to initially travel side by side, which allows vehicles turning left and

right onto the connector to share the lane. However, the lane quickly narrows creating the potential for side swipe collisions. Additionally, community members pointed out that the high volume of right turning vehicles from Route 68 make left-hand turns onto the connector difficult. To address both these issues, participants at the meeting recommended reducing the width of the raised island at that location in order to allow for two striped receiving lanes.

The sudden change from two westbound through lanes at the Route 68/North Main Street Extension intersection to one through lane and an exclusive right turn lane at the intersection of Route 68 at the Barnes Road Connector was another concern. Specifically, the aforementioned lane configuration is confusing and counter-intuitive, resulting in numerous sudden lane changes as motorists intending to travel straight through the intersection find themselves in the exclusive right turn lane.

On Route 68 just west of the Route 15 overpass, the road narrows near the driveway to Gigantes Deli and an unsafe situation occurs as there is limited room for motorists to bypass vehicles turning into the driveway to the deli.

2.7 SUMMARY OF EXISTING CONDITIONS

In summary, Route 68 contains the following problems:

- Constrained roadway capacity.
- Lack of pedestrian and bicycle connectivity.
- Increased congestion resulting from normal annual growth of traffic that is greatly exacerbated by an increased proportion of turning movements relative to through movements.
- Inconsistent signal timing and lack of coordination across the study area.
- Significant vehicle queuing causing turn lane overflow and blockage, and also blockage of non-signalized side streets and business driveways.
- Areas with high accident rates.
- Access management issues pertaining to sections with multiple closely spaced driveways.
- Poor Levels of Service at several signalized and unsignalized intersections.

3. Data Analysis

The Existing Conditions Report focused on the street network, land use impacts, traffic volumes, accidents, observed operations and other operating characteristics of the Route 68 Corridor Study Area. An extensive amount of data was collected and analyzed for the report.

The Land Use Impacts section of the Existing Conditions Report included information on Existing Land Use for the Town of Wallingford and the Route 68 Corridor. It also included information on Residential and Non-Residential Build-out or development potential for the Route 68 Corridor.

As part of the Build-Out analysis, vacant and agricultural parcels within the Town were identified. From this inventory, net developable areas were determined by removing any areas that contain development constraints such as wetlands, floodplains, and steep slopes in excess of 15%. This process yielded an approximation of potential residential dwelling units and buildable square footage for non-residential lands by zone. The

results of the build-out analysis were an integral for traffic forecasting for the 3, 10, and 20-year horizons.

3.1 TRAFFIC FORECASTING

In the existing conditions section of the report it was noted that the overall traffic volumes in corridor during the weekday afternoon peak hour have remained relatively constant over the last 20 years. It was determined that this phenomenon was likely due to the fact that during the most congested periods, the corridor is operating at or near capacity. The congestion and associated delays act to prevent or dissuade additional motorists from utilizing the corridor during those peak periods.

This theory was supported reinforced during the initial public input meeting where numerous residents in the area indicated that a significant number of individuals either avoid traveling on Route 68 during peak periods or utilize alternate routes in the area to avoid or partially bypass the corridor. This suggests a degree of latent travel demand within the Route 68 corridor. That is, there is some level of traffic growth that would be occurring if additional roadway capacity existed. Therefore, if some or all of the capacity improvements are made to the

corridor, congestion level will initially decrease and the abovementioned latent travel demand will result in some degree of traffic growth in the corridor.

Because the current capacity limitations in the corridor prevent the traffic volumes on Route 68 from growing during the most congested periods, the consultant team did not look at the effect of the future traffic volumes on the roadway assuming the existing roadway geometry and signal timings. Accordingly, the project team analyzed the projected future traffic volumes with respect to the recommended improvements associated with each horizon year. For example, the short-term (3-year) traffic volume projections were analyzed with respect to the short-term (3 years or less) improvements. Ultimately, a series of potential future traffic scenarios involving projected changes to both traffic volume, as well as roadway capacity, was developed. For the three-year traffic volume projections, the existing traffic volumes per increased one percent per year for three years. This growth rate was obtained from ConnDOT. For the 10 and 20 year traffic volume projections, the existing traffic volumes were increased one percent per year for three years as described above, then increase one half of one percent for each year

thereafter. This growth rate was developed based on an analysis of employment and population projections obtained from state and municipal data sources.

3.2 CAPACITY ANALYSIS

The 3, 10, and 20-year traffic volume projections were utilized and the set of short, mid, and long-term improvements were analyzed for future traffic conditions in the Route 68 corridor. The purpose of this analysis was to evaluate the impact of the proposed capacity improvements on traffic operations within the study area. The potential improvements were evaluated with respect to the traffic volumes anticipated at the year around which the improvements would be expected to be completed should the town or state decide to implement them as recommended. Therefore, the short-term improvements were evaluated with respect to the three-year traffic volume projections, the mid-term improvements with respect to the 10-year traffic volume projections, and the long-term improvements with respect the 20-year traffic volume projections. The scenarios analyzed are described below.

Existing Conditions – The existing traffic volumes were analyzed with respect to current roadway conditions including roadway geometry and signal timings.

Timing Changes Only – The 3-year (2011) traffic volumes were analyzed assuming that the traffic signals within the corridor were coordinated and the signal timings were optimized to minimize overall delays within the corridor.

Short-Term Improvements – The 3-year (2011) traffic volumes were analyzed assuming the potential short-term improvements, including the signal improvements described above, were implemented. For this scenario it was also assumed that the proposed state project at the intersection of Route 68 at Route 150 was completed

Mid-Term Improvements – The 10-year (2019) traffic volumes were analyzed with respect to the recommended mid-term improvements. It was assumed that under this scenario the recommended short-term improvements had also been implemented.

Long-Term Improvements – The 20-year traffic volumes were analyzed assuming that Route 68 had been widened to provide four travel lanes throughout the length of the corridor with additional turn lanes at key intersections.

A summary table listing each of the recommended improvements along with the cost and anticipated timeline for implementation for each is provided at the end of this section. The projected traffic volumes for each scenario can be found at the end of this report.

4. Recommendations

The recommended improvements focused on eliminating bottlenecks within the corridor, improving safety and improving conditions for pedestrians in the western portion of the corridor. The emphasis was on low-cost, achievable, high-impact improvements. The Route 68 Corridor study area was divided into five geographic areas as shown on the “Concept Index Map”. These five areas are as follows:

- Hanover Street to Route 150
- Route 68 at Route 150
- Route 68 between Route 150 and Warehouse Point Road
- Route 68 at North Plains Industrial Road
- Route 68 at the Barnes Road Connector

4.1 CRITERIA FOR SELECTING INITIATIVES AND IMPROVEMENTS

The criteria for selecting the proposed initiatives and improvements were:

- Efficacy: Does it address the problem?
- Public Input: What are the public’s priorities?
- Feasibility: Is it achievable from a financial, physical and political/jurisdictional perspective?

Input from town and SCRCOG staff and the public generated a number of ideas for initiatives and improvements to the Route 68 Corridor study area. These ideas were explored and evaluated, and based upon the criteria for selecting improvements, some of them were eliminated.

There were three main types of improvements proposed.

These included:

- Operational and congestion management.
- Safety improvement.
- Pedestrian and bicycle improvements.

There were three time frames developed for the improvements:

- Short-Term: less than 3 years
- Mid-term: 3-10 year
- Long-Term: more than 10 years

There were three cost levels developed for the recommended improvements:

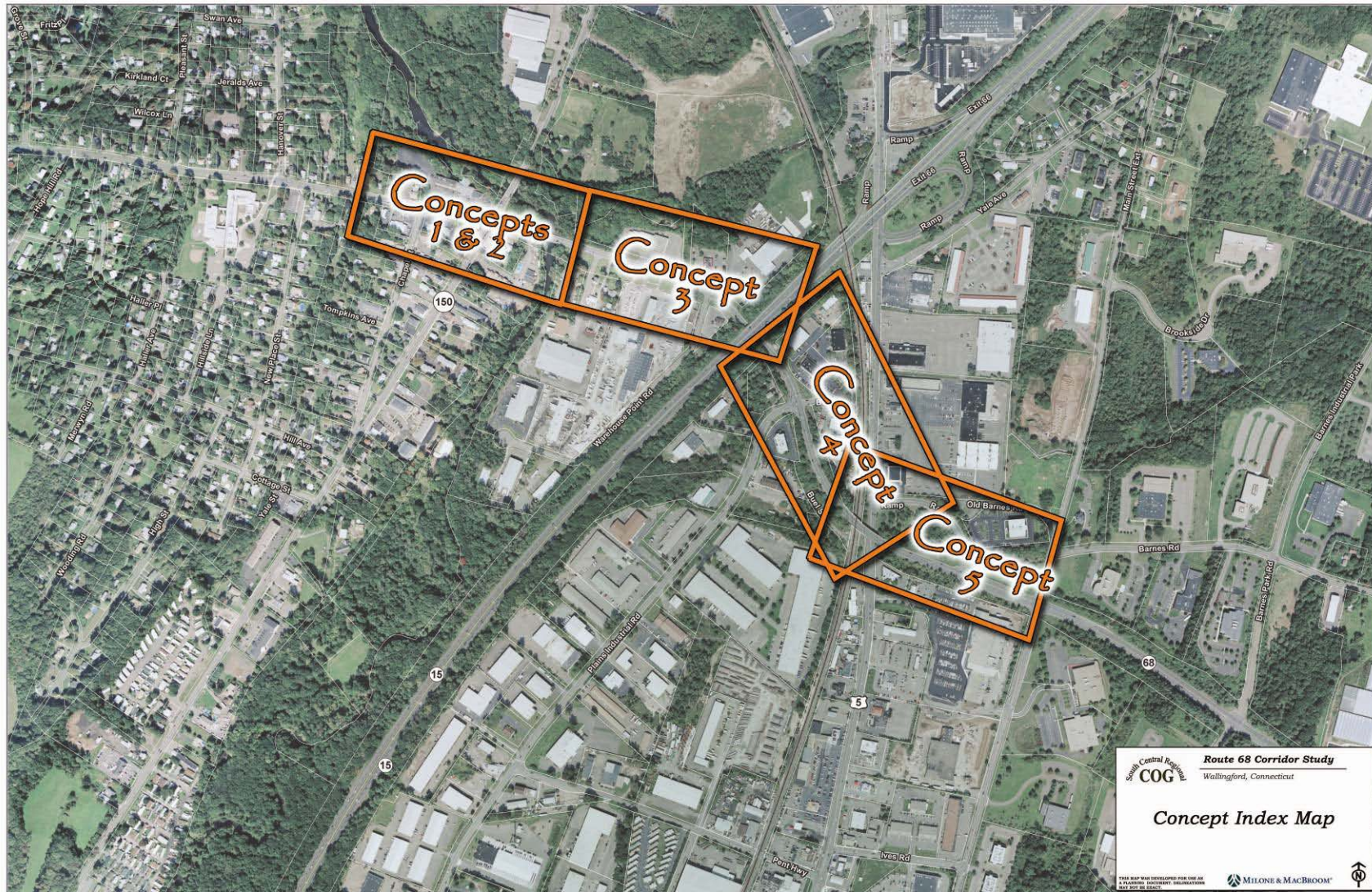
- Low-cost (less than \$100,000)
- Medium-cost (\$100,000-\$500,000)
- High cost (more than \$500,000)

The recommended improvements were sent to the Connecticut Department of Transportation for comment and review. ConnDOT officials noted that the recommended improvements described in this study have been developed to a conceptual level. If ConnDOT decides to move forward with any of the proposed improvements, it will be necessary to bring the concepts to the final design phase. This process would require the completion of a number of additional tasks.

These could include: an examination of potential impacts to side street traffic, a detailed analysis of traffic operations and accident history, and for larger-scale improvements, an environmental review and benefit-cost analysis may be necessary. It may also be necessary to obtain more comprehensive survey to determine impacts to adjacent properties. The plans shown are conceptual. To address issues such as intersection and stopping sight distance, taper length, merging distance and other geometric issues, the concepts would need to be fine-tuned and further developed to ensure that any proposed improvement complies with ConnDOT guidelines.

The recommended improvements were developed working with Town and SCRCOG staff throughout the project, so there were no major comments on the final set of recommendations.

CONCEPT INDEX MAP



The major issues were analyzed at each area; solutions and recommendations were developed to address these issues. Ultimately a set of concept plans was developed based upon those recommendations. A brief statement on the benefits and impacts of the proposed recommendations and associated concept plan was prepared for each area.

4.2 CORRIDOR-WIDE ISSUES AND CONSTRAINTS

There are a number of issues and constraints at the corridor-wide level that negatively influence traffic flow and operations along Route 68. In addition to the physical constraints of the roadway system such as the bottlenecks at bridges and underpasses, there is an issue of existing uncoordinated traffic control signal systems. Currently, there are multiple signal systems within this corridor and non-uniformity in terms of the signal cycle lengths as measured in seconds.

Signal System

The Route 68 intersection with Hanover Street, at the western end of the study area, operates on a coordinated system with the Route 68/Hope Hill Road intersection further west. The Route 68 intersection with Route 150 to the east is not currently

included in this coordinated signal system. It instead functions independently of the two aforementioned signals. The intersection also operates on a significantly longer cycle length than the Hanover Street and Hope Hill Road signals.

The next traffic signal to the east within the Route 68 study area is almost one-half mile away at North Plains Industrial Road. This signal operates independently; not coordinated with any other traffic control signals; it also has a different cycle length than the Route 150 and Hanover Street signals.

Farther east, the two intersections of Route 68 at the Barnes Road Connector and North Main Street Extension operate separately and have yet another cycle length that differs from the other signals within the study area.

Multiple measures to improve traffic flows along the Route 68 study area through modifications to traffic control signals are recommended. Short-term, low to medium-cost improvements include establishing a uniform cycle length across the multiple signals, coordinating the signals into two systems and optimizing each signal's timings, phasings, and offsets. Review of signal

operations during peak traffic periods, through the use of Synrcho 7 and SimTraffic, indicate that the study intersections will function optimally under cycle lengths between about 80 to 100 seconds. Due to the half mile distance along Route 68 between Route 150 and North Plains Industrial Road, these two intersections are found to not receive any substantial benefit from coordination. The two signal coordination systems that are therefore recommended are:

- Route 68 at Route 150 should be included in the Route 68 at Hanover Street/Hope Street system.
- Route 68 at North Plains Industrial Road should be included in the Route 68 at Barnes Road Connector/North Main Street Extension system.

Anticipated benefits of these short-term/low-cost traffic control signal improvements include:

- Reduction in overall east-west travel times along Route 68 throughout the study area (10% - 20%).
- Reduction in queuing, particularly at Route 150.

The coordination and retiming of signals is an involved process that can significantly impact traffic operations. Therefore if the

Town of Wallingford or the Connecticut Department of Transportation decides to move forward with this recommended improvement, a more detailed analysis should be undertaken with careful attention to the potential impacts of the improvement on side-street operations should be undertaken at that time.

Roadway Widening

A long-term, high-cost measure to improve traffic flow would be to provide four travel lanes throughout the entire corridor. The construction of a four-lane roadway throughout the corridor would significantly reduce east-west travel time, reduce queuing and remove the numerous identified physical constraints. As previously mentioned, removing the major constraints to widening within the corridor would be a very expensive, costing between 43 and 55 million dollars. Given the high cost and current and projected constraints to state and local budgets, the abovementioned improvement is likely not feasible in the foreseeable future barring any major changes to state and federal revenue streams for transportation funds. Additionally, the widening of the

corridor to provide two travel lanes in each direction could have negative impacts on a number of property owners along Route 68, which would have to be addressed prior to moving forward.

Location Specific Improvements

The major issues were analyzed at each area; solutions determined and recommendations generated to address these issues, and ultimately develop concept plans from the recommendations. A brief statement on the issues, benefits and impacts of the proposed recommendations and associated concept plans were prepared for each area.



Route 68 Between Hanover Street and Route 150

4.3 ROUTE 68 BETWEEN HANOVER STREET AND ROUTE 150

Issues: The stretch of Route 68 from Hanover Street to Route 150 serves the Yalesville neighborhood and the associated elementary school, along with the Yalesville Library. Additionally, there are a number of small retail establishments along this portion of the Route 68 Corridor. A detailed field reconnaissance of the area revealed significant pedestrian activity in the area. In particular, well-worn foot paths alongside the roadway suggest that there is demand for a completed sidewalk network in the area. Overall, the pedestrian network shows a lack of connectivity. The pedestrian accommodations at the intersection of Route 68 at Hanover Street and the driveway to Yalesville

Elementary school require upgrades to the pedestrian ramps, pushbuttons, and crosswalks.

Closer to Route 150, the intersection of Route 68 at Chapel Street is marked by long delays on the side-street approach and a significant number of collisions (16) during the latest three-year period available. Based on conversations with ConnDOT, it was agreed that both congestion as well as the number of collisions at Chapel Street could and should be reduced through the elimination of some movements at that location. Chapel Street is also a potential on-street section of the Quinnipiac Linear Trail currently under study.

To address the issues outlined above, we have recommended a series of improvements, shown as concepts 1-A, 1-B, and 1-C.

Concept 1-A – Concept 1-A consists of a series of recommended improvements to the pedestrian network along Route 68 to Route 150. In the short term, it is recommended that the sidewalk network be replaced/refurbished to eliminate gaps in the system from Hanover Street to Chapel Street. Ultimately, it is recommended that the sidewalk along Route 68 be extended

to Route 150. It should be noted that this portion of the proposed sidewalk will require re-grading on the south side of Route 68 on private property and is therefore a mid-term improvement. In addition to completing the sidewalk network, it is recommended that the pedestrian facilities at the intersection of Route 68 at Hanover Street and the driveway to Yalesville Elementary School be upgraded to comply with current ADA standards, with pedestrian pushbutton pedestals and striped crosswalks installed on all approaches. Street trees could be planted along this section of roadway to enhance the streetscape and solidifying the gateway to Yalesville.

Concept 1-A: Anticipated Benefits and Impacts:

- Improved safety for parents and children walking to Yalesville Elementary School.
- Improved pedestrian access for Yalesville residents to area businesses and the library.
- Aesthetic enhancements to the neighborhood.
- Improved pedestrian comfort and safety.
- **Short-term, mid-cost improvement**

Concept 1-B – Concept 1-B entails the installation of a raised island on Chapel Street to eliminate northbound left-hand turns onto Route 68. This improvement would require motorists' currently making left-hand turns onto Route 68 from Chapel Street to seek alternative routes. It is anticipated that most of these motorists would now make the left-hand turn onto Route 68 from Route 150. This would increase the number of northbound left-turn movements onto Route 68 from 150. For this reason, this improvement should be implemented only in combination with improvements to the northbound approach of Route 68 at Route 150.

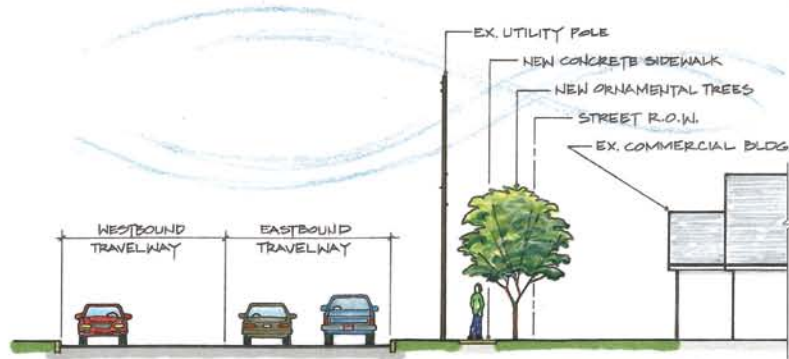
Concept 1-C – Concept 1-C recommends converting Chapel Street to a one-way street serving only southbound automobile traffic. This would eliminate all turning movements onto Route 68 at this location, reducing the number of conflict points. Additionally, the excess roadway width resulting from the one-way conversion could be used for an on-street section of the Quinnipiac Linear Trail. It should be noted that this improvement would have a significant impact on the travel patterns of residents and regular visitors on Chapel Street. Additionally, this

improvement may require the closure of one or more commercial driveways on Chapel Street to prevent cut-through traffic via private property. Therefore, such an improvement would only move forward after meeting with residents and other stakeholders to obtain the buy-in of those most affected.

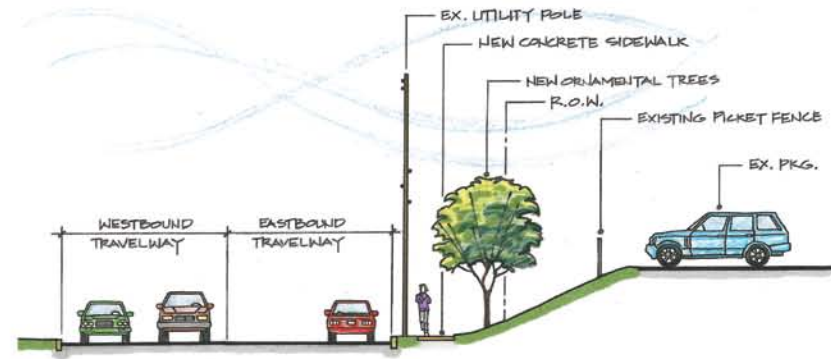
The improvements outlined in Concepts 1-A, 1-B and Concept 1-C are shown on the following pages.

CONCEPT 1-A

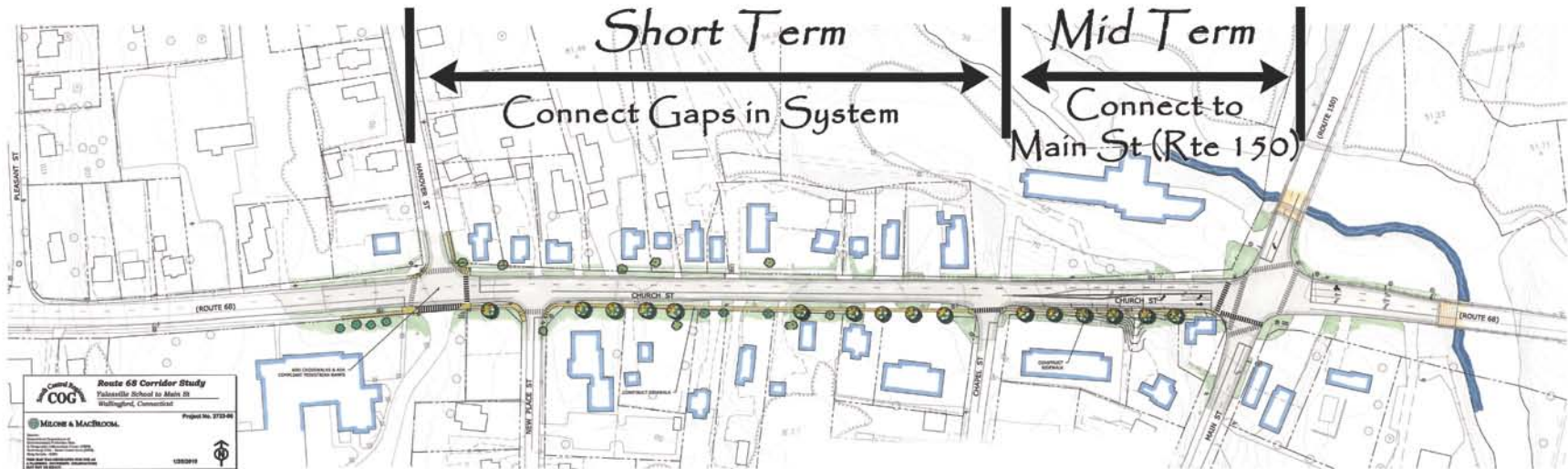
Pedestrian Improvement Plan - Yalesville School to Main St.



SECTION AT BUILDINGS
NOT TO SCALE



SECTION AT SLOPE
NOT TO SCALE



CONCEPT 1-B



CONCEPT 1-C

Concept 1-C

- Convert Chapel Street to one-way southbound
- Install striping and signage for two-way bike path



Concept 1-B and 1-C: Anticipated Benefits and Impacts:

- Limiting or restricting turns onto Route 68 from Chapel Street reduces the likelihood of collisions at that location.
- When combined with capacity improvements to Route 68 at Route 150, delays for northbound vehicles turning onto Route 68 will be reduced.
- Converting Chapel Street to one-way southbound will create space on Chapel Street to accommodate the Quinnipiac River Linear Trail.

Concept 1-B is a short-term, low-cost improvement and Concept 1-C is a medium-cost, mid-term improvement.

4.4 ROUTE 68 AT ROUTE 150

As discussed in the existing conditions section of this report, the intersection of Route 150 at Route 68 is heavily congested during peak periods. Due to the volume of traffic on all approaches and its restricted geometry, the intersection exhibits poor operating characteristics. Each approach at the intersection experiences vehicle queuing that is quite notable; for example, the westbound approach queues routinely extending over 500 feet.

This intersection also experiences one of the highest accident rates within the Town of Wallingford. According to the latest three years of data obtained from ConnDOT, most accidents at the intersection are rear-end collisions. This type of accident typically corresponds with vehicle queuing issues.

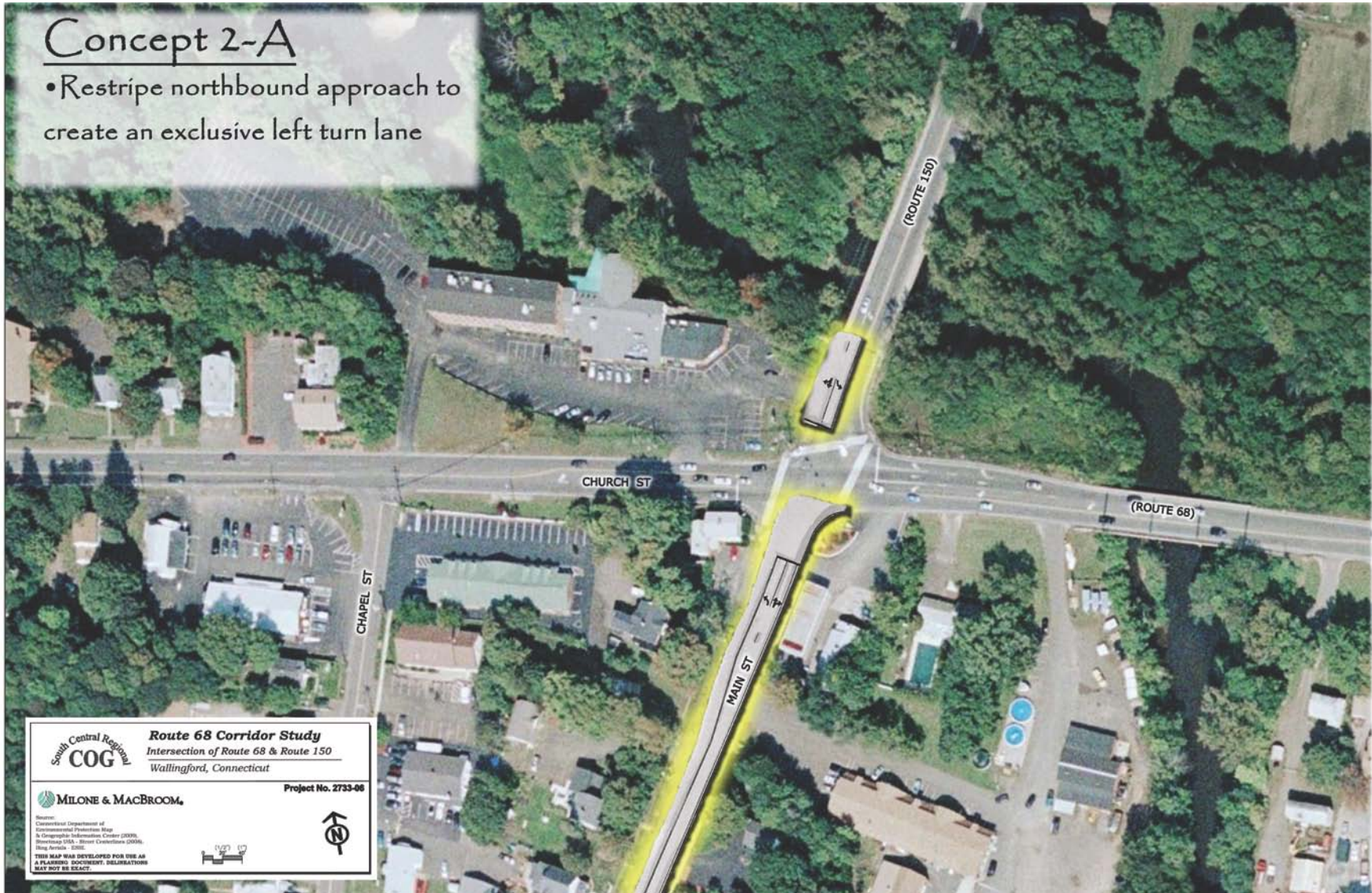


Three conceptual improvements are recommended for this roadway area, shown in Concepts 2-A, 2-B and 2-C. Each one of these proposed improvements compliments State Project 148-202, the scheduled widening in front of the Westbrook Lobster Restaurant and associated east-west restriping to primarily provide better westbound traffic flow.

Concept 2-A – Concept 2-A removes northbound left-turning vehicles from northbound through traffic by restriping of the northbound Route 150 approach at Route 68 to create an exclusive left turn lane and shared through/right turn lane. This is different than the current northbound approach with a shared left turn/through lane and an exclusive right turn lane. Concept 2-A will also allow for the signal's operations to be improved through modifications to the north-south phasing.

This can be simply accomplished with signage and pavement markings; however, if paired with the aforementioned State Project 148-202, some minor widening on the east side of the Route 150 northbound approach may be required.

CONCEPT 2-A



Anticipated Benefits and Impacts – Concept 2-A

- Reduces blockage of northbound through traffic from left turning vehicles.
- Improved safety by eliminating “avoidance maneuver” where northbound through traffic would swerve around vehicles waiting to turn left.
- Benefits traffic flows, primarily during weekday afternoon.
- Benefit during the morning is marginal due to heavy northbound right turn traffic.
- **Short-term, low-cost improvement.**

Concept 2-B – Concept 2-B shows a widening of the northbound Route 150 approach at Route 68 to create a three lane approach with exclusive left, through and right turn lanes. Intersection operations will be improved dramatically. This improvement will likely require property acquisition and potential environmental remediation, as the land is part of a site that formerly housed a gas station.

CONCEPT 2-B

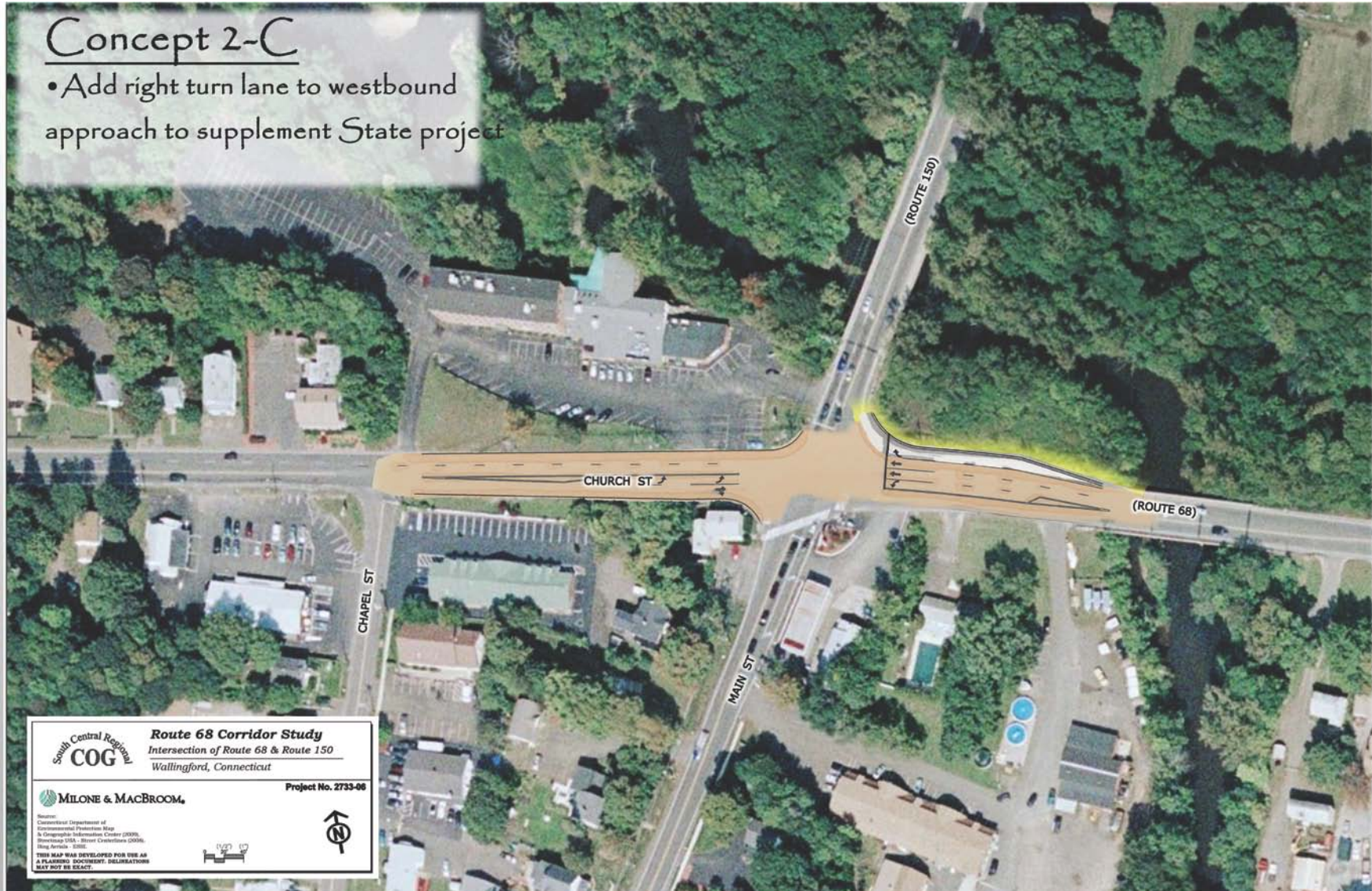


Anticipated Benefits and Impacts – Concept 2-B

- Benefits of exclusive left-turn lane discussed in Concept 2-A while maintaining the existing exclusive right turn lane.
- Reduced Average Intersection Delay (30% - 40%).
- Reduced Queuing (primarily northbound).
- **Mid-term, mid-cost improvement.**

Concept 2-C - Concept 2-C shows a widening of the east leg of the Route 68 at Route 150 intersection to allow for the addition of an exclusive westbound right turn lane. This is in addition to the improvements scheduled to take place under State Project 148-202, and will result in an exclusive left turn lane, two through lanes and an exclusive right turn lane. This improvement would only be beneficial to operations if the westbound left turn movement continues to operate on protected/permitted phasing. In some cases, particularly, where 85th percentile speeds exceed 40 miles per hour, DOT may prohibit permitted left turns in situations where the left turn opposes three lanes of traffic

CONCEPT 2-C



Anticipated Benefits and Impacts – Concept 2-C

- Further reduces westbound queues from state project;
- Allows higher volume of westbound right turns on red movements;
- **Mid-Term/medium-cost improvement;**

State Project 148-202

The Connecticut Department of Transportation (ConnDOT) is currently in the design phase of an improvement to the intersection of Route 68 at Route 150. State Project 148-202 will widen Route 68 to provide two westbound travel lanes through

the intersection. Specifically, the westbound approach of Route 68 at Route 150 will be restriped to provide a left turn lane, a through lane and a shared through/right turn lane. The west leg of the intersection will be widened to provide two receiving lanes, eliminating the bottleneck that currently exists. The project is being funded using state money that has been set aside for safety improvements. Construction is scheduled to commence in 2011. A conceptual drawing of this low-cost, high-impact state project is shown on the map titled “*State Project 148-202*”.

Birdseye View of Route 68 at Route 150

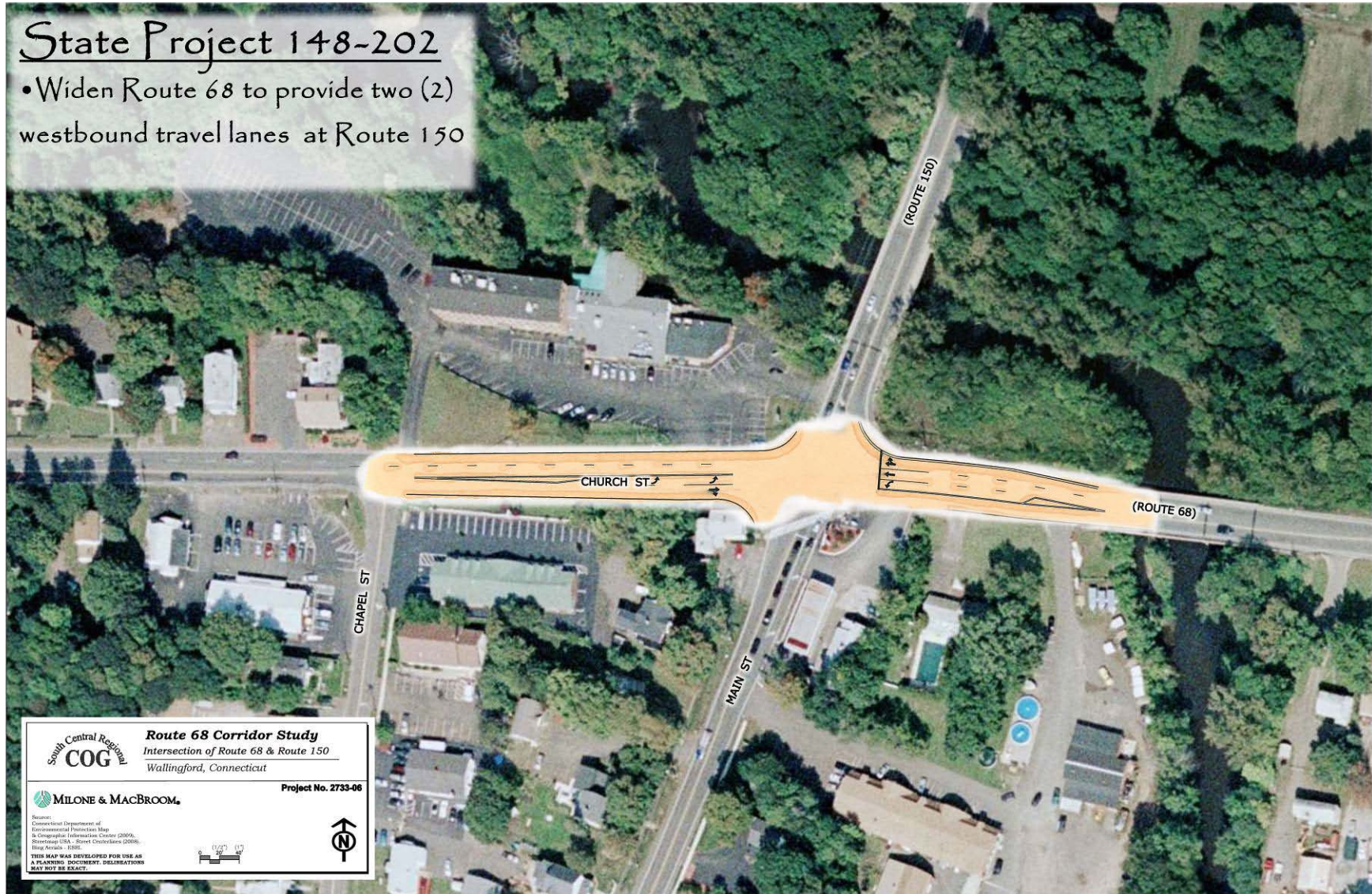


Source: Bing Maps, www.bing.com/maps, 2010

STATE PROJECT 148-202

State Project 148-202

- Widen Route 68 to provide two (2) westbound travel lanes at Route 150



State Project 148-202 at the intersection of Route 68 and Route 150 will benefit traffic flow and operations by:

- Significantly reducing westbound vehicle queuing and delays.
- Improving corridor travel time for westbound motorists (the heavy afternoon commuter flow).
- Improving safety as a result of queuing reductions.

Our proposed improvements for the intersection of Route 68 at Route 150 assume completion of the state project.

4.5 ROUTE 68 BETWEEN ROUTE 150 AND WAREHOUSE POINT ROAD

The stretch of Route 68 between Route 150 and the Wilbur Cross Parkway overpass has a number of issues that affect travel flows and safety. This area contains multiple closely spaced driveways and curb cuts, and has historically experienced a high rate of rear-end vehicle collisions. As mentioned earlier, this section of Route 68 contains a single travel lane in each direction with striped shoulders that generally provide sufficient width for bypass of vehicles that have stopped to turn left into side driveways. At the eastern end of this stretch of Route 68,

approaching the Wilbur Cross Parkway overpass, the roadway shoulder decreases in width limiting the extent for vehicle bypass for the westbound travel direction near the deli and Warehouse Point Road. Similarly, at the western end of this section, the shoulder width decreases over the Quinnipiac River Bridge approaching Route 150. Delays result between these two points when a motorist stopped to turn left does not pull close enough to the centerline to provide the sufficient width for bypass.



Looking east on Route 68 toward Warehouse Point Road



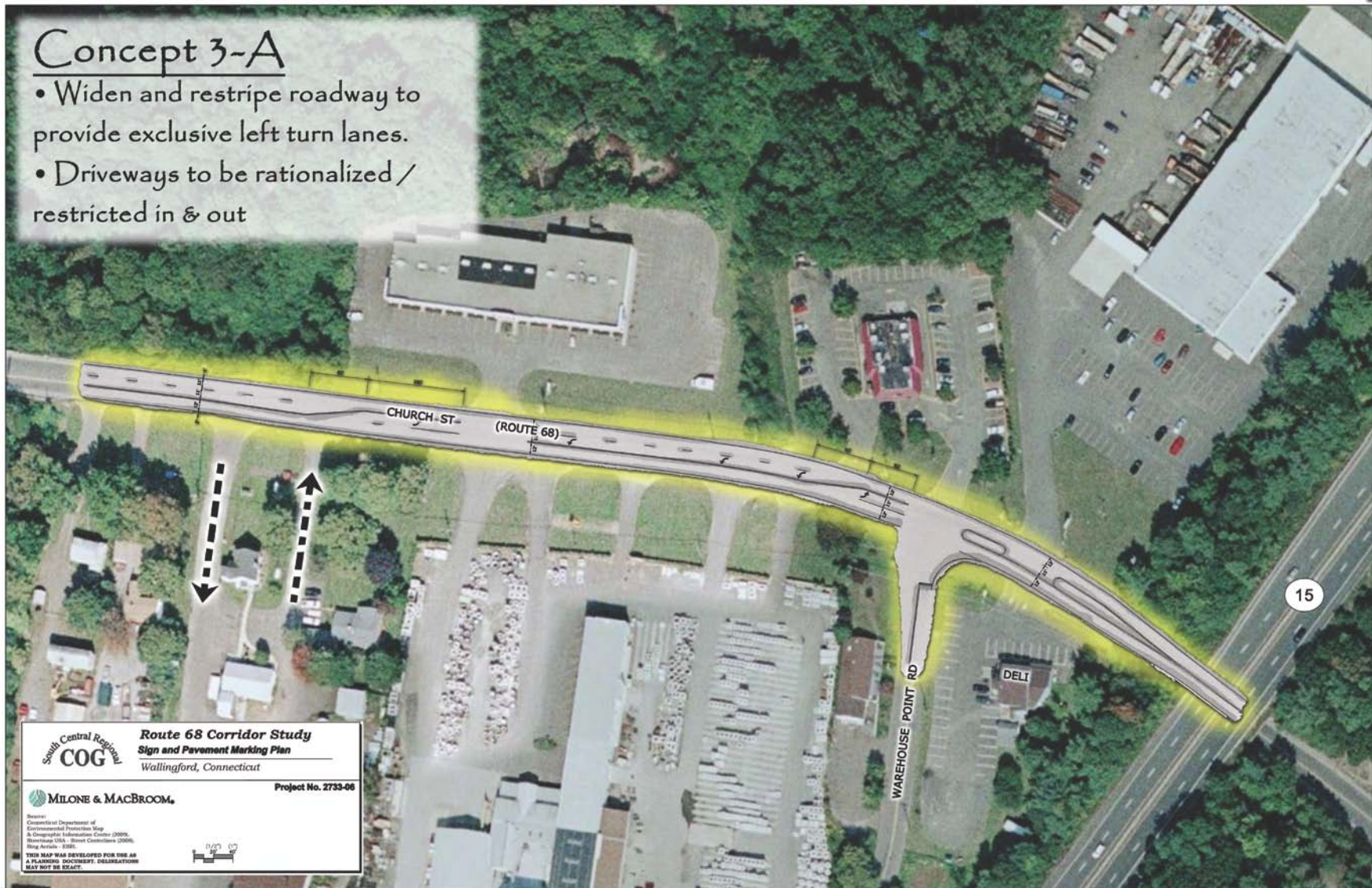
Benefits and Impacts: The better organization of the roadway space will improve flow and reduce driver confusion. This improved organization will reduce the rear-end collision accident rate and reduce overall delays for motorists traveling on Route 68. **These are short-term, low-cost, high-impact improvements**

The conceptual improvement recommended for this section of Route 68, shown in Concept 3-A, is to restripe the roadway and slightly widen as necessary to provide exclusive left turn lanes. This will better organize the roadway space and aid overall travel flows, creating less opportunity for confusion on the part of turning versus non-turning motorists. Overall lane use will be better defined in terms of separating out left turning vehicles from through traffic along this portion of Route 68. Some rationalization of driveways (in vs. out) will be required.

CONCEPT 3-A

Concept 3-A

- Widen and restripe roadway to provide exclusive left turn lanes.
- Driveways to be rationalized / restricted in & out



South Central Regional
COG

Route 68 Corridor Study
Sign and Pavement Marking Plan
Wallingford, Connecticut

MILONE & MACBROOM

Project No. 2733-06

Sources:
Connecticut Department of
Environmental Protection Map
& Geographic Information Center (2006).
Beverlymap USA - Street Coordinates (2006).
Map Avenue, LLC.

THIS MAP WAS DEVELOPED FOR ONE AS
A PLANNING DOCUMENT. DIMENSIONS
MAY NOT BE EXACT.

4.6 ROUTE 68 AT NORTH PLAINS INDUSTRIAL ROAD

At the intersection of Route 68 at North Plains Industrial Road, motorists traveling on Route 68 experience excessive queuing and associated delays during peak periods. During the peak periods it was observed that vehicle queues would often block turn lanes. This exacerbates the excessive vehicles queues, as vehicles intending to enter the turn lanes are instead forced to remain the through lanes until queued vehicles begin to clear. Furthermore, in the case of the exclusive left turn lane on the Route 68 westbound approach, it was observed that vehicles would often block the turn lane and few motorists were able to enter the turn lane and make the turn during the exclusive left turn phase. In other words, the excessive vehicle queues at this location effectively reduce the capacity of the intersection at precisely those times at which it is most need.

In addition the excessive vehicle queues, the turn lanes at the Route 68 approaches to the intersection are not well-identified to roadways users unfamiliar with the corridor. Specifically, motorists on the Route 68 westbound approach intending to travel straight through the intersection may inadvertently find



themselves in the exclusive left turn lane, as the lane shift at this location is not clearly delineated. A similar situation exists on the Route 68 eastbound approach. To illustrate with an example, at the Route 68 eastbound approach, during non peak free flow conditions, motorists following the double yellow centerline intending to continue through along Route 68 may find themselves entering the left turn lane instead. This can be minimized by better delineating the lane shifts and turn lane additions, improving safety.

Three conceptual improvements are recommended for this intersection of Route 68 with North Plains Industrial Road, shown in Concepts 4-A, 4-B and 4-C. Concept 4-A is a restriping of the south-eastbound approach to delineate the turn lanes begin and separate from the through travel lane. Concept 4-B illustrates a restriping of the north-westbound approach to extend the left turn lane. This will reduce occurrences where motorists intending to enter the exclusive turn lane become blocked by queues that develop along the shared through/right turn lane. Concept 4-C shows a widening of the south-eastbound approach in order to extend the right turn lane. This will produce a similar result to the previous concept.

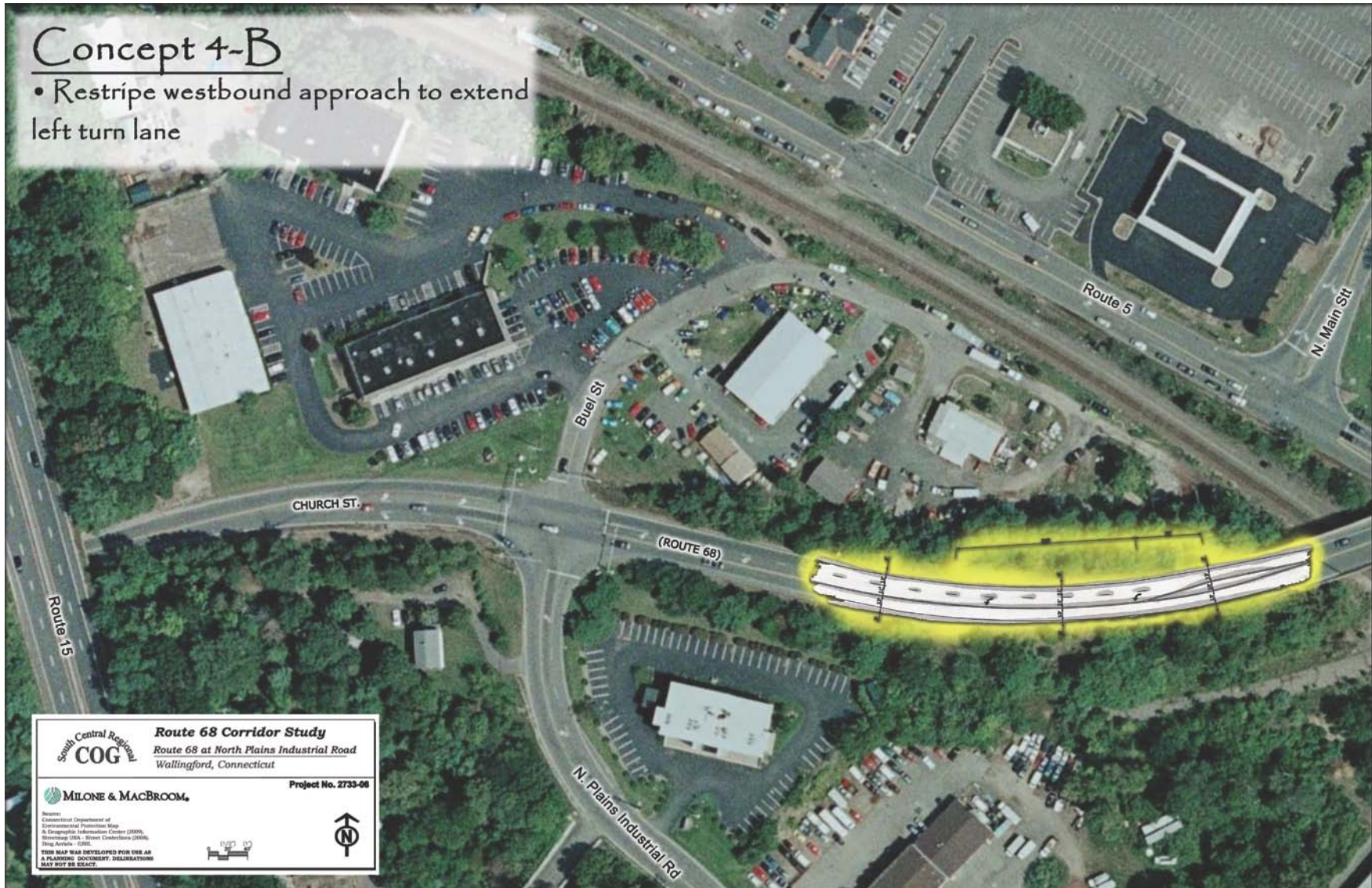
Anticipated Benefits and Impacts:

- More intuitive lane shifts reduce driver confusion and improve safety.
- Reduction in turn lane blockages.
- Reduction in delays and queuing.
- **Short-term/Low-cost improvements (restriping under Concepts 4-A and 4-B).**
- **Mid-term/low-cost improvement (widening and restriping under Concept 4-C).**

CONCEPT 4-A



CONCEPT 4-B



CONCEPT 4-C





Source: Bing Maps, www.bing.com/maps, 2010

4.7 ROUTE 68 AT BARNES ROAD CONNECTOR

The Barnes Road Connector is an important link between Route 68 and US Route 5. It carries a large amount of traffic between these two important state routes. During the analysis of existing conditions, a number of safety issues were identified at this location. Similar to other locations along Route 68 in the study area, the eastbound approach to the Barnes Road Connector lacks sufficient delineation of lane shifts. Motorists may unclear as to when the exclusive eastbound left turn lane becomes a separate and distant lane from the through movement lane.

Drivers unfamiliar with the area are susceptible to following the double yellow centerline intending to continue through along Route 68 and drifting into the left turn lane. The single through lane also widens to two through lanes near this point, adding to potential confusion on the part of motorists who do not travel the corridor regularly.

During the initial public input meeting, numerous residents identified the confluence of left and right turning vehicles from Route 68. That is, the Barnes Road Connector receives eastbound left turning vehicles and westbound right turning vehicles from

Route 68 and the receiving lane is wide enough to accept two vehicles side by side. However, the lane decreases in width quickly. Two side by side vehicles must quickly merge. This occurs when left turning vehicles are given the green arrow to proceed and right turning motorists proceed at the same time under a “right-on-red condition”.

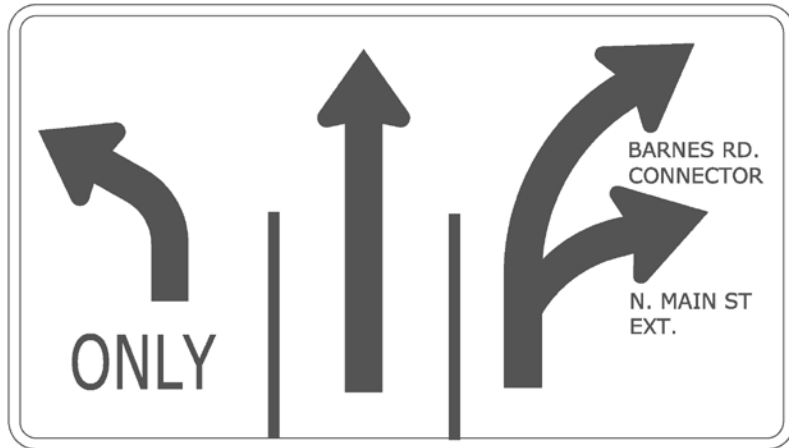
On the westbound approach of the intersection, motorists approach from the North Main Street Extension intersection to the east in the outer westbound through lane intending to continue straight along Route 68 find that the lane they are in becomes a right turn only lane at the connector. This right-turn-only lane is not well marked ahead of time. Realizing late that they are “trapped”, these motorists either accept the right turn onto the Barnes Road Connector or attempt to switch lanes at the last second to continue through.

Motorists in the westbound left turn lane experience an issue at the US Route 5 end of the Barnes Road Connector where it becomes blocked during peak periods by vehicle queuing in the right turn lane. Similar to the queuing situation along Route 68 at the North Plains Industrial Road mentioned earlier, when a

queue of significant length develops within the connector right turn lane at US Route 5, the left turn lane gets cut-off. Vehicles intending then to enter the left turn lane cannot and end up further extending the overall queue.

To address the aforementioned traffic safety issues along this section of Route 68, five conceptual improvements are recommended for the area, shown in Concepts 5-A through 5-E. With each concept a recommendation is included to install advance warning signs and new pavement markings ahead of the westbound Route 68 approach to the Barnes Road Connector to signify the lane change where the outer lane becomes a right turn only lane. This includes installing signage which would read “Right Lane Must Turn Right Ahead”, as well as improved lane use and destination signage for the westbound approach of the intersection of Route 68 at North Main Street Extension, which is shown in the Figure “Recommend Signage East of N. Main Street Ext”.

Recommended Signage East of N. Main Street Ext.



Concept 5-A shows a restriping of the Route 68 eastbound approach at the Barnes Road Connector to extend the left turn lane and delineate the lane shift.

Anticipated Benefits and Impacts – Concept 5-A:

- More intuitive lane shift reduces driver confusion and improves safety;
- Increase storage length within left turn lane;
- **Short-term/Low-cost improvement.**

Concepts 5-B and 5-C are similar in that they show a raised island to separate right and left turns initially entering the Barnes Road Connector from Route 68. Along with this, more length is provided thereafter to better merge two vehicles making these turns. The existing raised island separating the southbound Barnes Road Connector approach from vehicles entering the connector is also removed. The difference between these two concepts is that 5-B shows the intersection realigned and squared up, while 5-C maintains the current alignment.

Anticipated Benefits and Impacts – Concept 5-B and 5-C

- Improved safety
- Raised island separates left and right turns onto the connector, reducing potential for side-swipe collisions;
- Longer merge area on connector further reduces potential for vehicle accidents;
- **Mid-term/High-cost improvement (Concept 5-B);**
- **Short-term/Medium-cost improvement (Concept 5-C).**

Concept 5-D shows an extension of the left turn lane on the Barnes Road Connector at US Route 5. This is so that fewer

vehicles turning left would be blocked from entering the left turn lane. Modification to the raised island on the eastern leg of this intersection would be required, but no widening of the roadway would be expected.

Anticipated Benefits and Impacts – Concept 5-D

- **Reduction in left turn lane blockage;**
- **Mid-Term/Medium-cost improvement.**

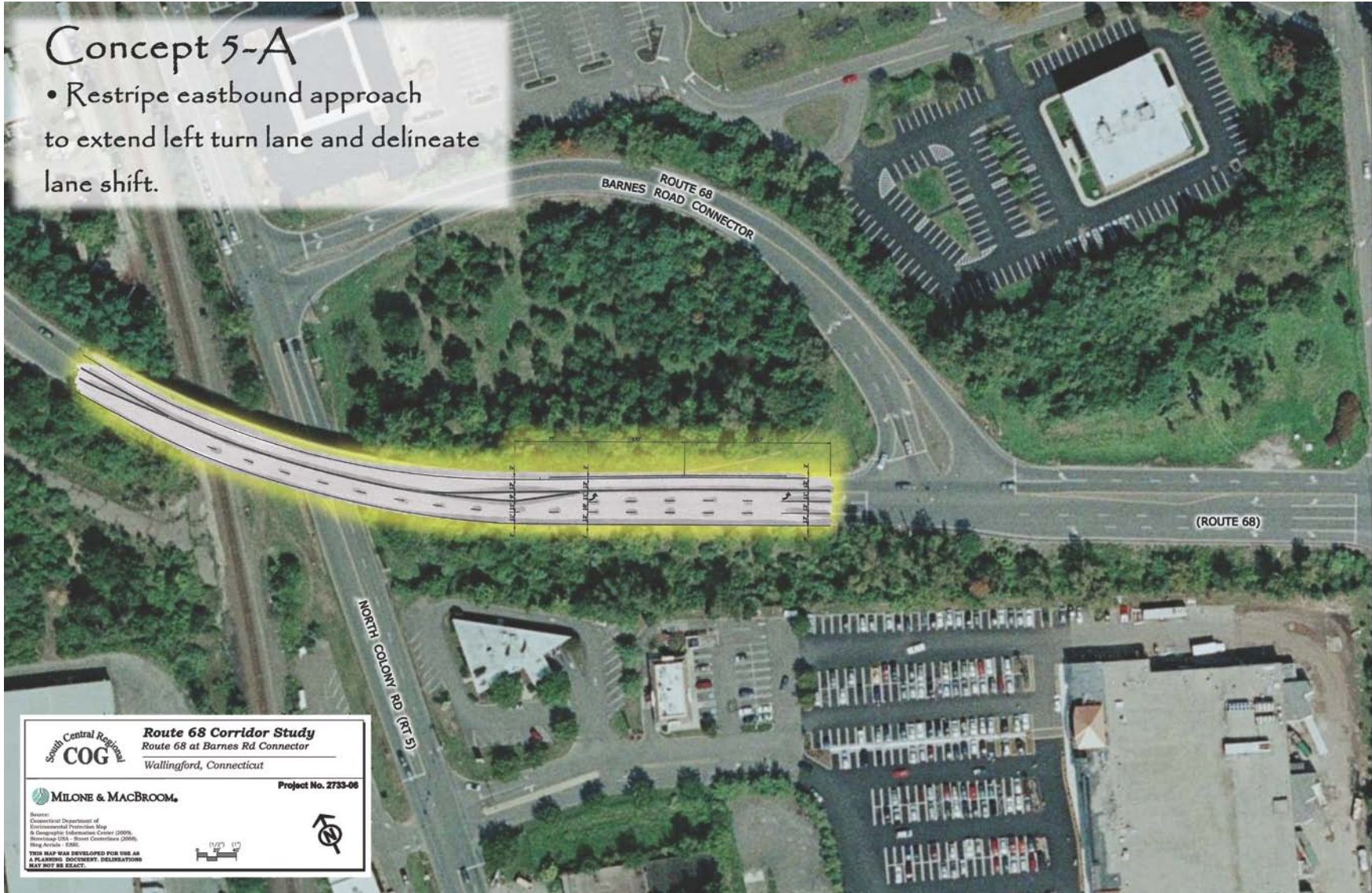
Concept 5-E shows a widening of the Barnes Road Connector to provide two lanes throughout for motorists traveling from Route 68 to Route 5. The connector approach to Route 68 is also realigned/squared up and the existing raised island at this location is removed.

Anticipated Benefits and Impacts – Concept 5-E

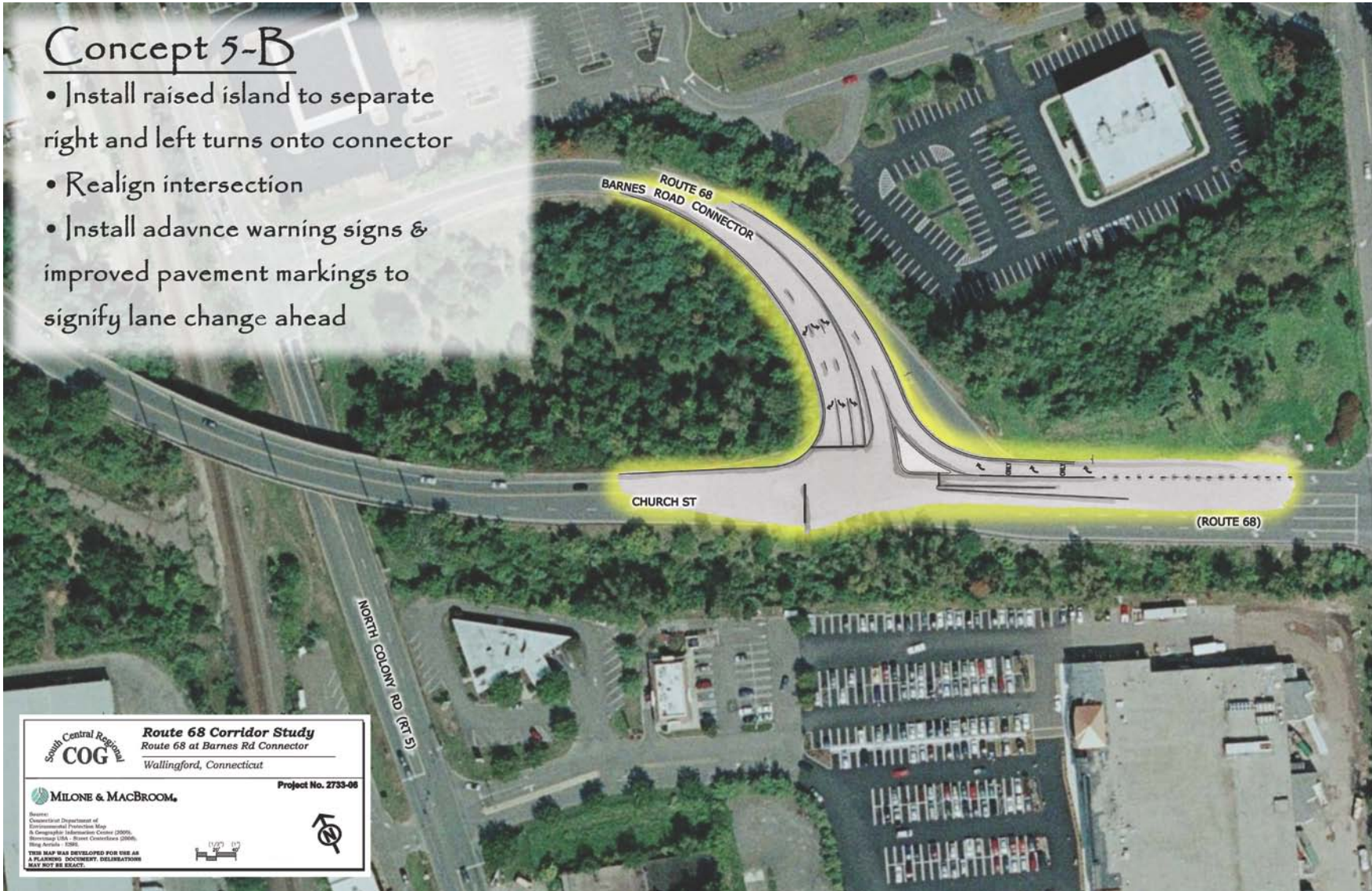
- Elimination of turn lane overflows and blockages at the connector approach to US Route 5.
- Reduction in delays and queuing;
- **Long-term/High-cost improvement.**

A CD containing the technical appendix, including drawings of the existing roadway conditions and the recommended improvements, can be found at the end of this report. The appendix also contains a bicycle and pedestrian analysis by Nelson\Nygaard and the capacity analysis worksheets for the future traffic volume scenarios.

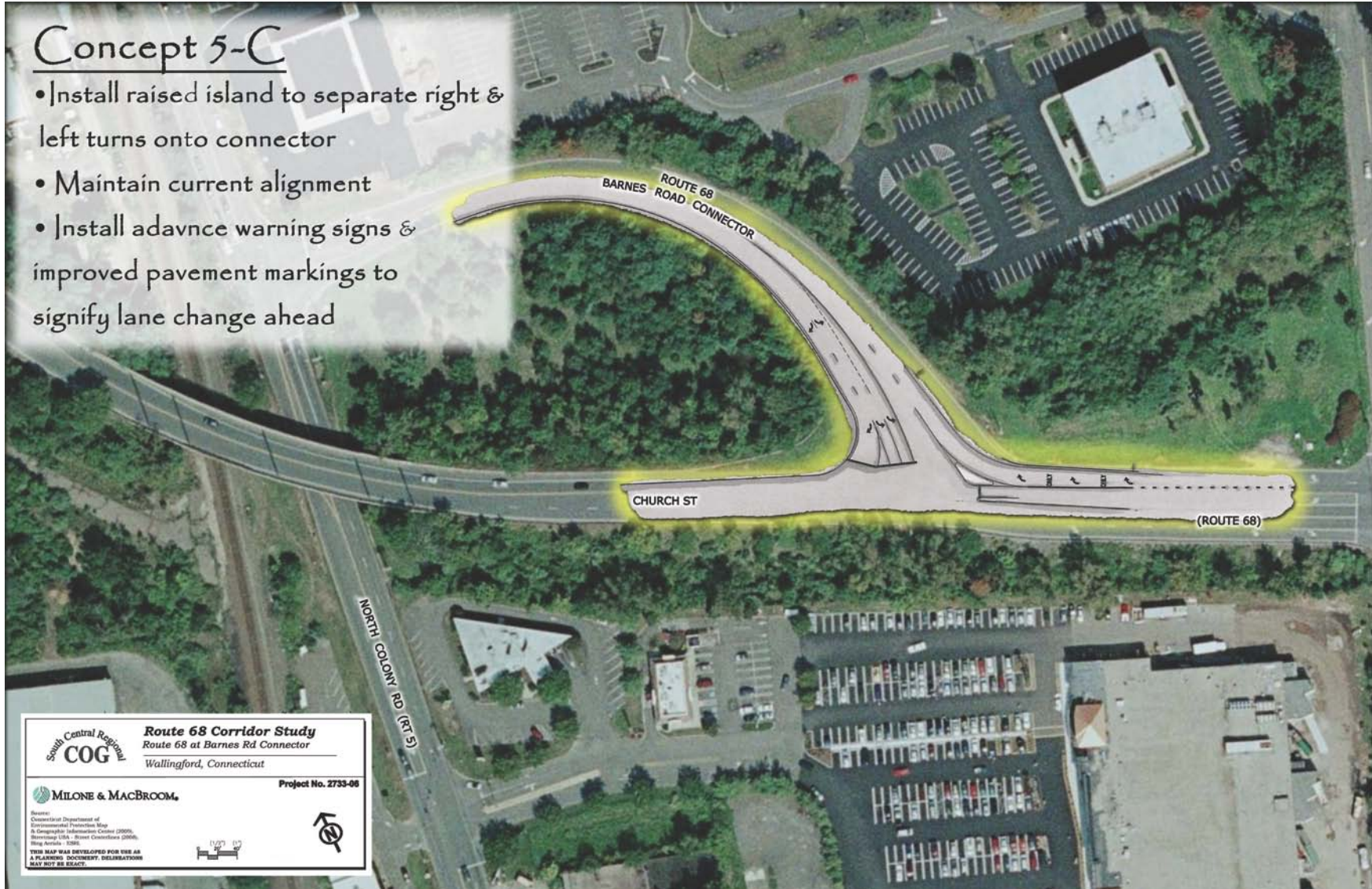
CONCEPT 5-A



CONCEPT 5-B



CONCEPT 5-C



Concept 5-C

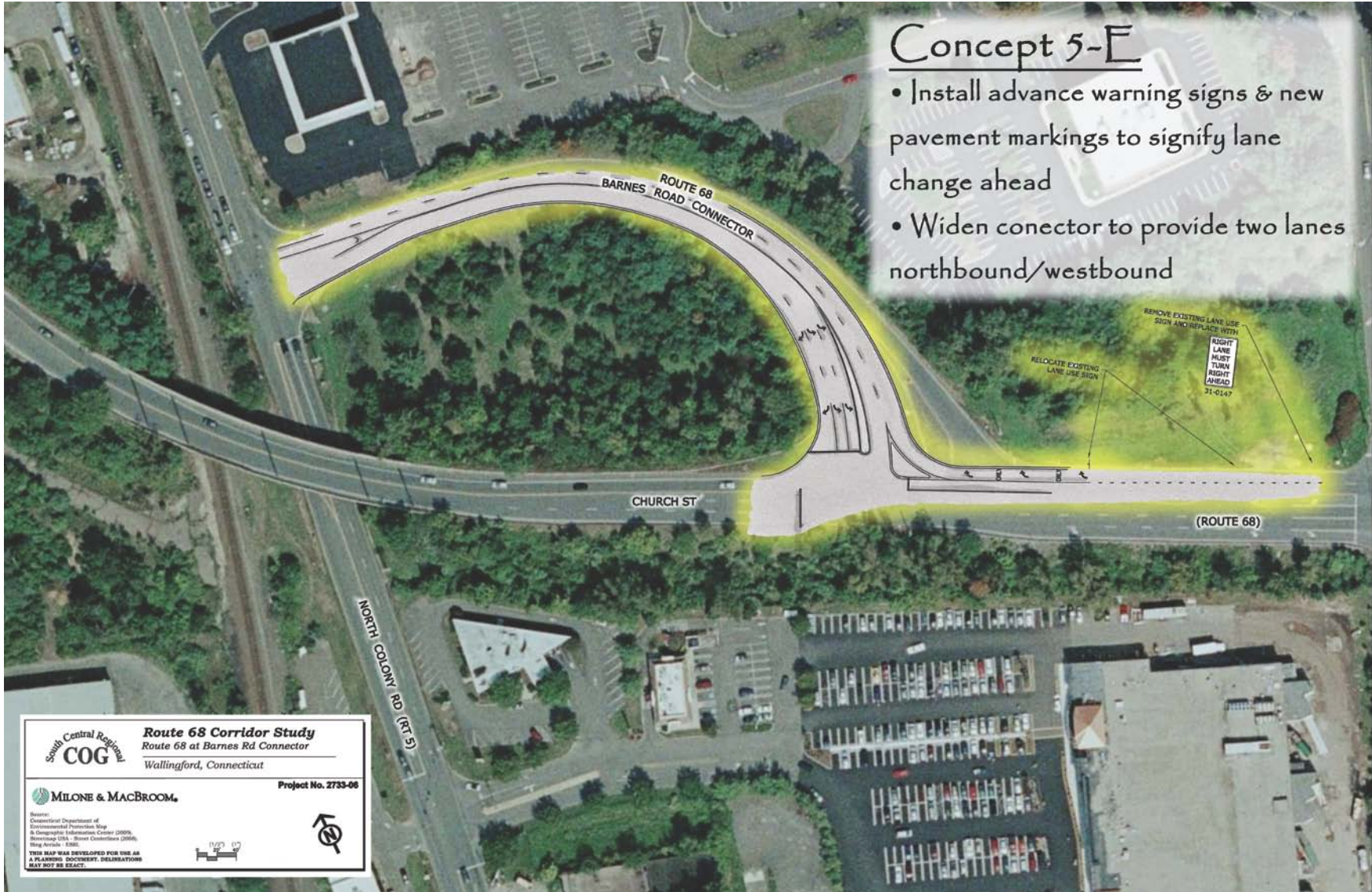
- Install raised island to separate right & left turns onto connector
- Maintain current alignment
- Install advance warning signs & improved pavement markings to signify lane change ahead

	Route 68 Corridor Study Route 68 at Barnes Rd Connector Wallingford, Connecticut	Project No. 2733-06
		Source: Connecticut Department of Environmental Protection Map & Geographic Information Center (2005), Benchmark USA - Benchmark Contours (2006), Bing Aerials © 2006.
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CONCEPT 5-D



CONCEPT 5-E



4.8 ADDITIONAL IMPROVEMENTS & INITIATIVES EXPLORED

The following additional improvements or initiatives were explored and eventually eliminated after failing to meet the criteria established in Section 4.1.

- Bypass lane east of Warehouse Point Road
- Additional east-west corridor
- Convert Route 68 at Route 150 to a grade-separated intersection
- Stagger shifts at area employers
- Route buses from Yalesville School to/from the rear access
- Schedule sporting events at nearby athletics fields to off-peak hours
- Jug handle at Route 68 at Route 150
- Channelized WB right turn lane at Route 68 at Route 150
- Traffic signal at Chapel Street at Route 68
- Two-way left turn lane b/w Rte 150 and Warehouse Point Road
- Traffic signal at Warehouse Point Road

5. Summary

The Route 68 Corridor is widely perceived as having numerous traffic issues. The total amount of traffic through the corridor has not significantly changed over the last two decades but congestion has become worse. The goal of the Route 68 Corridor study was establish a baseline of existing conditions and to focus on traffic operations and safety along with strategies to reduce congestion, minimize delays and to enhance safety for all roadway users. The selected recommended improvements aim to achieve this goal through a series of improvements that range from near-term, low cost to long-term, high cost improvements. These improvements listed in the following table will ultimately reduce congestion, minimize delays and enhance safety for all roadway users within the corridor.

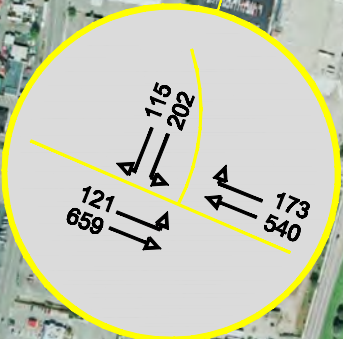
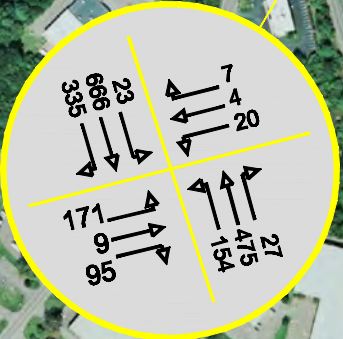
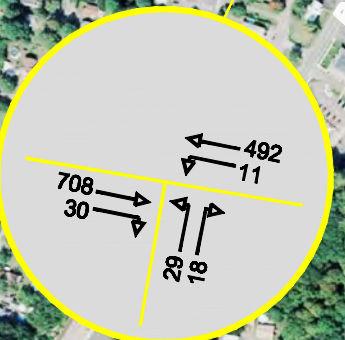
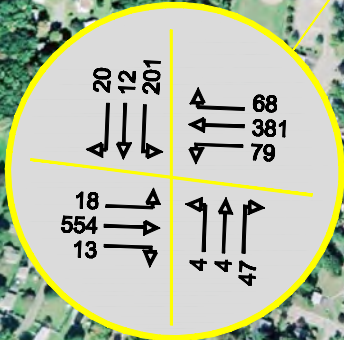
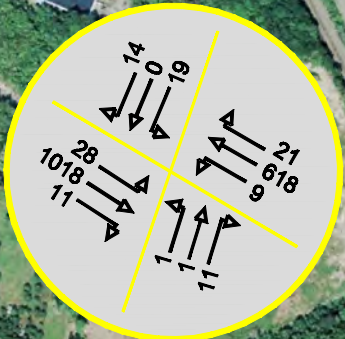
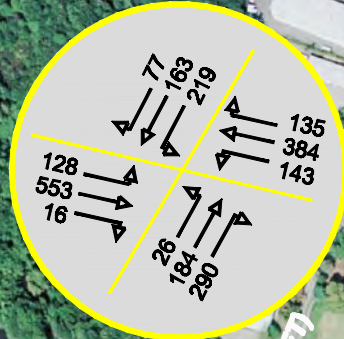
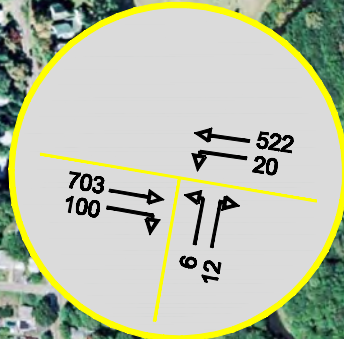
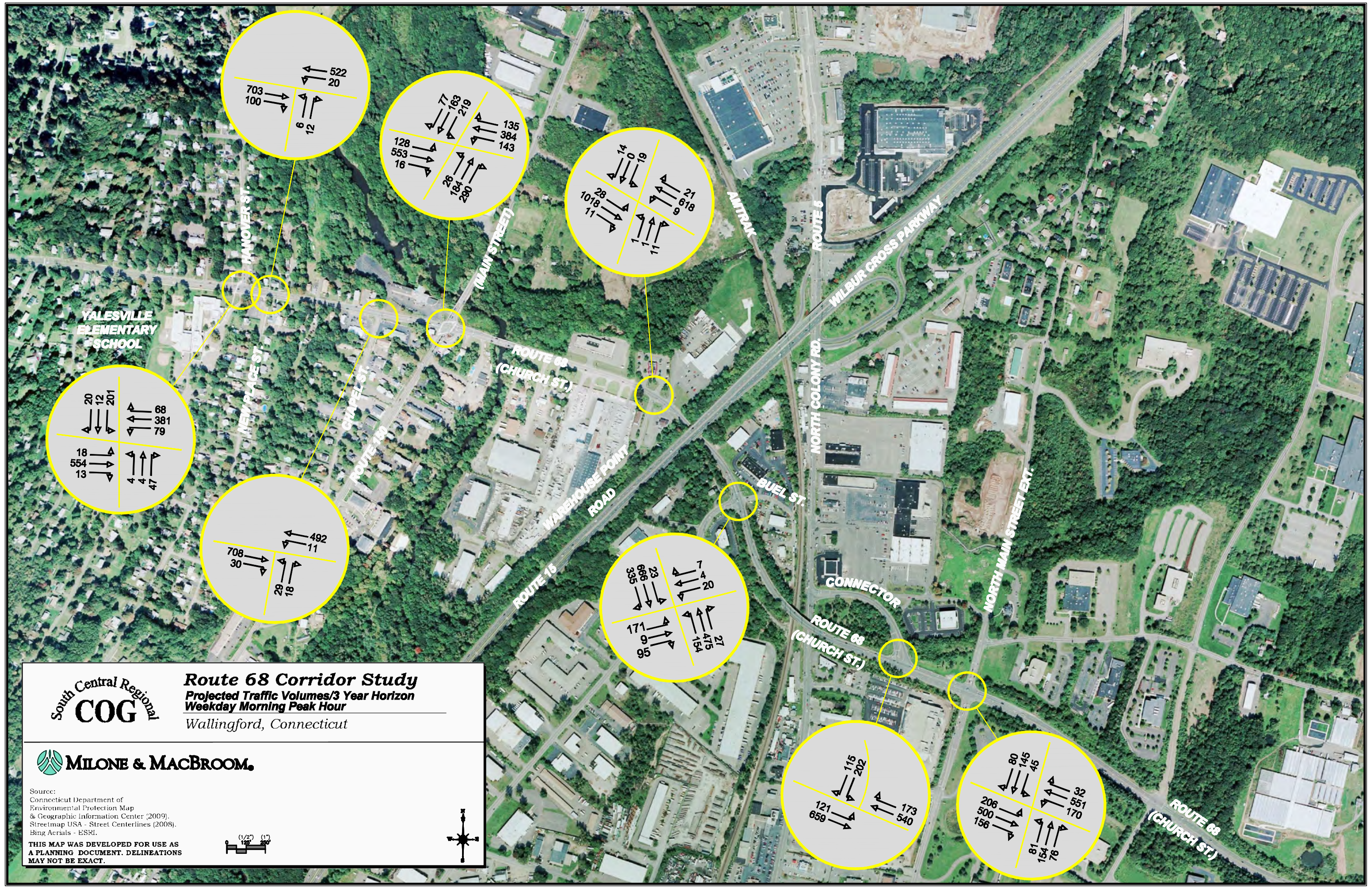
Route 68 Corridor Study

RECOMMENDED IMPROVEMENTS

Concept	Location	Description	Timeframe	Cost	Cost - Low Est.	Cost - High Est.
-	Corridor-Wide	Corridordinate and Retime Traffic Signals throughout corridor	Short	Low	\$ 20,000	\$ 30,000
-	Corridor-Wide	Provide four (4) through travel lanes with strategic turn lanes throughout the corridor	Long	High	\$ 43,000,000	\$ 55,000,000
1-A	Hanover to Route 150	Add streetscape elements, rebuild sidewalk section from Chapel to Route 150, and install ADA compliant ramps	Short	Low	\$ 78,000	\$ 95,000
1-A	Hanover to Chapel Street	replace sidewalk, stripe crosswalks at all approaches, install pedestrian pushbuttons and pedestals at Hanover	Short	Medium	\$ 159,000	\$ 192,000
1-B	Hanover to Chapel Street	Eliminate northbound left turns at Chapel Street	Short	Low	\$ 56,000	\$ 68,000
1-C	Hanover to Chapel Street	Construct bike trail on Chapel Street - convert Chapel Street to one-way southbound	Mid	Medium	\$ 357,000	\$ 432,000
2-A	Route 150 at Route 68	Restripe northbound approach to create exclusive left turn lane and through/right lane	Short	Low	\$ 27,000	\$ 33,000
2-B	Route 150 at Route 68	Widen Roadway to provide exclusive left turn lane, through, and exclusive right turn lane	Mid	Medium	\$ 424,000	\$ 513,000
2-C	Route 150 at Route 68	Install westbound right turn lane to supplement state project	Mid	Medium	\$ 146,000	\$ 177,000
3-A	Route 150 to Warehouse Point Road	Widen and restripe roadway to create left turn lanes at key locations	Short	Low	\$ 38,000	\$ 46,000
4-A	N. Plains Industrial Road at Route 68	Restripe eastbound approach to clearly delineate lane shift	Short	Low	\$ 3,000	\$ 3,000
4-B	N. Plains Industrial Road at Route 68	Extend westbound left turn lane on Route 68 at N. Plains Industrial Road	Short	Low	\$ 6,000	\$ 7,000
4-C	N. Plains Industrial Road at Route 68	Widen eastbound approach to extend right turn lane	Mid	Low	\$ 75,000	\$ 91,000
5-A	Barnes Road Connector at Route 68	Extend eastbound left turn lane on Route 68 at Barnes Road Connector	Short	Low	\$ 57,000	\$ 69,000
5-B	Barnes Road Connector at Route 68	Separate right and left turns onto connector w/raised island, Square up intersection	Mid	High	\$ 809,000	\$ 979,000
5-C	Barnes Road Connector at Route 68	Separate right and left turns onto Connector w/raised island, Leave current alignment	Short	Medium	\$ 260,000	\$ 314,000
5-D	Barnes Road Connector at Route 68	Extend westbound left turn lane on Connector at U.S. Route 5	Mid	Low	\$ 25,000	\$ 30,000
5-E	Barnes Road Connector at Route 68	Widen connector to provide two lanes northbound/westbound	Long	High	\$ 1,135,000	\$ 1,373,000

Future Traffic Volumes





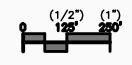
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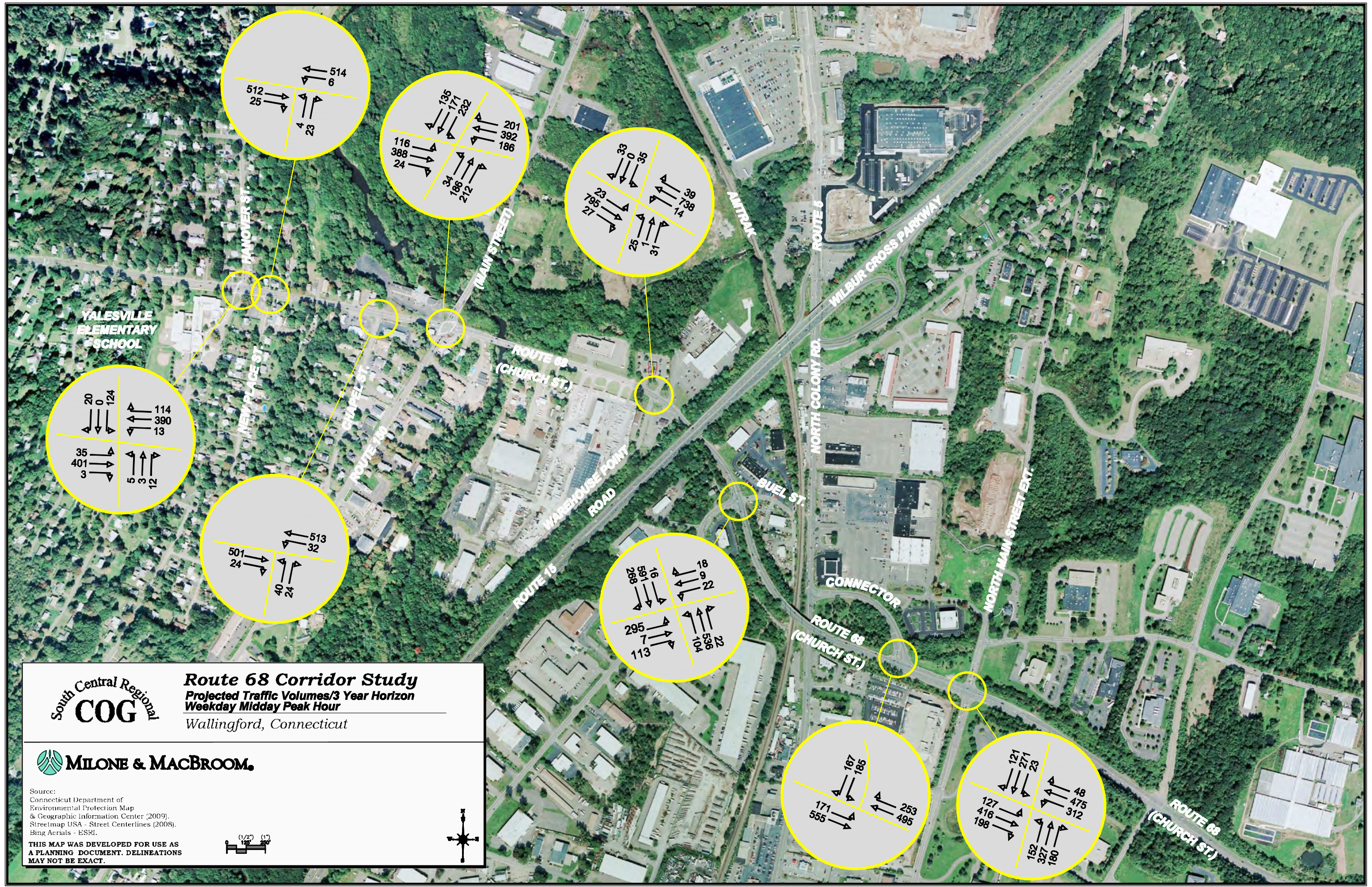
Route 68 Corridor Study
Projected Traffic Volumes/3 Year Horizon
Weekday Morning Peak Hour
Wallingford, Connecticut

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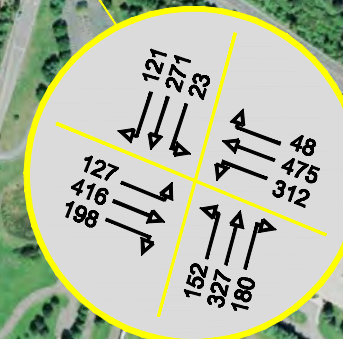
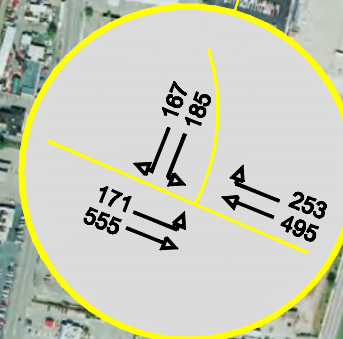
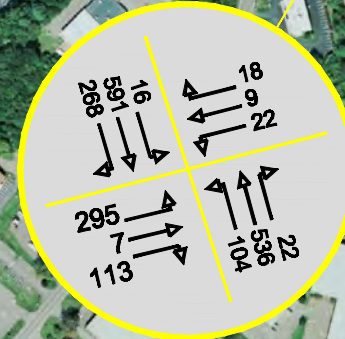
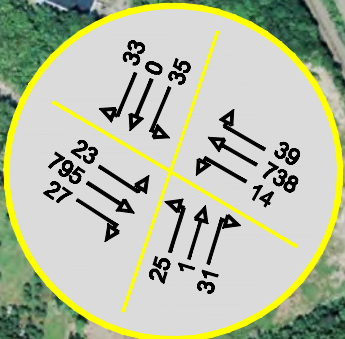
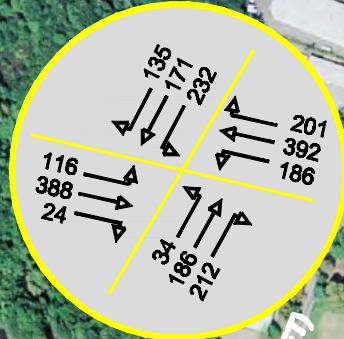
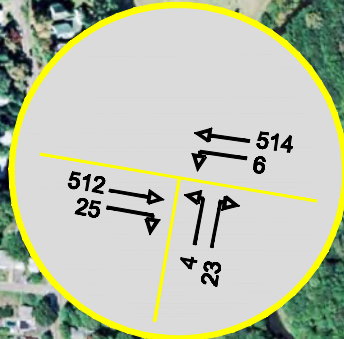
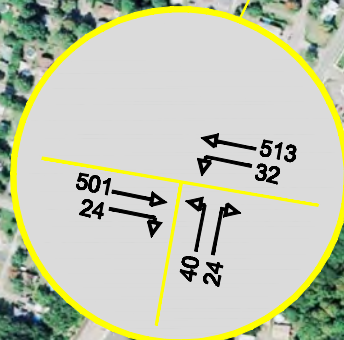
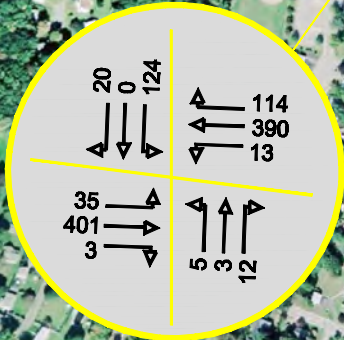
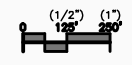


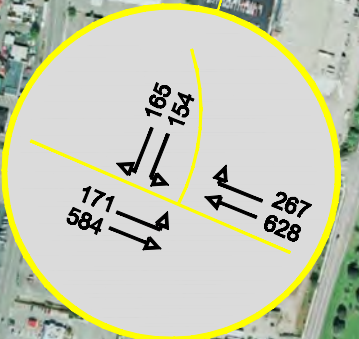
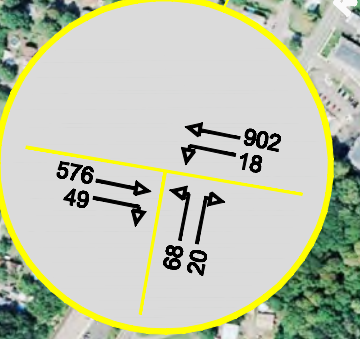
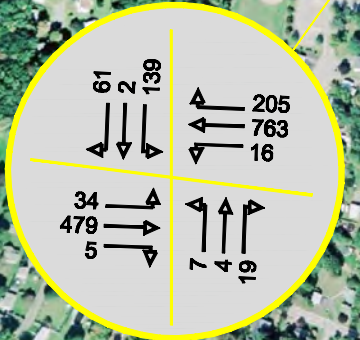
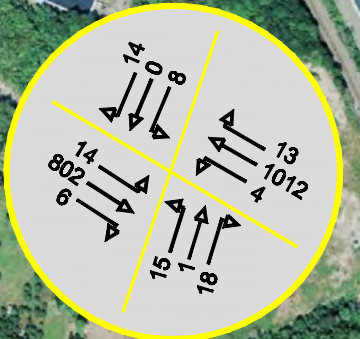
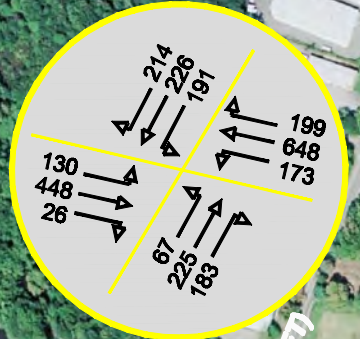
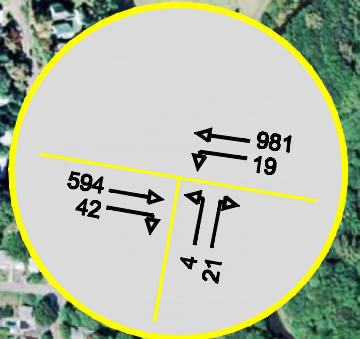
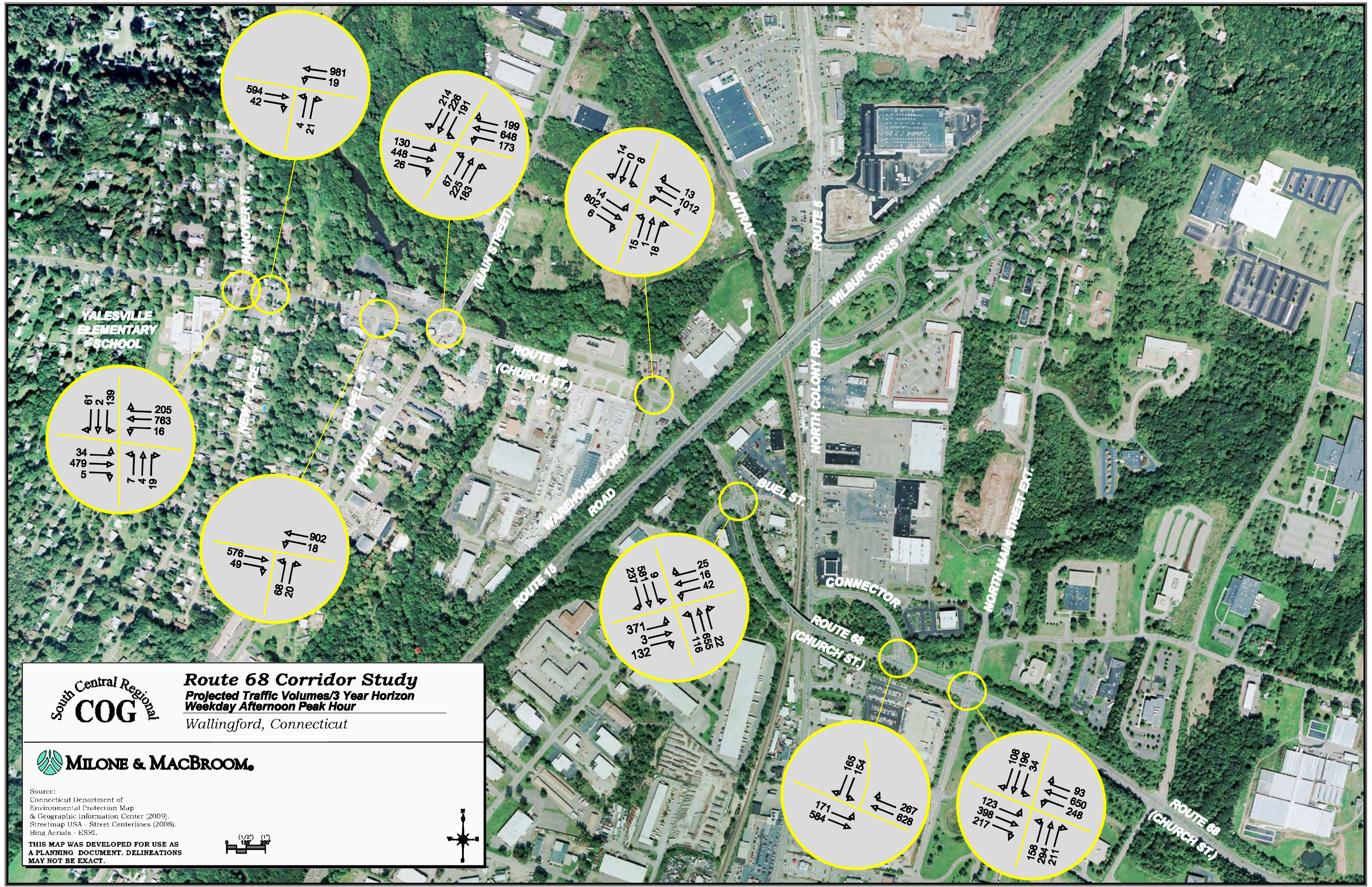
Route 68 Corridor Study
Projected Traffic Volumes/3 Year Horizon
Weekday Midday Peak Hour
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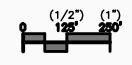
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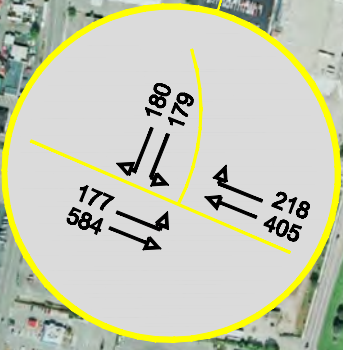
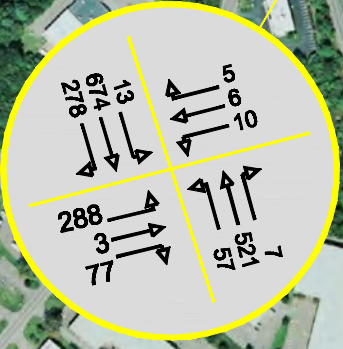
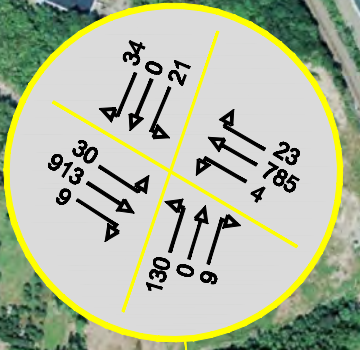
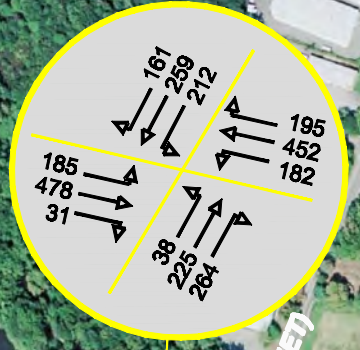
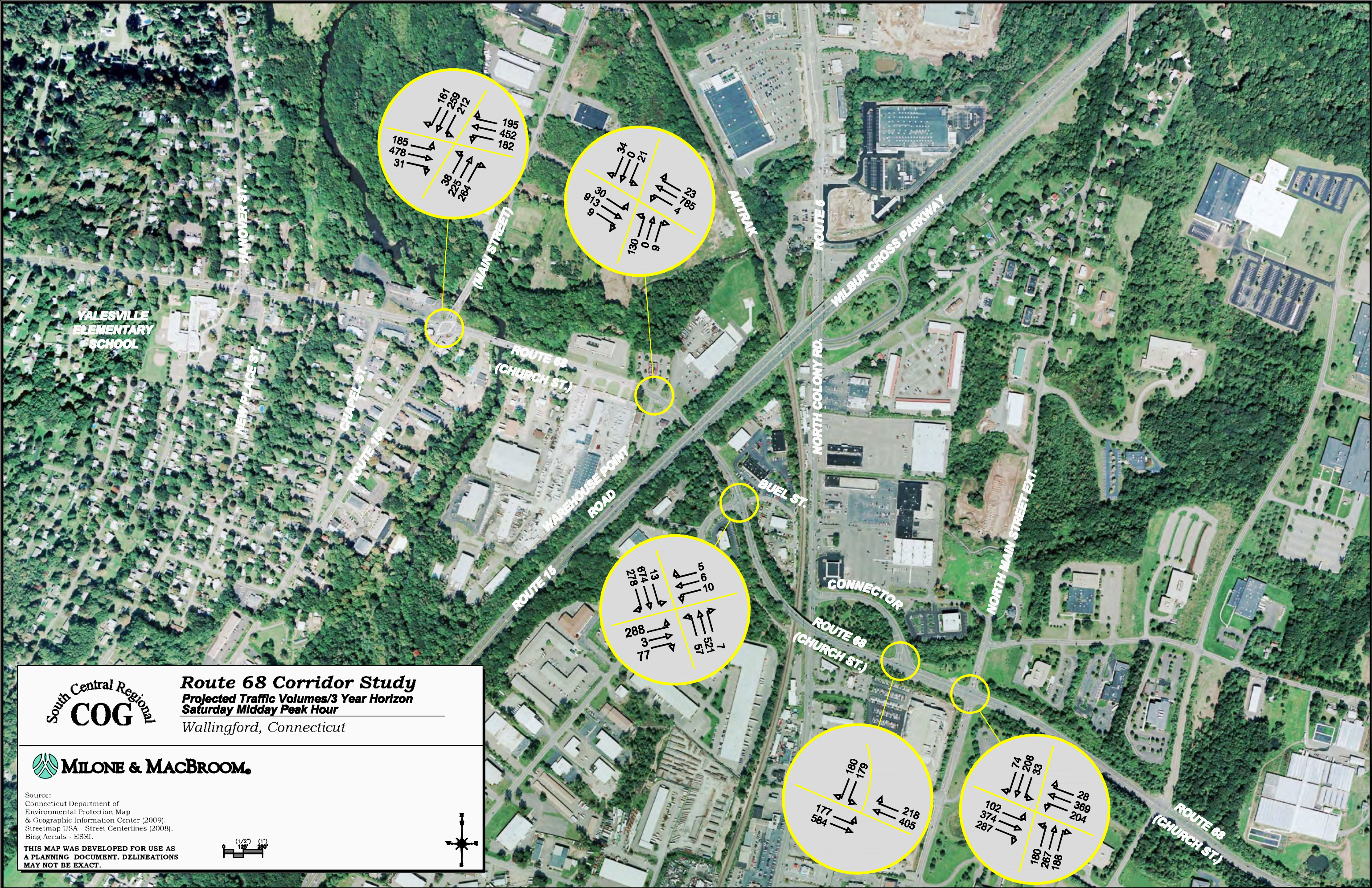
Route 68 Corridor Study
Projected Traffic Volumes/3 Year Horizon
Weekday Afternoon Peak Hour
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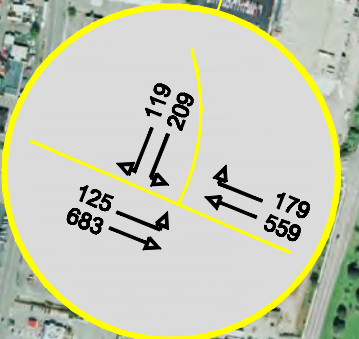
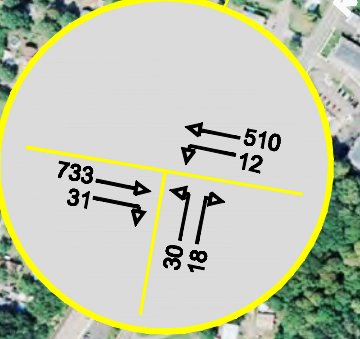
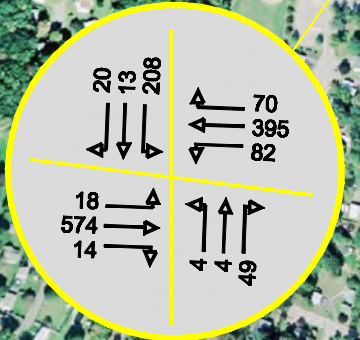
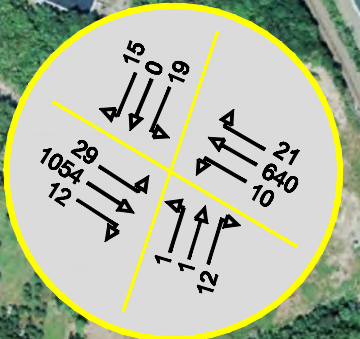
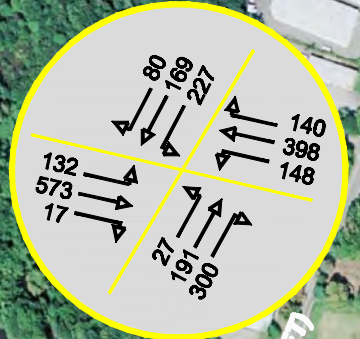
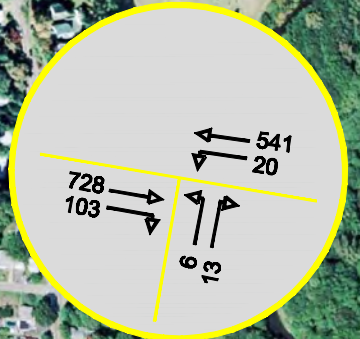
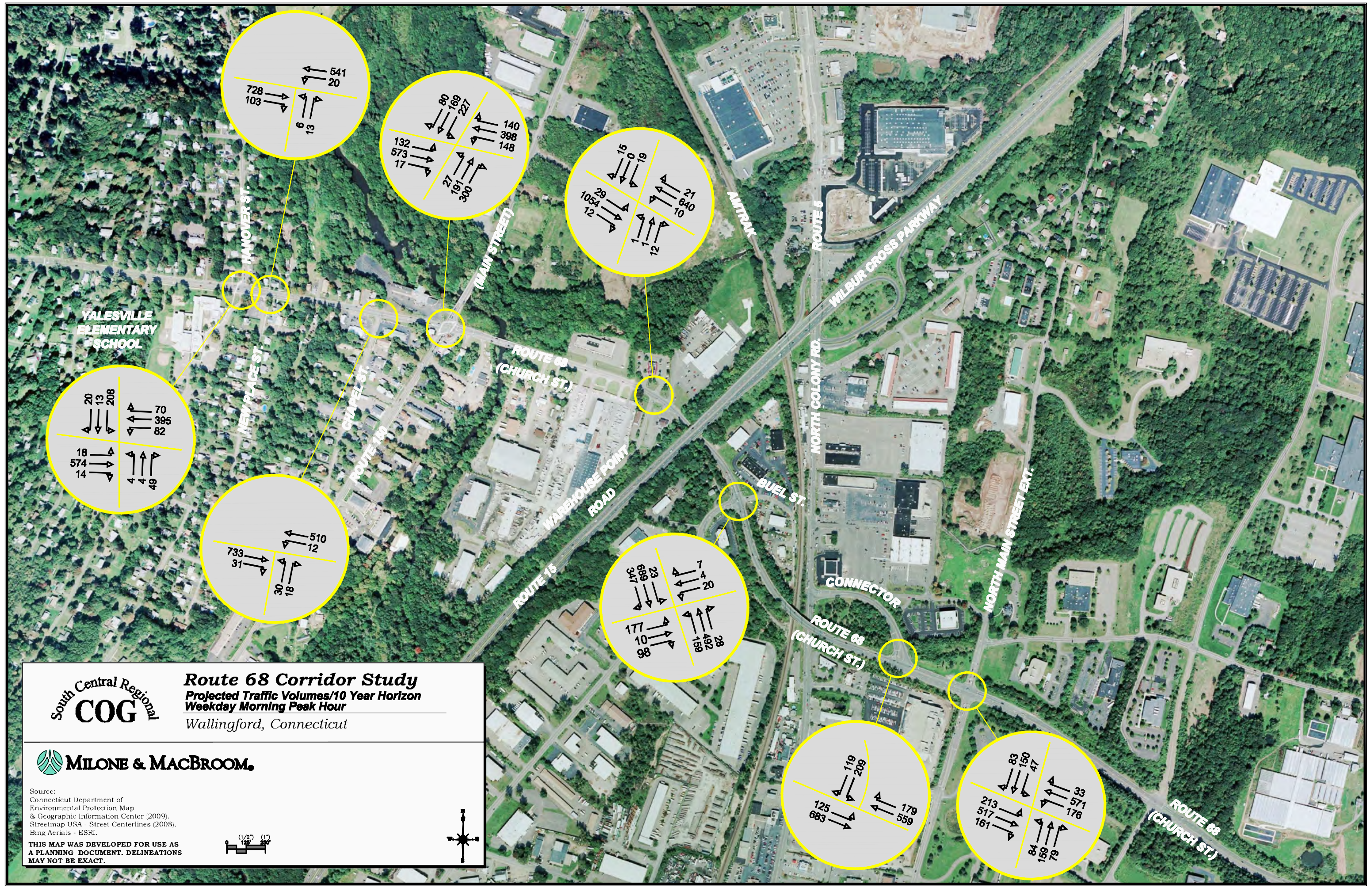

Route 68 Corridor Study
 Projected Traffic Volumes/3 Year Horizon
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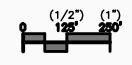
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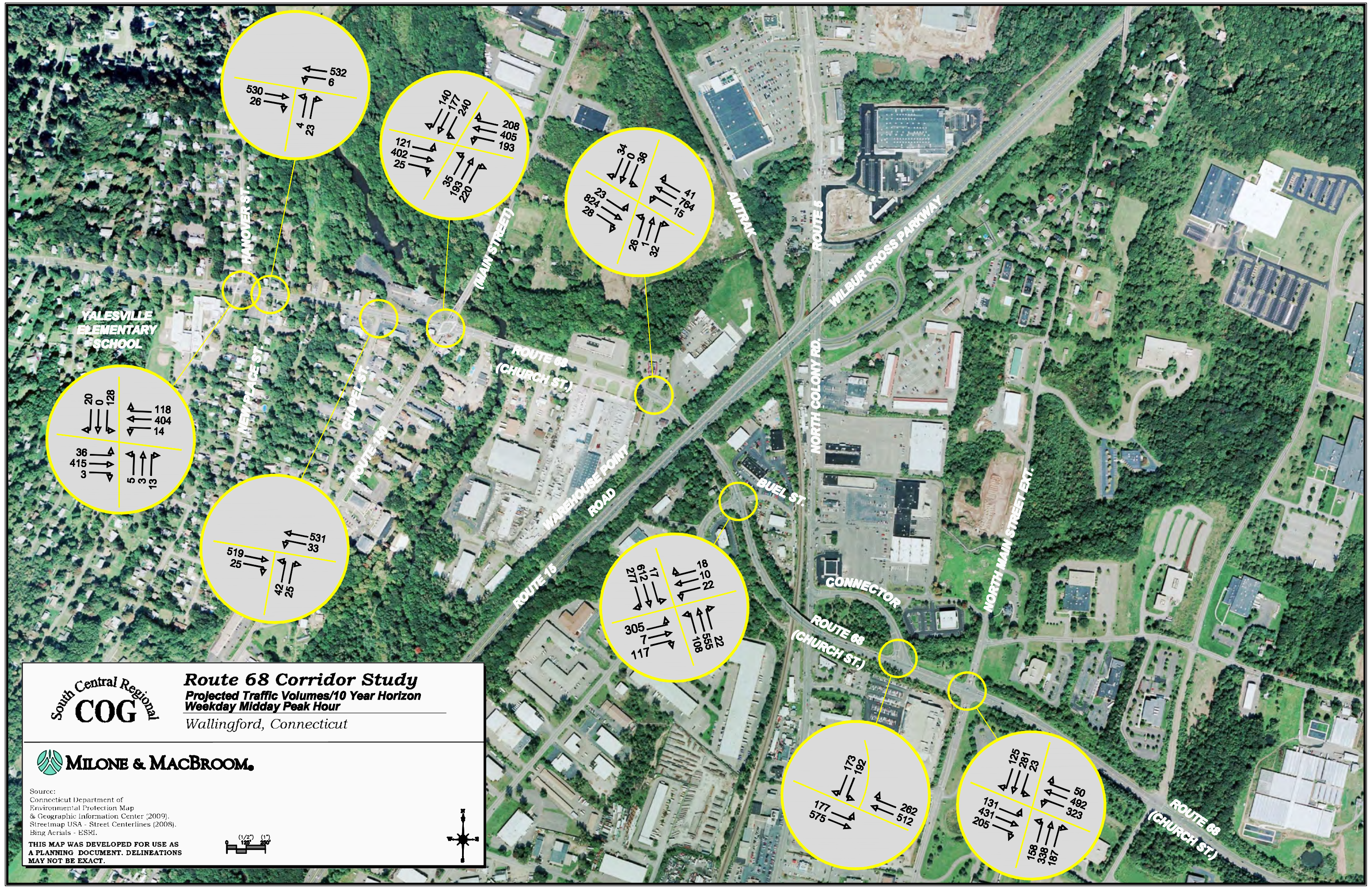
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Projected Traffic Volumes/10 Year Horizon
Weekday Morning Peak Hour
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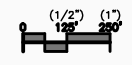


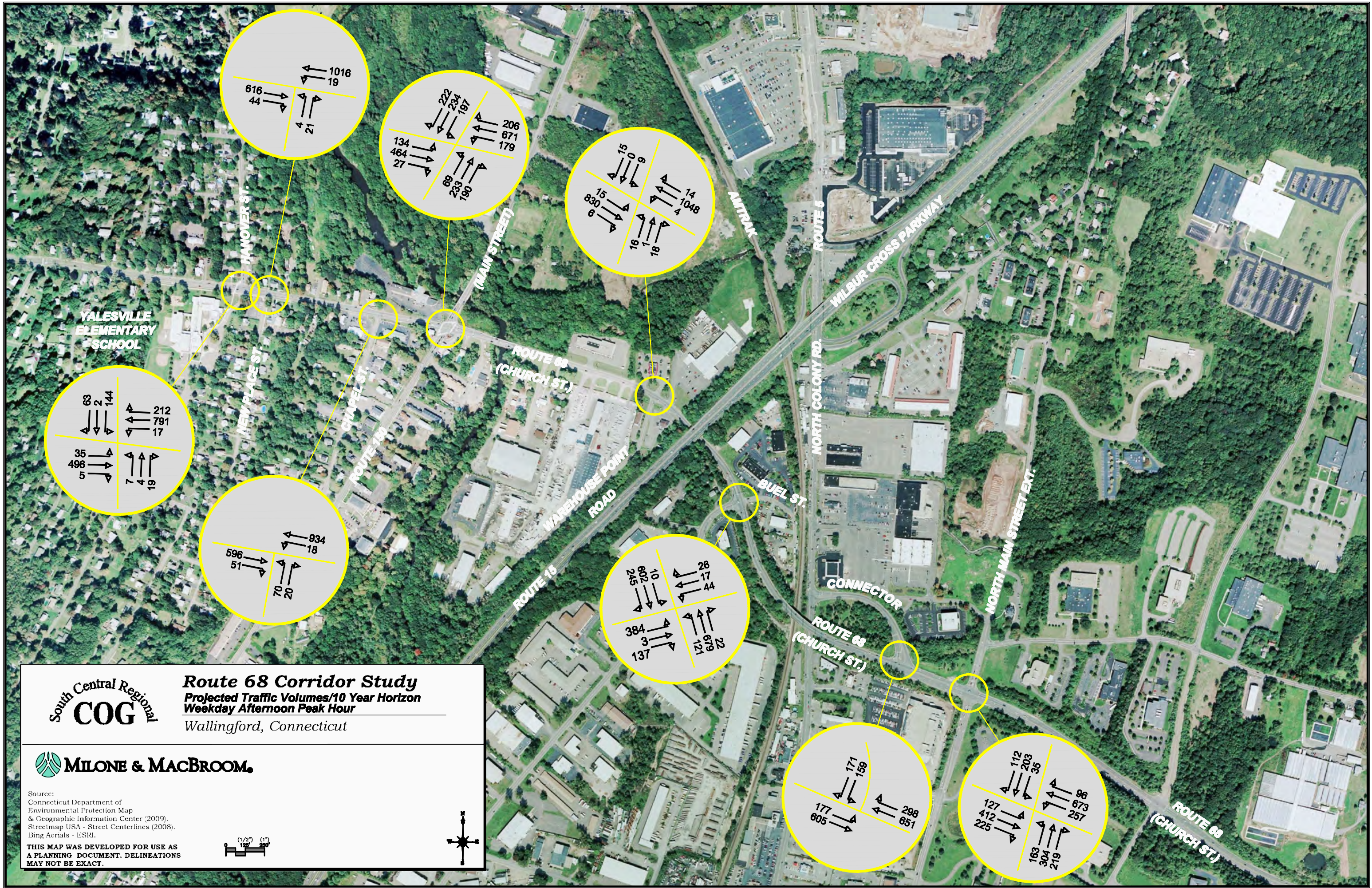
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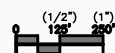
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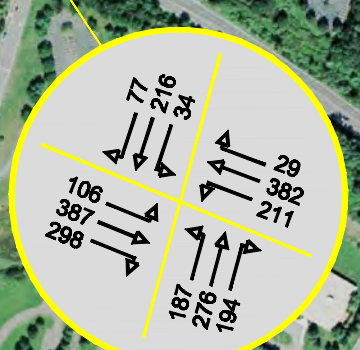
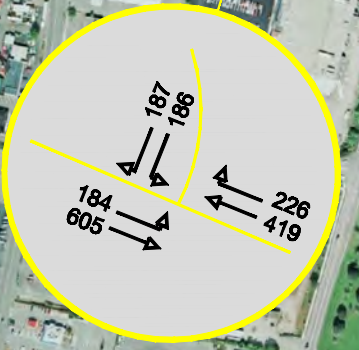
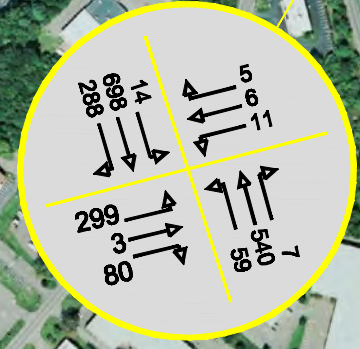
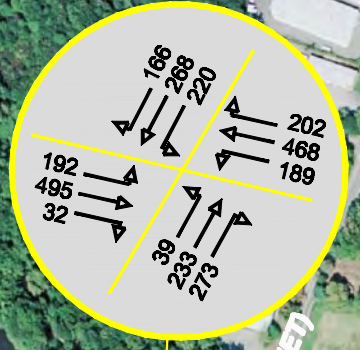
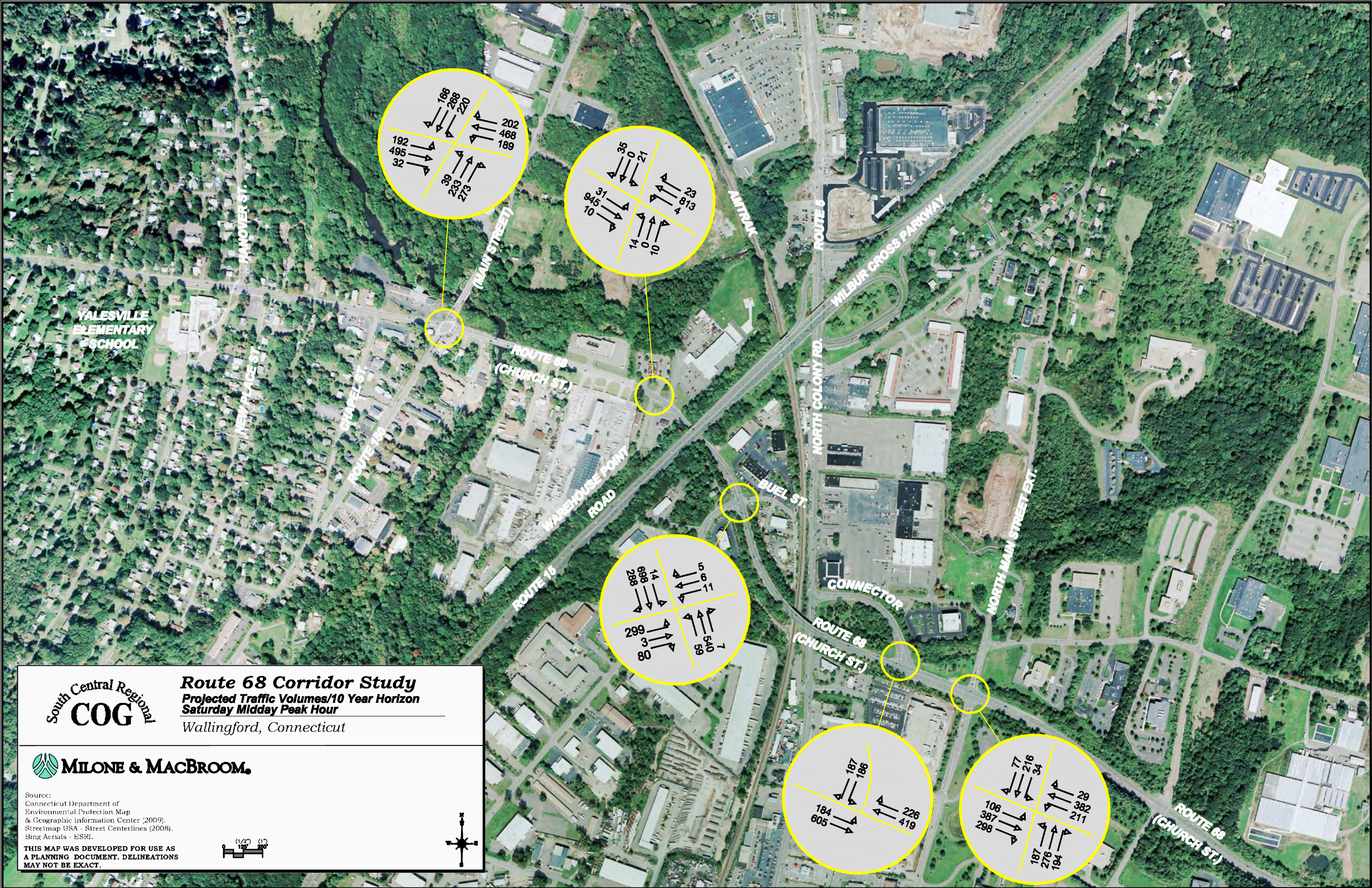
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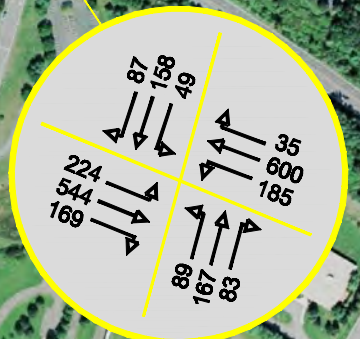
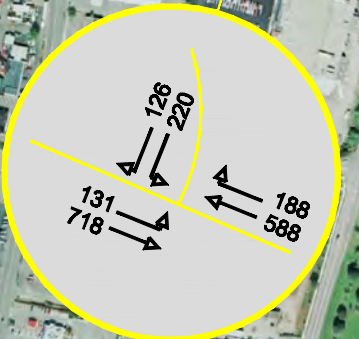
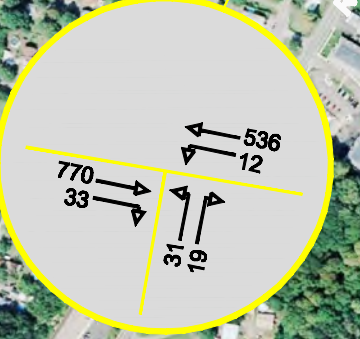
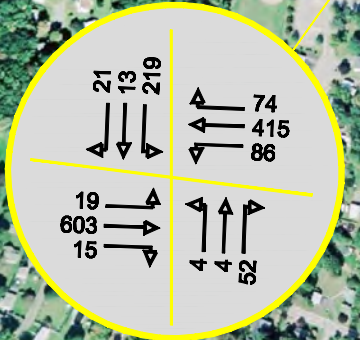
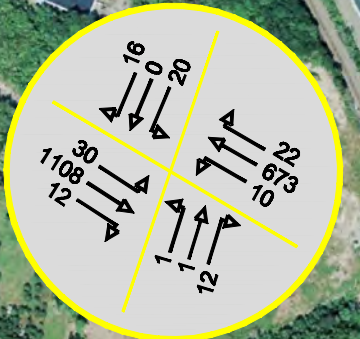
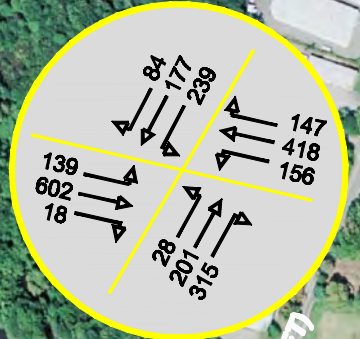
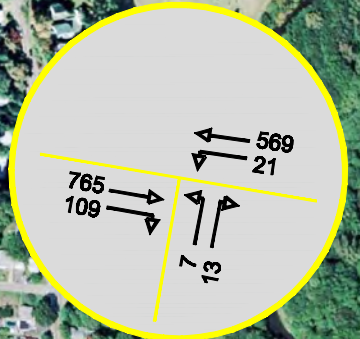
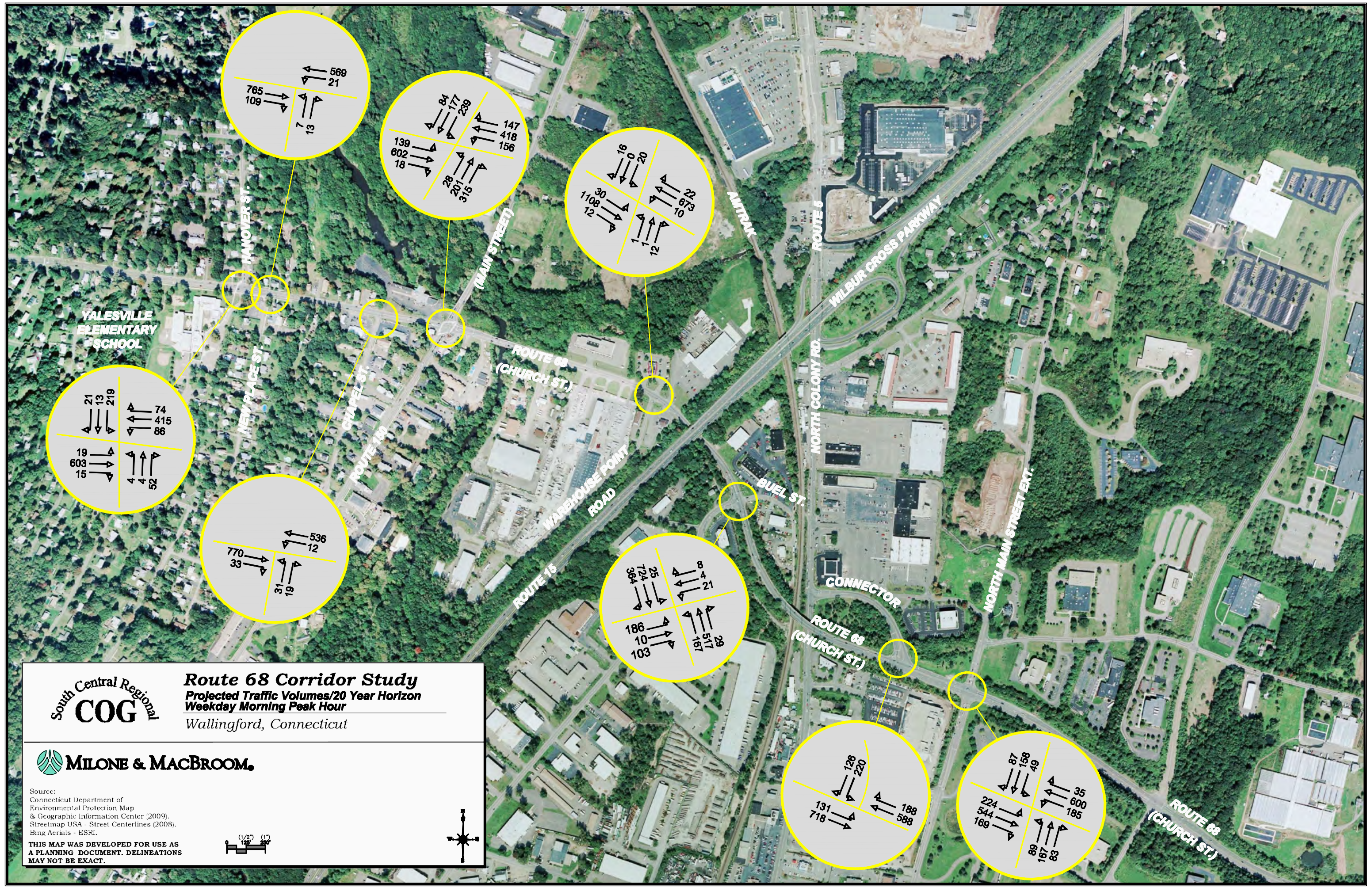
South Central Regional COG

Route 68 Corridor Study
 Projected Traffic Volumes/10 Year Horizon
 Saturday Midday Peak Hour
 Wallingford, Connecticut

MILONE & MACBROOM

Source:
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 Streetmap USA - Street Centerlines (2008).
 Bing Aerials - ESRI.

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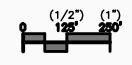
South Central Regional
COG

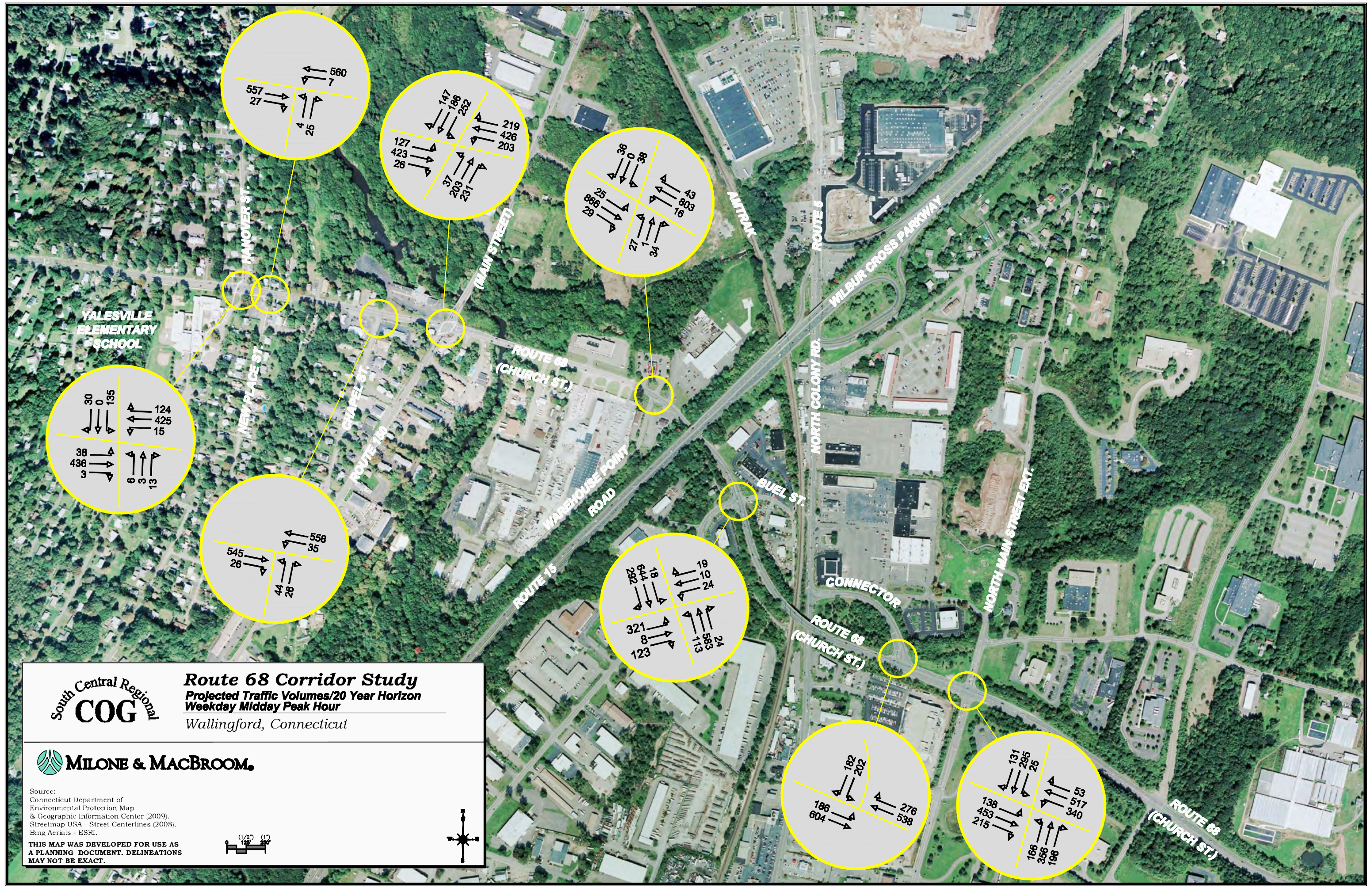
Route 68 Corridor Study
Projected Traffic Volumes/20 Year Horizon
Weekday Morning Peak Hour
Wallingford, Connecticut

MILONE & MACBROOM

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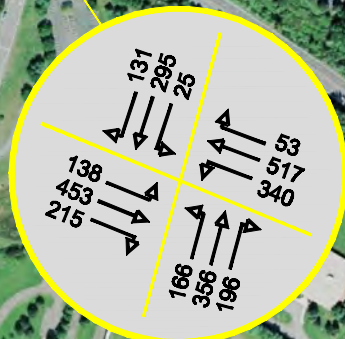
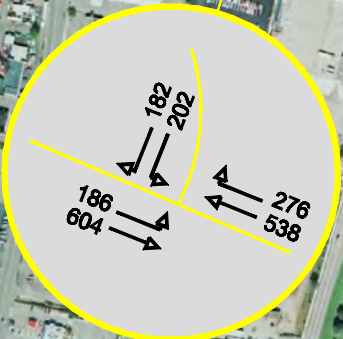
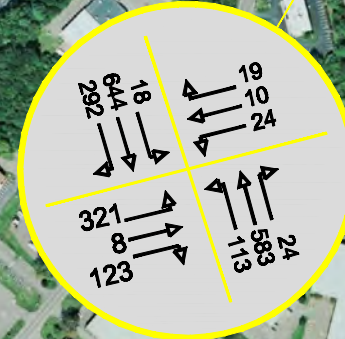
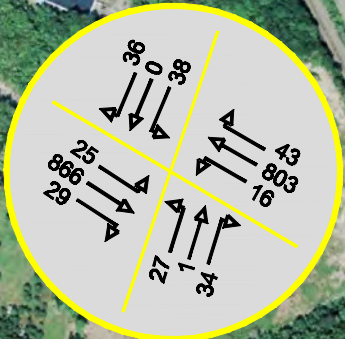
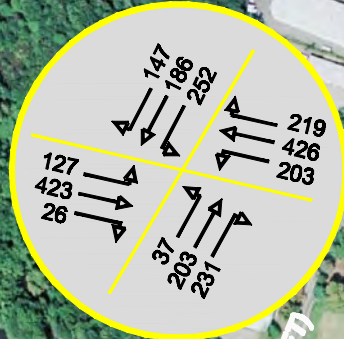
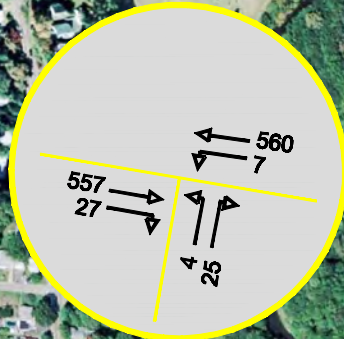
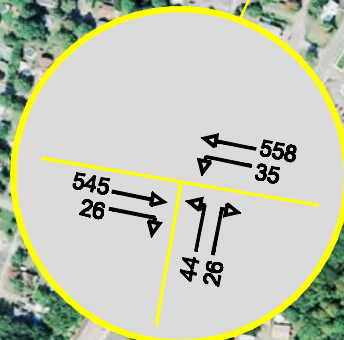
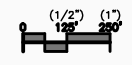


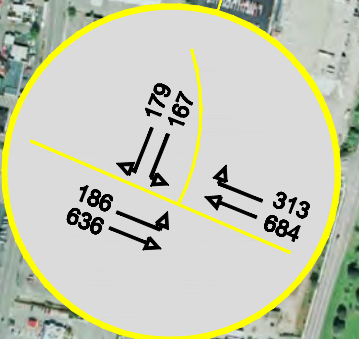
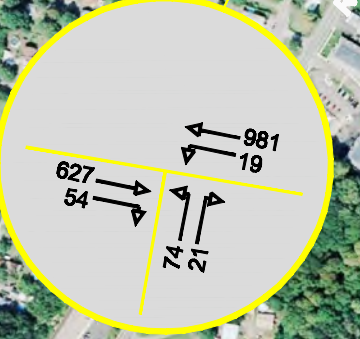
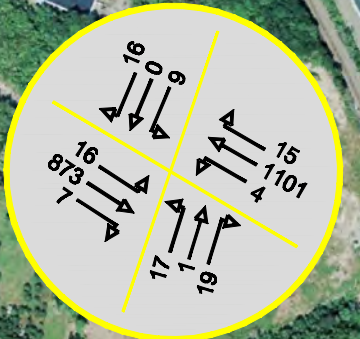
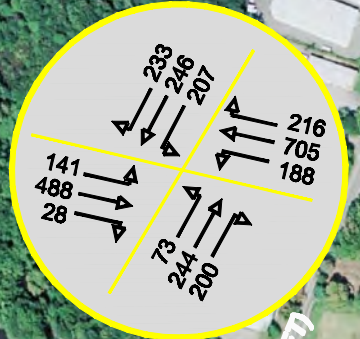
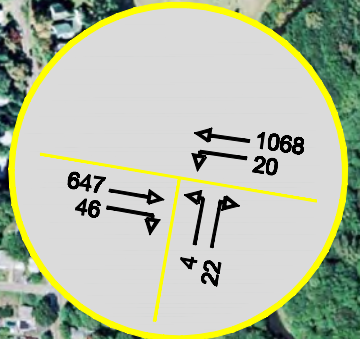
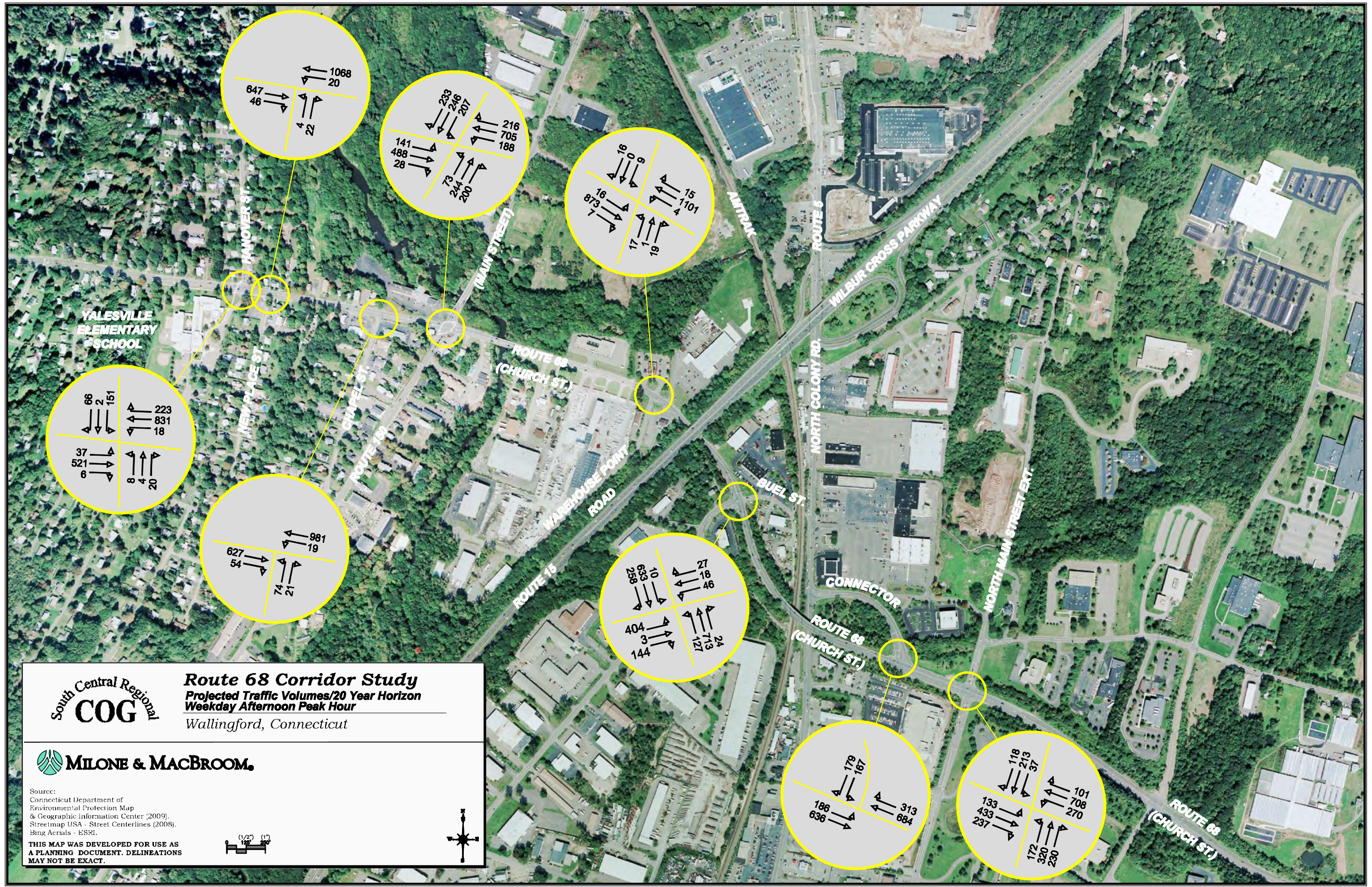
Route 68 Corridor Study
Projected Traffic Volumes/20 Year Horizon
Weekday Midday Peak Hour
 Wallingford, Connecticut



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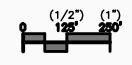
South Central Regional
COG

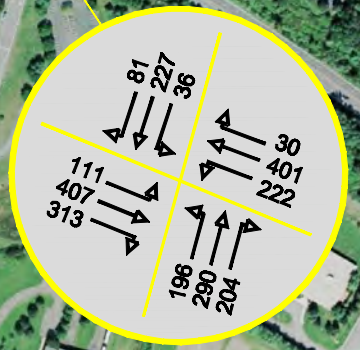
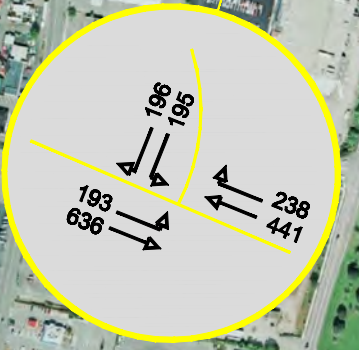
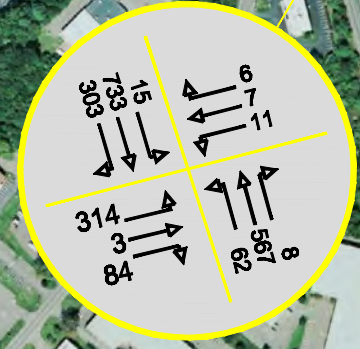
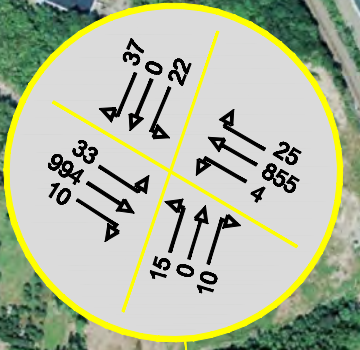
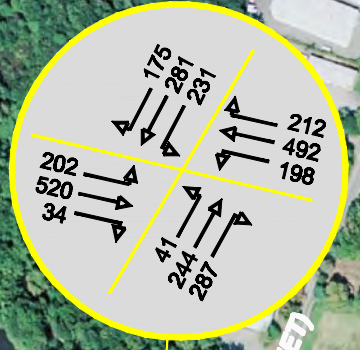
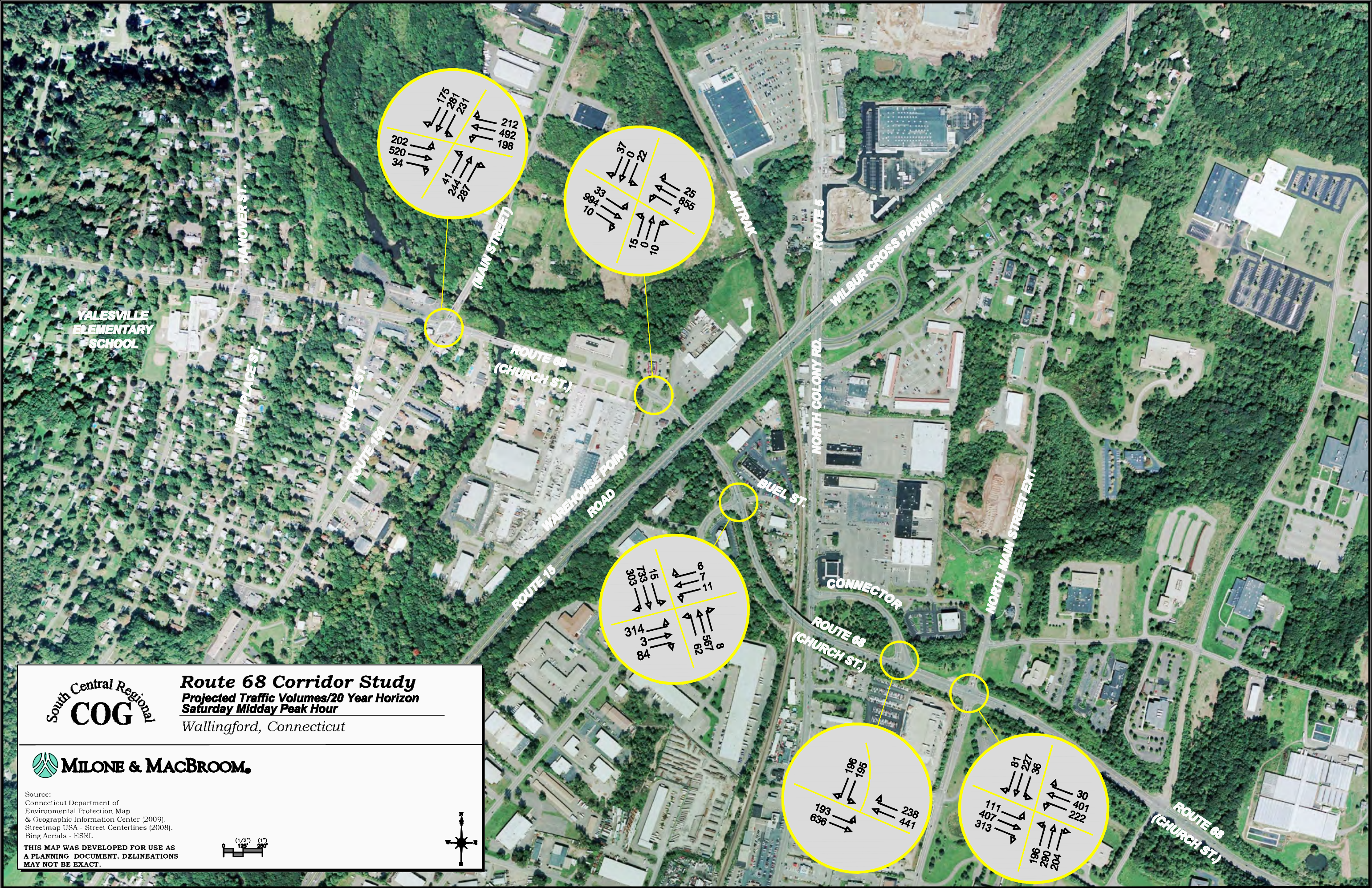
Route 68 Corridor Study
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Weekday Afternoon Peak Hour
Wallingford, Connecticut


MILONE & MACBROOM


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Route 68 Corridor Study
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