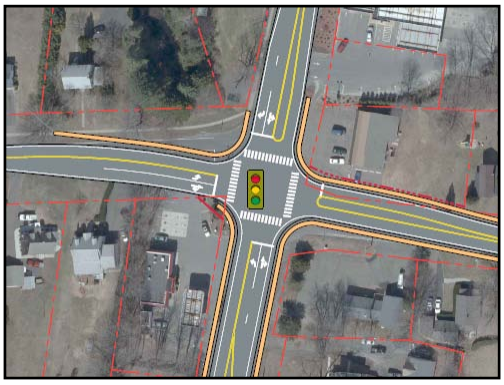
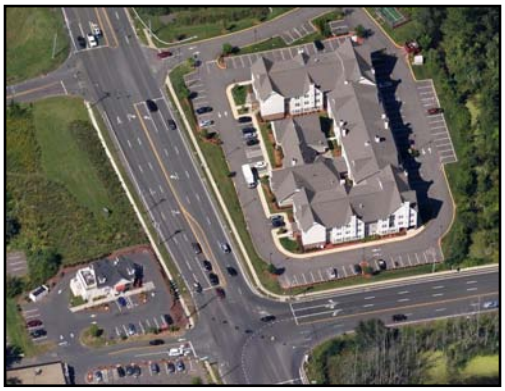
Route 3 Traffic and Development Study

Final Study Report





Prepared For:

Capitol Region Council of Governments

and

Town of Rocky Hill

Prepared By:

Tighe & Bond, Inc

In Association with:

Susan Jones Moses & Associates

Fitzgerald & Halliday, Inc

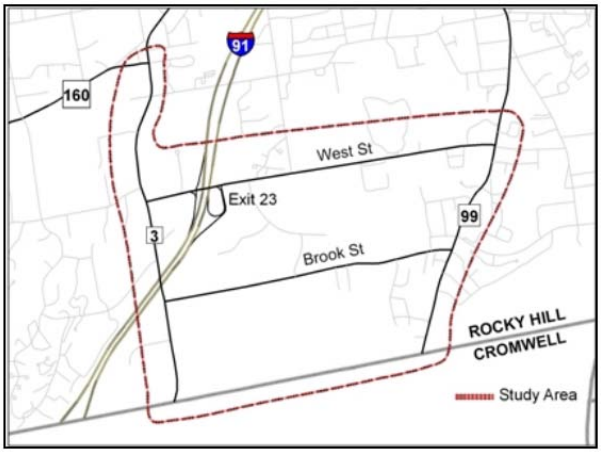
Weston Solutions

May 31, 2012

Prepared in cooperation with the Connecticut Department of Transportation. The opinions, findings, and conclusions expressed in this publication are those of the Capitol Region Council of Governments and do not necessarily reflect the official views or policies of the Connecticut Department of Transportation, and/or the U. S. Department of Transportation.

Executive Summary

The Route 3 Traffic and Development Study was conducted in cooperation with the Town of Rocky Hill, the Capitol Region Council of Governments (CRCOG), and the Connecticut Department of Transportation (ConnDOT). The purpose was to develop a comprehensive transportation plan for the study area to guide the Town and State on future transportation system improvements. The main study roadways include Cromwell Avenue (Route 3), West Street (SR 411), Brook Street, New Britain Avenue (Route 160), Elm Street (Route 160), and Main Street (Route 99). Local roads that play an important role in traffic circulation within this network were reviewed as well.



The study was conducted under the guidance of the Technical Review/Steering Committee (TR/SC) comprised of elected officials, town staff, a member of the town Planning and Zoning Commission, ConnDOT, and CRCOG. The TR/SC developed the following Mission Statement to serve as a foundation for the study:

Mission Statement

- *Develop sustainable strategies and recommendations to provide a measured approach, identifying both short-term and long range study area transportation system improvement scenarios that accommodate projected growth of the Town of Rocky Hill*
- *Identify improvement strategies that recognize and accommodate all modes of transportation within the study area, including transit, pedestrians, and bicycles, providing a complete transportation network*
- *Seek improvements to the study area transportation system that enhance and preserve the character and setting of residential neighborhoods*
- *Formalize a transportation system management and improvement plan that effectively correlates growth in development with enhancements to the study area transportation system and presents them in a manner that will assist the town in assessing development proposals.*

Engaging members of the public throughout this transportation planning process was a priority. Meetings with the public, Town Council, Chamber of Commerce, and the Economic Development Commission were held throughout the study at critical milestones to gain input and feedback on findings and concepts in the developmental stages. Appearances on the Mayor's Report television program and updates to the study website kept interested parties informed on the study progress. Additional outreach efforts included a survey and comment forms.

Needs and Deficiencies

Data analysis, field visits, and a review of both existing and future conditions were supplemented by discussions with stakeholders, town staff and officials, and members of the public to develop a set of needs and deficiencies for the study to address. The following summarizes issues that were identified, grouped by location.

Cromwell Avenue – Between New Britain Avenue and the Cromwell town line

- Statewide data indicates that the section of Cromwell Avenue from New Britain Avenue to Elm Street and from West Street to Cold Spring Road should be evaluated for safety improvements.
- Long vehicle queues develop during the afternoon peak hour on the northbound approach at New Britain Avenue, caused by the heavy left turning volume at this intersection.
- Reports that queues during the afternoon peak hour on New Britain Avenue's eastbound approach to Cromwell Avenue block emergency vehicles exiting Rocky Hill Fire Department Station 2 and nearby driveways.
- Public comments indicate that the installation of a traffic signal at Rhodes Road should be considered to facilitate safe egress from the street.
- The long cycle length at the cluster intersections at West Street and France Street results in long queues on both West Street and France Street.
- Field observations identified a queuing issue at the Dunkin Donuts near the West Street intersection.
- Prior to the installation of the traffic control signal at the Westside Market driveway, this intersection exhibited a high rate of collisions. The installation of the traffic control signal appears to have mitigated the safety issues at this intersection.
- During higher traffic periods, the left lane on the southbound approach at Brook Street becomes a defacto left turn lane, forcing all through traffic into the right lane. Just south of this intersection, the right lane becomes a right turn only lane, forcing through traffic into the left lane. It is undesirable to require multiple lane changes for through vehicles along this road segment.
- In the future, several intersections with Cromwell Avenue are expected to operate poorly during the morning and/or afternoon peak hours. These intersections include New Britain Avenue, Elm Street, France Street, and West Street.
- Existing lane configurations in some areas do not provide the necessary capacity for the expected future traffic volumes. Traffic movements of concern include Cromwell Avenue northbound left turns to New Britain Avenue and southbound left turns to West Street.

West Street

- Statewide data indicates that the intersection with the I-91 southbound ramps should be evaluated for safety improvements.
- At the I-91 southbound exit ramp, poor intersection sight lines are provided for right turning vehicles due to the bridge parapet and intersection geometry.
- Long vehicular queues for traffic turning left onto I-91, particularly during the afternoon peak hour.

West Street (cont'd)

- During peak traffic hours, eastbound queue lengths at the signalized intersection with the I-91 north ramps block access to the right turn lane due to its short length.
- Long vehicular queues on Capitol Boulevard for the left turn movement heading towards the I-91 interchange during the afternoon peak hour.
- Poor intersection sight distance provided from the stop bar looking east from Gilbert Avenue.
- Steep downhill gradient on West Street on the eastbound approach to the Main Street intersection encourages higher travel speeds.
- Currently, the offset intersection alignment at the intersection with Main Street, West Street, and Forest Street requires a split signal phase, resulting in poor afternoon peak hour traffic operations.
- In the future, the West Street intersections with the I-91 access ramps (southbound and northbound), Capital Boulevard, and Main Street are expected to operate poorly during the morning and/or afternoon peak hours.
- Long queue lengths are anticipated in the I-91 interchange area in the future.
- Existing lane configurations in some areas do not provide the necessary capacities for the expected future traffic volumes. Traffic movements of concern include the westbound movements at Cromwell Avenue, right turning movements to Capital Boulevard, and left turning movements from Capital Boulevard onto West Street.

Brook Street

- The existing truck restriction sign located at the intersection with Henkel Way is difficult to see and read. A similar observation was made at the intersection of Brook Street and Main Street.
- In the future, the intersection at Henkel Way is expected to operate poorly during the afternoon peak hour.
- High travel speeds and lack of delineation between the commercial and residential sections of the street.

Study Wide

- Lack of continuously adequate bicycle and pedestrian accommodations and along many of the study area roadways.
- Lack of adequate Transit rider accommodations within the study area. Need for bus shelters at stops on Capital Avenue near West Street and on Elm Street near Rose Hill Cemetery.

Recommendations

In line with the Mission Statement, the recommendations include improvements that address the existing and future needs of motor vehicles and alternative modes of transportation. The set of recommendations range from improvements at particular intersections and along roadway segments to a new local road providing improved circulation throughout the study area.

The following briefly summarizes each of the recommended improvements by location.

Cromwell Avenue at Inwood Road

- Widen Cromwell Avenue along the west side of the road south of the intersection with Inwood Road to facilitate the extension of two southbound travel lanes through the intersection.
- Provide an exclusive left turn lane into Inwood Road for northbound traffic along with a through lane. Conduct minor widening along the east side of Cromwell Avenue.
- Provide sidewalks to enhance connectivity in this area.

Cromwell Avenue at Brook Street

- Widen Cromwell Avenue to provide a short exclusive southbound exclusive left turn lane to Brook Street, removing left turning vehicles from the through traffic stream.
- Install new sidewalk along both sides of Cromwell Avenue to connect with existing sidewalk. Crosswalks are recommended on the south approach of Cromwell Avenue and on Brook Street.

Cromwell Avenue at France Street / West Street

- Phase 1: Widen the France Street eastbound approach to Cromwell Avenue to a two lane approach, with an exclusive right turn lane and a through/left turn lane. This improvement is intended to mitigate the long queues on France Street during the peak traffic hours.
- Phase 2: Widen Cromwell Avenue to provide an additional southbound left turn lane at the intersection of West Street to improve future traffic operations.

Cromwell Avenue, Elm Street, and New Britain Avenue

- Widen New Britain Avenue to two lanes in the westbound direction from the intersection at Cromwell Avenue to the existing two westbound lanes leading to Hayes Road.
- Extend the length of the existing exclusive right turn on New Britain Avenue approaching Cromwell Avenue to provide additional vehicle storage.
- Coordinate with Rocky Hill Fire Department regarding the potential for hardwired fire pre-emption from Station 2 to nearby signalized intersections

- Widen Cromwell Avenue to provide double left turns at both New Britain Avenue in the northbound direction and at Elm Street in the southbound direction.
- Widen the segment between the intersections with New Britain Avenue and Elm Street to provide additional storage for vehicle queuing and reduce travel lane and shoulder widths in the segment to minimize the impacts to adjacent commercial properties and parking areas.
- Encourage access management and inter-parcel connections between commercial parcels to improve Cromwell Avenue safety and traffic operations.

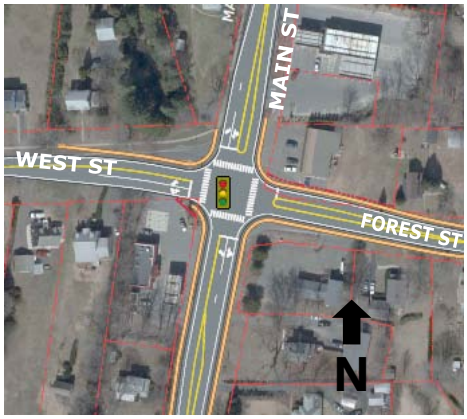
Cromwell Avenue, Elm Street, and New Britain Avenue (cont'd)

- Widen Elm Street between Cromwell Avenue and the Big Y signalized driveway to provide two eastbound lanes. The additional eastbound lane is needed to accept a proposed double southbound left turn from Cromwell Avenue.
- Provide in-fill sidewalk, provide additional crosswalks and pedestrian ramps at Cromwell Avenue intersections.

Interstate 91 Interchange Area Recommendations

- Modify the lane use on the westbound approach along West Street at the I-91 southbound ramps to provide a double left turn onto the ramp. Widen the southbound entrance ramp to accept a double left turn movement.
- Widen West Street to provide a double left turn and two through lanes on the westbound approach to the northbound ramps. Install the widening along the south side of West Street.
- Modify the existing channelized free flow right turn lane into Capital Boulevard to provide a larger turning radius to provide increased lane capacity.

West Street at Main Street Recommendation



- Realign West Street and Forest Street to eliminate the offset alignment of the side streets and provide a conventional intersection configuration. Modify the signal operations to eliminate the split phasing.
- Provide exclusive left turn lanes on the eastbound and northbound intersection approaches. Provide an exclusive right turn lane on the southbound approach.
- Provide five-foot wide shoulders along Main Street to accommodate bicycle traffic. Install sidewalks along Main Street, and crosswalks on each intersection leg.

Brook Street at Henkel Way Recommendation

- Reconstruct the existing stop sign controlled intersection with a modern roundabout to improve traffic conditions, provide a traffic calming element on Brook Street, and provide the capability for errant trucks to turn around in the intersection and avoid travelling in the residential neighborhood to the east.
- Install sidewalks that connect to existing sidewalk to the west and the proposed sidewalks to the east.
- Provide aesthetic treatments along the intersection approaches and in the center island.

Brook Street Streetscape Enhancements

- Widen Brook Street to provide a 32' wide paved cross section, including 11' travel lanes and 5' shoulders, to accommodate bicycle traffic on either side of the street.
- Install sidewalks along both sides of Brook Street to accommodate pedestrians. Review the opportunity to include pedestrian level aesthetic lights along the street. Plant street trees along both sides of the street to enhance the character and aesthetics of the roadway.

Elm Street Connector – New Local Road

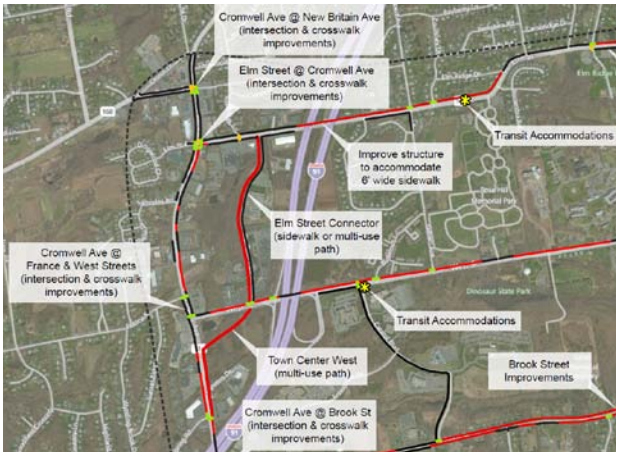
- Provide an extension from Corporate Place to Elm Street to enhance the transportation network and improve circulation.
- Include measures for pedestrians and bicycles including either a sidewalk and 5 foot shoulders or a multi-use path alongside the new local road.

Transit Improvements

- Provide concrete pads and bus stop shelters, conforming to aesthetics of other recently installed Town shelters, on Capitol Boulevard near West Street and on the south side of Elm Street at Rose Hill Cemetery
- Provide ADAAG compliant access

Typical Rocky Hill Bus Shelter

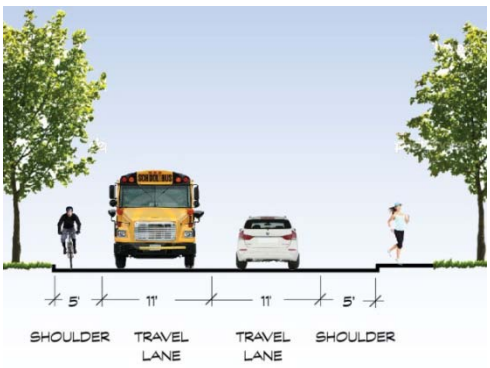
Study Area Pedestrian Improvements



- In-fill and extend sidewalk infrastructure to provide continuous facilities for pedestrians on Elm Street, West Street, Brook Street, and Cromwell Avenue within the study area.
- Upgrade intersections to accommodate pedestrians via marked crosswalks, pedestrian signals, and ADA accessible curb ramps.
- Provide a multi-use path along the east side of Cromwell Avenue from Cold Spring Road north, ending at a connection to the proposed multi-use path at the Town Center West development. The path will connect the residential areas west of the study area to West Street and Elm Streets via proposed pedestrian facilities. Continue efforts for developer construction of a multi-use path through the Town Center West development from Cromwell Avenue to West Street opposite Corporate Place.

Study Area Bicycle Improvements

- Widen shoulders along Elm Street and Main Street to provide a 5' wide minimum shoulder for cyclists.
- Construct multi-use pathway on Cromwell Avenue between Cold Springs Road and the Town Center West development. Connect to Town Center West pathways connecting to West Street and the Elm Street Connector pedestrian and cycling amenities.



Implementation Plan

The Transportation Improvement Program includes 13 potential projects that address the roadway network, transit system, and accommodations for pedestrian and bicycle traffic in the study area. Specifically, as shown in Table E-1, the study recommends physical roadway improvements, one roadway/streetscape enhancement, and several spot improvements to transportation facilities.

The Transportation Improvement Program classifies projects by size and priority for implementation. A project's size is determined by its complexity, estimated impacts, and anticipated permitting requirements and is categorized as small, medium, or large. Whether a project addresses an existing or future need establishes a project's priority: short, mid, or long term. Estimated project costs are provided based on 2012 dollars.

Table E-1: Summary of Projects in Implementation Plan

Project Description	Project Type	Project Priority	Project Cost
1. Intersection Improvements at Cromwell Avenue and West Street / France Street - (Phase 1)	Small	Short-Term	$250,000
2. Intersection Improvements at Cromwell Avenue and West Street / France Street – (Phase 2)	Medium	Short-Term	$1,300,000
3. Intersection Improvements at Brook Street and Henkel Way	Small	Short-Term	$800,000
4. West Street and Interstate 91 Interchange Improvements	Large	Short-Term	$2,300,000
5. Cromwell Avenue Improvements from Elm Street to New Britain Avenue	Large	Short-Term[1]	$5,300,000
6. Study Area Transit Facility Improvements	Small	Short-Term	$50,000
7. Study Area Sidewalk and Pedestrian Facility Improvements	N/A[2]	Short-Term	$4,400,000[3]
8. Study Area Bicycle Facility Enhancements	N/A[2]	Short-Term	$2,500,000[3]
9. Intersection Improvements at West Street and Main Street	Medium	Mid-Term	$1,100,000
10. Brook Street Neighborhood Streetscape and Multimodal Improvements	Large	Mid-Term	$2,300,000
11. Intersection Improvements at Cromwell Avenue and Inwood Road	Small	Long-Term	$500,000
12. Intersection Improvements at Cromwell Avenue and Brook Street	Medium	Long-Term	$1,300,000
13. Elm Street Connector Roadway	Large	Long-Term	$3,200,000

[1] Short-term priority only for recommendations addressing New Britain Avenue queues and Fire Station 2 access concerns

[2] For summary purposes, Bicycle and Pedestrian Improvements are grouped as a combined project for each mode, however implementation will likely occur as many separate projects as funding from various sources becomes available

[3] Not including costs of bicycle and pedestrian improvements identified as components of other recommended projects

Executive Summary

Section 1 Introduction

Section 2 Assessment of Existing Conditions

Figures

Tables

Appendix

Section 1
Introduction

The Route 3 Traffic and Development Study (Study) was conducted by the Capitol Region Council of Governments (CRCOG) on behalf of the Town of Rocky Hill (Town). The Town of Rocky Hill initiated the request for the study through CRCOG. The project is funded by the Federal Highway Administration (FHWA), the Town, and the Connecticut Department of Transportation (ConnDOT). The purpose of the study was to develop a comprehensive transportation plan for the study area in the Town of Rocky Hill and provide a planning document for the Town and State to guide future development and transportation system improvements.

The goals and objectives of the plan were identified by the project Technical Review/ Steering Committee (TR/SC), which was comprised of Town of Rocky Hill political leaders and Town, CRCOG, and ConnDOT staff. These goals and objectives were identified at the onset of the study and memorialized in the overall Study Mission Statement.

- *Develop sustainable strategies and recommendations to provide a measured approach, identifying both short-term and long range study area transportation system improvement scenarios that accommodate projected growth of the Town of Rocky Hill*

- *Identify improvement strategies that recognize and accommodate all modes of transportation within the study area, including transit, pedestrians, and bicycles, providing a complete transportation network*

- *Seek improvements to the study area transportation system that enhance and preserve the character and setting of residential neighborhoods*

- *Formalize a transportation system management and improvement plan that effectively correlates growth in development with enhancements to the study area transportation system and presents them in a manner that will assist the town in assessing development proposals.*

The study process includes five primary work tasks that are included in the overall scope of the project.

Task 1 – Data Collection

Task 2 – Analysis of Existing Conditions

Task 3 – Analysis of Future Conditions

Task 4 – Identification and Analysis of Improvement Alternatives

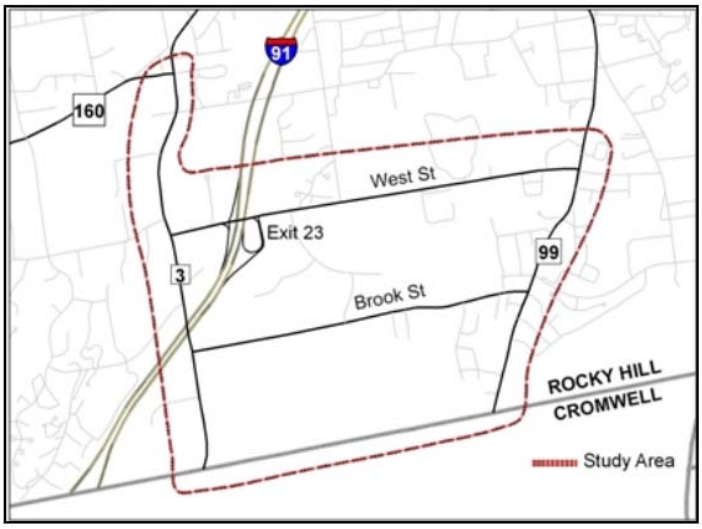
Task 5 – Final Improvement Plan

In addition to these work tasks a comprehensive Public Outreach program was conducted throughout the study process to involve and obtain input from the public. Four Public Meetings were conducted in addition to two Town Council Meetings, and two meeting with the business community during Chamber of Commerce meetings. The Public Outreach program is described in more detail, along with a summary of activities in Section 1.4.

1.1 Study Area

The Route 3 Traffic and Development Study area includes a significant portion of the Town of Rocky Hill, including the South Western commercial district of the Town. The study area includes several State Highways owned and maintained by ConnDOT, in addition to the Town maintained local roadways that were reviewed. The study area is illustrated in Figure 1-1. The main study roadways include:

Figure 1-1: Study Area



- **Cromwell Avenue (Route 3)** from the Cromwell town line and extending north into Rocky Hill to the intersection of Cromwell Avenue and New Britain Avenue (Route 160)
- The full length of **Brook Street**, between Cromwell Avenue and Main Street (Route 99)
- The full length of **West Street (SSR 411)**, between Cromwell Avenue and Main Street
- **Elm Street (Route 160)** from the intersection with Cromwell Avenue east to the Big Y Plaza driveway.
- **New Britain Avenue (Route 160)** at the intersection with Cromwell Avenue
- **Main Street (Route 99)**, from the Cromwell Town Line to the intersection with West Street. This roadway is being investigated to a lesser level of detail than the other State Routes in the study area. The primary analysis along Main Street will focus on the intersection of West Street and Main Street
- Other local town roads at intersections with the major routes in the study area.

In addition to reviewing the transportation system, the study also conducted an analysis of existing and future land use. Overall, the study area includes approximately 2,300 acres of land with a diverse mix of land uses, currently developed or zoned for development. Current land uses include residential, retail, commercial, office parks, and light industrial. The assessment of current land use and forecasted trends are provided in subsequent sections of this report.

1.2 Study Team

The study team was comprised of representatives from the Town of Rocky Hill, Connecticut Department of Transportation, and the Capitol Region Council of Governments, as well as the consultant team. The Town of Rocky Hill was represented by two leaders from the Town Council, one from each political party, and staff from the Engineering Department, the Economic Development Department, the Planning and Zoning Department, and one representative from the Planning and Zoning Commission. All Town representatives served on the Technical Review/ Steering Committee (TR/SC). ConnDOT staff are actively involved on the TR/SC and represented at all public meetings. The Department was represented by two staff members from the Bureau of Policy and Planning. CRCOG is the regional planning agency for the Town of Rocky Hill and overall project manager for the Study. CRCOG staff coordinated the efforts of the study team, Town, and State. CRCOG staff is also actively participating in the public outreach initiatives in cooperation with the Town, hosting the project website, and providing travel forecast assistance through the CRCOG maintained travel demand model. In total the Study is represented by parties at the State, Regional, and Local levels to ensure that the planning activities conducted under this Study fit within the overall planning goals at all levels of government.

The Tighe & Bond (T&B) consultant team features experts in the fields of transportation and traffic engineering, land use analysis and development planning, multi-modal planning, and environmental planning. Tighe & Bond, Inc. serves as the lead consultant on the project with expertise in transportation and traffic engineering. The other team members include Susan Jones Moses & Associates (SJM), Fitzgerald & Halliday, Inc. (FHI), and Weston Solutions (WS). Susan Jones Moses & Associates is the land use consultant. SJM is assessing the existing land use and development and will be supporting the effort to forecast the changes in land use and expansion of development looking out 20 years. Fitzgerald & Halliday is responsible for assessing the existing natural resources and reviewing current transportation infrastructure relative to accommodations for bicycles and pedestrians and providing recommendations for future enhancements to better accommodate all modes of travel in the study area. Weston Solutions is supporting the public outreach efforts, acting as a facilitator during public hearings.

1.3 Study Process

The study was conducted following a process defined by CRCOG. Similar previous studies have been conducted by CRCOG following a similar framework followed on this study. The key elements of the study include:

- technical analyses and assessment of the study area to assess existing conditions and deficiencies
- forecasting future travel demand and identification of potential future areas of concern
- identifying feasible improvement alternatives to mitigate the effects of future traffic on the study area roadways and to enhance the overall transportation system to address all modes of travel
- stakeholder meetings, primarily the Technical Review/Steering Committee meetings, but also meetings with business owners and economic development leaders in Town,
- a comprehensive public outreach process involving meetings, websites, and a public survey to obtain public input on the study process.

This Final Study report summarizes the comprehensive analysis of existing conditions, future conditions, and describes the transportation system improvement recommendations needed to mitigate the forecast growth in traffic and development in the region and Town.

Under the assessment of existing conditions the current study area needs, deficiencies, and opportunities were identified. An Existing Conditions Technical Memorandum was prepared that provided a detailed summary of the following tasks:

- Assessing the existing transportation system and identifying needs and deficiencies
- Observing traffic volumes, vehicle classifications, and travel speeds within the study area and developing 2010 existing traffic volumes
- Analyzing traffic safety and traffic operations during the morning and afternoon peak periods
- Reviewing current multi-modal transportation services and facilities
- Analyzing existing land use and development patterns to facilitate projections of future development potential
- Reviewing current land use policy and identifying economic trends and development potential in the Town
- Screening the natural and environmental resources to identify existing resources and determine limitations on land use expansion

The assessment of future conditions was conducted to analyze the effect of local and regional growth on the study area under 2030 future conditions. Under the assessment of future conditions, regional growth patterns were established considering land use changes and employment data forecasts for the region. Based on these data, traffic

volumes were forecast for the study area roadways utilizing the CRCOG travel demand model. A Future Condition Technical Memorandum was prepared summarizing the findings of the 2030 future design year assessment including:

- Analysis of potential land use and development patterns in the Town of Rocky Hill and in the region
- Forecasting the 2030 design year traffic volumes travelling through the study area
- Analyzing intersection operations under the 2030 no-build condition using projected traffic volumes
- Identification of poor operating conditions in the study area caused by increases in traffic

The assessment of future conditions provided the basis for the development of a series of improvement alternatives for the transportation system in the study area. The improvements were developed to provide acceptable intersection operations, mitigate the effects of projected traffic growth, and address identified safety concerns and issues in the study area. Concept plans were prepared to address a broad spectrum of issues, from an assessment of possible interchange modifications along Interstate 91 to simple intersection geometric improvements to address capacity and safety, to providing an aesthetic streetscape enhancement plan for a residential neighborhood in the study area. A complete summary of the various alternatives is presented in the Appendix of this report, and the recommended improvement plans are presented in a subsequent section of this report.

1.4 Local Coordination and Public Outreach

Throughout the Study, a comprehensive Public Outreach Program was conducted by the Study Team in cooperation with the State and Local agencies. Overall, the Public Outreach initiatives were guided by CRCOG's overall transportation planning and public participation guidelines set forth in the study scope of work. The goals of the outreach program are:

- Obtain input from the Public on Study Area issues, concerns, and help identify and frame the study goals and objectives
- Advise the Public of the study findings
- Further educate the Study Team with local knowledge
- Involve stakeholders and the public in the development and refinement of recommendations that fit the vision and character of the Town
- Facilitate review by Town Council, Town Boards and Commissions, Businesses, and Residents, leading to a Final Improvement Plan that can be endorsed by the Town of Rocky Hill to help guide future transportation system improvements and enhancements

In order to meet these Public Outreach goals, the Project Team, CRCOG, Town, and State have identified the following project committees and Town Commissions for milestone meetings throughout the Study process. In addition to meetings with these groups, Public Meetings were conducted at Study milestones to seek input from the Public. The Study Process has been organized such that the Economic Development Subcommittee of the Town Council Meetings serve as the formal Public Information Meetings. The following section describes the various Project Committees and their role in the Study.

1.4.1 Project Committees

The study effort will be guided through oversight provided by the Town of Rocky Hill, CRCOG, and ConnDOT. The public outreach initiatives will be facilitated through a Project Technical Committee/Steering Committee, the Rocky Hill Town Council, the Economic Development Subcommittee of the Rocky Hill Town Council, the Economic Development Commission, and the Rocky Hill Chamber of Commerce. The following section describes each of the groups that will be responsible to provide oversight and guidance throughout the conduct of the study. In addition, throughout the Scope of Services, meetings with each of these groups and committees have been identified during the work task that they will take place.

1.4.1.1 Technical Review / Steering Committee

This committee will provide consistent input and oversight throughout the study process. The committee will be comprised of:

- **Town Representatives**: Staff from the planning, engineering, and economic development departments; two representatives of the Town Council; and one representative of the Town of Rocky Hill Planning and Zoning Commission.
- **CRCOG Representatives**
- **ConnDOT Representatives:** ConnDOT Staff from the Division of Policy and Planning will represent the Department on this project and serve as a liaison between the Study and other Department units

Technical Review /Steering Committee meetings will be conducted at key milestones of the study process to provide an update on the study process and obtain guidance on the results, findings, and recommendations of the study. There are six meetings scheduled with this Committee.

1.4.1.2 Economic Development Subcommittee of Town Council

The Economic Development Subcommittee of the Town Council (EDS) meetings have been devised to serve two purposes within the Public Outreach effort. These include providing a meeting setting where the Study Team can provide an update to some members of the Town Council in a venue outside of the Town Council meetings where the members of the EDS can brief the full Town Council on the Study progress. Secondly, the EDS meetings will also serve as the formal Public Information Meeting for the Study. There are four meetings scheduled with the EDS.

1.4.1.3 Economic Development Commission

One meeting was conducted with the Rocky Hill Economic Development Commission (EDC) where the results of the existing and future conditions assessments and initial concept alternatives were presented. The EDC provided input on the land use analyses and initial concept plans relative to the current planning and economic development initiatives in the Town.

1.4.1.4 Rocky Hill Chamber of Commerce

The Study Team made two presentations to the Rocky Hill Chamber of Commerce at the Chamber's regular monthly meeting. The meeting with the Chamber members was the primary outreach to the business leaders and business owners in the Town. The initial meeting with the Chamber included a presentation of the existing conditions assessment, future condition analysis, and included a preview of the initial concept plans that were being contemplated by the Study Team and Steering Committee. The Chamber members utilized this forum to provide comments and input on the initial concepts and expressed their concerns relative to potential impacts to business, both along the study area roadways and general business activity that can be spurred by potential improvements to the transportation infrastructure in the Town. The second meeting with the Chambers was conducted near the completion of the Study and included a presentation of the Final Study recommendations.

1.4.1.5 Town Council

During the Analysis of Alternatives task and prior to publication of the Final Study Recommendations, the Study Team will conduct meeting with the Rocky Hill Town Council. The intent of these meetings will be to present the work of the Study to the governing body of the Town and obtain input on Town policy direction relative to the future impacts and recommended improvements. The Town Council meeting scheduled for the end of the Study will present the Final Study Recommendations and seek endorsement from the Town. There are two meetings scheduled to take place with the Town Council.

1.4.2 Summary of Outreach Activities

The Public Outreach initiatives have been on-going since the initiation of the Study. The following public meetings have taken place during the conduct of the Study:

Steering Committee Kickoff Meeting:	November 10, 2010
Economic Development Subcommittee Meeting:	December 8, 2010
Rocky Hill Mayor's Report:	December 12, 2012
Town of Cromwell Meeting:	January 4, 2011
Steering Committee Data Collection Meeting:	January 19, 2011
Steering Committee Existing Conditions Meeting:	February 23, 2011
Economic Development Commission Meeting:	May 10, 2011
Steering Committee Future Conditions Meeting:	May 11, 2011
Steering Committee EDS Preparation Meeting:	June 14, 2011
Economic Development Subcommittee Meeting:	June 21, 2011
Steering Committee Alternatives Review Meeting:	November 9, 2011
Steering Committee Alternatives Review Meeting:	January 10, 2012
Rocky Hill Chamber of Commerce Presentation:	January 12, 2012
Rocky Hill Town Council Presentation:	February 6, 2012
Rocky Hill Mayor's Report:	March 15, 2012
Economic Development Subcommittee Meeting:	February 14, 2012
Steering Committee Final Alternative Review Meeting:	September 12, 2012
Steering Committee Final Report Review Meeting:	October 31, 2012
Rocky Hill Chamber of Commerce Presentation:	November 8, 2012
Economic Development Subcommittee Meeting:	November 13, 2012
Rocky Hill Town Council Presentation:	December 3, 2012

1.4.3 Outreach Initiatives

In addition to the steering committee meetings and public meetings, a Public Survey following the completion of the Assessment of Existing Conditions was distributed in the Town to residents to facilitate input into the existing perceived issues and deficiencies. During the Analysis of Existing Conditions, Public Survey 1 was conducted. A copy of the survey and tabulated results are available in the Appendix.

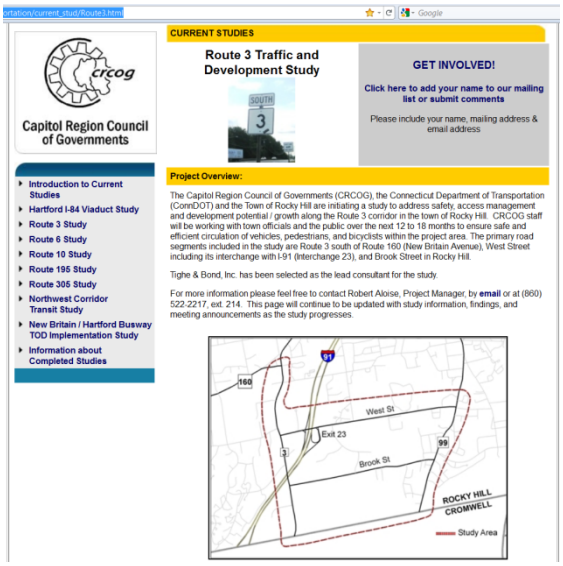
The Study Area extends south, just over the Cromwell Town Line. During the data collection phase of the Project, the Study Team and Town of Rocky Hill staff met with staff from the Town of Cromwell's Engineering, Planning, and Economic Development departments. The purpose of the meeting was to obtain information related to future developments planned along the Town Line with Rocky Hill, understand planned infrastructure improvements in the area, and discuss the overall growth and economic development experience in Cromwell to help the Study Team understand some of the regional activity.

1.4.4 Project Website

CRCOG is hosting a Route 3 Study webpage on the CRCOG website:

http://www.crcog.org/transportation/current_stud/Route3.html

The website provides information related to past and planned meetings, a link to subscribe to a project mailing list, and Study Publications as they become available.



Section 2
Assessment of Existing Conditions

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

2.1 Roadway Characteristics

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

2.1.1 Cromwell Avenue (Route 3)

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

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

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

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

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

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

2.1.2 West Street (SSR 411)

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

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

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

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

2.1.3 Brook Street

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

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

2.2 Intersection Traffic Control

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

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

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

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

TABLE 2-1
Study Area Intersections Traffic Control Devices

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

[1] Intersections operating in a closed loop system along Cromwell Avenue and West Street
[2] Intersections operate in a cluster under one traffic signal controller

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

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

2.3 Traffic Volumes

2.3.1 Historical Traffic Conditions

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

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

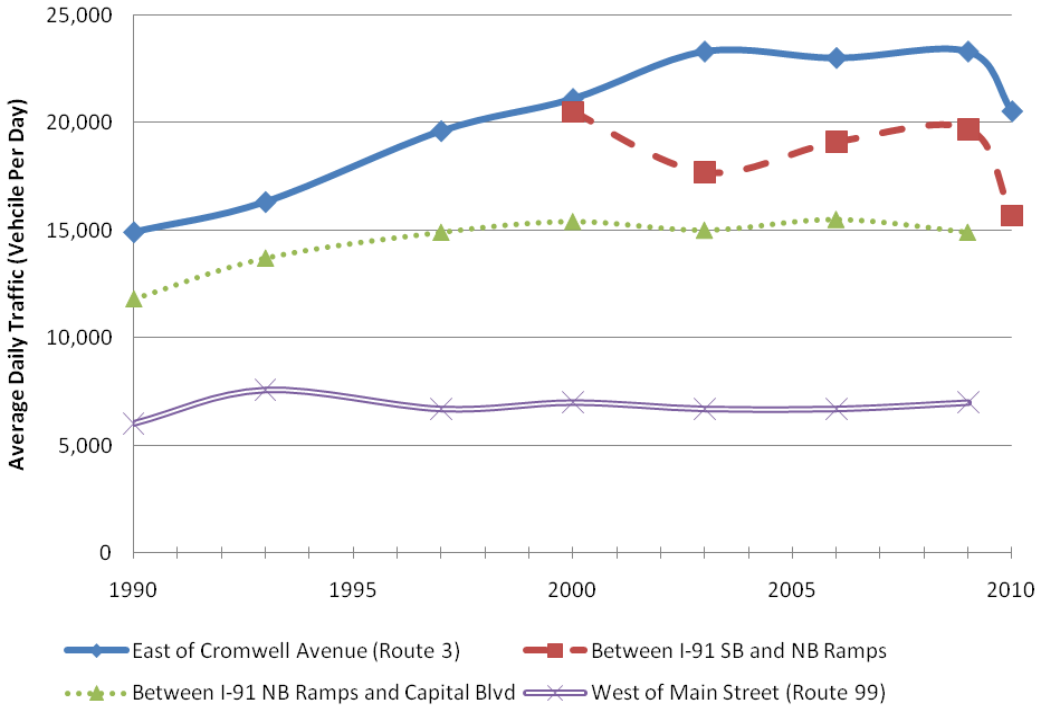
FIGURE 2-1

Cromwell Avenue Historical Average Daily Traffic

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

FIGURE 2-2

West Street Historical Average Daily Traffic



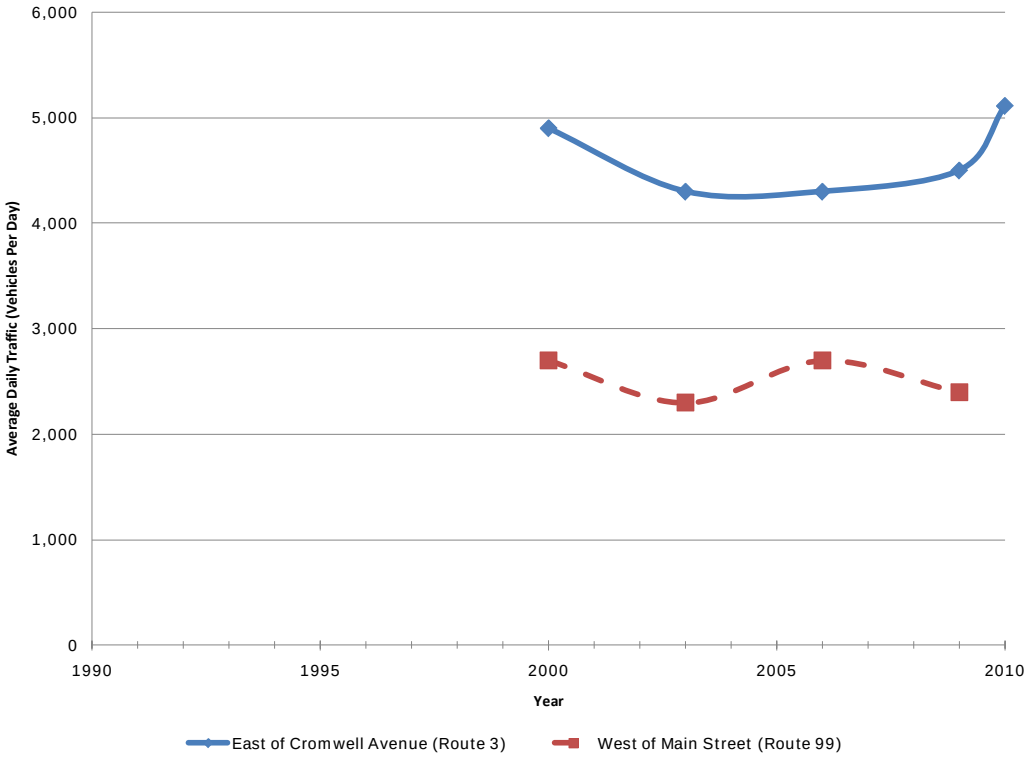
Source: ConnDOT, Connecticut Counts

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

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

FIGURE 2-3

Brook Street Historical Average Daily Traffic



Source: Connecticut Counts, ConnDOT

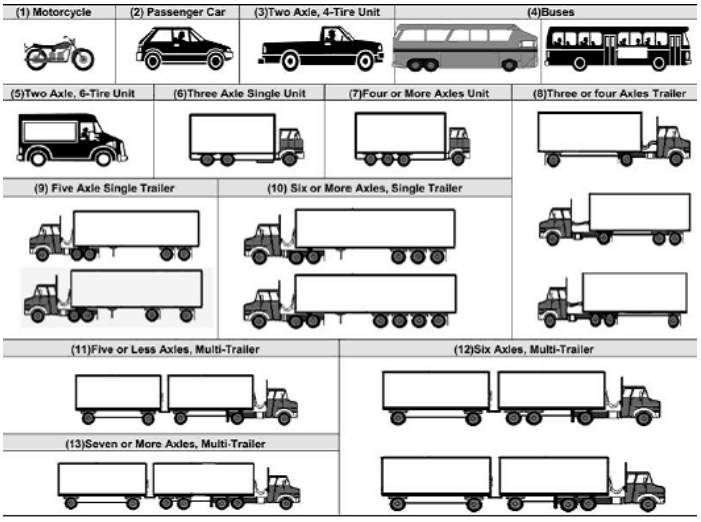
Table 2-2 also indicates that Cromwell Avenue carries about 10,000 more vehicles per day south of New Britain Avenue, than observations north of New Britain Avenue. This indicates that New Britain Avenue provides a significant amount of traffic entering the Study Area from the northwest end of the Town,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

TABLE 2-2

Existing Average Daily Traffic Volumes Summary (2007 – 2010)

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

2.3.2 Heavy Vehicle Traffic



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

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

TABLE 2-3
Heavy Vehicle Summary

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

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

2.3.3 2010 Existing Morning and Afternoon Traffic Volumes

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

- Traffic volume data collected in the middle of the decade (2005-2007) was used as the traffic volume datum for traffic data collected at the end of the decade. This approach was taken to capture traffic conditions during times of normal economic activity in the study area

- Traffic study data from approved developments were included in the 2010 Existing Traffic Volumes regardless of the operating status of the development. Approved developments include Modern Tire on Cromwell Avenue; strip mall at 581 Cromwell Avenue; Inner Circle Foods on the corner of Brook Street and Henkel Way; and the Connecticut State Laboratory on West Street

- Intersection turning movement volumes obtained in 2009 – 2010 were generally increased and balanced against the data and studies from the middle of the decade

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

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

2.4 Travel Speeds

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

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

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

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

TABLE 2-4

Travel Speed Observations (MPH)

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

2.4.1 Travel Time Study

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

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

2.4.2 Cromwell Avenue

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

FIGURE 2-7

Cromwell Avenue Travel Time Study – Northbound Direction

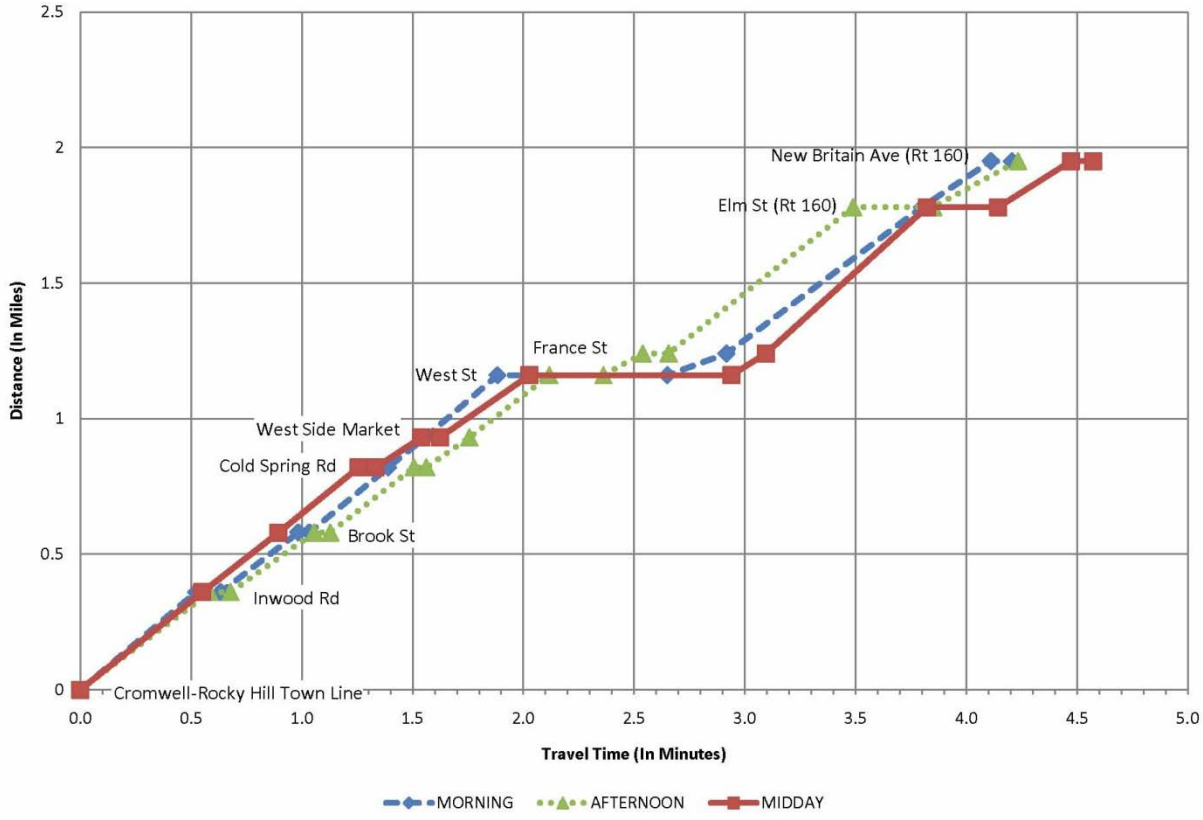


FIGURE 2-8

Cromwell Avenue Travel Time Study – Southbound Direction

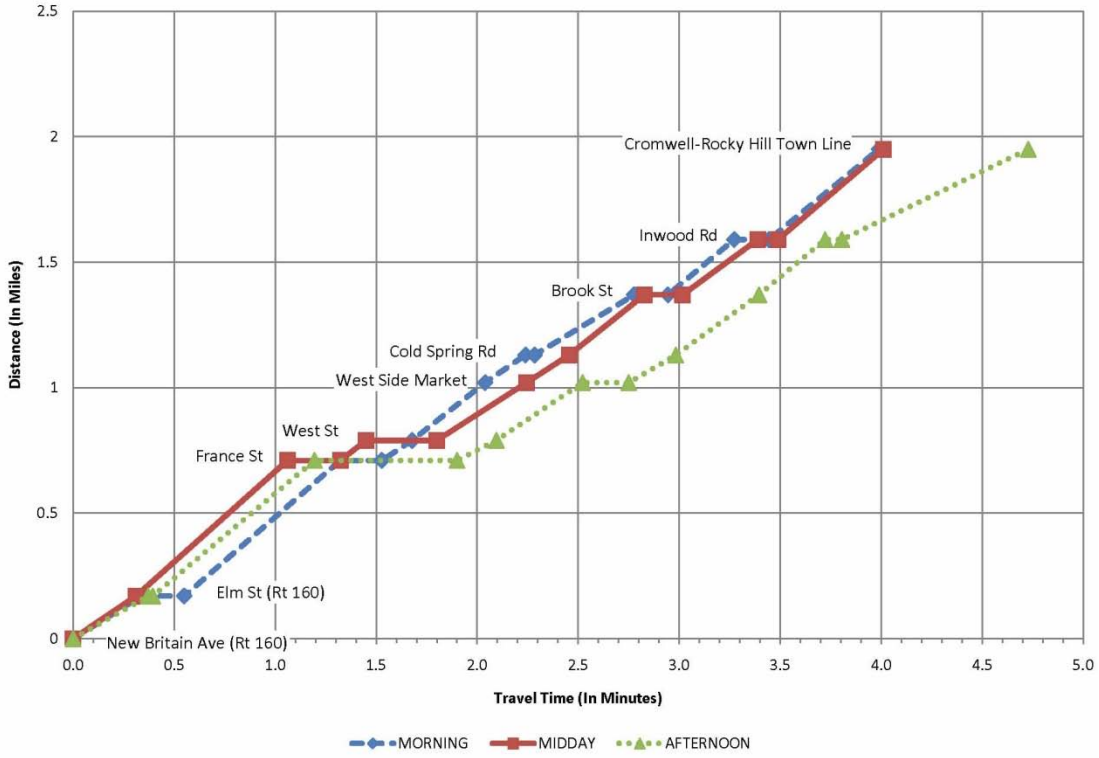


TABLE 2-5

Cromwell Avenue Average Northbound Travel Time Study Summary

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

TABLE 2-6

Cromwell Avenue Average Southbound Travel Time Study Summary

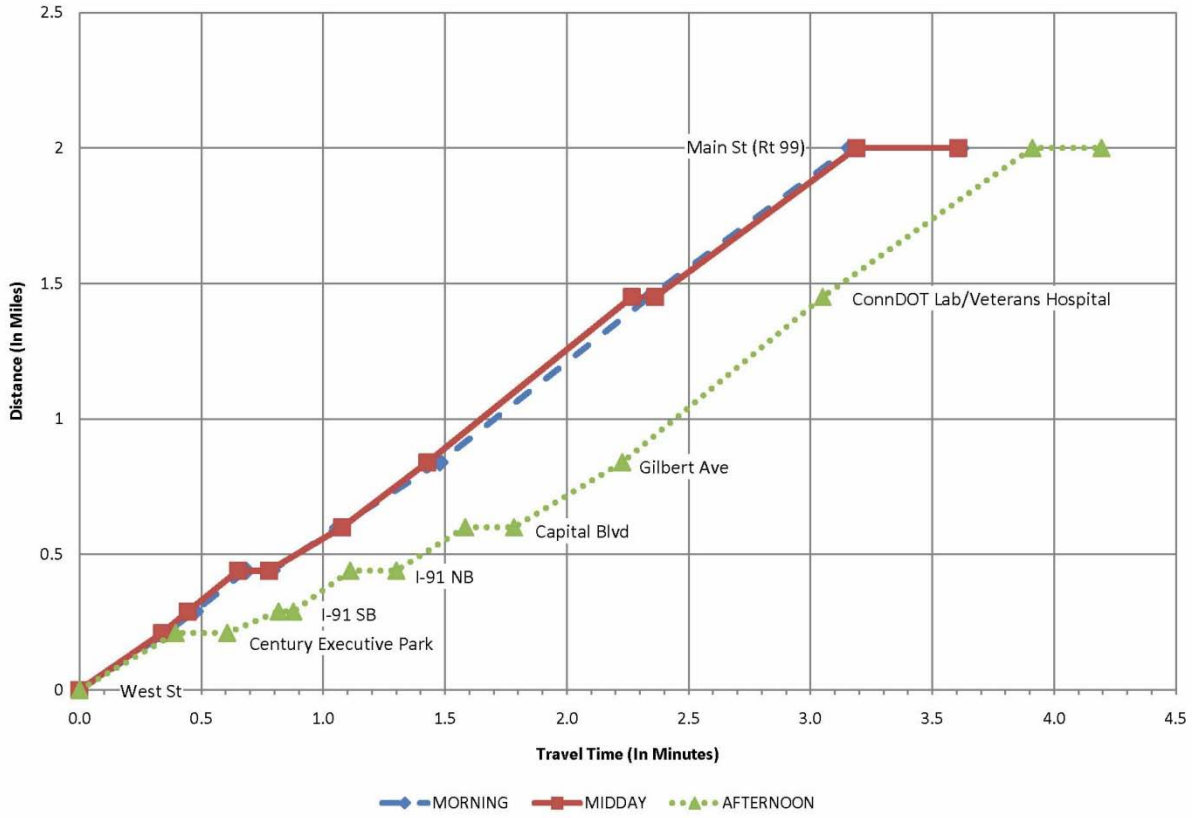
Intersection	Distance (Miles)	Morning Peak Hour		Midday Peak Hour		Afternoon Peak Hour	
		Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)	Travel Time (Sec)	Travel Speed (MPH)
New Britain Avenue	0.00	0.0	--	0.0	--	0.0	--
Elm Street	0.17	33.0	18.5	18.7	32.8	23.7	25.9
France Street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

2.4.3 West Street

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

FIGURE 2-9

West Street Travel Time Study – Eastbound Direction



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

FIGURE 2-10

West Street Travel Time Study – Westbound Direction

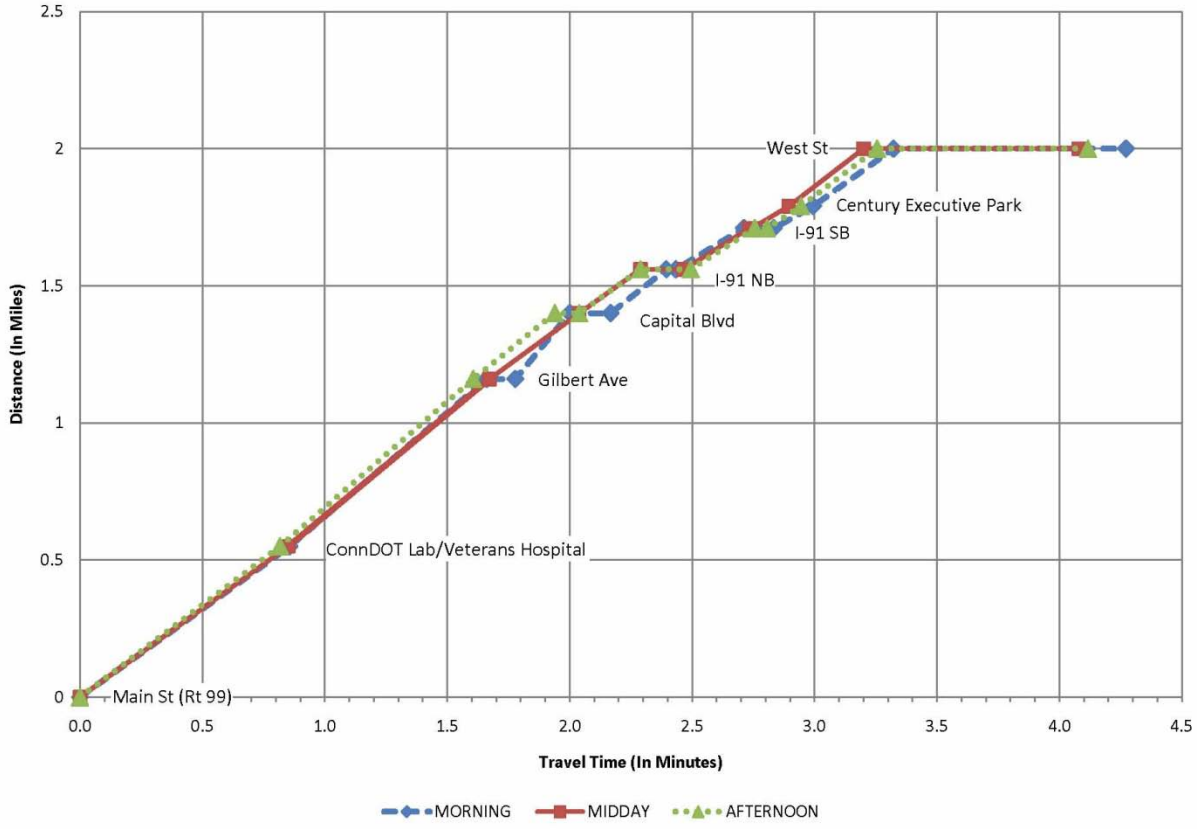


TABLE 2-7

West Street Average Eastbound Travel Time Study Summary

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

TABLE 2-8

West Street Average Westbound Travel Time Study Summary

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

2.5 Traffic Operations

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

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

Table 16-2
LEVEL OF SERVICE CRITERIA
Signalized Intersections

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

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

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

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

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

In general intersections that exhibit a LOS A or B are considered to have excellent to good operating conditions with little congestion or delay. LOS C indicates an intersection with acceptable operations. LOS D indicates an intersection that has tolerable operations with average delays that area approaching one minute. Intersections with Levels of Service E and F are operating with poor or failing conditions and typically warrant a more thorough review and possible improvement to mitigate the capacity issues. Improvements can include geometrics, lane use, timing modifications, of different form of traffic control to mitigate the operational issues and reduce average delay. In the context of this planning process, during the analysis of both existing and future conditions, intersections exhibiting LOS E and F will be identified for further analysis and potential improvements to mitigate poor or failing operations. Table 2-9 below summarizes the intersection operations along Cromwell Avenue; Table 2-10 summarizes the intersection operations along West Street; Table 2-11 summarizes the intersection operations along Brook Street.

2.5.1 Cromwell Avenue Peak Hour Traffic Conditions

TABLE 2-9

Cromwell Avenue Intersection Operational Summary

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

2.5.2 West Street Peak Hour Traffic Conditions

TABLE 2-10

West Street Intersection Operational Summary

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

Traffic Operations Summary Notes:

< Shared left turn and through lane

> Shared through and right turn lane

m Queue metered by upstream signal

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

2.5.3 Brook Street Peak Hour Traffic Conditions

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

TABLE 2-11

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

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

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

2.6 Traffic Safety

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

2.6.1 Cromwell Avenue

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

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

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

TABLE 2-12

Cromwell Avenue Collisions Summary

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

Source: ConnDOT, Town of Rocky Hill

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

TABLE 2-13

Cromwell Avenue Intersections Collisions Summary

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

2.6.2 West Street

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

TABLE 2-14

West Street Collisions-Type Summary

	Number of Collisions	
Collision Type	**Total**	**Percentage**
Rear-end	51	38%
Turning - Opp. Direction	32	24%
Fixed Object	17	13%
Turning - Intersecting Paths	11	8%
Moving Object	7	6%
Sideswipe - Same Direction	8	6%
Turning - Same Direction	9	5%
Total	**135**	**100%**
Contributing Factor	**Total**	**Percentage**
Following Too Closely	46	34%
Failed to Grant ROW	31	23%
Violated Traffic Control	12	9%
Animal/Foreign Object in Rd	7	6%
Driver Lost Control	8	6%
Speed Too Fast for Conditions	6	4%
Under the Influence	4	3%
Unknown	4	3%
Improper Lane Change	3	2%
Improper Passing Maneuver	3	2%
Other	11	8%
Total	**135**	**100%**

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

A review of statewide data indicates that the West Street / I-91 Southbound Ramps intersection should be evaluated in more detail as it relates to opportunities to improve safety. Although one may feel the numbers of accidents in other locations are high, analysis of the local accident data does not suggest a deficiency in vehicular safety when compared to statewide data. Table 2-15 summarizes the Cromwell Avenue collisions by intersection.

TABLE 2-15
West Street Intersections Collisions Summary

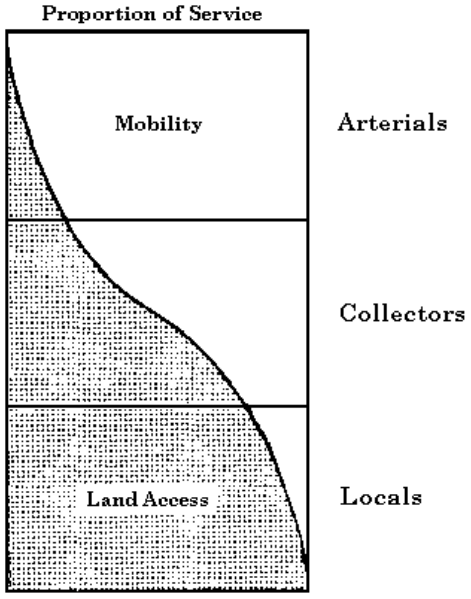
Cross Street	Total Collisions	Most Common Collision		Most Common Contributing Factor(s)	
Cromwell Avenue	17	Rear-end	11	Following Too Closely	8
Corporate Place	11	Rear-end	9	Following Too Closely	9
I-91 SB Ramps	34	Turning - Opp. Direction	20	Failed to Grant ROW	17
I-91 NB Ramps	19	Turning - Opp. Direction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

2.7 Access Management

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

Figure II-4

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



Source: Federal Highway Administration

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

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

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

2.7.1 Cromwell Avenue

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

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

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

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

2.7.2 West Street

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

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

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

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

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

2.7.3 Brook Street

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

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

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

2.8 Alternative Transportation Modes

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

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

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

2.8.1 Pedestrians and Sidewalk Infrastructure

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

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

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

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

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

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

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

Locations where marked crossings were notably absent include:

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

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

2.8.2 Bicycle Facilities

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

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

2.8.3 CT Transit Bus Services

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

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

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

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

2.9 Transportation System Condition

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

2.9.1 Cromwell Avenue

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

- A non-standard left-turn bypass lane is provided on Cromwell Avenue on the northbound approach to the signalized intersection at Inwood Place.

- Cromwell Avenue narrows from two lanes to one lane on the southbound approach to Inwood Place, as the existing right hand southbound lane becomes a right turn only lane. This lane reduction results in heavy southbound merging activity as through traffic merges into the inside lane in the southbound direction.

- During traffic peaks on Cromwell Avenue, the left lane on the southbound approach on Cromwell Avenue at Brook Street becomes a defacto left turn lane, forcing all through traffic into the right lane. The right lane becomes a right turn only lane just south of Brook Street.

- Statewide data indicates that the segment of Cromwell Avenue between Cold Spring Road and West Street should be evaluated to improve safety.

- Prior to the installation of the traffic control signal at the Westside Market intersection on Cromwell Avenue, this intersection exhibited a high rate of collisions. The installation of the traffic control signal appears to have mitigated the issues at this intersection.

- Field observations identified a queuing issue at the Dunkin Donuts at the intersection of Cromwell Avenue and West Street. During the morning peak hours, traffic in line at the Dunkin Donuts was observed queuing back into the intersection and onto Cromwell Avenue. The public also noted this issue at the Public Information Meeting.

- The long cycle length at the cluster intersections of Cromwell Avenue at West Street and France Street results in long queues on both West Street and France Street. Field observations also indicate that insufficient bypass area on France Street effectively restricts Right Turn On Red movements from France Street to Cromwell Avenue when a left-turning vehicle is stopped at the traffic signal.

- Public comments indicate that the installation of a traffic signal at Rhodes Road should be considered to facilitate safe egress from the street. A small development conducted a traffic control signal warrant analysis at this intersection to determine if a traffic control signal is warranted. A review of the current traffic volume data indicated that the intersection is not currently

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

- Long vehicle queues develop during the afternoon peak hour on the Cromwell Avenue northbound approach at New Britain Avenue, caused by the heavy left turning volume at this intersection.

- Statewide data indicates that the section of Cromwell Avenue from Elm Street to New Britain Avenue should be evaluated for safety improvements.

2.9.2 West Street

West Street was reviewed and the following deficiencies were observed.

- The intersection of the I-91 Southbound ramps and West Street exhibited a high number of collisions and a review of statewide data indicates that this intersection should be evaluated for safety improvements.

- Due to the location of the bridge parapet along the north side of West Street, and the geometry of the intersection of the I-91 Southbound exit ramp, poor intersection sight lines are available for traffic attempting to make a right turn on red.

- The traffic analysis exhibited and field observations confirm long queues for left turning traffic oriented to the I-91 ramps on West Street .

- Due to the location of the bridge parapet along the eastbound side of West Street, a very short channelized right turn lane is provided for traffic heading to I-91 North. Queue lengths at the signalized intersection of the I-91 North ramps with West Street backup beyond the channelized lane and block access during the peak hours.

- Observation of the destination signs located on the I-91 North exit ramp indicated difficulty reading sign messages at the higher rate of speeds on the ramp.

- During the afternoon commuter peak hour for the Corporate Ridge office park, typically occurring around 5 PM, long queues were exhibited on Capitol Boulevard for the left turn movement heading towards the I-91 interchange.

- Field observations indicate poor intersection sight distance from the stop bar looking left from Gilbert Avenue for traffic making a right turn on red.

- Steep downhill gradient on West Street on the eastbound approach to the Main Street intersection.

- Offset intersection alignment at the intersection with Main Street, West Street, and Forest Street requires a split signal phase, resulting in poor afternoon peak hour traffic operations.

2.9.3 Brook Street

Brook Street was reviewed and the following deficiencies were observed.

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

2.10 Existing Land Use and Economic Trends

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

2.10.1 Demographics

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

TABLE 2-16

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

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

Source: US Census Bureau; American Factfinder

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

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

2.10.2 Plan of Conservation and Development

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

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

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

- Guide growth to regional centers and areas of established infrastructure. This goal calls for steering development to established corridors where adequate infrastructure is available, such as the Route 3 Study Area with access to I-91 and several state highways.

- Increase redevelopment and infill development efforts. This goal includes policy recommendations aimed at supporting redevelopment in established corridors.

- Revise zoning and subdivision regulations to address local and regional land use concerns. Policy recommendations that support this goal include supporting infill and mixed-use development, and supporting zoning regulations and other efforts to increase pedestrian and bicycling as transportation options.

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

- Coordinate and promote regional land use, infrastructure, and fiscal policies for economic development. Policy recommendations included for this goal that will be addressed through the Study include encouraging development in corridors with infrastructure adequate to support such development, and providing leadership in identifying key areas of regional economic significance and growth potential.

- Support and improve regional business development strategies and efforts. One policy that addresses this goal is supporting efforts to attract new businesses in several target industries such as health care, distribution and logistics, and information technology. Distribution and logistics, and information technology are industries that have shown some strength in Rocky Hill (see economic trends, below.)

Transportation goals related to the Route 3 Corridor Study include:

- Provide a range of viable transportation options within the region. Relevant policies include coordinating local, regional, and state efforts to improve traffic flow in key corridors, and supporting efforts to improve walking and bicycling as viable transportation options.

- Improve inter-regional and interstate transportation. One key policy recommendation under this goal is to improve truck transportation through the region.

- Coordinate land use, environmental, and transportation efforts. This goal recommends combined local, regional, and state efforts for transportation improvements that are auto, bicycle, pedestrian, and business friendly. The goal also recommends in-fill development near existing or proposed transit.

- Anticipate and plan for future transportation needs. Recommendations in support of this goal call for tracking economic growth and encouraging local officials to plan transportation investments in anticipation of economic growth, a key component of the mission statement of the Route 3 Traffic and Development Study.

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

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

- Improve traffic circulation in western Rocky Hill. The provision of adequate circulation in the western side of town is noted as a key issue to support future development.

- Attract more economic development to provide jobs, goods and services, and more tax revenue. The Plan calls for the simplification of the number and variety of business zones to facilitate appropriate economic development in different parts of the community. It also recommends expansion of the economic development area on Brook Street, improved access to business areas, and aesthetic and functional (parking and access) improvements to commercial areas like Silas Deane Hwy (Route 99) and Cromwell Avenue. Further, the Plan recommends restricting commercial zones to their current extent unless significant community benefits can be demonstrated.

- Encourage nodal development, with one focus being the area encompassing the intersections of Cromwell Avenue with New Britain Avenue and Elm Street. The POCD notes that nodes should have identifiable focal points, defined edges, and strong structures. Compact development, mixed uses with pedestrian traffic and multi-purpose trips should be encouraged and sprawl and strip development discouraged.

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

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

- Allow land development at a level that is consistent with the transportation network's ability to provide an acceptable level of mobility. Policies that support this goal include coordinating with state and regional agencies to maintain the existing roadway system, encouraging developers to make necessary improvements to accommodate new traffic or mitigate traffic impacts, and encourage developers to provide road and utility connections, particularly along the Shunpike Turnpike (Route 3) between Main Street and the Rocky Hill town line. The Plan further promotes allowing development only where adequate roadways exist.

- Expand the economic base to better serve residents, businesses, and visitors. A key policy recommendation is the development a Premier Business Park Master and Marketing Plan for land located on the northern border of the community, adjacent to Rocky Hill and the Route 3 Study Area. The Town is currently in the process of completing such a plan.

2.10.3 Town of Rocky Hill Zoning

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

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

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

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

TABLE 2-17

Key Requirements for Key Study Area Zoning Districts

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

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

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

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

Source: Rocky Hill Zoning Regulations

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

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

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

TABLE 2-18

Allowable Uses - Key Zoning Districts in Rocky Hill Study Area

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

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

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

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

Source: Rocky Hill Zoning Regulations

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

Table 2-19 shows land area by zoning for both the Study Area and the Town of Rocky Hill. Within the Study Area, 58% of the land area is zoned residential[3], 17% Office Park (OP), 16% Business Park (BP), and 7% commercial (C). Comparatively, 69% of the Town's land is zoned residential, 8% Office Park, 5% Business Park, and 4% commercial. In addition, 12% of the land within the Town is zoned for agriculture, while none of the land in the Study Area is so zoned, despite large tracts of land in agricultural use. These parcels within the study are zoned BP, OP and residential.

[2] Town of Cromwell, *Zoning Regulations*, Revised through November 20, 2003.
[3] This includes all land zoned R20, R40 and RC.

TABLE 2-19

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

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

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

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

TABLE 2-20

Study Area Percent of Total Town Land by Zoning Category

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

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

2.10.4 Land Use

Rocky Hill has a land area of 7,375 acres. The study area comprises 29% of the land area of the town (2,275 acres.) The current number of parcels, land area, and building square footage by land use designation[4] are shown for both the Town of Rocky Hill and the Study Area in Table 2-21. The percentage of parcels and land area by use for both the Town and the Study area are shown in Table 2-21 and depicted in Figure 2-18.

TABLE 2-21

2010 Land Use, Rocky Hill and Route 3 Study Area

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

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

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

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

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

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

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

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

TABLE 2-22

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

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

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

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

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

2.10.5 Industrial Real Estate Market

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

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

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

TABLE 2-23

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

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

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

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

Source: CB Richard Ellis, SJM Associates

TABLE 2-24

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

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

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

Source: CB Richard Ellis, SJM Associates

2.10.6 Office Real Estate Market

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

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

TABLE 2-25

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

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

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

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

Source: CB Richard Ellis, SJM and Associates

TABLE 2-26

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

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

Source: CB Richard Ellis; SJM and Associates

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

TABLE 2-27

Rocky Hill Office Space as a Percentage of the Hartford Region

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

Source: CB Richard Ellis: SJM and Associates

2.10.7 Retail Real Estate Market

In addition to a high concentration of office uses, the Study Area is home to many retail establishments. Table 2-28 summarizes parcels with retail uses by type in both the Town of Rocky Hill and the Route 3 Study Area[5], and includes acreage and building square footage for each use. There are 29 parcels within the study area that are designated for retail use in the Town's CAMA database. There are 10 local/strip retail centers within the Study Area with 411,870 square feet of space. These centers comprise 91% of all local/strip centers in Rocky Hill, and 69% of the square footage of local/strip center space. There are four parcels designated as retail stores (14% of the Town total), and 3 each of gas/marts and combined office/retail uses. The Study Area is home to two supermarkets, Big Y Market and Westside Market, with a total of 172,509 square feet of space. In total, the Study Area has 32% of the Town's retail parcels, 27% of the retail acreage, and 36% of the square footage of retail uses within the Town.

TABLE 2-28

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

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

Source: Rocky Hill CAMA data; SJM Associates

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

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

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

2.11 Environmental and Natural Resources

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

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

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

2.11.1 Surface Water Resources

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

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

2.11.2 Groundwater Resources

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

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

2.11.3 Wetlands

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

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

2.11.4 Floodplains and Stream Channel Encroachment Lines

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

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

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

2.11.5 Threatened and Endangered Species and Critical Habitats

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

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

2.11.6 Historic Register Properties

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

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

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

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

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

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

2.11.8 Sensitive Noise Receivers

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

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

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

2.11.9 Hazardous Risk Sites

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

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

Section 3
Assessment of Future Conditions

The assessment of future conditions in the Study Area is conducted to develop a forecast of potential traffic growth and volumes that will travel on the study area roadways and measure the impacts in the future design year. Based on the traffic projections, an traffic operations analysis is conducted to identify the effects of the traffic growth and provide the basis for the development of transportation improvement alternatives to mitigate the impacts within the Study Area.

The Route 3 Traffic and Development Study conducted a review of potential land use changes in the study area that could contribute to local traffic growth and CRCOG, using a travel demand model maintained by CRCOG, forecast regional traffic volumes to the 2030 Design Year and provided specific traffic for the morning and afternoon peak hours in the study area. The forecast 2030 traffic volumes were used in traffic analyses that determined how the existing transportation network would function under 2030 traffic loading. These analyses provide the framework for the identification of areas of future operational concerns in the Study Area and advise State, regional, and local leaders and stakeholders of expected issues that may arise over the study time horizon.

3.1 Potential Future Development

The consultant team used several steps to identify parcels within the study area that have potential for future retail, commercial or industrial development. Using aerial photographs and parcel maps, the team surveyed the study area and recorded vacant and underutilized parcels. The team also met with the Town Planner and Town Economic Development Director to identify parcels for which development plans have been submitted or discussed. Interviews were conducted with key businesses and property owners within the Study Area to identify additional plans for future development, particularly for parcels that already housed some buildings, but had substantial land available for additional development. The findings from the site analysis and interviews were compiled in a database that included parcel map and lot number, address, acreage, and zoning.

A listing of all vacant parcels within the study area was developed based on the Town's CAMA database. There are 72 parcels comprising 459 acres of vacant land in the Study Area, including one 75 acre parcel of municipal parkland. A total of 51% (235 acres) of the vacant land is zoned R20, while 28% (127 acres) is zoned Office Park, 13% (61 acres) Business Park, and 5% (22 acres) Commercial.[6] [7] Table 3-1 summarizes the total vacant land (acres) in the Study Area.

[6] Note that the land use designation may not always reflect the zoning. In some cases, the land use designation reflects the ownership of the parcel. For example, one parcel zoned R20 but designated as commercial vacant is owned by Rose Cemetery. Several parcels owned by public utilities and with a land use designation of public utility are located within the R20 zone. The single parcel designated as residential vacant is a vacant parcel within a subdivision. Most vacant residential land is designated raw acreage.

TABLE 3-1

Study Area Vacant Land (Acres) by Land Use Designation and Zoning District

Land Use Designation	Zoning District					Total
	BP	C	OP	R20	Unspecified	
Commercial Land	0	13	81	4	0	98
Industrial Vacant	32	0	0	0	0	32
Municipal Park	0	0	0	75	0.9	76
Municipal Vacant	0	4	0	1	0	4
Open Space	0	0	0	8	12	20
Public Utility	0	6	24	12	0	42
Raw Acreage	0	0	4	36	0	40
State Hwy Taking	0	0	0	28	0	28
State Vacant	0	0	9	21	0	30
Tillable	29	0	10	42	0	81
Vacant Residential	0	0	0	1	0	1
Woodland	0	0	0	8	0	8
Total	**61**	**22**	**127**	**235**	**13**	**459**
Percent of Total	**13%**	**5%**	**28%**	**51%**	**3%**	**100%**

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

The inventory of potential development parcels was screened to eliminate the majority of parcels zoned for residential use, parcels that have significant natural resources coverage, parcels used for highway takings, parcels with utility easements, and parcels that are too small to accommodate commercial development as per the zoning code. Thirty five parcels were eliminated, and the remaining thirty seven parcels were compared to the parcel database developed based on site work and interviews. Parcels identified as potential commercial development sites through the analysis of vacant parcels that were not identified through the site analysis and interviews were added to the database of potential development parcels.

Figure 3-1 shows the location of all parcels that have been evaluated for potential future commercial/industrial development within the Rocky Hill portion of the study area. Table 3-2 shows the number of parcels and acreage by zoning district for the potential development parcels.

[7] One notable parcel not listed as vacant is L022 Brook Street (Parcel ID 17-331), located immediately east of the Burris property. This 86.15 acre parcel is zoned R20 and currently owned by Gardner Nurseries. Its land use designation is Industrial because of 2,660 square foot building on the property that is used for offices for the farming operation. The future use of this parcel will be important to residents to the east, as well as to the levels of traffic on Brook Street.

TABLE 3-2

Total Land with Potential for Commercial/Industrial Development by Zoning District

Zoning	Parcels	Acreage
OP	23	292
BP	15	129
COMM	13	30
R-20	5	110
Total	**56**	**561**

Source: Town of Rocky Hill CAMA Database; SJM and Associates

Conversely, several parcels were determined not likely to develop into commercial or industrial sites over the next 20 years. These parcels are also identified on Figure 3-1.

Currently, there are 292 acres of vacant or underutilized land that is zoned Office Park (OP) within the Rocky Hill portion of the Study Area. In addition, there are 129 acres of land zoned Business Park (BP) within the Rocky Hill study area that have some potential for development or redevelopment. The OP and BP land includes 92 acres on three parcels of land held by Burris Logistics, Henkel, and Sysco, which are partially developed but retain some development expansion potential. There are 30 acres of commercially zoned land primarily along Route 3 that are vacant, or which currently are occupied by single family homes surrounded by commercial uses. These single family homes could well convert to office or retail uses over the next twenty years. Only five parcels zoned R-20 were included as potential sites for future commercial/industrial development, one is the site of the new State Lab. This site was under development at the time of the assessment. Three are small single family lots. The final R-20 site is the 86.2 acre site on Brook Street that abuts the Burris property to the west. While the Town has expressed interest in retaining this site for residential use, it is included as a potential development site for further review because of neighborhood concern.

OP zoning allows research and development and light assembly, and BP zoning allows manufacturing, assembly, and warehousing and distribution. Much of the developable land zoned OP is within existing office parks such as Corporate Ridge and Corporate Place. These parcels will likely develop with office uses. The BP parcels are located along the south side of Brook Street and on either side of Route 3 south of I-91. Burris Logistics has approved plans to expand by 248,075 square feet at some time in the future.[8] Sysco has capacity within its existing facility to double its operations, and plans to expand by no more than 60,000 square feet (including additional freezer space) in the foreseeable future.[9] According to the Economic Development Director for the Town of Rocky Hill, the primary site for future industrial development within the Town is on two parcels of OP zoned land south of Belamose Avenue (and the existing industrial park) to the Cromwell town line totaling 114 acres. These are outside the Study Area, but are

[8] John Harrington, General Manager, Burris – January 4, 2011 interview

[9] Bob McMaken, President and Jeff Sault, VP of Operations – Sysco CT – January 5, 2011 interview

included in the database and on the map because vehicles accessing these parcels might utilize study area roadways.

The Town of Cromwell is completing plans for a 96 acre industrial park just south of the Cromwell-Rocky Hill town line on the west side of Route 3. At build-out, the park is expected to have an estimated 210,000 square feet of flex, distribution, and warehouse space. At the time of the initial analysis the Town of Cromwell expected the park to be under development within five years. However, through the course of the study development, Town of Rocky Hill staff have noted that plans for the development of the industrial park have stalled due to local approval and agreements with abutting property owners. While these issues may delay the development of the office park, the potential for this development to occur within the study horizon still exists. Cromwell also has several hundred acres of industrially-zoned land east of Route 3 and south of the Rocky Hill town line. According to Town of Cromwell officials, this land has development constraints, including wetlands, endangered species, other natural resources and potential contamination. Because of these constraints, this land will likely be built out over time as an office park similar in character to Corporate Ridge. The land is currently in private ownership and much of it is farmed. There are no immediate plans for any development on this land. However, in total, the Town of Cromwell plans to add 1.3 million square feet of office/flex space over the next twenty years, including at both the proposed industrial park and on the land east of Route 3. Development in Cromwell, as well as the twenty year build-out potential of vacant and underutilized land within the Rocky Hill portion of the study area will be evaluated as part of Task 3.

3.2 2030 Traffic Volume Forecasts

In support of the Future Condition Assessment, future traffic volumes were forecast for the 2030 Design Year. The traffic projections consider both the anticipated changes in land use and development in the Study Area, and the expected expansion of regional trips that traverse the study area. The growth in the regional trips is driven by factors including population growth, new development, land use expansion, increases in overall development density, and employment growth.

Independent methodologies were utilized to forecast two scenarios for 2030 Design Year Traffic volumes. The 2030 Future Traffic Volumes were estimated using CRCOG's regional transportation model, based on employment data inputs from the State Labor Department and US Census Bureau. A second set of future traffic volumes, the 2030 Alternate Traffic Volumes, were also developed using CRCOG's regional transportation model, but this time the traffic projections were based on employment inputs developed from an independent study of Rocky Hill and Connecticut's North Central Labor Market Area development trends and forecasts. Both sets of volumes were reviewed by ConnDOT with the **determination that the 2030 Future traffic volumes are approved for use in identifying the transportation needs and deficiencies**, and ultimately serve as the basis of the planned improvements in the Study Area and described in this report. A summary of the 2030 Alternate Traffic Volumes appear in the Future Condition Technical Memorandum that was published during the conduct of the study and available from the Town or CRCOG. For comparison purposes, weekday traffic volumes along Cromwell Avenue (Route 3) under the 2030 Future projections are projected to expand by 21% to 33% during the morning peak hour and 22% to 34% during the afternoon peak hour. The 2030 Alternate Traffic Volumes are forecast to be modestly higher than the 2030 Future Traffic Volumes along Cromwell Avenue (Route 3), with growth rates along Cromwell Avenue ranging from 34% to 44% during the

morning peak hour and between 33% and 46% during the afternoon peak hour. Traffic volumes along Main Street and Brook Street (between Henkel Way and Cromwell Avenue) are anticipated to grow by larger percentages, however will not approach the volumes that the heavier traveled stretches of Cromwell Avenue and West Street currently experience. A comparison of the two future traffic volume scenarios relative to the 2010 existing traffic volumes is presented in Table 3-3. However, going forward only the 2030 Future traffic volumes were used to develop recommendations to mitigate the anticipated effect of the travel demand increases.

TABLE 3-3

Morning Peak Hour Traffic Growth Summary

	Morning Peak Hour Volume (Vehicles)			Projected Traffic Growth (%)	
Location	**2010 Existing**	**2030 Future**	**2030 Alternate**	**2030 Future**	**2030 Alternate**
Cromwell Ave (Rte 3)					
South of Brook Street	1,322	1,760	1,900	33.1%	43.7%
South of West St	1,806	2,200	2,440	21.8%	35.1%
South of Elm St	1,462	1,910	1,980	30.6%	35.4%
South of New Britain Avenue	1,493	1,980	2,100	32.6%	40.6%
North of New Britain Avenue	733	980	1,020	33.7%	39.2%
West of New Britain Avenue	972	1,260	1,300	29.6%	33.7%
West Street (Rte 411)					
East of Cromwell Avenue	2,046	2,375	2,500	16.1%	22.2%
Between I-91 Ramps	2,148	2,550	2,625	18.7%	22.2%
East of I-91 NB Ramps	2,220	2,710	2,710	22.1%	22.1%
East of Gilbert Road	821	875	875	6.6%	6.6%
West of Main Street	543	575	575	5.9%	5.9%
Brook Street					
East of Cromwell Avenue	624	1,050	1,075	68.3%	72.3%
West of Henkel Way	486	900	950	85.2%	95.4%
Main Street (Rte 99)					
North of West Street	941	1,300	1,375	38.1%	46.1%

TABLE 3-4

Afternoon Peak Hour Traffic Growth Summary

Location	Afternoon Peak Hour Volume (Vehicles)			Projected Traffic Growth (%)	
	2010 Existing	2030 Future	2030 Alternate	2030 Future	2030 Alternate
Cromwell Ave (Rte 3)					
South of Brook Street	1,585	2,075	2,250	30.9%	42.0%
South of West St	2,279	2,790	3,075	22.4%	34.9%
South of Elm St	2,040	2,665	2,770	30.6%	35.8%
South of New Britain Avenue	1,946	2,575	2,850	32.3%	46.4%
North of New Britain Avenue	896	1,200	1,270	33.9%	41.7%
West of New Britain Avenue	1,414	1,820	1,875	28.7%	32.6%
West Street (Rte 411)					
East of Cromwell Avenue	2,359	2,720	2,875	15.3%	21.8%
Between I-91 Ramps	2,354	2,760	2,850	17.2%	21.1%
East of I-91 NB Ramps	2,265	2,699	2,725	19.2%	20.3%
East of Gilbert Road	911	963	970	5.7%	6.5%
West of Main Street	699	720	715	3.0%	2.3%
Brook Street					
East of Cromwell Avenue	599	1,025	1,050	71.1%	75.3%
West of Henkel Way	574	1,083	1,120	88.7%	95.1%
Main Street (Rte 99)					
North of West Street	1,287	1,791	1,900	39.1%	47.6%

Figure 3-2 and Figure 3-3 illustrate the historical average daily traffic volumes along Cromwell Avenue and West Street and indicate the “straight-line” forecast rate of growth from 2010 to 2030 based on the 2030 Future Traffic Volumes. Average Daily Traffic volumes along Cromwell Avenue are estimated to range from between 16,000 vehicles per day at the Cromwell-Rocky Hill Town Line to approximately 28,000 vehicles per day south of West Street, indicative of the volume of commuter traffic on Cromwell Avenue travelling to the Interstate 91 interchange on West Street, before decreasing to 22,000 vehicles per day at New Britain Avenue. Traffic volumes along West Street are estimated to continue to grow in the interchange area, with 25,000 vehicles per day to 28,000 vehicles per day forecast for the interchange area. The segment of West Street to the east of Corporate Ridge is forecast to experience minimal traffic volume growth between 2010 and 2030. Figures 3-4 and 3-5 illustrate the weekday morning and afternoon peak hour intersection turning movement volumes for the 2030 Future condition. In addition, Figures 3-6 and 3-7 summarize the projected traffic volumes under an alternative scenario where a new local roadway connection is provided between West Street and Elm Street. This scope of this recommendation is described in Section 4 of this report.

FIGURE 3-2

Cromwell Avenue Historical and Forecast Average Daily Traffic (2030 Future Traffic Volumes)

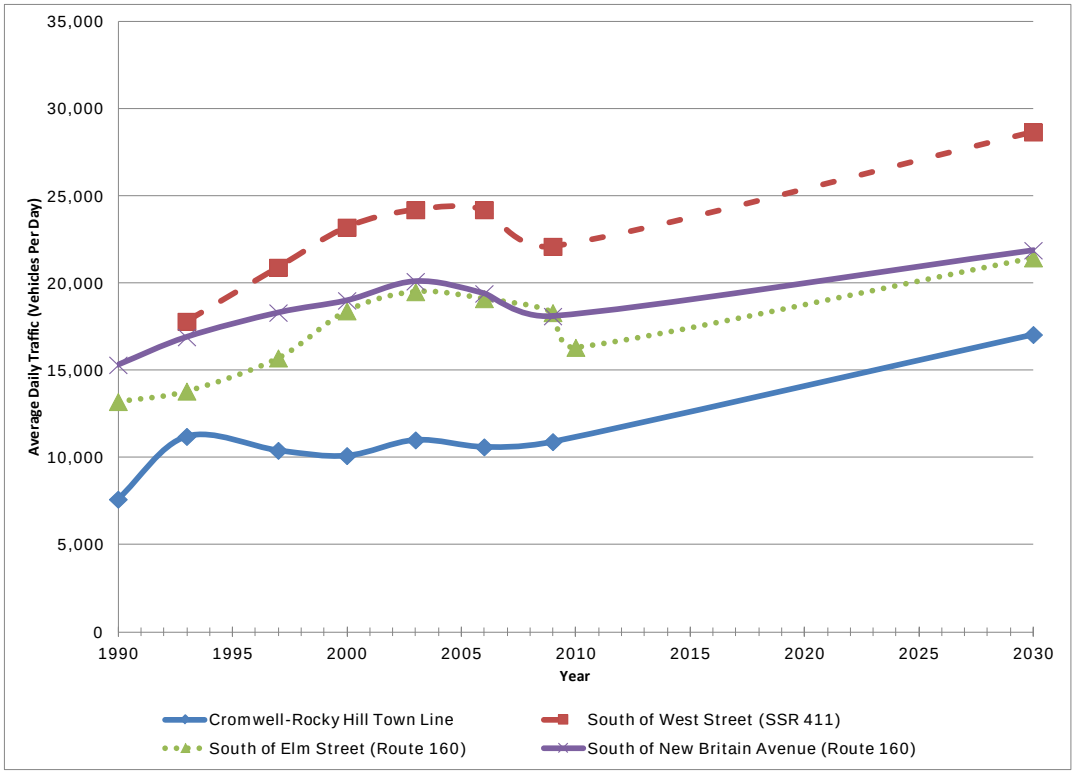
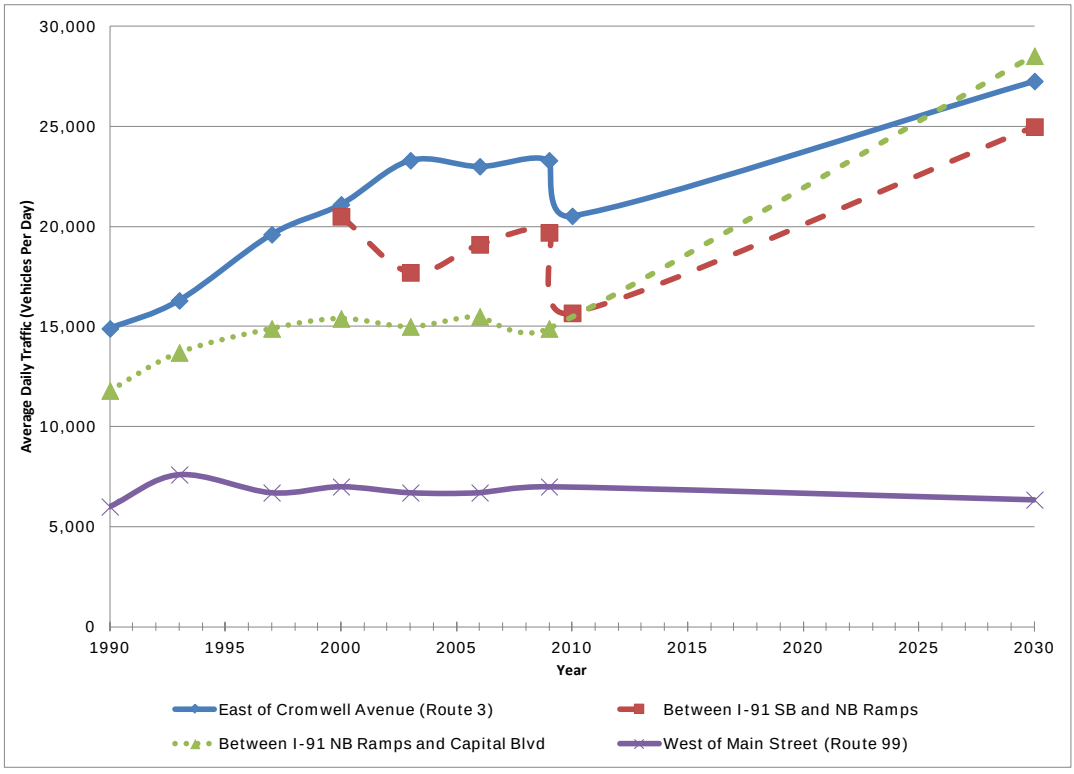


FIGURE 3-3

West Street Historical and Forecast Average Daily Traffic (2030 Future Traffic Volumes)



3.3 Future Traffic Analysis

The traffic operations analyses of 2030 Design Year traffic volumes are based on future traffic projection developed by CRCOG utilizing the CRCOG travel demand model. The following sections summarize the traffic analysis methodology and anticipated future traffic conditions for the existing transportation network under 2030 Future traffic volumes for the Study Area roadways and intersections. A detailed description of the analysis results is available separately in the Future Conditions Technical Memorandum.

3.3.1 Traffic Analysis Methodology

Future traffic operations during the morning and afternoon peak hours were analyzed to measure the effect of the projected traffic growth on the Study Area roadway network under the no-build condition. Traffic operations in terms of capacity and vehicle queuing at the sixteen study intersections were determined based on the premise that no improvements or changes were implemented between the 2010 Existing Condition and 2030 Design Year, i.e. an analysis of 2030 projected traffic volumes with existing roadway geometry, signal timing, and signal phasing. The capacity and queue analyses were computed using Trafficware's *Synchro plus SimTraffic 7 – Traffic Signal Coordination Software,* based on the *2000 Highway Capacity Manual* methodology.

The Highway Capacity Manual describes an intersection's qualitative operational condition by Level of Service (LOS). LOS is defined in the Highway Capacity Manual using grades A through F and is based on the average amount of delay experienced by a vehicle at an intersection. In general, intersections that exhibit a LOS A or B are considered to have excellent to good operating conditions with little congestion or delay. LOS C indicates an intersection with acceptable operations. LOS D indicates an intersection that has tolerable operations with average delays approaching one minute per vehicle. Intersections with Levels of Service E and F operate with poor or failing conditions and typically warrant a more thorough review and possible improvement to mitigate the poor operating conditions.

In addition to Level of Service, queuing is another critical factor that needs to be considered when conducting an analysis of intersection operations. A vehicle queuing analysis is used to determine the length of the line of vehicles that are stopped on an approach to an intersection waiting to pass through. The determination of queue lengths for each approach movement is used to determine turn lane storage requirements, indicates when traffic in exclusive turn lanes may extend beyond available storage and block adjacent lanes, and can identify situations where traffic waiting to move through an intersection backs up to an extent where traffic operations at up-stream intersections are impacted. The analyses of the Study Area intersections reviewed the 95th percentile queue lengths, which are indicative of the queue length (in vehicles) that has only a 5-percent probability of being exceeded during the analysis time period. The 95th percentile queue length is a useful metric in determining the appropriate length of turn pockets. The results of the queuing analysis were one of the factors used to identify areas of concern and provide the basis for improvements. The results of the analyses are described in the following section.

3.3.2 2030 Future Traffic Operations

The morning and afternoon peak hour traffic volumes were analyzed under the 2030 Future Traffic Volumes and 2030 Alternate Traffic Volumes. The results of the capacity analyses are summarized in Table 3-5 through 3-7 including the 2010 Existing and 2030 Future Traffic Volume projections during the morning and afternoon peak hours. The tables describe intersection operations in terms of LOS and average vehicle delay (seconds per vehicle). Figure 3-8 illustrates the morning and afternoon overall intersection Level of Service for each of the study intersections under the 2010 Existing, 2030 Future Volumes. Intersections operating at an LOS A or B, indicating good to excellent operating conditions during a peak period are noted in green, intersections operating at LOS C or D are noted in yellow, and intersections operating at LOS E or F, considered poor to failing operations, are noted in red.

TABLE 3-5

Cromwell Avenue Peak Hour Traffic Operations Summary (2010 Existing vs. 2030 Future)

Morning Peak Hour Summary				
	2010 Existing Condition		2030 Future Condition	
Study Intersection	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
Cromwell Avenue at New Britain Avenue	C	31.0	F	113.1
Cromwell Avenue at Elm Street	B	18.8	D	51.5
Cromwell Avenue at France Street	C	25.3	A	5.9
Cromwell Avenue at West Street	D	41.3	E	65.2
Cromwell Avenue at West Side Market	A	3.2	A	4.2
Cromwell Avenue at Cold Spring Road	C	21.6	D	40.8
Cromwell Avenue at Brook Street	A	7.4	B	14.5
Cromwell Avenue at Inwood Road	A	4.6	A	5.9
Afternoon Peak Hour Summary				
	2010 Existing Condition		2030 Future Condition	
	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
Cromwell Avenue at New Britain Avenue	C	26.7	F	118.3
Cromwell Avenue at Elm Street	D	47.4	F	107.4
Cromwell Avenue at France Street	B	18.6	D	36.5
Cromwell Avenue at West Street	D	39.2	D	54.5
Cromwell Avenue at West Side Market	A	6.8	A	7.6
Cromwell Avenue at Cold Spring Road	B	11.9	D	38.2
Cromwell Avenue at Brook Street	B	15.2	D	35.1
Cromwell Avenue at Inwood Road	B	16.6	C	25.8

Under the 2030 Future scenario, intersection operations deteriorate from the 2010 Existing condition because of the higher projected traffic volumes. Some of the signalized intersections will operate at overall LOS E or F during the peak hours, with significant delays at the critical approaches. The queue length at the critical movements will also be lengthened. The most impacted intersections include the Route 160 intersections (New Britain Avenue and Elm Street) at Route 3 (Cromwell Avenue), the West Street and Route 3 intersection, the I-91 Ramps (both northbound and southbound) intersections, the West Street and Capitol Boulevard intersection, and the West Street and Main Street (Route 99) intersection. Other intersections will also operate at reduced LOS of C and D during the peak hours. Under the 2030 Alternate Traffic Volume scenario, the operating condition would further deteriorate with increased traffic demand.

TABLE 3-6

West Street Peak Hour Traffic Operations Summary (2010 Existing vs. 2030 Future)

Morning Peak Hour Summary				
	2010 Existing Condition		2030 Future Condition	
Study Intersection	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
West Street at Corporate Place	A	4.5	A	5.3
West Street at I-91 Southbound Ramps	C	26.0	E	56.4
West Street at I-91 Northbound Ramps	C	27.6	E	61.2
West Street at Capital Boulevard	B	11.2	E	71.2
West Street at Gilbert Avenue	A	8.7	A	9.8
West Street at ConnDOT / VA Facility	A	4.2	A	4.9
West Street at Main Street	C	26.6	D	40.6
Afternoon Peak Hour Summary				
	2010 Existing Condition		2030 Future Condition	
	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
West Street at Corporate Place	B	10.8	B	13.5
West Street at I-91 Southbound Ramps	C	30.4	E	70.6
West Street at I-91 Northbound Ramps	B	14.4	B	16.8
West Street at Capital Boulevard	C	25.3	E	62.0
West Street at Gilbert Avenue	A	7.3	A	7.8
West Street at ConnDOT / VA Facility	A	6.8	A	7.7
West Street at Main Street	E	67.1	F	155.1

TABLE 3-7
Brook Street Intersections Morning Peak Hour Traffic Operations Summary

Morning Peak Hour					
		2010 Existing		2030 Future	
Street	Lane Use	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
Brook St	<EBT	A	5.8	A	7.4
Brook St	WBT>	A	0.0	A	0.0
Henkel Way	SBL	B	14.6	E	35.3
Henkel Way	SBR	B	10.5	C	17.4
Afternoon Peak Hour					
		2010 Existing		2030 Future	
Street	Lane Use	LOS	Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)
Brook St	<EBT	A	4.0	A	5.3
Brook St	WBT>	A	0.0	A	0.0
Henkel Way	SBL	C	16.7	F	179.9
Henkel Way	SBR	B	10.6	C	18.7

3.3.3 Future Areas of Concern

The following intersections will operate at a Level of Service E or F under the 2030 Future projected traffic volumes and warrant a review to identify measures to mitigate the effect of the forecast travel demand in the Study Area:

Cromwell Avenue (Route 3) at West Street (SSR 411)

- Intersection operates at LOS E during the morning peak hour.
- The southbound left turn volume and the westbound volumes (all movements) exceed the single southbound left turn lane, and the three westbound travel lanes capacities.
- The West Street intersection traffic control signal operates with the France Street signal in a cluster configuration, this operational configuration further reduces the intersection capacity. In addition, the signal runs as an isolated intersection without coordination with the Cromwell Avenue nor West Street corridor systems. The long cycle length further exacerbates the delay and queue lengths at this location, which are currently especially problematic on the southbound approach where queued vehicles routinely block egress from France Street, including access to the southbound left turn lane by France Street traffic.

Cromwell Avenue (Route 3) at France Street

- Intersection operates at LOS E during the morning peak hour.
- The higher volume France Street eastbound right turn traffic is regularly blocked by the eastbound left or through traffic on the single lane approach.
- The intersection operates with the West Street intersection as a cluster configuration, this setup reduces the intersection capacity. In addition, the signal runs as an isolated intersection without coordination with neither Cromwell Avenue nor West Street Corridor. The long cycle length further exacerbates the delay and queue lengths at this location.

Cromwell Avenue (Route 3) at Elm Street (Route 160)

- Intersection operates at LOS F during the afternoon peak hour.
- Westbound lane configuration provides an exclusive left turn lane, a shared through/left turn lane, and a right turn lane; the lane configuration relegates the eastbound and westbound movements to operate under split-phasing configuration, reducing the overall intersection capacity.
- Southbound left turn can only proceed during the protected phase causing additional delays for that movement.

Cromwell Avenue (Route 3) at New Britain Avenue (Route 160)

- Intersection operates at LOS F during both the morning and afternoon peak hours
- Eastbound right turn lane is short and its usage is blocked by the through and/or left turn traffic reducing the intersection capacity.
- Northbound left turn volumes exceed the single northbound left turn lane capacity.

West Street (SSR 411) at I-91 Southbound Ramps

- Intersection operates at LOS E during both the morning and afternoon peak hours
- During the morning peak hour, the intersection suffers long delay and queue due to the heavy eastbound through traffic orientated towards the I-91 northbound ramps, and the heavy southbound left turn traffic towards Capitol Boulevard. Long queues are expected on the approaches.
- During the afternoon peak hour, the intersection suffers long delay and queues due to the heavy eastbound through traffic towards the I-91 Northbound ramps, and the heavy westbound left turn traffic onto I-91 Southbound. Long queues are expected on the approaches.

West Street (SSR 411) at I-91 Northbound Ramps

- Intersection operates at LOS E during the morning peak hour.
- The intersection suffers long delay and queue due to the heavy eastbound through traffic and the heavy northbound right turn traffic towards Capitol Boulevard.

West Street (SSR 411) at Capital Boulevard

- Intersection operates at LOS E during both the morning and afternoon peak hours
- During the morning peak hour, the eastbound right turn traffic arriving at Capital Boulevard from the I-91 Interchange is significant and the volume exceeds the channelized free right turn lane capacity.
- During the afternoon peak hour, the northbound left turn departing Corporate Ridge traffic heading towards the I-91 Interchange is significant and exceeds the overall approach capacity during the peak hour.

West Street (SSR 411) at Main Street (Route 99)

- Intersection operates at LOS F during the afternoon peak hour.
- The offset West Street westerly leg and Forest Street easterly leg restricts the signal to operate the eastbound and westbound approaches on two separate phases, reducing the intersection efficiency.
- The heavy northbound and southbound through traffic on Main Street restrict the volume of traffic that is able to turn left onto the side streets.

Brook Street at Henkel Way

- Intersection operates at LOS E during the afternoon peak hour.
- The two-way stop sign control operation, where Henkel Way heading south is operating under stop sign control, and experiences long delays during the afternoon peak hour. The increase in delay is directly attributable to the significant increase in projected traffic volumes on the western portion of Brook Street under the 2030 Design Year traffic volumes, which reduces the number of available gaps for turning vehicles leaving Henkel Way.

Section 4
Recommendations

This section presents detailed recommendations for transportation system improvements and enhancements. The recommendations have been identified to address both existing issues and those resulting from the forecasted travel demand and development growth that is expected to occur in the Town of Rocky Hill and the region by the year 2030. The recommendations were identified and developed cooperatively with the Technical Review / Steering Committee, and were refined through a public input process, to address the goals and objectives outlined in the Study Mission Statement.

Generally, the proposed improvements are focused on spot improvements to the transportation system to address future traffic growth, improve safety, increase accessibility, and promote alternative modes of travel. However, in some areas, more extensive improvements are needed to address future transportation needs. Although many of the recommendations address transportation issues related to motor vehicles, a series of enhancement recommendations have been developed to address alternative modes of travel, including pedestrian, transit, cyclist, and recreational usage of the transportation system.

The recommendations are presented on an intersection-by-intersection basis. The development and refinement of the preferred improvements was guided by the Town of Rocky Hill's desire to identify implementable solutions that adequately meet study goals by addressing both the existing deficiencies and potential future operational issues identified and described in the previous sections of this report.

4.1 Summary of Recommendations

Most of the recommended improvements are categorized by Study Area roadway corridor in the following sections (i.e., Cromwell Avenue, West Street, and Brook Street). However, most of the recommendations pertaining to alternative modes of travel are aggregated into study-wide recommendations. Although they are categorized as study-wide, these recommendations can be implemented selectively through spot implementation as funding becomes available or can be incorporated into other transportation projects. Full concept plans and figures for each of the recommendations summarized in the following sections are presented in the Appendix.

4.1.1 Cromwell Avenue (Route 3) Recommendations

Based on the character of Cromwell Avenue and its future travel demands, the Cromwell Avenue recommendations generally focus on providing needed capacity, while adhering to the study goals and limiting impacts on existing private development and businesses along the corridor.

4.1.1.1 Closed Loop Traffic Signal System

The State of Connecticut Department of Transportation operates a closed loop traffic control signal system along Cromwell Avenue and West Street. The signal system includes all of the signals along Cromwell Avenue from Inwood Road to New Britain Avenue, and the four signals along West Street at its intersections with Corporate Place, both I-91 interchange 23 ramps, and Capital Boulevard. Maintaining efficient traffic signal system operations should be a priority in advance of implementing physical improvements along the corridors.

Recommendations

The operation and configuration of the settings within the closed loop system should be monitored by both Town and State officials to ensure that the system operates in an efficient manner and is responsive to current traffic conditions. As development levels change and traffic volumes increase in the future, the systems settings should be reviewed on an annual basis, and verified or adjusted as necessary. The potential operational improvements that can be achieved through system calibration are summarized in Figure 4-1.

Additionally, the Town of Rocky Hill should consider requiring developers seeking site plan approvals that may impact travel patterns within the signal system envelope to demonstrate either that the current signal system settings are appropriate or provide recommendations for signal system setting changes. This review can also occur at the State level for developments that require Office of the State Traffic Administration review.

4.1.1.2 Inwood Road Intersection Improvements

The existing lane geometry at the intersection of Inwood Road and Cromwell Avenue includes two southbound Cromwell Avenue lanes and a single northbound lane. Lane continuity is an existing geometric deficiency in the southbound travel direction as the existing right travel lane, which functions as a through lane to the north of the intersection becomes a right turn only lane on its approach to Inwood Road. This right turn trap lane causes additional weaving maneuvers for southbound Cromwell Avenue traffic.


Looking north, Cromwell Ave at Inwood Rd

In addition to the geometric issue that affects southbound traffic, the northbound lane configuration includes a single approach lane at Inwood Road, with a wide shoulder area to facilitate bypass traffic maneuvers around a vehicle waiting to turn left into Inwood Road. Pedestrian accommodations include an existing sidewalk that runs along the west side of Cromwell Avenue, from approximately the midpoint between Brook Street and Inwood Road to the south before terminating at the south edge of the Inwood Road development. In addition, there are limited segments of sidewalk along the east side of the street that have been constructed through redevelopment of the parcels as required by the Town of Rocky Hill.

Recommendations

The recommended intersection improvements eliminate the existing right turn trap lane at the intersection of Inwood Road and Cromwell Avenue. The improvement is achieved by widening Cromwell Avenue along the west side of the road south of the intersection to facilitate the extension of two travel lanes through the intersection, and eliminate the need for through traffic to weave out of the right lane on the southbound approach to the intersection. The Cromwell Avenue cross section can be transitioned back to a single lane in each direction south of the intersection by implementing a typical lane merge transition.

On the intersection's northbound approach, it's recommended that the bypass lane be eliminated and the lane configuration adjusted to provide an exclusive left turn lane into Inwood Road along with a through lane. Additionally, the traffic control signal at this intersection should be modified to include a protected phase for the northbound left turn lane operations.

To address pedestrian access, it is recommended that in-fill sidewalk installation continue to occur along Cromwell Avenue, both through the redevelopment process and through available funding sources for sidewalk infrastructure improvements. The continuity of the sidewalk infrastructure to the north will become more important as development continues along Brook Street, including a recently approved residential complex, potentially providing the ability for new residents to walk to work in the nearby office parks.

The recommendations are illustrated in Figure 4-2.

Potential Impacts and Constraints

Based on available mapping and property information, the proposed improvements, including the roadway widening and in-fill sidewalk can be installed within the limits of the roadway right of way and property actions will likely not be required. However, based on the final configuration of the intersection lane geometry and overall pavement width, the existing overhead utility facilities that exist along the east side of Cromwell Avenue could potentially be impacted. The design of these improvements should seek to minimize or avoid impacting these facilities, if feasible, as the utility poles carry communication facilities in addition to secondary and primary electric services.

4.1.1.3 Brook Street Intersection Improvements

The existing lane geometry at the intersection of Cromwell Avenue and Brook Street includes two travel lanes in the southbound direction. The interior travel lane functions as a de facto left turn lane during peak periods when traffic conditions along Cromwell Avenue are busy and traffic turning left onto Brook Street is heavy, blocking the through traffic operations. The existing lane configuration forces traffic to weave into the right lane to travel through the intersection when the left lane is blocked by a turning vehicle. This condition is anticipated to deteriorate as development continues along Brook Street.

Additionally, the movement of southbound through traffic to the right lane exacerbates previously identified weaving problems at the Inwood Road intersection located immediately south of this location. As noted under the Inwood Road recommendations, the southbound right lane transitions into a right turn only lane on the approach to Inwood Road, requiring additional weaving operations for through traffic.

Currently, there are no pedestrian facilities at this location, and while the Cromwell Avenue bridge over I-91 to the north of the intersection was constructed with a sidewalk along the east side of the structure, there is no connection to the sidewalk on either side of the bridge.

Recommendations

The recommended improvements at this intersection seek to mitigate the effects of southbound left turning vehicles on southbound through traffic by widening Cromwell Avenue to provide a short exclusive left turn lane to Brook Street. The southbound exclusive left turn lane will remove turning vehicles from the through traffic stream and improve through movement operations.

The recommendation also includes a new sidewalk along both sides of Cromwell Avenue. The new sidewalk on the west side of the street begins opposite Brook Street and

continues south to connect to existing sidewalk. New sidewalk is also recommended along the east side of Cromwell Avenue to connect to existing facilities to the south and the existing sidewalk on the bridge to the north. One crosswalk is proposed across Cromwell Avenue and one across Brook Street. The recommendations associated with the alternative modes of travel also reference these in-fill sidewalk accommodations for pedestrians.

The existing traffic conditions at the intersection are LOS A and LOS B in the morning and afternoon peak periods, respectively, but they will deteriorate to LOS D in the 2030 afternoon peak period with no modifications. The recommended improvements at this intersection will provide acceptable LOS C conditions under both peak periods.

The recommendations are illustrated in Figure 4-3.

Potential Impacts and Constraints

The recommended improvements, including the roadway widening to facilitate the installation of a southbound left turn lane and the construction of sidewalk along both sides of the corridor, may require small strip property acquisitions to provide additional right of way width to accommodate the additional facilities. The potential acquisitions are minor and do not affect existing parking or development.

The proximity of the intersection to the Cromwell Avenue Bridge over I-91 presents a physical constraint that may limit the length of the recommended exclusive southbound left turn lane. Prior to the initiation of the project, preliminary engineering should be conducted to establish the recommended geometry for the intersection and establish the potential impacts.

A review of existing utilities in the intersection area indicates that only minor impacts to the existing infrastructure will occur as a result of the Cromwell Avenue widening. The primary pole line exists along the east side of Cromwell Avenue. Relocations of guy poles and other utility poles on the west side of Cromwell Avenue will be required to facilitate the widening.

4.1.1.4 West Street (SR 411) & France Street Intersection Improvements

The intersections of West Street and France Street with Cromwell Avenue experience the some of the highest traffic volumes within the study area. Traffic travelling within the Town of Rocky Hill and regional trips, including those travelling to and from the I-91 interchange, use this intersection to reach their destinations.

During the peak hours, traffic volumes travelling south along Cromwell Avenue towards the I-91 interchange are heavy, causing operational issues at the cluster intersection of France Street and West Street. This flow results in a high volume of left turns onto West Street from a single southbound exclusive left turn lane. A review of the existing traffic operations indicates that from an intersection capacity perspective the intersection currently operates at tolerable levels with an LOS D during the existing morning and afternoon peak periods. However, during peak periods, southbound left turn lane queuing routinely extends beyond the adjacent France Street intersection, located just 400 feet to the north, occasionally blocking the intersection. This blocking of the intersection creates long queues on France Street for vehicles attempting to enter Cromwell Avenue traffic flow during the morning peak hour. France Street's single lane approach to Cromwell Avenue also exacerbates the queuing problem as vehicles attempting to turn right onto Cromwell Avenue are routinely blocked by, and queue behind, vehicles waiting to turn left.

In the future, projected traffic volumes are expected to cause additional operational problems at this location. A review of 2030 operations indicates that the West Street and France Street intersections will operate at a poor LOS E during the morning peak period. The West Street intersection is also anticipated to operate at LOS E during the afternoon peak hour. In addition, operations within the cluster intersection will be significantly affected by queuing. The analysis of traffic operations indicated that, without roadway improvements, the peak southbound queues will extend over 600 feet to the north, blocking vehicles from exiting France Street during the peak hours.

Recommendations

In order to address these deficiencies, physical improvements are proposed at both intersections to provide additional capacity and reduce queuing. The primary mitigation requires widening Cromwell Avenue between France Street and West Street to provide an additional exclusive left turn lane on the southbound approach to West Street. The two left turn lanes will almost double the available storage between the two intersections, providing approximately 600 feet of available left turn lane storage. Additionally, to address the queuing and operational issues along France Street, the recommendation includes implementing minor widening along France Street to provide a two lane eastbound approach with an exclusive right turn lane and a through-left lane.

The addition of the right turn lane will facilitate additional right turn on red capacity and allow vehicles to more effectively stack at the intersection.

The implementation of these recommendations results in significant improvements in traffic conditions under the projected 2030 travel demand. A review of the West Street intersection indicates that the intersection will operate at LOS D during both the morning and afternoon peak hours. In addition, the France Street intersection exhibits significant improvements and is anticipated to function at LOS B during both peak hours.

The recommendations described above are illustrated in Figure 4-5.

In an effort to provide an interim solution to help address France Street operational issues, it is recommended that France Street be widened to provide a two lane approach, consisting of a shared left-through lane and an exclusive right turn lane. This will not mitigate the existing Cromwell Avenue queuing issues experienced in the morning peak hour at West Street, but will improve traffic operations for right turns out of France Street during the afternoon peak and other off-peak periods when Cromwell Avenue traffic volumes are lower. The interim plan for France Street is illustrated in Figure 4-4.

Potential Impacts and Constraints

The recommended improvements may require the relocation of an existing utility pole line that exists adjacent to the west curb line in the grass strip between the sidewalk and the curb. The proposed widening will eliminate portions of the existing grass strip. The existing utility poles carry communications and electric services.

To minimize impacts, during design it is recommended that consideration be given to reducing the travel lane width to 11 feet in this segment of Cromwell Avenue.

4.1.1.5 Route 160 Overlap Area (Elm Street to New Britain Avenue)

The segment of Cromwell Avenue at the north extent of the study area includes a section of State Route 160 that overlaps Route 3 between the intersections of Elm Street and New Britain Avenue. Route 160 is an east west state highway that begins on the east end at Main Street in Glastonbury and extends west across the Connecticut River via a ferry through the Town of Rocky Hill and continues to the west into Berlin before terminating at the intersection with the Berlin Turnpike (Route 15). Within the study area some of the heaviest volumes are carried on the overlap of the two state routes as regional trips from all directions converge on this segment of the roadway. The anticipated future traffic volumes will result in failing operations at both New Britain Avenue and Elm Street during the afternoon peak hour. Further contributing to the operational deficiencies are the queue lengths that will occur at both the Elm Street intersection and the New Britain Avenue intersection, primarily the southbound left turn onto Elm Street and the northbound left turn onto New Britain Avenue. Extensive queues that potentially block the upstream intersections under 2030 traffic volumes may occur without the implementation of improvements.

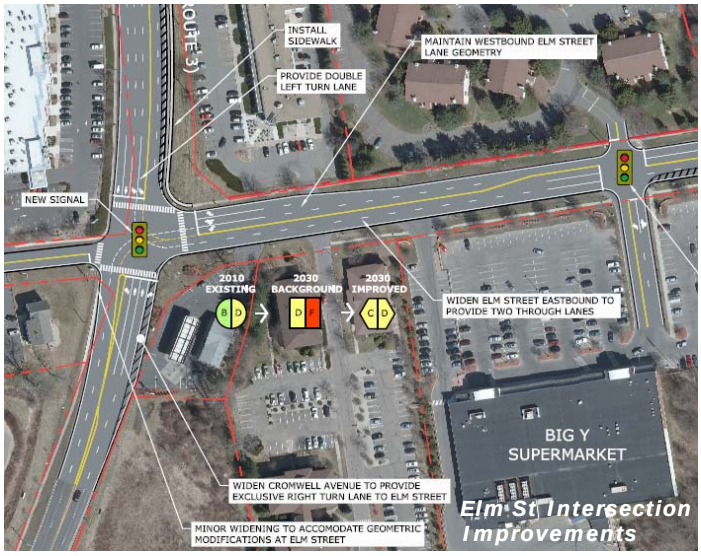
Also of concern at the New Britain Avenue/Cromwell Avenue intersection, are the lengthy current and future eastbound queues, especially during the afternoon peak hour. Current queues have been reported to impact numerous driveways along both sides of New Britain Avenue. Rocky Hill Fire Department Station 2 is located approximately 500 feet west of the intersection, and queues have been reported to extend across their driveway raising significant safety and emergency response time concerns.

This segment of Cromwell Avenue is the most built-up section of the corridor with strip retail development along both sides of the street and numerous curb cuts serving the developments. A review of collision data indicated that this section of Cromwell Avenue experiences a higher rate of crashes than expected when compared to statewide data and warrants review and possible mitigation. To address safety concerns the implementation of access management policies is recommended. The result is a recommendation that strives to reduce the number of driveways, and provide inter-parcel connections between adjacent properties, allowing patrons to enter Cromwell Avenue at signalized locations via side streets instead of at unsignalized driveways.

Route 160 in the project area appears on CRCOG's 2008 Regional Bike Plan as an On Road Bike Route and on the State's bike map as one of only a handful of bicycle Cross-State Routes. However, along most of this segment, shoulder widths of between 1 and 2 feet are too narrow to adequately accommodate cyclists.

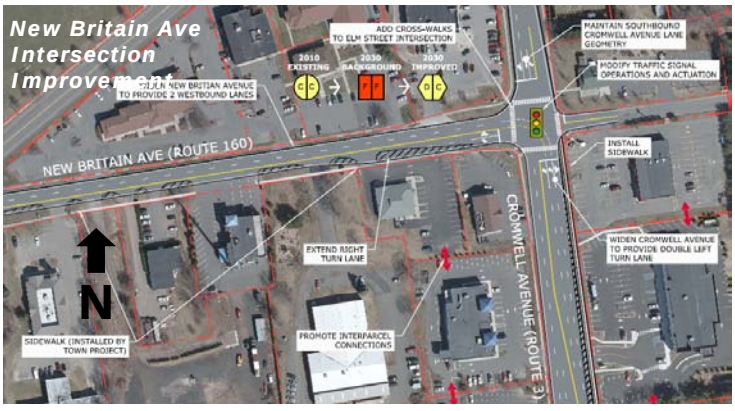
Recommendations

Physical improvements are needed to address the operational deficiencies, including mitigating projected delay and congestion, along this segment of Cromwell Avenue. Specifically, the cross section of Cromwell Avenue needs to be widened by one full travel lane between the intersections. This additional lane will serve as left-turn storage for southbound traffic at the Elm Street intersection and northbound traffic at the New Britain Avenue intersection. At Elm Street, the southbound approach will include two through lanes and two left turn lanes. At New Britain Avenue, the northbound approach will provide two left turn lanes and one through lane. Under this improvement scenario, travel lanes should be reduced from 12 feet to 11 feet and minimal shoulders provided in order to minimize the potential effect on adjacent development.



Elm Street also needs to be widened to facilitate the southbound double left turn from Cromwell Avenue onto Elm Street. The improvement provides an additional eastbound travel lane to accept the two southbound left turning lanes. The section of Elm Street between Cromwell Avenue and the Big Y shopping plaza driveway will be increased by one eastbound lane to provide a four lane cross section. The two eastbound lanes should extend through the Big Y center driveway before transitioning back to one eastbound lane across the Big Y plaza frontage. The traffic signal at the Big Y main driveway will be modified to facilitate the revised eastbound lane geometry, which will include an exclusive left into the residential complex and two through lanes, with the right hand through lane facilitating right turns into the Big Y plaza.

Similar to the improvements along Elm Street, New Britain Avenue also requires physical improvements to accommodate the northbound double left turn from Cromwell Avenue. The segment of New Britain Avenue between Cromwell Avenue Haynes Road will be expanded to provide two westbound lanes, connecting to the two lanes at Haynes Road. The widening should be balanced within the



existing roadway right of way, which may require alignment adjustments to mitigate the potential impacts to the parking areas serving the commercial developments along the north side of the street.

In addition to the improvement for westbound traffic, the exclusive right turn lane approaching Cromwell Avenue in the eastbound direction is recommended for lengthening. To better accommodate the right turn traffic volumes, the right turn lane should be extended to the extent possible without impacting adjacent development. These improvements, along with the other recommended intersection capacity improvements will also reduce the problematic New Britain Avenue queuing from the intersection to the west. In addition it is recommended to coordinate with Rocky Hill Fire Department regarding the potential for hardwired fire pre-emption from Station 2 to the nearby signalized intersections.

The Town of Rocky Hill has been installing in-fill sidewalk and as new development has occurred. Sidewalk has been installed such that the pedestrian infrastructure along Elm Street, Cromwell Avenue, and New Britain Avenue is nearly continuous along both sides of each roadway. The remaining section of missing sidewalk along the south side of Elm Street along the gas station frontage and extending to the south along Cromwell Avenue to the medical office building should be installed during development or as funding becomes available. The comprehensive recommendations for the area including Elm Street, Cromwell Avenue, and New Britain Avenue are illustrated in Figure 4-6A and Figure 4-6B.

The recommendations improve pedestrian accommodations and address existing and future motorist traffic issues. Bicycle improvements were also considered for this segment, however due to impacts resulting from their accommodation, a specific recommendation could not be agreed upon. It is recommended that opportunities to provide bicycle accommodations from Elm Street to New Britain Avenue continue to be explored during design of these improvements. A lower impact accommodation may involve the extension of the multi-use trail along either a roadside or off-road alignment from the north end of the new Elm Street Connector Roadway to New Britain Avenue, however no acceptably low-impact alignment was identified during these study efforts.

Potential Impacts and Constraints

The scope of the improvements is extensive and therefore there are several potential impacts that may result from the implementation of the recommended improvements. One concern identified during the public outreach process involved the potential for impacts resulting from widening to accommodate additional travel lanes. Of specific concern were impacts to commercial developments along Cromwell Avenue and Route 160. To address these concerns, the recommendations include the reduction of travel lane widths in these areas from 12 feet to 11 feet. These lane width reductions will reduce required widening by four feet along Route 160 and five feet along Cromwell Avenue, which is critical due to the close proximity of the parking areas to the existing curb line.

The topography alongside Cromwell Avenue exhibits an elevation change along the west side of the roadway, where the existing parking lot for the Cold Spring Plaza is retained by a steep fill slope that meets at the back of sidewalk. Avoiding impacts to the existing parking area by limiting the majority of the widening to the east side of Cromwell Avenue will be critical. The recommended widening along Cromwell Avenue may require acquiring additional right of way from adjacent property owners. During the preliminary engineering phase, design quality survey should be obtained and reviewed relative to

the scope of the recommended improvements to identify the most appropriate alignment of Cromwell Avenue. Efforts should be made to minimize both property taking and physical impacts to adjacent commercial sites and parking. Locations of potential retaining walls can be determined at that time to minimize impacts as appropriate.

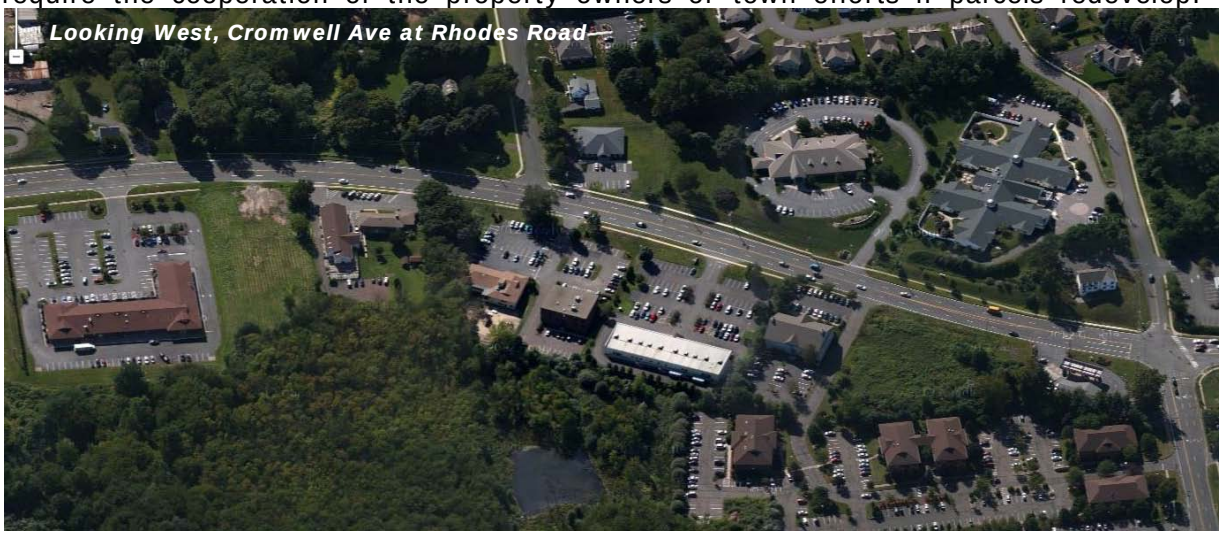
4.1.1.6 Access Management Recommendations

The ability to manage, modify, and control driveway access, and plan for future access along a corridor can provide significant benefits to the operational characteristics of a roadway system. Access Management is the proactive management of vehicular access points to land parcels adjacent to roadways. Good access management encompasses a set of techniques that state and local governments can use to control access to highways, major arterials, and other roadways. Fewer driveways spaced further apart allows for more orderly merging of traffic and presents fewer challenges to drivers. Additionally, back access roadways and vehicular connections between adjacent parcel parking lots allows for trips between parcels and potentially access to side streets without entering the main roadway.

Within the study area, there are two key areas that exhibit a need for implementation of access management principles. The first segment exists along the east side of Cromwell Avenue between Elm Street and Rhodes Road. The second area is along Cromwell Avenue between Elm Street to New Britain Avenue.

Recommendations

Existing land uses along the east side of Cromwell Avenue between Elm Street and Rhodes Road include small commercial developments including offices, a daycare facility, and medical facility. There are four existing buildings served by three curb cuts opposite and just north of Rhodes Road. The two southerly sites share one driveway and a common parking lot. The two sites located to the north each have one driveway on Cromwell Avenue. It is recommended that the Town work towards the creation of inter-parcel connections between these sites, and realignment of the southernmost driveway access opposite Rhodes Road. The recommendation will accommodate trips between parcels and potentially to Cromwell Avenue via a potential future signalized intersection at Rhodes Road. Implementation of access management measures in this area would require the cooperation of the property owners or town efforts if parcels redevelop.



The second area where implementation of proactive access management would increase safety and provide improved traffic operations for patrons is the area of Cromwell Avenue from Elm Street to New Britain Avenue. Currently there are six existing driveways on this short section of Cromwell Avenue, servicing six commercial establishments. A review of the existing conditions indicated that the Town has taken steps to encourage the application of access management without infringing on the property owners right to access to the public street. One successful application of access management includes the inter-parcel connection between the two strip plazas along the west side of Cromwell Avenue. This connection provides patrons at both sites access to the existing traffic control signal located at the intersection of Elm Street Extension, Elm Street, and Cromwell Avenue. The opportunity to extend the connections between the convenient store and package store to the north of these sites would provide complete access between all of the sites along the west side of Cromwell Avenue. Full inter-parcel connectivity should remain the Town's goal. Full implementation will provide patrons with access to side streets, providing opportunity to make turning movements onto Cromwell Avenue at a signalized location rather than at unsignalized site driveways.

Potential Impacts and Constraints

The ability to implement access management principles has historically been driven by the local site plan approval process. Proactive involvement by Town staff to help property owners seek inter-parcel connections, combine or consolidate existing driveways, and better align proposed driveways with existing locations has historically been a challenging process. The ability to implement good access management principles along this section of Cromwell Avenue is important to the future traffic conditions and access to the commercial parcels.

4.1.2 West Street (SR 411) Recommendations

4.1.2.1 I-91 Interchange Area (Corporate Place to Capital Boulevard)

The I-91 interchange area serves as a hub for local and regional traffic within the study area connecting roadways classified as local, arterial, and expressway. Under current conditions, the interchange operates at acceptable Levels of Service during the peak periods. However, as forecast traffic volumes materialize, operating conditions in the interchange area will deteriorate and physical improvements will be required to address the poor operating conditions expected to occur by the year 2030. Without improvements, the intersections of West Street with the I-91 southbound ramps, the I-91 northbound ramps, and Capital Boulevard are expected to operate at a poor LOS E during the morning pear period under 2030 traffic conditions. In the afternoon peak, the intersections with I-91 southbound ramps and the intersection with Capital Boulevard is also anticipated to operate at LOS E.

Looking North, Interstate 91 Interchange Area

During the review of existing conditions, crash data indicated that the intersection of West Street and the I-91 southbound ramps experienced a higher number of incidents than expected when compared to statewide data and should be evaluated for safety improvements. The primary movement causing the high incident rate is the left turn movement from westbound West Street onto the southbound ramp.

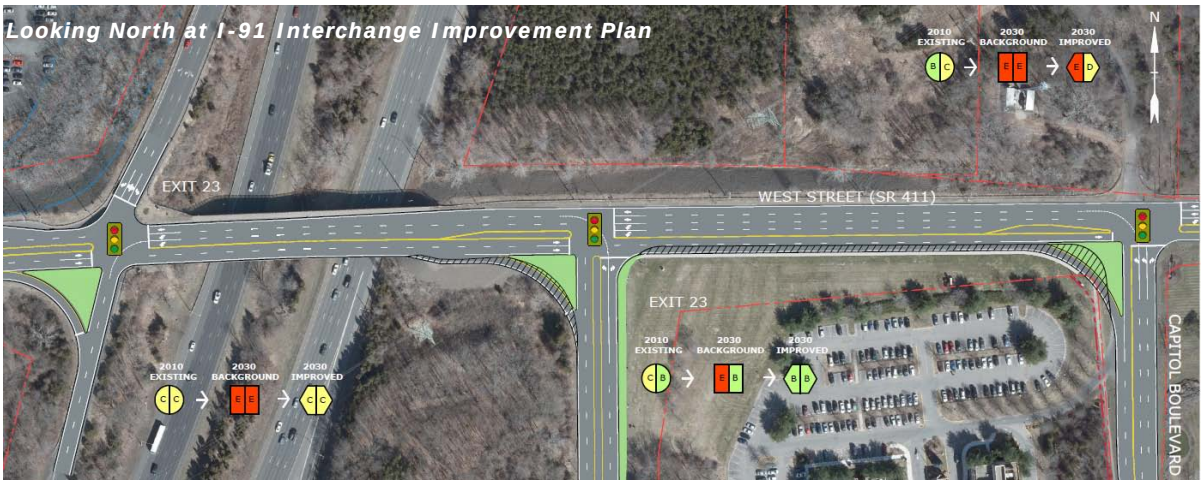
The West Street bridge over I-91 is a relatively new structure, and ConnDOT has indicated that preserving the existing bridge should be a priority for any recommendation. Therefore, the existing bridge was held as a design control for recommended improvements in the interchange area.

Recommendations

In order to address safety and forecasted operational issues at the interchange, roadway improvements are recommended along West Street, on the southbound I-91 entrance ramp, on the northbound I-91 ramp, and on Capital Boulevard. The improvements also require reconfiguration of the lane use along westbound West Street at the I-91 southbound ramps.

At the intersection of West Street and the I-91 southbound ramps, the poor operations are attributable to heavy left turn volumes. In order to increase the capacity for left turn traffic, the westbound approach lane use is recommended to be modified. Currently, the approach provides a single left turn lane and two through lanes. The recommended arrangement is a single through lane and a double left turn onto the southbound ramp. This recommended double left will require physical improvements on the entrance ramp

to receive the two lanes of traffic. This will require minor widening along the west side of the on-ramp to provide a two lane wide section extending from West Street to beyond the yield merge with the turning roadway carrying traffic from eastbound West Street. The two lanes are transitioned back to a single lane prior to the merge with I-91 southbound such that only one stream of traffic will be entering the freeway. Once implemented, the double left turn onto the ramp will only operate under a protected signal phase. This protected-only operation will help mitigate the existing intersection safety issues.



The improvements recommended for the intersection of West Street and the I-91 northbound ramp are similar to those proposed at West Street's intersection with the I-91 southbound ramps. Again, the recommended plan includes modifying the lane geometry on the westbound approach to provide a double left turn onto the I-91 northbound entrance ramp. The revised lane geometry requires modifications to the existing ramp in the form of physical widening to accommodate receiving traffic from the two left turn lanes, with minor widening and realignment proposed for the turning roadway. Additionally, in order to process the through traffic, two westbound through travel lanes are needed on West Street. Providing a four lane westbound approach at the intersection requires minor West Street widening between Capital Boulevard and the I-91 northbound ramps.

At the intersection of West Street and Capital Boulevard, an increase in the turning radius of the channelized right turn lane into the development is recommended. This modification will increase the capacity of the turning roadway, allowing more efficient processing of vehicles into Capital Boulevard during the critical morning peak hour.

The recommendations for the interchange area are illustrated in Figure 4-7.

Potential Impacts and Constraints

As noted, one of the critical design controls is the existing West Street Bridge over I-91. The recommended improvements have been devised in a manner that retains the existing structure without major modifications. With any future project phases, it will be critical to either avoid impacts to the structure or confirm the viability of recommendations that impact it in any way.

4.1.2.2 West Street at Main Street (Route 99)

The intersection of Main Street, West Street, and Forest Street currently experiences poor traffic operations during the afternoon peak and is projected to experience failing traffic operations under future 2030 conditions. The cause is partially related to the existing offset West Street and Forest Street alignment that requires these roads operate under inefficient independent signal phases (split phasing). Based on a review of intersection traffic flows, the primary intersection turning movements are between West Street and the northern leg of Main Street, including West Street left turns onto Main Street and southbound Main Street right turns onto West Street. Sidewalks are currently only provided along the northwest corner of the intersection.


Looking North, West Street at Main Street

Recommendations

The recommended improvements at this intersection include physical modifications to both West Street and Forest Street to align the roads opposite each other and form a conventional 4-leg intersection with Main Street. In addition to the realignment, exclusive left turn lanes are proposed to be added on the West Street and northbound Main Street approaches, and an exclusive right turn lane is proposed to be added on the southbound Main Street approach. These recommendations will improve traffic operations in the 2030 morning and afternoon peak periods to acceptable LOS to B and C, respectively. Without improvements the intersection is projected to operate at a tolerable LOS D and a failing LOS F in the 2030 morning and afternoon peak periods.


Looking North, West Street at Main Street Improvements

To improve pedestrian facilities in the area, the installation of sidewalks is recommended on both sides of Main Street and both sides of Forest Street.

Consistent with the Study Bicycle Facilities recommendations (Section 4.1.6.2) a minimum shoulder width of 5 feet is recommended along Main Street through the intersection.

The intersection recommendations appear in Figure 4-8.

Potential Impacts and Constraints

The recommended improvements may result in impacts to private property along the north side of Forest Street and south side of West Street in the realignment areas. During the development of the concept plan, attention was given to the proposed roadway realignments in relation to the location of the existing street lines to minimize impacts. However since the property line information is based on available Town GIS data, the identified impacts are approximate and appropriate for study use only. The alignment should be reviewed and adjusted as necessary during design to minimize the rights of way acquisition requirements.

The realignment of West Street to the south will require the relocation of one utility pole with apparent significant utilities. A review of the pole and facilities carried on it indicates that it may function as a junction pole for several utility services, including communications, in addition to secondary and primary electric services. The pole also serves as one of the connection locations for the existing span wire supported traffic control signals. The recommended realignment of West Street will require relocation of this utility pole and may impact adjacent utility poles.

4.1.3 Brook Street Recommendations

Brook Street currently serves two distinct land uses with primarily light industrial and commercial uses located west of Henkel Way and residential areas located to the east of Henkel Way. During the Public Outreach process, the Study Team heard several times of the desire to better separate the traffic associated with the vastly different uses. Specifically, the residents along Brook Street do not want tractor-trailer traffic from industrial sites along Brook Street using the residential section of the corridor, consistent with existing signage prohibiting heavy vehicles from this portion of Brook Street. Residents and town staff also noted that travel speeds were high and measures to reduce travel speeds should be reviewed. Finally, the residents that live along Brook Street expressed a need for additional pedestrian and bicycle accommodations. The recommendations proposed along Brook Street seek to enhance the character of Brook Street in the residential areas.

4.1.3.1 Henkel Way Intersection Improvements


Looking North, Brook Street at Henkel Way

The intersection of Henkel Way and Brook Street currently operates with the Henkel Way approach under stop sign control and Brook Street under free flow. Based on the 2030 future traffic operations analysis, the intersection is expected to fail during the afternoon peak hour, coincident with the departing traffic from the Corporate Ridge commercial offices to the north. From a land use perspective, this intersection delineates the transition from the mainly commercial and industrial uses to the west, and a residential neighborhood to the east. The use of the residential section of Brook Street by commercial traffic has been an ongoing issue with the residents, and the Town has taken steps to discourage truck traffic east of the intersection.

Recommendations


Brook St at Henkel Way Roundabout

The recommendation primarily involves converting the existing stop sign controlled intersection into a modern roundabout. The roundabout is anticipated to improve operations to a LOS B under future 2030 traffic volumes. Also, the design of the roundabout provides the ability for vehicles to make a U-turn within the circulating roadway. It is recommended that signage encouraging trucks to make a U-turn at the roundabout be placed on the eastbound approach to the intersection, as the Town prefers that heavy vehicles utilize Cromwell Avenue to travel to and from the industrial section of Brook Street.

The roundabout also provides traffic calming and the opportunity to serve as a gateway to the residential neighborhood. Modern roundabouts are designed for low travel speeds and have demonstrated to effectively reduce vehicular speeds. The center island can be

decoratively landscaped with plantings or other treatments to provide a pleasing gateway between the commercial and residential areas.

The recommendation includes the installation of sidewalk along the edges of the roundabout to connect existing sidewalk infrastructure to the east and west. It is recommended that the roundabout feature pedestrian crosswalks across the Henkel Way approach leg and provide one crosswalk across Brook Street, on the west side of the roundabout intersection.

The Brook Street at Henkel Way recommendations appear in Figure 4-9.

Potential Impacts and Constraints

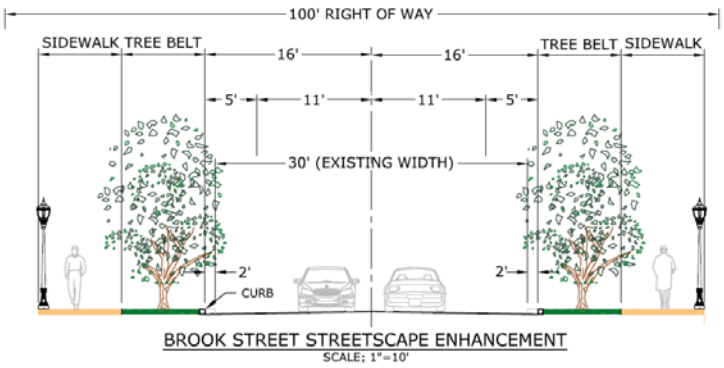
The reconfiguration of the intersection into a modern roundabout is anticipated to require minor right of way acquisition from the corners of parcels located immediately to the northeast and northwest of the existing intersection. Additionally, the roundabout should be situated to provide sufficient roadway setback to the house located on the south side of Brook Street across from Henkel Way; based on the approximate study level property line mapping, property acquisition may not be necessary.

A review of the utilities in the area indicate that the utility pole line located along the north side of Brook Street will likely be impacted by the construction of the roundabout and that at least two utility poles will require relocation. Based on a visual review, the existing poles appear to carry several communication facilities in addition to secondary and primary power.

4.1.3.2 Streetscape Enhancements Main Street to Henkel Way

During the public outreach process, the Study Team heard several times that the roadway in the Brook Street residential area could be enhanced to reflect the neighborhood setting, that travel speeds were high, and that the street lacked the infrastructure to adequately accommodate all modes of travel.

Recommendations



The plan to improve the residential section of Brook Street includes both roadway and pedestrian improvements to create a street that accommodates multiple transportation modes, encourages lower travel speeds and enhances neighborhood character. The existing Brook Street cross section is approximately 28' wide. The recommended cross section will widen the road to 32' wide to provide 11' travel lanes and 5' wide shoulders, the minimum width recommended to serve as a bike travel lane. Additionally, in-fill sidewalk installation along both sides of Brook Street is recommended to better accommodate pedestrian traffic along both sides of the street. Finally, the recommended improvements includes the installation of street trees adjacent to the roadway as an aesthetic treatment, a visual barrier along the roadway, and to further enhance the neighborhood setting. At the discretion of the Town, the installation of pedestrian level street lighting is also recommended. Pedestrian street lights are typically 10 to 12 feet above the sidewalk area and are intended to illuminate the pedestrian walkway. A determination regarding the inclusion of pedestrian level lights can be made by the Town during the implementation phase of an overall streetscape enhancement project.

The recommended Brook Street Streetscape improvements appear in Figure 4-10. Although not specifically endorsed as part of the study, consideration should be given during design phases to the viability providing narrower 10 foot wide lanes and designating the 5 foot shoulders as bike lanes.

Potential Impacts and Constraints

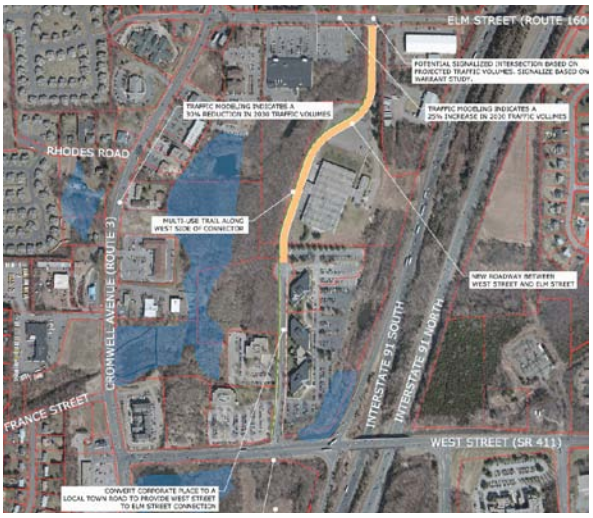
The landscape/enhancement plan has little in the way of potential impacts and constraints for implementation. The existing Brook Street right of way and generous residential setbacks can easily accommodate the recommended improvements. Utility poles exist along the south side of Brook Street and any widening improvements should be implemented in a manner that considers impacts to these facilities.

4.1.4 Recommendation for Future Local Roadway

4.1.4.1 Elm Street Connector Roadway

One of the goals of the Town is to preserve mobility and provide acceptable traffic operations in the Study area. In addition to opportunities to make improvements to the existing roadway network, additional alternate local roadway corridors were investigated. New roadway links can help better distribute traffic volumes in the study area, provide beneficial missing links in the system, and facilitate opportunities to enhance facilities for alternative modes of travel away from the primary arterials within the study area. The Elm Street Connector recommendation provides a new north-south link between West Street and Elm Street that accommodates multiple travel modes.

Recommendations



There are currently only three north-south links between Elm Street and West Street within the study area: Cromwell Avenue, Gilbert Street, and Main Street. The proposed improvement includes the establishment an additional north-south link in the form of a new Town road, termed the Elm Street Connector, between Elm Street and West Street along the west side of I-91.

Currently, the Corporate Place roadway serves as the site driveway and circulating roadway for an office building complex located on the west side of I-91. Based on information provided by the Town of Rocky Hill, Corporate Place is an existing Town roadway. The recommend improvement proposes to extend Corporate Place to the north to intersect with Elm Street adjacent to the Big Y Plaza and the tennis center, providing a new north-south Town roadway.

Based on discussions with Town Staff, the future corridor for this roadway will most likely be constructed through the redevelopment process of the large industrial site located to the north of the Corporate Place office park. This parcel is well situated for redevelopment in the future and the Town has indicated that there has been interest in redeveloping the site. Under a redevelopment scenario, when a developer is preparing site plans, the development plan should include the establishment of a new Town of Rocky Hill roadway right of way that will facilitate the Elm Street connector. A conceptual layout and typical sections are provided in Figure 4-11. The alignment should be refined during the site planning process, with design and review requirements potentially dictated by Town staff. The future roadway should accommodate, at a minimum, a sidewalk along the east side of the roadway, connecting to the sidewalk on the east side of the existing roadway in Corporate Place. It is recommended that the new roadway also provide accommodations for bicycle traffic, either through the creation of a multi use path or through provision of a minimum 32 feet wide roadway cross section that provides 11 foot travel lanes and 5 foot wide shoulders to accommodate bicycle traffic.

Once the connector is built, it is recommended that the lane use at the signalized Corporate Place approach to West Street be modified to include double left turn lanes

and a shared through and right turn lane. A traffic control signal is recommended at the north end of the connector roadway where it intersects with Elm Street. The recommended northbound lane arrangement includes a two lane approach with an exclusive left and exclusive right lane. In addition, an exclusive right turn lane and a through lane are recommended on Elm Street's eastbound approach to the intersection. The exclusive right turn lane will operate as the eastbound lane drop from the two lane section recommended to the west. The westbound approach should provide a left-through lane with enough room to facilitate a bypass maneuver around a vehicle waiting to make a left turn onto the connector roadway.

The Town or Rocky Hill is currently engaged in a site planning process with a prospective developer seeking to develop the vacant land located directly across West Street from Corporate Place. One proposed site driveway for the mixed use development aligns with the Corporate Place intersection. As one of the elements of the development, a multi-use path has been discussed traversing the site and connecting from West Street at this signalized location to Cromwell Avenue almost a quarter mile to the south. Ideally, a multi-use path along the west side of the development drive to West Street would connect via crosswalk at the signal to a multi-use path along the west side of the Elm Street connector.

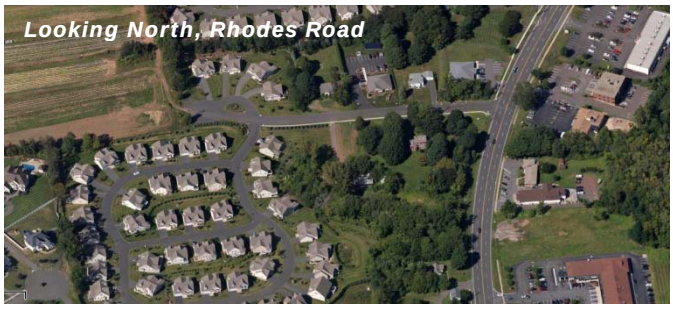
Potential Impacts and Constraints

There is no public land north of Corporate Place for the Elm Street Connector. It is recommended that the Elm Street Connector be a public road, requiring the establishment of a town right of way. This could be accomplished in coordination with the redevelopment of the large industrial parcel. Establishment of the right of way and construction of the recommended facilities could be achieved through a partnership with the developer.

4.1.5 Rhodes Road Area Recommendations

The intersection of Rhodes Road and Cromwell Avenue was the subject of many comments and significant interest from the Town of Rocky Hill and residents that live in Rhodes Landing adult community located on Rhodes Road. The interest stemmed from Town and resident inquires and requests to the Office of the State Traffic Administration (OSTA) and the Connecticut Department of Transportation to have a traffic control signal installed at the currently unsignalized intersection of Rhodes Road and Cromwell Avenue. This signal request had been denied prior to the initiation of this study based on the State's determination that a traffic control signal does not meet the warrants as defined in the Federal Highway Administration publication the *Manual on Uniformed Traffic Control Devices.* The traffic control signal warrants generally utilize recent traffic flows and crash history at an intersection to determine if a signal is needed to provide safe and efficient traffic operations. A review conducted under this Study indicates that a traffic control signal is still not warranted at the intersection of Rhodes Road and Cromwell Avenue.

Recommendations


Looking North, Rhodes Road

Rhodes Road was planned and designed to provide future access to the undeveloped area located to the west via the end of Rhodes Road. In addition, during the last decade, a small bank development was proposed along Cromwell Avenue adjacent to Rhodes Road. This study considers traffic to a future design year of 2030, and a number of factors are expected to contribute to significant increases in intersection traffic by that time. Among them are the potential extension of Rhodes Road to the west, the potential for development along Cromwell Avenue and in and around the study area in general, and projected increases in regional traffic. Therefore, with future increases in traffic volumes, the intersection of Rhodes Road may someday meet the minimum traffic signalization warrants. It is recommended that the Town of Rocky Hill continue to pursue the installation of a traffic control signal at this intersection by monitoring intersection traffic volumes and collision counts and review them against traffic signal warrant criteria. Once warrants have been determined to be met, a traffic control signal can be applied for and potentially approved by OSTA and ConnDOT.

Potential alignments for the extension of Rhodes Road to the west are shown in Figure 4-12.

4.1.6 Recommendations for Alternative Modes of Travel

4.1.6.1 Pedestrian Facilities

Sidewalk Recommendations

Recommended improvements to pedestrian facilities are focused on substantially improving sidewalk connectivity within the study area. The corridors prioritized for such improvements include Cromwell Avenue, Elm Street, West Street, and Brook Street (see Figure 4-13. While sidewalks currently exist on these roadways, the network is not contiguous. Approximately 6 miles (32,000 linear feet) of sidewalks are envisioned for installation to complete the sidewalk network within the Study Area. The quantities per corridor are as follows:

- Elm Street: 5,400 lf (linear feet)
- Elm Street Connector: 3,200 lf
- Town Center West: 1,700 lf
- Cromwell Avenue: 3,700 lf
- West Street: 5,900 lf
- Brook Street: 12,100 lf

Sidewalk improvements to Elm Street would require the existing Elm Street bridge structures over I-91 to be widened to accommodate at least one 6 foot wide sidewalk along the bridge's north side (the bridges currently lack sidewalks). The existing structures were constructed in 1965 and the bridges are currently classified as structurally deficient by ConnDOT. The addition of a sidewalk during rehabilitation of the structure would greatly benefit pedestrian connectivity on Elm Street and is recommended to be included in the next bridge improvement program. Based on the current condition of the bridges, improvement is likely needed within the study time horizon.

New sidewalks should be concrete, a minimum width of five feet, and separated from the curb line by a vegetative buffer where feasible, except along bridges.

Potential Impacts and Constraints

The potential impacts and constraints of sidewalk construction are primarily related to the physical space required for the sidewalks. Construction easements would likely be necessary as many of the roadsides have substantial grades that would require re-grading of private property to accommodate sidewalk facilities. Additionally, new sidewalks place the burden of maintenance of the sidewalk on the property owner, often resulting in resistance to sidewalk proposals by adjacent property owners.

Crosswalks

A total of twenty five crosswalks would be needed to connect existing and proposed sidewalks (see figure 4-13). Several side-streets are among the locations where new crosswalks are recommended. The new crosswalks are necessary upon construction of new sidewalks leading up to an intersection. The most critical crosswalks would be those at intersections with Cromwell Avenue. While most proposed crosswalks would be contingent upon the installation of sidewalks, crosswalk improvements would be immediately beneficial at the following locations:

Typical bar style crosswalk markings.

- Cromwell Avenue at France Street (no existing crosswalks)
- Cromwell Avenue at West Street (no existing crosswalks)
- Cromwell Avenue at West Side Market (no existing crosswalks – install during development of proposed site at Cromwell Avenue and West Street)
- Cromwell Avenue at Cold Spring Road (no existing crosswalks)
- Cromwell Avenue at Inwood Road

These locations would require the installation of crosswalk pavement markings, ADA accessible curb ramps, and pedestrian actuated buttons and signal heads. New sidewalk would also be required at several of these intersections.

Additionally, crosswalks along Main Street should be upgraded via construction of curb ramps leading to signal buttons and installation of pedestrian signal heads.

Potential Impacts and Constraints

The introduction of marked and signalized crossings is, for the most part, constrained to locations where sidewalks are present. The potential impact of crosswalk installation is minimal, with pedestrian crossing times at signalized intersection causing a slight delay to traffic and only when signal heads are actuated by pedestrians. Given the current low level of pedestrian activity in the study area, it is not anticipated that additional crosswalks and pedestrian signals at intersections would cause significant delay.

Multiuse Pathway

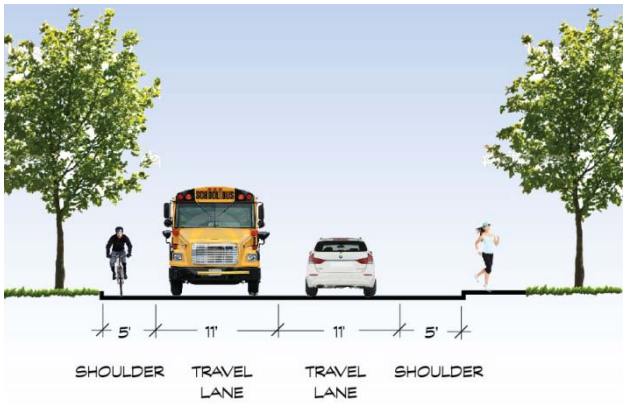
In response to local concerns regarding pedestrian and bicycle connectivity between the Cold Springs Road area and Elm Street, a multi-use pathway is recommended on the east side of Cromwell Avenue between Cold Spring Road and the proposed Town Center West Development (see figure 4-13 and 4-14). This pathway would accommodate both bicyclists and pedestrians, thereby providing an off-street facility for bicyclists on this section of Cromwell Avenue. The multi-use pathway would be a 10 foot (minimum) wide asphalt surface that would connect to a similar multi-use path within the Town Center West development, which would then connect to Elm Street via the new Elm Street Connector. Pedestrian and bicycle accommodations will be provided on the Elm Street Connector either by continuing the multi-use path or providing a combination of sidewalks and 5 foot shoulders.

Potential Impacts and Constraints

The use of this type of facility is generally limited to areas that have few curb cuts, thereby constraining the use of pathways to rural, industrial, or non-retail commercial areas. A multiuse path has a cross-section that is twice the size of the typical sidewalk and therefore has a greater impact upon properties adjacent to its construction. The proposed locations for the multiuse path are adjacent to or travel through proposed redevelopment areas and the construction related impacts could therefore be minimized in the process of site development/redevelopment. Given the size of these facilities, a maintenance agreement is often necessary between the municipality and adjacent private property owner to ensure adequate seasonal maintenance of the pathway.

4.1.6.2 Bicycle Facilities

Bicycles can be best accommodated on four corridors within the study area (see figure 4-14). These corridors include Elm Street, the Elm Street Connector, Main Street, and Brook Street. On each of these routes, bicycles would be accommodated via a 5 foot wide shoulder and bike route signage or along a multi-use pathway.



Typical roadway section with five foot shoulders

The proposed roadway improvements of Brook Street and the Elm Street Connector were described in previous sections and allow for the accommodation of bicycles within a 5 foot wide shoulder or along a multiuse pathway.

While Main Street varies in width, most of the roadway within the study area can accommodate bicycles within the existing shoulder. To better accommodate bicyclists along Main Street, it is recommended to conduct roadway widening to provide a minimum 32 foot wide travelway (11 foot lane and 5 foot shoulder widths). In general Main Street's width exceeds 32 feet, however isolated "pinch-point" areas of substandard width do exist and will need widening. One impediment to this widening is the structure which carries Main Street over the Hog Brook approximately 1000 feet north of West Street. The bridge currently has two 12 foot lanes with 2.5 foot wide shoulders within a 29 foot curb-to-curb width. These shoulder widths do not comply with ConnDOT design criteria for an urban minor arterial (4'-8' right shoulders), and the total width of 29 feet over the bridge is significantly less than the 36 foot provided on its approaches. A 2011 bridge inspection report indicates that the bridge was constructed in 1922 and is currently structurally deficient and functionally obsolete. To better accommodate cyclists and match the existing approach widths, it is recommended that a 36 foot wide roadway cross-section (with minimum 6 foot wide shoulders) be provided at this bridge when it is rehabilitated or reconstructed.

Elm Street varies in width between 24 feet and 30 feet and would therefore require widening of 2 feet to 8 feet along the corridor in order to provide a minimum 5 foot wide shoulder alongside 11 foot travel lanes. It is recommended that the roadway be widened from Cromwell Avenue to Main Street to provide 11 foot travel lanes and 5 foot shoulders for a minimum cross section of 32' wide. The structures that carry Elm Street over I-91 southbound and I-91 northbound provide an impediment to this recommendation. Elm Street is currently 30 feet wide (12 foot lanes with 3 foot wide shoulders) which does not meet ConnDOT design criteria for an urban minor arterial (11'-12' lanes and 4'-8' wide shoulders). The 2010 bridge inspection reports indicate that both bridges were constructed in 1965 and that both are currently categorized as structurally deficient. It is recommended that when they are rehabilitated or reconstructed, the bridges be widened to provide for two 11 foot lanes, two 5 foot wide shoulders, and one 6 foot wide sidewalk.

Within the study area, Route 160 appears in CRCOG's 2008 Regional Bike Plan as an On Road Bike Route, and on the State's bike map as one of only a handful of bicycle Cross-State Routes. The recommendation to provide 5 foot wide shoulders along Elm Street addresses the bicycle access issues along much of the route. However, within the study area there is still a need for improved bicycle accommodations along Cromwell Avenue between Elm Street and New Britain Avenue. Bicycle improvements were considered for this segment, however due to resulting impacts consensus was not reached on a specific recommendation. It is recommended that opportunities to provide bicycle accommodations from Elm Street to New Britain Avenue continue to be explored during design of the recommended Cromwell Avenue improvements. A lower impact accommodation may involve the extension of the multi-use trail along either a roadside or off-road alignment from the north end of the new Elm Street Connector Roadway to New Britain Avenue, however no acceptably low-impact alignment was identified during these study efforts.

Although not specifically endorsed as part of the study, during design of roadway widening for recommended 5 foot shoulders, consideration should be given to the viability of designating the shoulders as bike lanes.

Potential Impacts and Constraints

The introduction of bicycle facilities in the form of 5 foot wide shoulders would have a minimal impact upon existing roadways that are currently 32 feet wide or more. Roadway sections of sufficient width may need to be re-striped to accommodate a 5 foot wide shoulder. The potential impacts and constraints of accommodating bicycles are primarily related to construction that would be necessary in widening roadways to a minimum width of 32 feet. Construction easements would likely be necessary as many of the roadsides have substantial grades that would require re-grading of private property to accommodate additional roadway width.

4.1.6.3 Transit Facilities

Bus shelters are recommended at two locations within the study area: at the southeast corner of the West Street and Capitol Boulevard intersection and on the south side of Elm Street west of Rose Hill. These shelters would provide a waiting area for CT Transit's Route 47 bus patrons and improve customer service. Proposed shelters should conform to the other bus shelters that have been installed in Town, similar to the one located near Town Hall. Typical Rocky Hill bus shelters have glass surrounds and architectural elements. Additionally, electric service can be run to a shelter or solar panels used to provide electricity to operate lights or other amenities in the bus shelter, such as information displays related to bus service times.

Rocky Hill Bus Shelter

Potential Impacts and Constraints

The installation of transit shelters is constrained to areas where sufficient right-of-way exists at the roadside to accommodate the shelter and waiting area. A maintenance agreement should be put in place between CT Transit and the municipality to ensure that the shelter and waiting area is kept litter-free, clear of snow in winter months, and in a state of good repair.

Section 5
Implementation Plan

The implementation plan seeks to identify and prioritize recommended improvements that can be planned, programmed, and built within the 20 year study horizon. The basis of this implementation plan includes the overall project costs, complexity, and benefit. This section of the report seeks to provide ConnDOT, CRCOG, and the Town of Rocky Hill a menu of projects with guidance for implementation over time based on a series of qualitative and quantitative metrics.

5.1 Transportation Improvement Program

The Transportation Improvement Program includes 13 potential projects that address the roadway network, transit system, and pedestrian and bicycle needs in the study area. Specifically, the study recommends physical roadway improvements, one roadway/streetscape enhancement, and identifies numerous improvements to enhance transit, pedestrian and bicycle facilities. For summary purposes, these alternative transportation mode recommendations are grouped as one combined project for each mode, however the study recognizes that implementation of the improvements will likely occur as the result of many separate projects as funding from various sources becomes available.

The Transportation Improvement Program classifies projects as small, medium, and large based on project size, complexity, and project cost. The projects are also prioritized as short-term, mid-term, and long-term representing when implementation of the project is anticipated to be necessary. A short-term project priority indicates an immediate need for the project to address an existing deficiency or operational concern. Conversely, a project priority of long-term would indicate a project that intended to address an anticipated future issue or need such as operational issues that are expected to occur due to future traffic growth.

5.1.1 Project Categorization

Project types are categorized into small projects, medium projects, and large projects, based on several metrics as described in Table 5-1.

TABLE 5-1

Project Type Characteristics

Project Type	Implementation Time	Complexity	Approximate Project Cost
Small	Less than 3 years	Low	Less than $1 million
Medium	Between 3-6 years	Moderate	$1 million - $2 million
Large	More than 6 years	High	More than $2 million

Implementation time refers to the time frame required to initiate a project, conduct the remaining planning and engineering design work required to prepare the project for construction and to complete construction the improvement, assuming that funding for all phases of the project is available. A subsequent section of the report identifies possible funding sources that may be available to support the implementation of each project. Implementation time is not intended to indicate the priority or relative time

frame with respect to the completion of this study, but rather intended to provide planners and decision makers with a measurement of the potential total time to implement the improvement from initiation.

The complexity of each project has been established based on the overall complexity to plan, design, and construct the improvement. Several metrics were considered in the establishment of each project's relative complexity. Projects are categorized into Low, Moderate, and High complexity based on the qualitative metrics described in Table 5-2.

TABLE 5-2

Summary of Project Complexity Characteristics

Complexity Level	Project Characteristics
Low Complexity	• Little to no additional planning needed, concept planning sufficient to proceed into design • Design effort is limited and typical. • None to minor right of way action • Environmental impacts and permitting requirements are very low • Utility impacts are considered minor or not anticipated
Moderate Complexity	• Additional Planning required to define project • Detailed design effort needed to define construction and impacts • Some right of way impacts anticipated • Environmental impacts and permitting are expected. • Potential for utility impacts and relocations
High Complexity	• Significant planning still required to define project • Detailed design effort following planning is required • Significant right of way actions needed. Private ownership coordination • Major environmental impacts, significant permitting process and agency involvement at all levels of government • Major utility relocations and design efforts to coordinate

Project costs have been estimated following the guidelines published by the Connecticut Department of Transportation and are presented in 2012 dollars. Costs may need to be expanded to account for inflationary pressures on construction costs looking out into the future. The "Preliminary Cost Estimating Guidelines" provide unit costs and percentage based lump sum costs to facilitate the estimation of project costs at the Preliminary Engineering level of project development. The approximate project costs presented in this study are limited to the construction item costs and exclude costs related to rights of way actions, utility relocations, environmental remediation, and engineering. The estimates include contingency (10%) and incidentals (25%-30%) in the total opinion of probable costs for each project.

5.1.2 Project Prioritization

The priority for each of the recommended improvement projects has been established based on two primary criteria: project need and local interest to implement the recommended improvements. Project need is based on the urgency to mitigate an existing deficiency within the overall transportation system. Projects are deemed to have a higher priority when they address an identified safety deficiency, address accessibility, or mitigate a current mobility or operational issue. The project priority categories are defined at Short-Term, Mid-Term, and Long-Term based on the criteria described in Table 5-3.

TABLE 5-3

Summary of Project Need Priority Metrics

Project Priority	Project Characteristics
Long-Term	• Project does not address an identified safety concern • Project scope intended to address future travel demand and traffic operations • Project may have some mobility, accessibility, or multi-modal benefits
Mid-Term	• Project scope provides operational and mobility benefits that are currently an issue, but traffic operations are not poor or failing • Local stakeholders have expressed interest in implementing improvement to enhance transportation system.
Short-Term	• Project addresses an urgent safety issue • Project intended to address existing operational deficiency • Project addressed a deficiency in accessibility that has been identified as a local concern

In addition to the priority assigned to the project based on project need, input from the Town of Rocky Hill and CRCOG was obtained for each of the projects to determine the relative importance of each project from a local and regional planning and political perspective. The overall priority presented for each of the projects is predominately based on transportation need, however, in cases where the Town or CRCOG has indicated that a project is a higher priority to address local interests, adjustments have been made address local input.

5.1.3 Recommended Projects Summary

The following section outlines each of the proposed improvements recommended by the Study and describes the project in terms of the scope of the improvements and the priority for implementation. It should be noted that some priorities described in this report are subjective and founded in the policies and goals of the Town of Rocky Hill and CRCOG at the time of development. The local and regional priorities should continue to be reviewed and evaluated to determine if changes to the priorities for the improvement plans are needed to remain current with local and state trends, policies, priorities, and conditions with the study area.

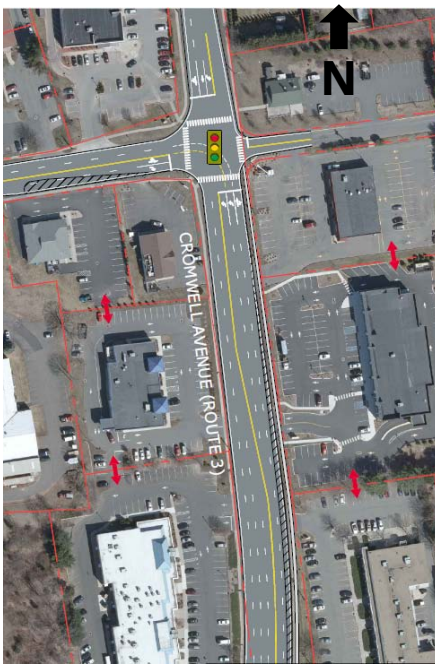
1. Intersection Improvements at Cromwell Avenue and West Street/France Street (Phase 1)			
Project Goals:	Mitigate morning peak hour delays and queuing along France Street.	Project Type:	Small
		Project Priority:	Short-Term
		Project Cost:	$250,000
Project Elements:	• Widen France Street to accommodate two lane approach (left turn & right turn lanes). • Modify traffic signal operations to accommodate new lane geometry. See Figure 4-4		

2. Intersection Improvements at Cromwell Avenue and West Street/France Street (Phase 2)			
Project Goals:	Mitigate the effect of future travel demand on the cluster intersection of West Street and France Street through geometric improvements.	Project Type:	Medium
		Project Priority:	Short-Term
		Project Cost:	$1,300,000
Project Elements:	• Widen Cromwell Avenue between France Street and West Street to provide a second southbound left turn lane to address future travel demand. • Modify intersection traffic operations to accommodate southbound double left turn movement. See Figure 4-5		

3. Intersection Improvements at Brook Street and Henkel Way

Project Goals:	Improve future traffic operations and facilitate the redirection of truck traffic away from neighborhood area. Create a gateway between the industrial and residential uses along Brook Street and calm traffic entering and traveling through the neighborhood.	Project Type:	Small
		Project Priority:	Short-Term
		Project Cost:	$800,000
Project Elements:	• Replace the existing two-way stop sign controlled intersection with a modern roundabout. The roundabout should be designed to accommodate a 180 degree turn by semi-trailers. • Install sidewalks and in-fill sidewalk along both sides of Brook Street in the intersection area. • Provide an aesthetic center island area with landscaping or other treatments at the direction of the Town of Rocky Hill See Figure 4-9		

4. Operational Improvements Along Cromwell Avenue, Elm Street, and New Britain Avenue

Project Goals:	Mitigate the effects of future travel demand along Cromwell Avenue, New Britain Avenue, and Elm Street through roadway widening and intersection improvements. Encourage access management and improve pedestrian facilities.	Project Type:	Large
		Project Priority:	Short-Term
		Project Cost:	$5,300,000
Project Elements:	• Widen Elm Street to provide two eastbound travel lanes between Cromwell Avenue and the Big Y shopping plaza. Extend two lanes to future connector roadway. • Widen Cromwell Avenue from Elm Street to New Britain Avenue to provide double left turn lanes southbound at Elm Street and northbound at New Britain Avenue. • Widen New Britain Avenue to provide two westbound lanes to accept the double left turn from Cromwell Avenue and extend two westbound lanes to Haynes Road. • Extend length of the exclusive right turn lane on eastbound New Britain Avenue. • Provide additional crosswalks and pedestrian ramps at Cromwell Avenue intersections. • In-fill sidewalk to provide cohesive sidewalk network within the project area. • Encourage inter-parcel connections between commercial parcels along both sides of Cromwell Avenue. • Coordinate with Rocky Hill Fire Department regarding hardwired fire pre-emption from Station 2 to nearby signalized intersections See Figure 4-6A and 4-6B		

5. West Street and Interstate 91 Interchange Improvements

Project Goals: Modify I-91 interchange area to mitigate the effects of future travel demand and to mitigate existing safety deficiencies at the southbound ramps.

Project Type:	Large
Project Priority:	Short-Term
Project Cost:	$2,300,000

Project Elements:

- Modify lane use at southbound ramps to provide a double left turn movement from westbound West Street. Widen ramp to accept two lanes and modify alignment of turning roadway. Improvements at southbound ramp address existing safety deficiency and should be a higher priority improvement.
- Widen West Street and modify lane use at northbound ramps to provide a double left turn movement from westbound West Street. Widen ramp to accept two lanes modify alignment of turning roadway.
- Widen West Street along south side of street between northbound ramps and Capital Boulevard.
- Modify alignment of free flow right turning roadway into Corporate Ridge site.

See Figure 4-7

6. Study Area Transit Facility Enhancements

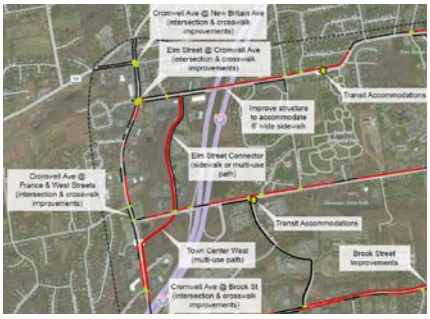
Project Goals: Provide improvements to transit facilities in Town to provide higher level of customer service at key stops.

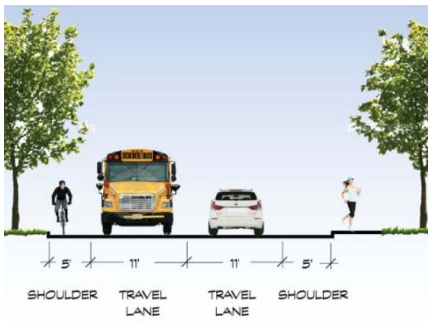
Project Type:	Small
Project Priority:	Short-Term
Project Cost:	$50,000

Project Elements:

- Install a bus shelter and concrete pad at the southeast corner of the West Street and Capitol Boulevard intersection and on the south side of Elm Street west of Rose Hill.
- New shelters should conform to current aesthetics of other recently installed shelters in Town.

See Figure 4-13

7. Study Area Sidewalk and Pedestrian Facility Improvements			
Project Goals:	Improve pedestrian accessibility at study area intersections and along study area roadways	Project Type:	N/A
		Project Priority:	Short-Term
		Project Cost:	$4,400,000
Project Elements:	• In-fill and extend sidewalk infrastructure so as to provide continuous east/west and north/south facilities for pedestrians on Elm Street, West Street, Brook Street, and Cromwell Avenue within the study area. • Upgrade intersections to accommodate pedestrians via marked crosswalks, pedestrian signals, and ADA accessible curb ramps. • Provide a multi-use path along Cromwell Avenue to connect the residential areas to the west of the study area with the existing and proposed pedestrian facilities. See Figure 4-13		

8. Study Area Bicycle Facility Enhancements			
Project Goals:	Improve existing roadway infrastructure to better accommodate bicycle traffic, improve and expand connections between residential and recreational land uses, and improve regional bike routes within the Study Area and Town of Rocky Hill.	Project Type:	N/A
		Project Priority:	Short-Term
		Project Cost:	$2,500,000
Project Elements:	• Widen shoulders along Elm Street and Main Street to provide a 5' wide minimum shoulder for cyclists. • Construct multi-use pathway on Cromwell Avenue between Cold Springs Road and proposed Town Center West Development See Figure 4-14		

9. Intersection Improvements at West Street and Main Street			
Project Goals:	Realign West Street and Forrest Street to improve traffic operations and provide wide shoulders along Main Street to facilitate bicycle usage of the road.	Project Type:	Medium
		Project Priority:	Mid-Term
		Project Cost:	$1,100,000
Project Elements:	• Shift alignment of West Street to the south and shift alignment of Forest Street to the north to align the offset roadway geometry into a conventional four way intersection. Provide exclusive left turn lanes on the northbound and eastbound approaches. Provide an exclusive right turn lane on the southbound approach. • Provide a minimum 5' wide shoulders along Main Street to accommodate bicycle traffic. • Install sidewalks and crosswalks on each leg of the intersection and incorporate pedestrian phasing within the traffic control signal operations. See Figure 4-8		

10. Brook Street Neighborhood Streetscape and Multimodal Improvements			
Project Goals:	Improve transportation facilities and provide traffic calming and aesthetics enhancements in the residential section of Brook Street between Main Street and Henkel Way.	Project Type:	Large
		Project Priority:	Mid-Term
		Project Cost:	$2,300,000
Project Elements:	• Widen Brook Street to provide a uniform 32' wide roadway cross section (5' bike shoulders and 11' travel lanes). • Install in-fill sidewalk along both sides of Brook Street between Henkel Way and Main Street. • Consider the installation of pedestrian level lighting and/or street lights within the neighborhood area along Brook Street. • Install street trees along both sides of Brook Street to enhance the aesthetics of the corridor and to advise roadway users of the neighborhood setting. See Figure 4-10		

11. Intersection Improvements at Cromwell Avenue and Inwood Road			
Project Goals:	Improve intersection operations and mitigate geometric deficiency by widening Cromwell Avenue.	Project Type:	Small
		Project Priority:	Long-Term
		Project Cost:	$500,000
Project Elements:	• Widen Cromwell Avenue south of the intersection to provide additional southbound travel lane. Merge two lanes back to one lane south of the intersection. • Eliminate existing southbound right lane drop at Inwood Road. • Implement minor widening along east side of Cromwell Avenue and install northbound exclusive left turn lane into Inwood Road. • Modify traffic signal operations to provide an exclusive northbound protected left turn phase. • Construct in-fill sidewalk along east side of Cromwell Avenue. See Figure 4-2		

12. Intersection Improvements at Cromwell Avenue and Brook Street			
Project Goals:	Improve intersection traffic operations and capacity through geometric modifications and provide additional pedestrian facilities.	Project Type:	Medium
		Project Priority:	Long-Term
		Project Cost:	$1,300,000
Project Elements:	• Widen Cromwell Avenue along the west side of the road to accommodate an exclusive southbound left turn lane. • Modify traffic signal operations to provide exclusive southbound protected left turn phase. • Install sidewalk along both sides of Cromwell Avenue and portions along Brook Street and connect to the existing sidewalk crossing the Cromwell Avenue bridge over I-91. Provide crosswalks at the intersection. See Figure 4-3		

13. Elm Street Connector Roadway			
Project Goals:	Improve local roadway network connectivity and access to developable land and facilitate mobility of alternative travel modes.	Project Type:	Large
		Project Priority:	Long-Term
		Project Cost:	$3,200,000
Project Elements:	• Extend existing town roadway (Corporate Place) to the north to provide a parallel roadway connection between West Street and Elm Street. • Include measures to facilitate use of the roadway by bicycle traffic (wide shoulders or a multi-use pathway). • Install a new traffic control signal at the intersection of Elm Street and the new connector roadway and modify Elm Street to accommodate the new signalized intersection. See Figure 4-11		

5.1.4 Implementation Plan Summary

Table 5-4 summarizes the recommendations on a project-level basis. A review of the implementation plan indicates that there are seven projects that have been identified as Short-Term priorities, two projects that that have been identified as Mid-Term priorities, and four projects that have been identified as Long-Term priorities. The projects prioritized as Short-Term indicate that funding sources could be sought in the Short-Term to address the existing concerns.

Table 5-4: Summary of Projects in Implementation Plan

Project Description	Project Type	Project Priority	Project Cost
1. Intersection Improvements at Cromwell Avenue and West Street / France Street - (Phase 1)	Small	Short-Term	$250,000
2. Intersection Improvements at Cromwell Avenue and West Street / France Street – (Phase 2)	Medium	Short-Term	$1,300,000
3. Intersection Improvements at Brook Street and Henkel Way	Small	Short-Term	$800,000
4. West Street and Interstate 91 Interchange Improvements	Large	Short-Term	$2,300,000
5. Cromwell Avenue Improvements from Elm Street to New Britain Avenue	Large	Short-Term[1]	$5,300,000
6. Study Area Transit Facility Improvements	Small	Short-Term	$50,000
7. Study Area Sidewalk and Pedestrian Facility Improvements	N/A[2]	Short-Term	$4,400,000[3]
8. Study Area Bicycle Facility Enhancements	N/A[2]	Short-Term	$2,500,000[3]
9. Intersection Improvements at West Street and Main Street	Medium	Mid-Term	$1,100,000
10. Brook Street Neighborhood Streetscape and Multimodal Improvements	Large	Mid-Term	$2,300,000
11. Intersection Improvements at Cromwell Avenue and Inwood Road	Small	Long-Term	$500,000
12. Intersection Improvements at Cromwell Avenue and Brook Street	Medium	Long-Term	$1,300,000
13. Elm Street Connector Roadway	Large	Long-Term	$3,200,000

1 Short-term priority only for recommendations addressing New Britain Avenue queues and Fire Station 2 access concerns.

2 For summary purposes, Bicycle and Pedestrian Improvements are grouped as a combined project for each mode, however implementation will likely occur as many separate projects as funding from various sources becomes available.

3 Not including costs of bicycle and pedestrian improvements identified as components of other recommended projects.

5.2 Project Implementation

The transition from the planning process to project implementation is the critical step forward in the project development process. Utilizing the ideas and plans developed under this Study, and with the help from CRCOG and support from the State of Connecticut Department of Transportation, the Town of Rocky Hill's responsibility lies in the identification of projects for implementation to address the needs and future concerns in the Study Area. Once a project has been identified by the Town, the actual implementation will follow a well defined process. The most critical hurdle for the projects is identification of a funding source to support the engineering, rights of way acquisition, utility modifications, and ultimately construction of the improvements. The Town, working independently or with CRCOG and/or ConnDOT will determine the purpose and need of a project and develop a scope for the work. Utilizing the concept plans and costs defined in this Study, funding through an appropriate funding vehicle can be sought.

5.2.1 Project Initiation and Funding

Generally speaking, it is expected that the majority of the recommendations and improvements identified in this Study will be publically funded through State and/or Federal Transportation Funding Programs as provided for in the Federal Transportation Legislation or through State funding made available in the State of Connecticut transportation budget or through the State Bond Commission. However, there are other improvements that could be constructed by private entities as mitigation for proposed development in the study area.

There are many current funding vehicles that are available to the Town, Region, and State to support the recommendations presented in the Study. Current funding programs include:

- National Highway Performance Program (NHPP)
- Surface Transportation Program (STP)
- National Safety Improvement Program (HSIP)
- Congestion Mitigation and Air Quality Program (CMAQ)
- Transportation Alternatives (TA)
- Local Capital Improvement Program (LoCIP)
- Small Town Economic Assistance Program (STEAP)
- Recreational Trails Program
- Special Tax Obligation Bonds

It is worth noting that with any program reliant on public funding, either by the Federal Government or State of Connecticut, that priorities may change in the future along with available funding vehicles for transportation system improvements. In addition, there are several large construction projects currently underway in the State of Connecticut that have constrained transportation spending looking forward as available funds are channeled to complete these project. The State of Connecticut Department of Transportation published the Transportation Capital Plan: 2012 – 2016 describing the state of available funds and programmed spend over the next four years. However, the current fiscal constraints should not limit the identification and pursuit of projects and

funding for the priority projects identified by the Study, so that as funding becomes available, projects are ready.

5.2.2 Design and Construction

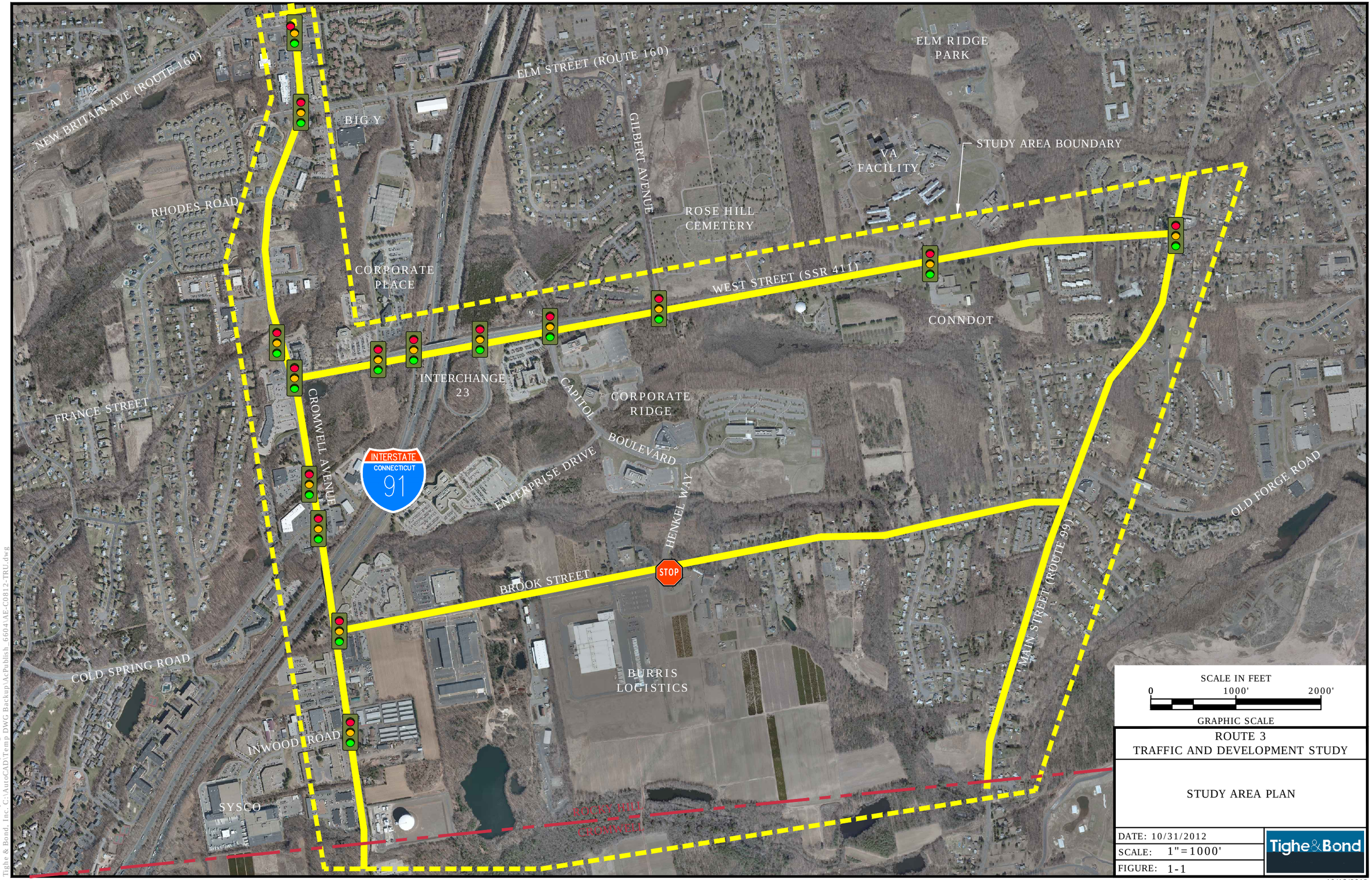
5.2.2.1 Engineering Design

Following the initiation of a project and identification of a funding source, the remaining steps to implement an improvement will involve design and construction. Based on the complexity of a project, an initial Preliminary Engineering phase may be required to conduct a more detailed engineering study and refine the concept plans and project scope. A Preliminary Engineering study can help establish the potential impacts to environmental and natural resources, identify potential property and utility impacts, and help refine the expected costs in current dollars, rather than forecasting based on estimates reported in this Study, which are provided in current 2012 dollars.

Once Preliminary Engineering is complete and the decision is made to move forward with the project, Final Design will take place to add detail to the plan, conduct a right of way acquisition process, address utility conflicts and possible relocations, and develop construction documentation to facilitate bidding and construction of the improvements. Generally, projects that are identified as having a low level of complexity can be designed within 12-18 months from initiation of the project by the Town. As complexity grows, so does the timeframe required to design improvements, with design phases potentially lasting three years or more.

5.2.2.2 Construction

Following the completion of the design phase, the project will begin the construction phase. The steps involved in a publically funded project include advertisement for bids to contractors, collecting bid on the work and awarding the contract, and finally conducting the construction to build the improvement. Utility relocations typically take place during construction, but in some instances a utility company may relocate facilities in advance of a project taking place once a utility agreement is in place. Generally, smaller projects are completed within one construction season, generally March through November. Larger projects can span several construction seasons depending on the complexity of the work, the construction staging and phasing needed to facilitate the maintenance and protection of traffic operations during construction, and possibly the availability of funding. Projects identified as having Moderate Complexity can be expected to take up to two construction seasons, and highly complex projects could take more than two construction seasons to build.



SCALE IN FEET
0 1000' 2000'
GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

STUDY AREA PLAN

DATE: 10/31/2012
SCALE: 1"=1000'
FIGURE: 1-1

Tighe&Bond

10/18/2012

Oct 18, 2012-6:30pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AcPublish_6604\AE-C0812-TRU.dwg

N

Cromwell

Rocky Hill

Inwood Road

Cromwell

Brook Street

Cold Spring Road

West Side Market

Shunpike Village/ Dunkin Donuts

Avenue

West Street (SR411)

France Street

Marriot Courtyard & Residence Inn

(Route 3)

Rhodes Road

New Britain Ave (Route 160)

Elm Street (Route 160)

Copper Beech Drive

2009 CDOT COUNT
STATION 33
ADT: 10,900
AM: 1,060
PM: 1,162

2009 CDOT COUNT
STATION 2102
ADT: 11,100
AM: 737
PM: 1,332

2009 CDOT COUNT
STATION 63
ADT: 3,500
AM: 176
PM: 483

2009 CDOT COUNT
STATION 63
ADT: 3,800
AM: 461
PM: 264

2009 CDOT COUNT
STATION 46
ADT: 7,700
AM: 562
PM: 936

2009 CDOT COUNT
STATION 46
ADT: 7,100
AM: 497
PM: 761

2009 CDOT COUNT
STATION 36
ADT: 7,800
AM: 665
PM: 688

2009 CDOT COUNT
STATION 36
ADT: 8,100
AM: 629
PM: 822

2010/01 CT COUNT
48-HOUR ATR
ADT: 10,336
AM: 766
PM: 992

2010/01 CT COUNT
48-HOUR ATR
ADT: 10,445
AM: 772
PM: 834

2009 CDOT COUNT
STATION 24
ADT: 11,200
AM: 798
PM: 1,036

2009 CDOT COUNT
STATION 24
ADT: 10,900
AM: 877
PM: 1,030

2009 CDOT COUNT
STATION 35
ADT: 9,400
AM: 661
PM: 955

2009 CDOT COUNT
STATION 35
ADT: 10,500
AM: 668
PM: 1,126

2010/12 CT COUNT
96-HOUR ATR
ADT: 2,134
AM: 108
PM: 238

2010/12 CT COUNT
96-HOUR ATR
ADT: 2,003
AM: 200
PM: 138

2010/12 CT COUNT
96-HOUR ATR
ADT: 8,227
AM: 583
PM: 687

2010/12 CT COUNT
96-HOUR ATR
ADT: 8,082
AM: 585
PM: 725

2009 CDOT COUNT
STATION 19
ADT: 9,100
AM: 704
PM: 808

2009 CDOT COUNT
STATION 19
ADT: 9,200
AM: 660
PM: 970

2009 CDOT COUNT
STATION 30
ADT: 8,900
AM: 748
PM: 801

2009 CDOT COUNT
STATION 30
ADT: 9,200
AM: 582
PM: 1,010

2009 CDOT COUNT
STATION 18
ADT: 5,300
AM: 340
PM: 522

2009 CDOT COUNT
STATION 18
ADT: 5,300
AM: 362
PM: 516

2009 CDOT COUNT
STATION 45
ADT: 11,900
AM: 801
PM: 1,192

2009 CDOT COUNT
STATION 34
ADT: 8,500
AM: 678
PM: 835

MATCH LINE A BELOW

MATCH LINE B BELOW

2010/12 CT COUNT
96-HOUR ATR
ADT: 11,025
AM: 909
PM: 1,019

2010/12 CT COUNT
96-HOUR ATR
ADT: 9,161
AM: 772
PM: 715

2009 CDOT COUNT
STATION 28
ADT: 11,800
AM: 896
PM: 1,171

2009 CDOT COUNT
STATION 28
ADT: 11,500
AM: 1,126
PM: 924

Century Executive Park

2009 CDOT COUNT
STATION 7084
ADT: 7600
AM: 886
PM: 691

2009 CDOT COUNT
STATION 7085
ADT: 8400
AM: 794
PM: 988

I-91 SB Exit

I-91 SB Entrance

I-91 NB Ramps

2009 CDOT COUNT
STATION 29
ADT: 7,000
AM: 497
PM: 889

2009 CDOT COUNT
STATION 29
ADT: 7,900
AM: 1,074
PM: 680

2010/12 CT COUNT
96-HOUR ATR
ADT: 7,335
AM: 438
PM: 889

2010/12 CT COUNT
96-HOUR ATR
ADT: 8,189
AM: 1,137
PM: 563

2009 CDOT COUNT
STATION 100
ADT: 10,700
AM: 902
PM: 1,264

2009 CDOT COUNT
STATION 100
ADT: 9,000
AM: 987
PM: 747

2009 CDOT
STATION 7087
ADT: 8300
AM: 1062
PM: 933

2009 CDOT
STATION 7086
ADT: 6200
AM: 540
PM: 725

Capital Boulevard

Corporate Ridge Office Park

Henkel Way

2010/09 CT COUNT
24-HOUR ATR
ADT: 1,708
AM: 128
PM: 168

2010/09 CT COUNT
24-HOUR ATR
ADT: 1,789
AM: 164
PM: 181

2010/09 CT COUNT
24-HOUR ATR
ADT: 870
AM: 114
PM: 67

2010/09 CT COUNT
24-HOUR ATR
ADT: 1,296
AM: 93
PM: 188

Gilbert Avenue

2009 CDOT COUNT
STATION 68
ADT: 9,300
AM: 782
PM: 857

2009 CDOT COUNT
STATION 69
ADT: 7,700
AM: 592
PM: 780

2009 CDOT COUNT
STATION 53
ADT: 3,500
AM: 350
PM: 385

Main Street (Route 99)

2009 CDOT COUNT
STATION 10
ADT: 7,000
AM: 584
PM: 616

2009 CDOT COUNT
STATION 31
ADT: 12,300
AM: 934
PM: 1,127

Forest Road

2009 CDOT COUNT
STATION 47
ADT: 11,000
AM: 814
PM: 1,012

2009 CDOT COUNT
STATION 104
ADT: 9,500
AM: 703
PM: 865

2009 CDOT COUNT
STATION 37
ADT: 8,400
AM: 638
PM: 831

2009 CDOT COUNT
STATION 98
ADT: 250
AM: 17
PM: 18

Brook Street

Sawmill Road

2009 CDOT COUNT
STATION 2033
ADT: 7,400
AM: 577
PM: 782

2009 CDOT COUNT
STATION 95
ADT: 2,400
AM: 199
PM: 263

2009 CDOT COUNT
STATION 67
ADT: 4,500
AM: 313
PM: 408

2010/12 CT COUNT
96-HOUR ATR
ADT: 2,505
AM: 283
PM: 298

2010/12 CT COUNT
96-HOUR ATR
ADT: 2,615
AM: 127
PM: 299

MATCH LINE A ABOVE

MATCH LINE B ABOVE

Brook Street

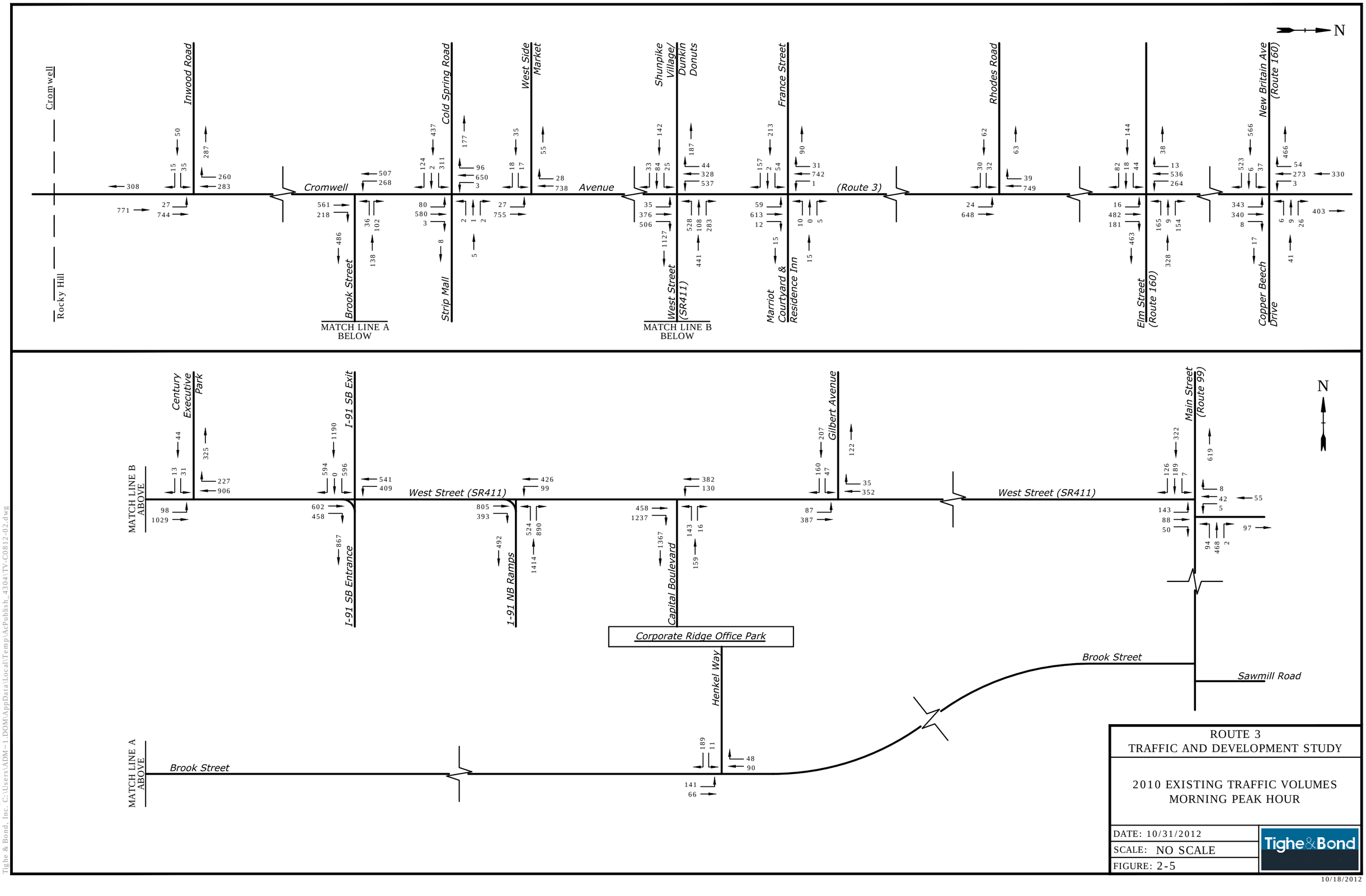
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

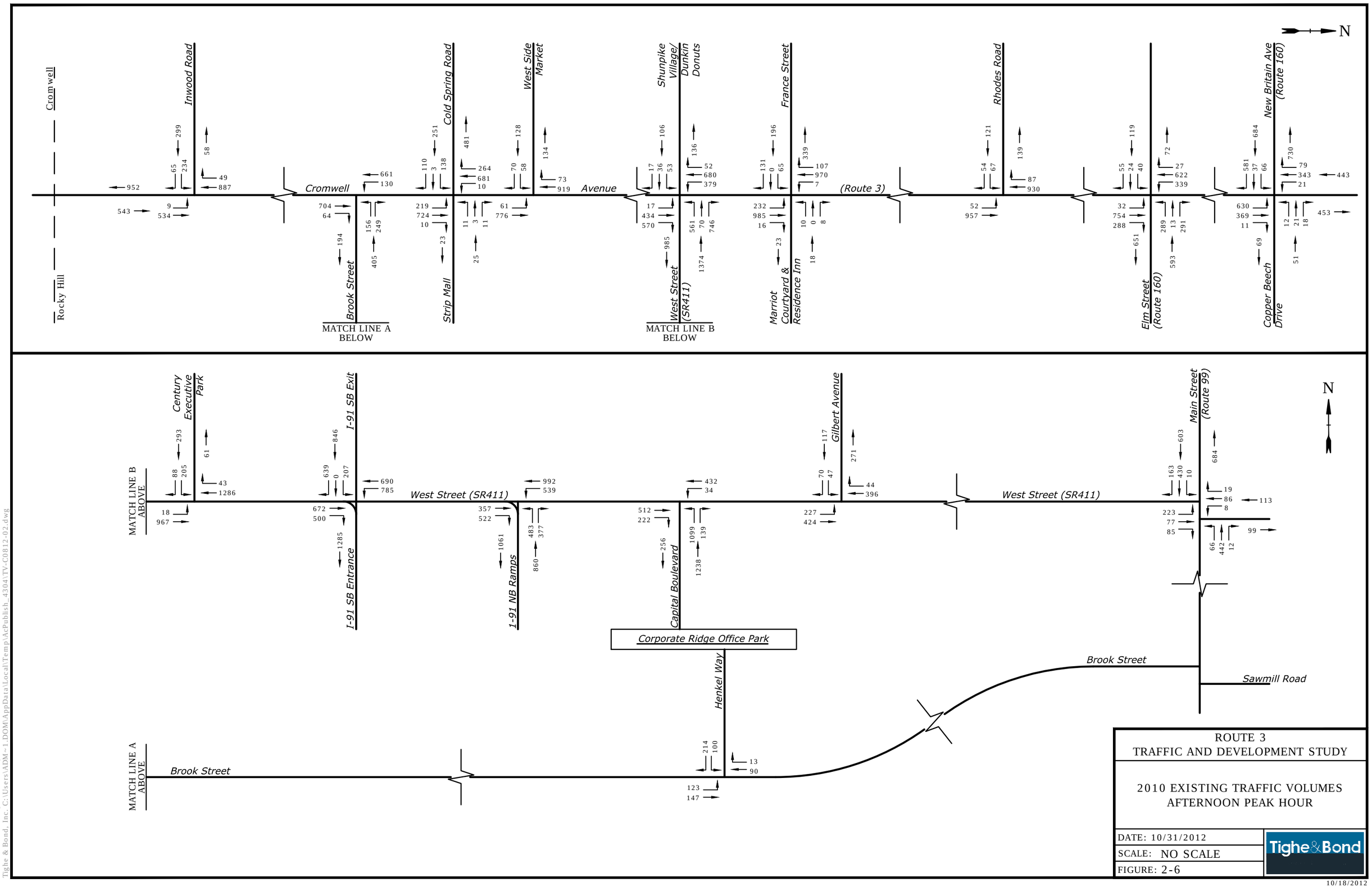
2009/2010 AVERAGE DAILY TRAFFIC VOLUME SUMMARY

DATE: 10/31/2012
SCALE: NOT TO SCALE
FIGURE: 2-4

Tighe&Bond

10/18/2012





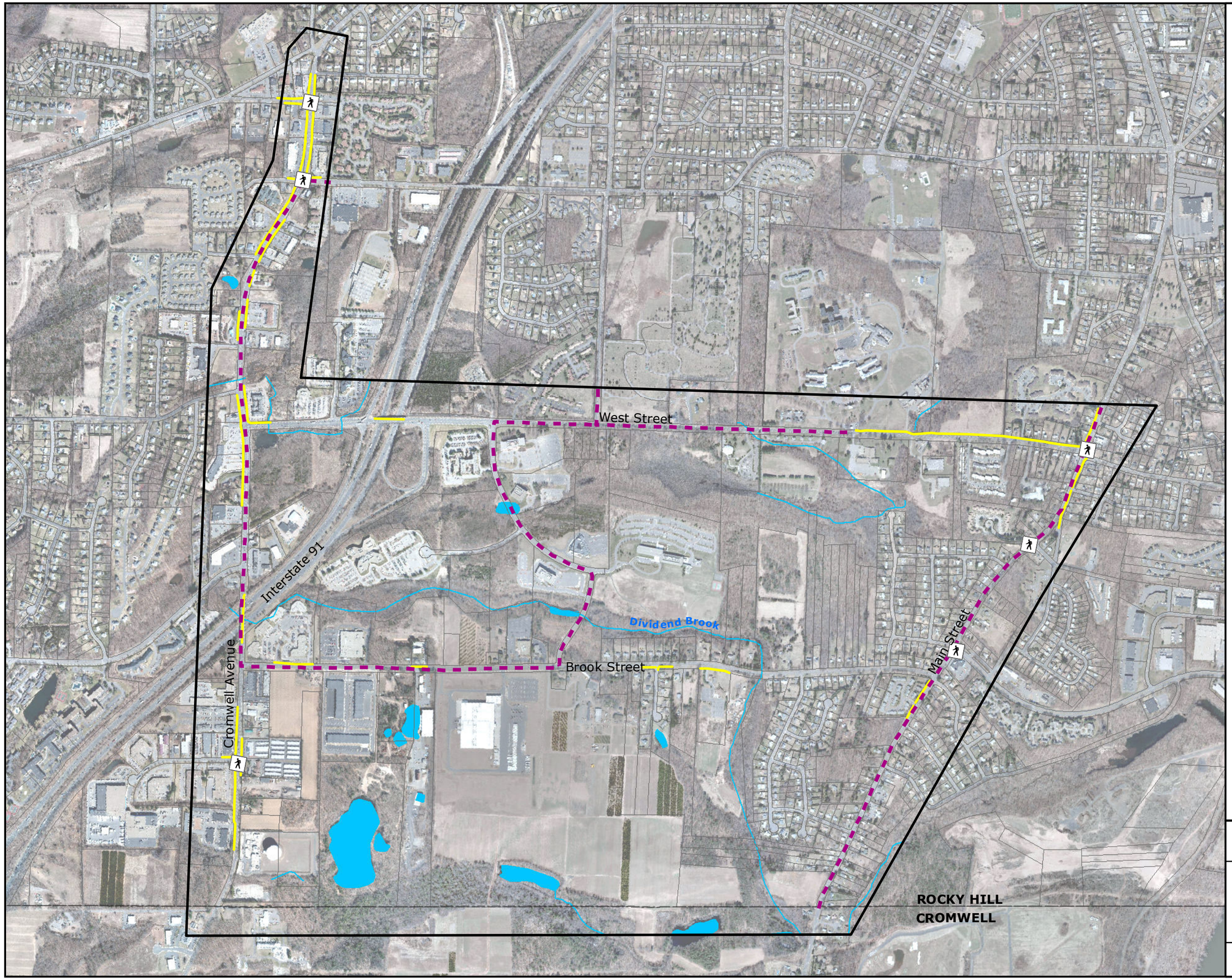
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2010 EXISTING TRAFFIC VOLUMES
AFTERNOON PEAK HOUR

DATE: 10/31/2012
SCALE: NO SCALE
FIGURE: 2-6

Tighe&Bond

10/18/2012



0 375 750 1,500 2,250 3,000
Feet

Legend

- Study Area
- Crosswalk
- Bus Route
- Sidewalk
- Municipal Boundary
- Parcel Boundary
- Open Water

Route 3 Traffic and Development Study
Rocky Hill, Connecticut

Bicycle and Pedestrian Facilities

Figure 2-11

Original in Color - FHI - 103112

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2010 EXISTING
TRANSPORTATION CONDITIONS
CROMWELL AVENUE

DATE: 10/31/2012
SCALE: 1"=400'
FIGURE: 2-12

Tighe&Bond

10/18/2012

Oct 18, 2012-6:35pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AcPublish_6604\AE-C0812-TRU.dwg

ROUTE 3 BETWEEN COLD SPRING ROAD AND WEST STREET SHOULD BE EVALUATED FOR SAFETY IMPROVEMENTS BASED ON 2006-2008 STATEWIDE DATA

DUNKIN DONUTS TRAFFIC BACK-UP INTO INTERSECTION

TOWN PETITION FOR TRAFFIC SIGNAL AT RHODES ROAD WARRANTS NOT MET

REVIEW OF STATEWIDE DATA INDICATED FURTHER EVALUATION OF OPPORTUNITIES TO IMPROVE SAFETY ARE WARRANTED AT INTERSECTION

ROUTE 3 BETWEEN ELM STREET AND NEW BRITAIN AVE SHOULD BE EVALUATED FOR SAFETY IMPROVEMENTS BASED ON 2006-2008 STATEWIDE DATA

INTER-PARCEL CONNECTION RESULT OF ACCESS MANAGEMENT IMPLEMENTATION

HIGH PERCENTAGE OF CRASHES INVOLVED WITH VEHICLES EXITING DRIVEWAY PRIOR TO SIGNAL INSTALLATION IN SEPT. 2008

LONG CYCLE LENGTH CAUSING LONG DELAY AND QUEUE ON FRANCE STREET & WEST STREET

SPEEDS:
40 MPH - POSTED
37 MPH - AVERAGE
42 MPH - 85th PERCENTILE

LONG NORTHBOUND LEFT TURN QUEUE DURING AFTERNOON PEAK HOURS

CRASH EXPERIENCE WARRANTS REVIEWS OF POTENTIAL SAFETY IMPROVEMENTS

FRANCE ST
ROUTE 160
N
MTG-739-B
767 CROMWELL AVE
(SHUNPIKE)
D D
C B
CROMWELL AVENUE (ROUTE 3)
SPEED LIMIT 40
MTG-320-B
MARRIOTT
MTG-1622
HILL VIEW
PLAZA
SPEED LIMIT 40
B D
C C
NEW BRITAIN AVE
INTERSTATE
CONNECTICUT
91
WEST STREET
MTG-320-A
CENTURY
EXECUTIVE
PARK
MTG-1280
WEST ELM
BUSINESS
CENTER
(BIG Y)
ELM STREET (ROUTE 160)
MTG-417
LENNOX
MTG-271
ELMS
COMMONS

SCALE IN FEET
0 400' 800'
GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2010 EXISTING
TRANSPORTATION CONDITIONS
CROMWELL AVENUE

DATE: 10/31/2012
SCALE: 1"=400'
FIGURE: 2-13

Tighe&Bond

10/18/2012

Oct 18, 2012-6:36pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AcPublish_6604\AE-C0812-TRU.dwg

SCALE IN FEET

0 400' 800'

GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2010 EXISTING
TRANSPORTATION CONDITIONS
BROOK STREET

DATE: 10/31/2012	Tighe&Bond
SCALE: 1"=400'	
FIGURE: 2-14	

10/18/2012

SCALE IN FEET
0 400' 800'
GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2010 EXISTING
TRANSPORTATION CONDITIONS
WEST STREET

DATE: 10/31/2012	Tighe&Bond
SCALE: 1"=400'	
FIGURE: 2-15	

10/18/2012

Oct 18, 2012-6:36pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AcPublish_6604\AE-C0812-TRU.dwg

SCALE IN FEET

0 400' 800'

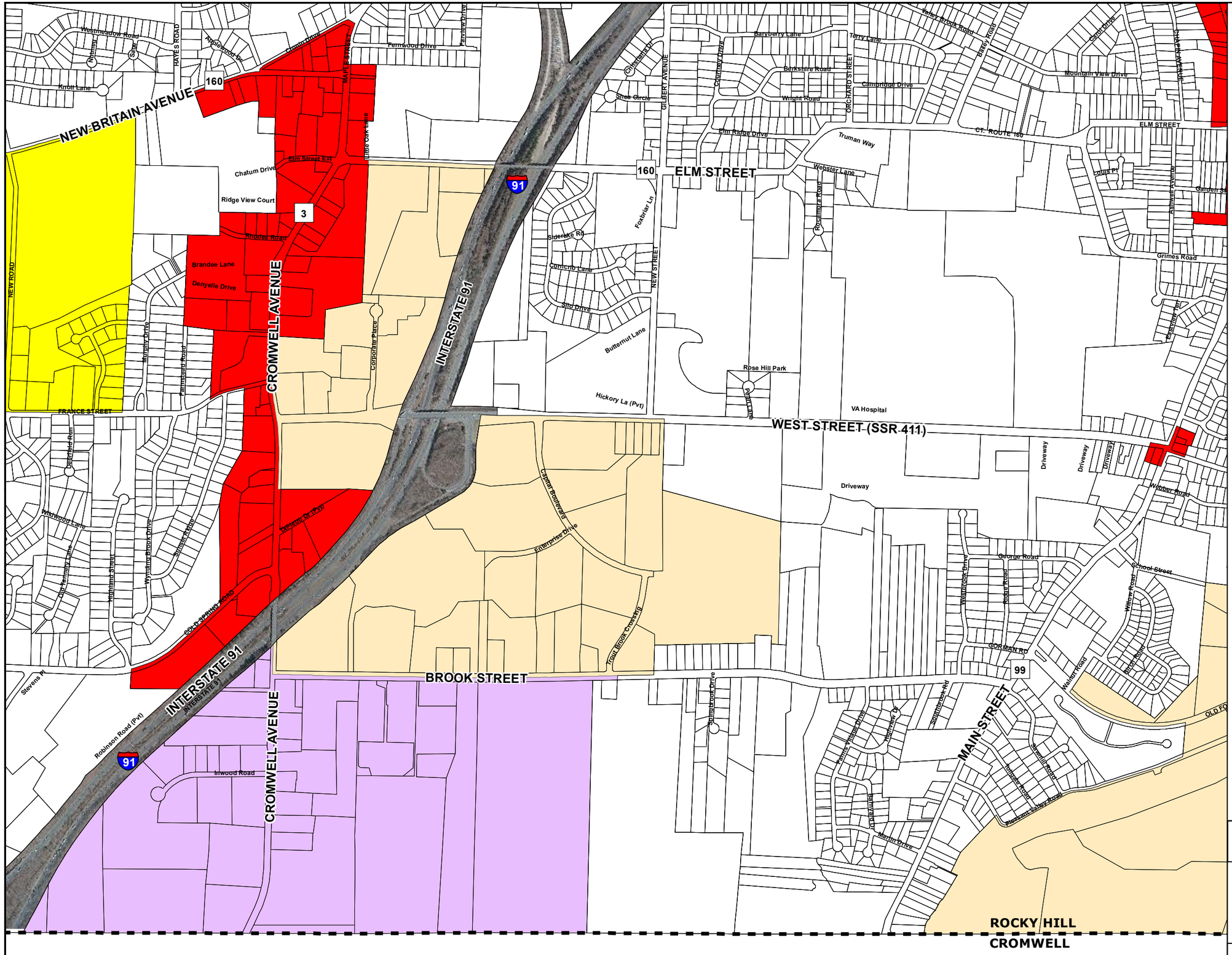
GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2010 EXISTING
TRANSPORTATION CONDITIONS
WEST STREET

DATE: 10/31/2012	Tighe&Bond
SCALE: 1"=400'	
FIGURE: 2-16	

10/18/2012



Legend

- R-20
- R-40
- Agriculture
- Flood Plain
- Commercial
- Regional Commercial
- Office Park
- Business Park
- Waterfront District
- Water
- Study Area

0 550 1,100 2,200 Feet

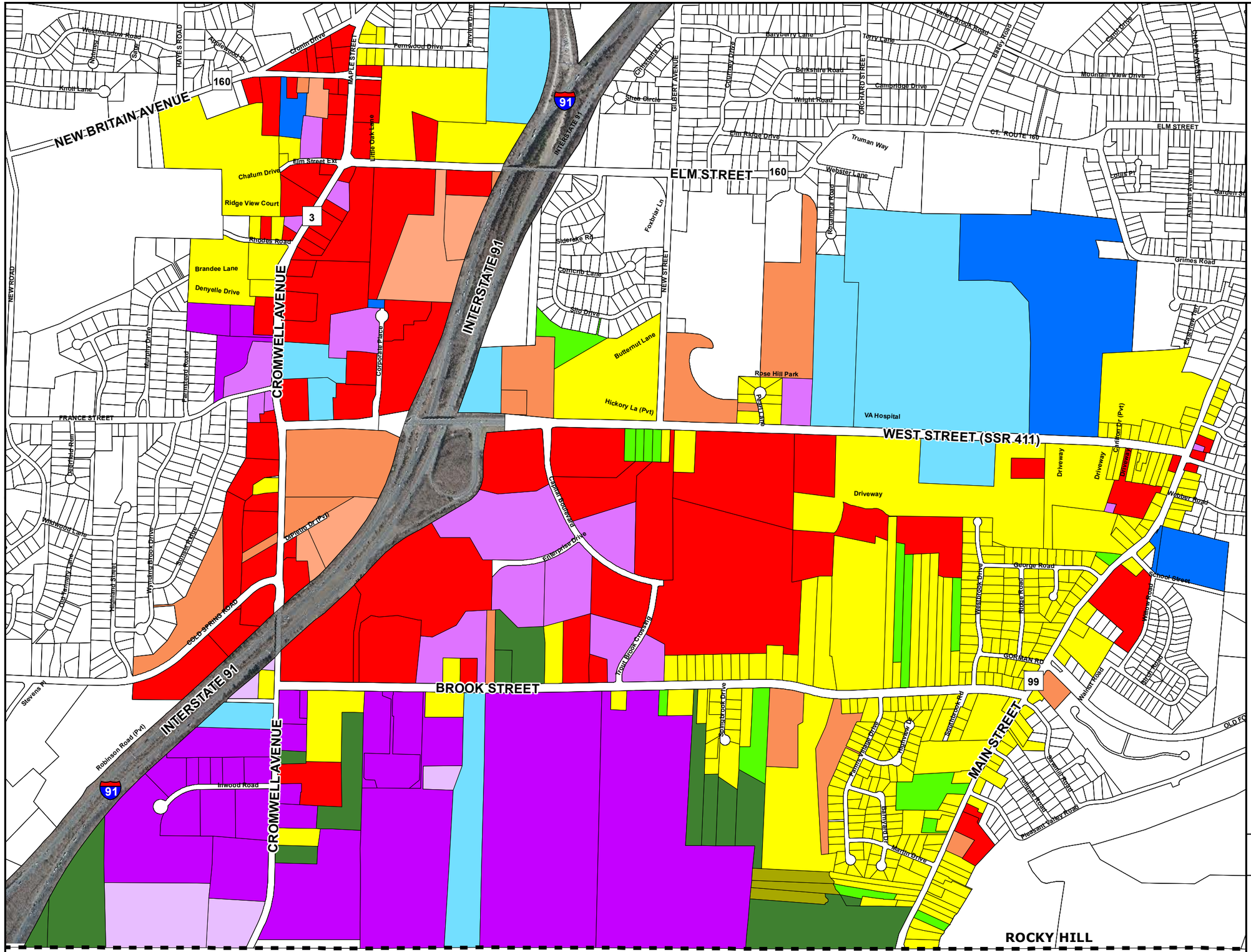
Route 3 Traffic and Development Study
Rocky Hill, Connecticut

Zoning Districts

Figure 2-17

Tighe&Bond

J:\C\C0812-CRCOG-Route3\GIS\Mapping\zoning.mxd



Legend

- Study Area
- Commercial
- Commercial Vacant
- Commercial/Industrial
- Industrial
- Industrial Vacant
- Municipal
- Other
- Raw Acreage
- Residential
- State
- Tillable
- Woodland
- Parcel

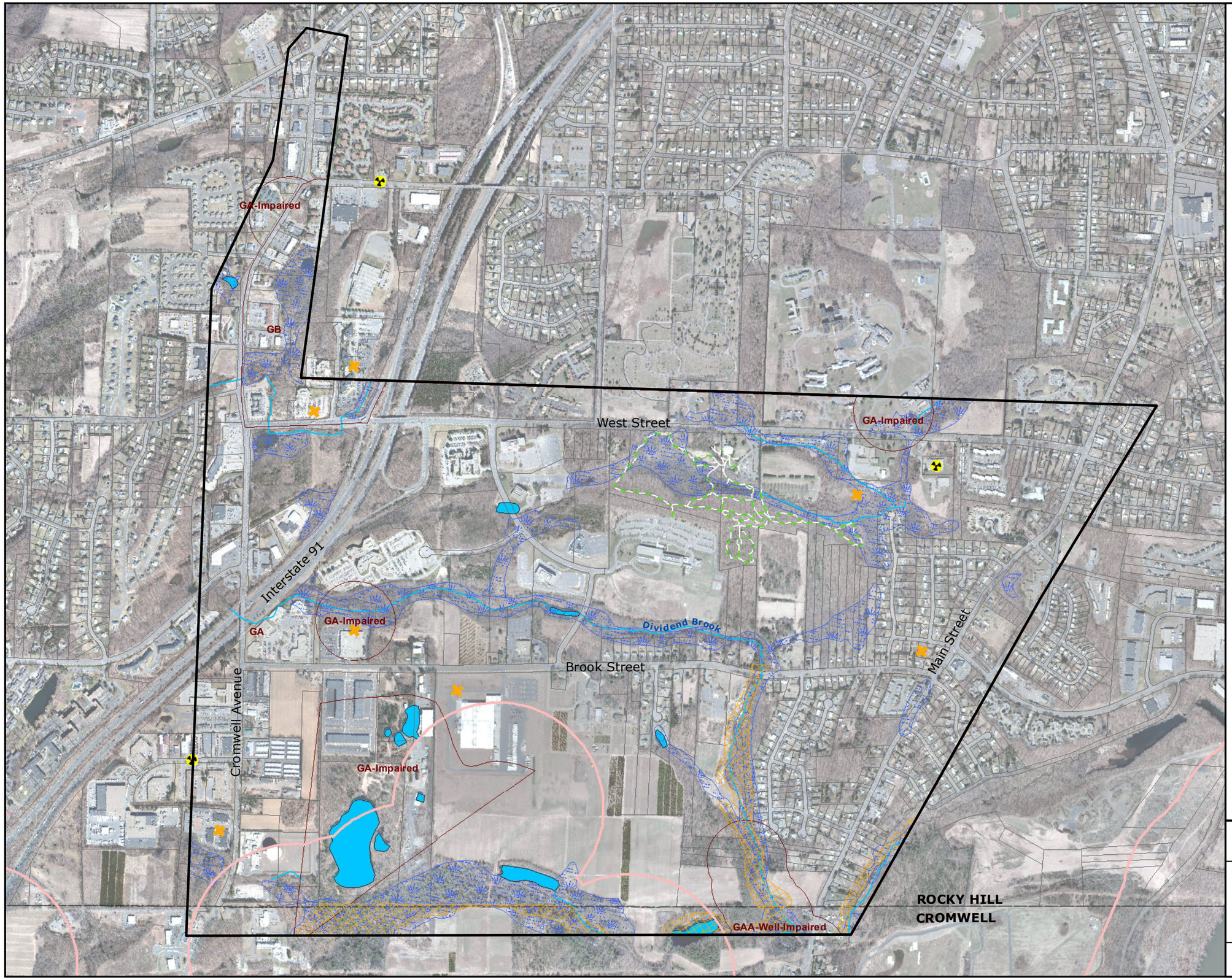
0 550 1,100 2,200 Feet

Route 3 Traffic and Development Study
Rocky Hill, Connecticut

Land Use by Parcel

Figure 2-18

J:\C\C0812-CRCOG-Route3\GIS\Mapping\Landuse.mxd



0 375 750 1,500 2,250 3,000
Feet

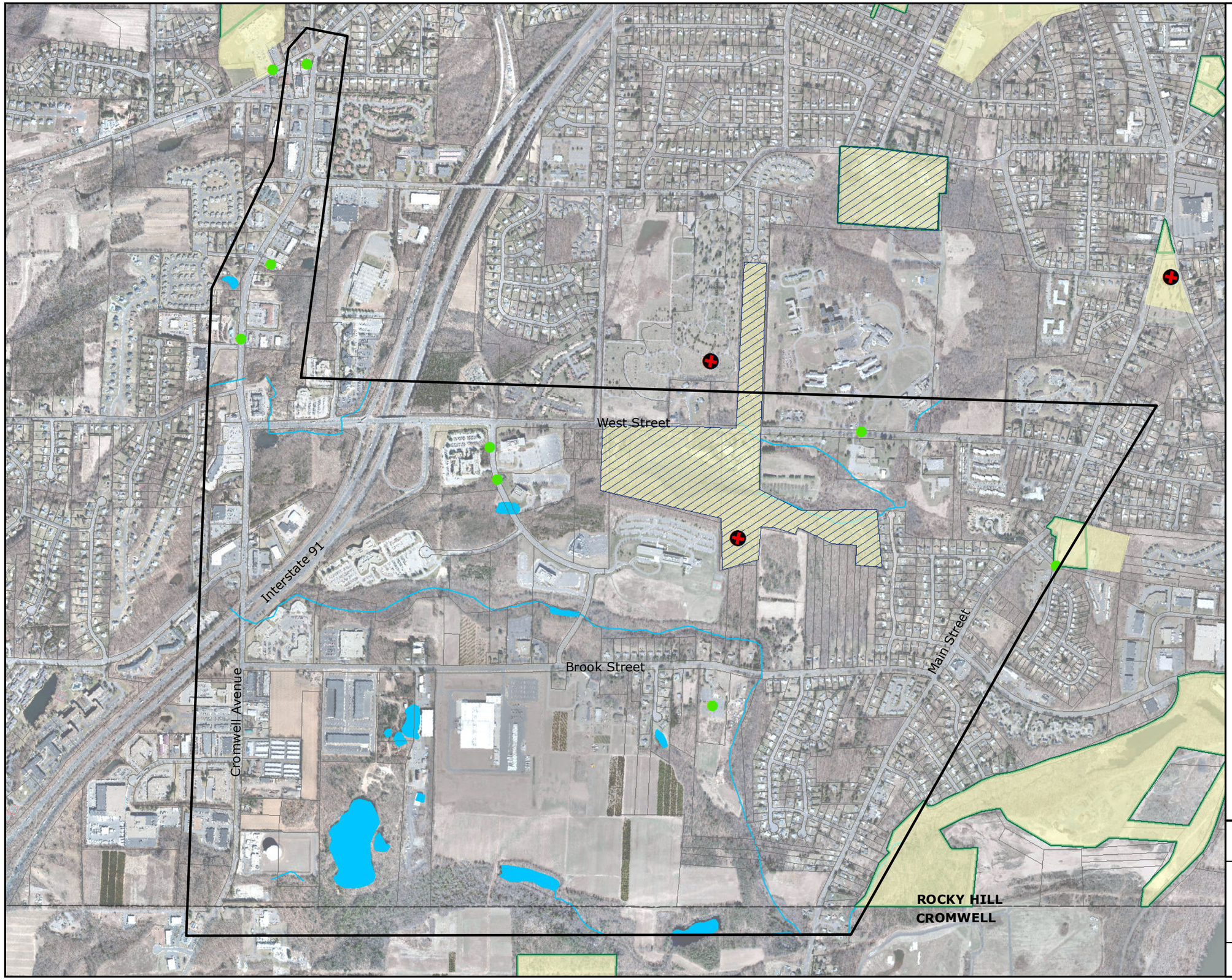
Legend

- Study Area
- Leachate Wastewater Discharge
- Hazardous Material
- Multi-Use Trail
- Natural Diversity Database
- 100 Year Flood Zone
- Ground Water Quality
- State Wetland
- Municipal Boundary
- Parcel Boundary
- Open Water

Route 3 Traffic and Development Study
Rocky Hill, Connecticut

Figure 2-19
Environmental Resources

Original in Color - FHI - 103112



0 375 750 1,500 2,250 3,000
Feet

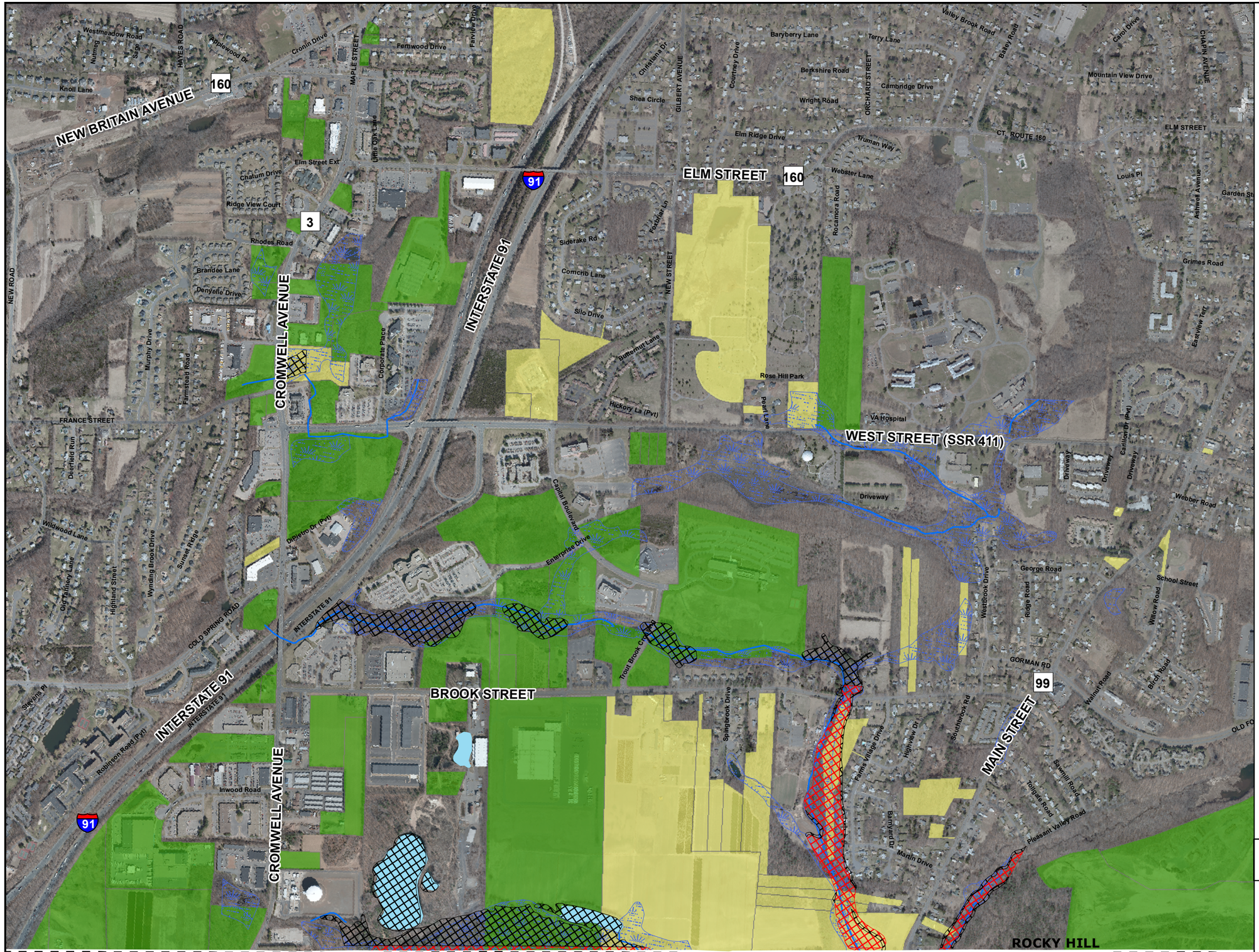
Legend

- Study Area
- Cemetery
- Noise Sensitive Receptor
- 6f Property
- 4f Property
- Preserved Open Space
- Recreational Area
- Municipal Boundary
- Parcel Boundary
- Open Water

Route 3 Traffic and Development Study
Rocky Hill, Connecticut

Figure 2-20
Community Facilities Located
Within the Study Boundary

Original in Color - FHI - 103112



Legend

- Study Area
- Parcels with Commercial/Industrial Development Potential
- Parcels Not Likely to Develop for Commercial/Industrial Uses
- Parcels
- Floodplain Overlay (100-year Floodzone)
- Floodplain Overlay (500-year Floodzone)
- Open Water
- Wetlands
- Stream

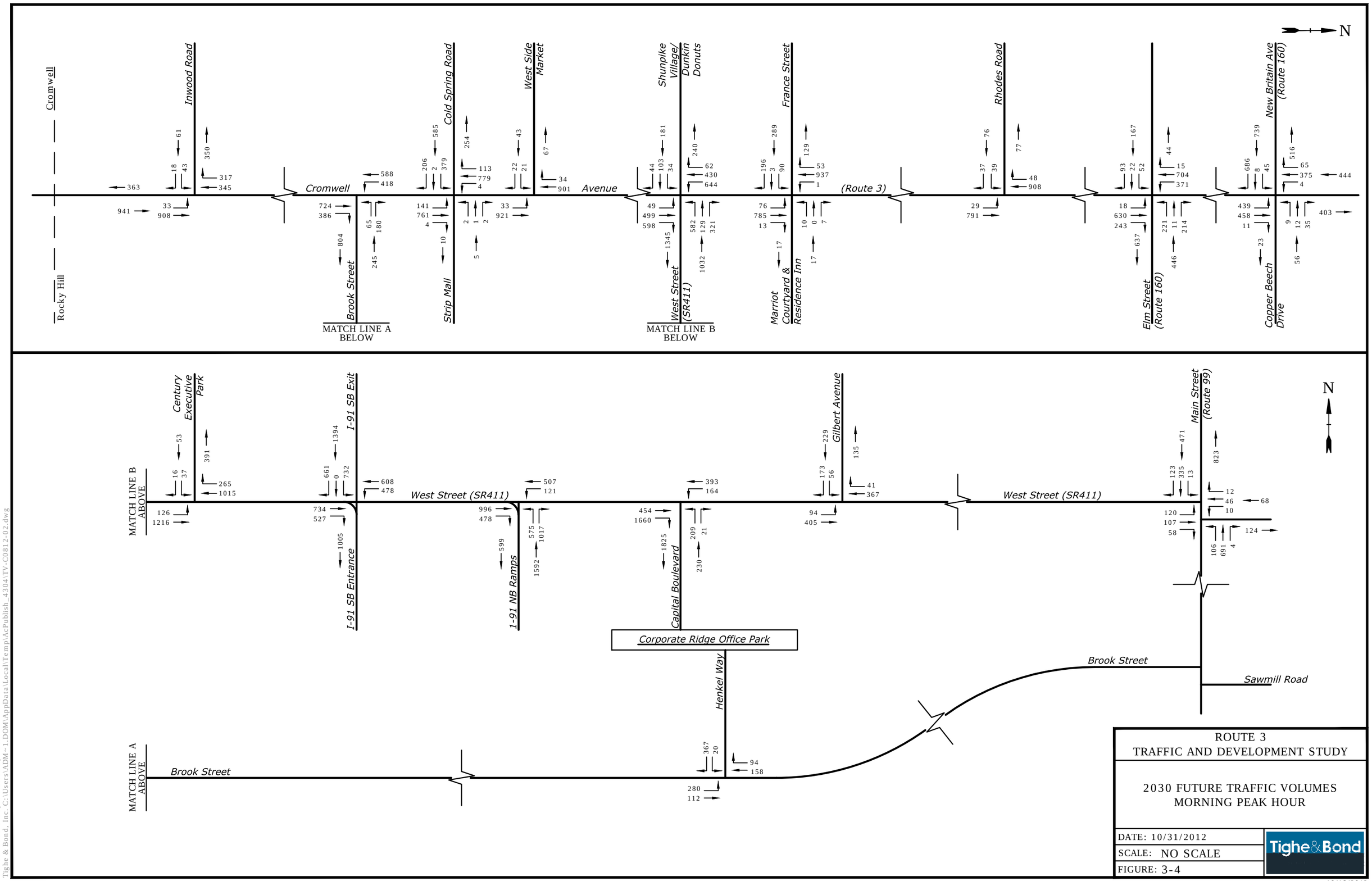
0 550 1,100 2,200 Feet

Route 3 Traffic and Development Study
Rocky Hill, Connecticut

Vacant and Underdeveloped Parcels Considered for Future Development

Figure 3-1

J:\C\C0812-CRCOG-Route3\GIS\Mapping\PotentialDev_parcels.mxd



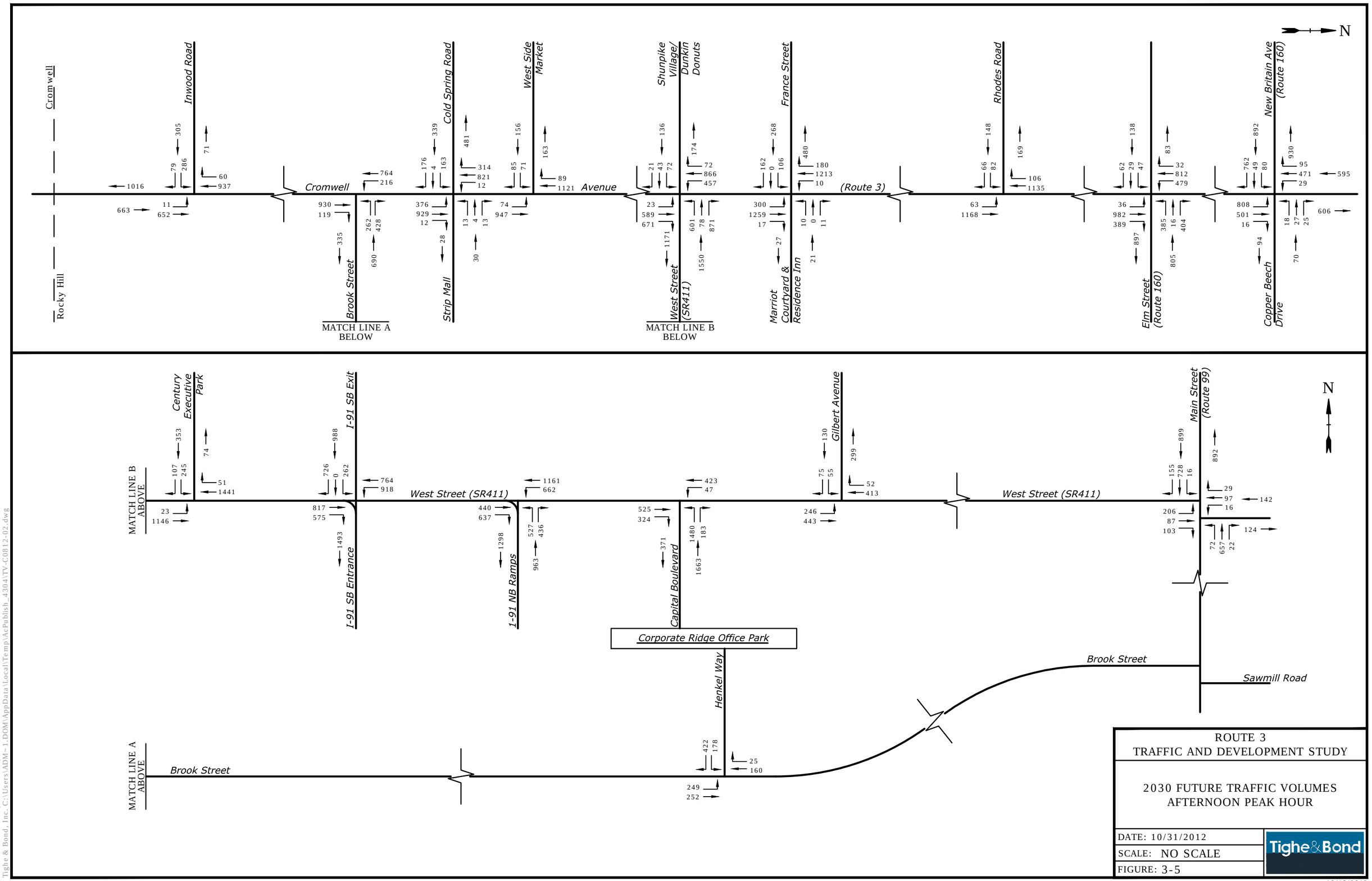
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

2030 FUTURE TRAFFIC VOLUMES
MORNING PEAK HOUR

DATE: 10/31/2012
SCALE: NO SCALE
FIGURE: 3-4

Tighe&Bond

10/18/2012



ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

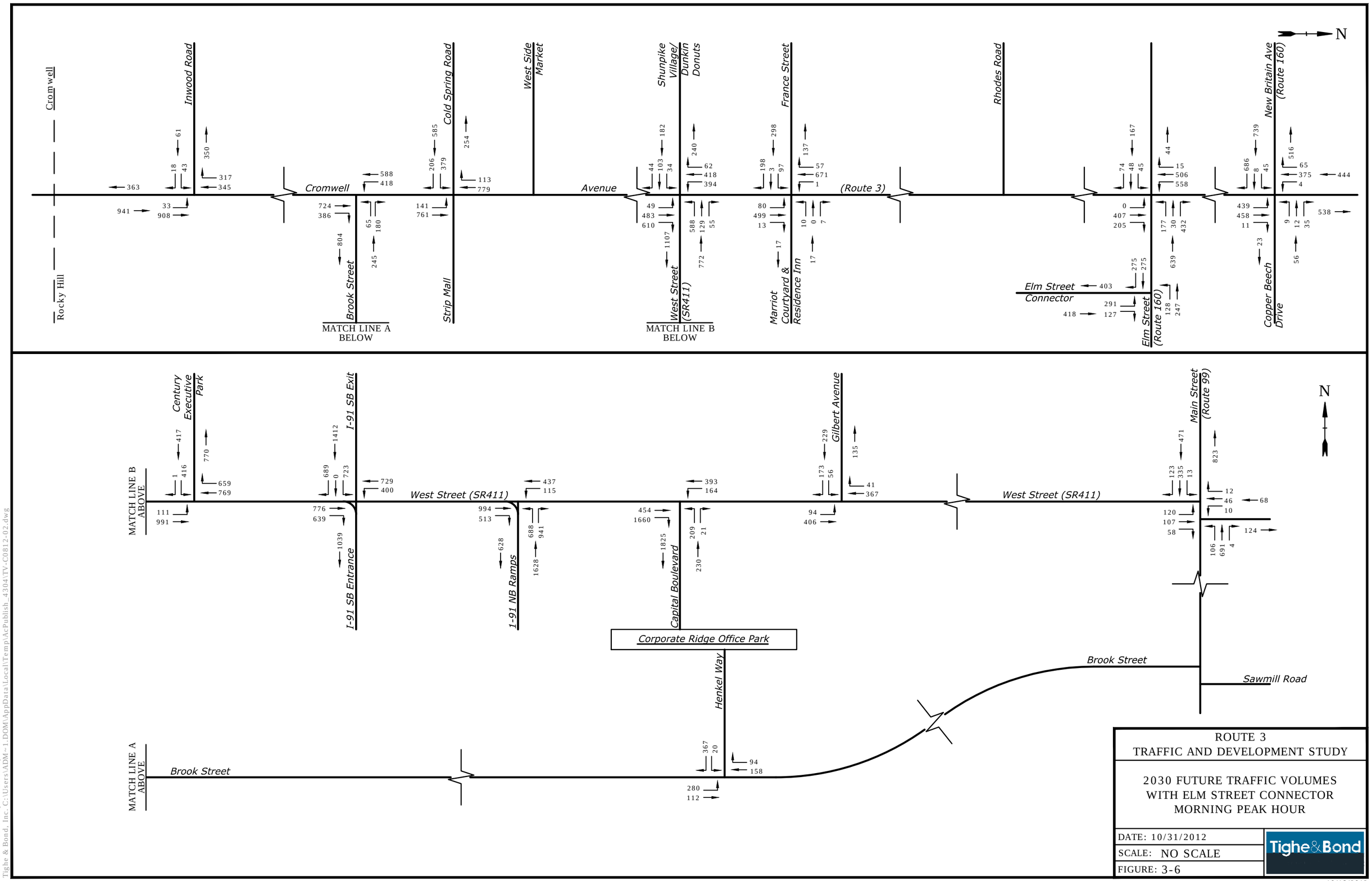
2030 FUTURE TRAFFIC VOLUMES
AFTERNOON PEAK HOUR

DATE: 10/31/2012
SCALE: NO SCALE
FIGURE: 3-5

Tighe&Bond

Oct 18, 2012-3:58pm Plotted By: adm
Tighe & Bond, Inc. C:\Users\ADM-1.DOM\AppData\Local\Temp\AcPublish_4304\TV-C0812-02.dwg

10/18/2012



ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

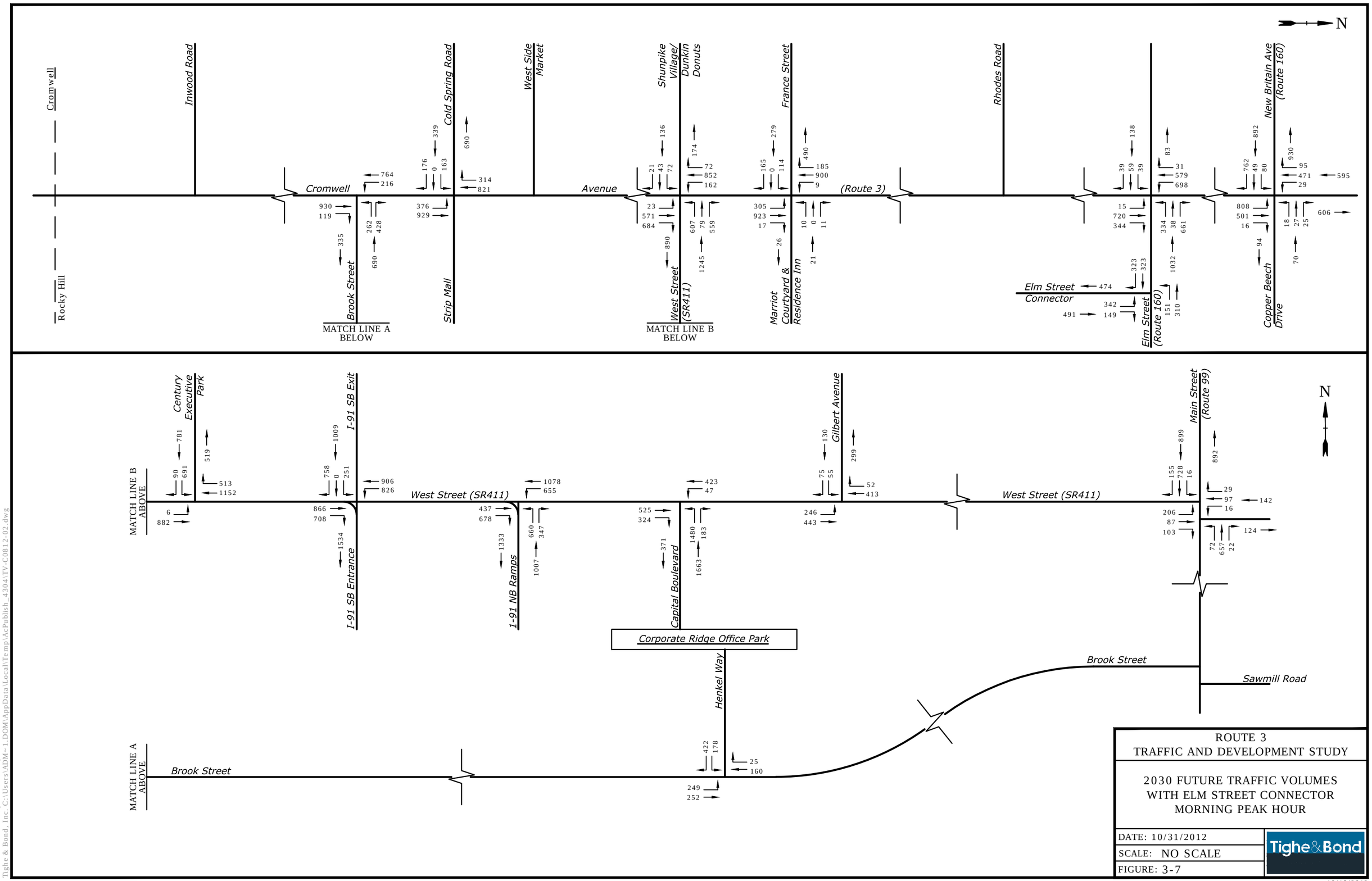
2030 FUTURE TRAFFIC VOLUMES
WITH ELM STREET CONNECTOR
MORNING PEAK HOUR

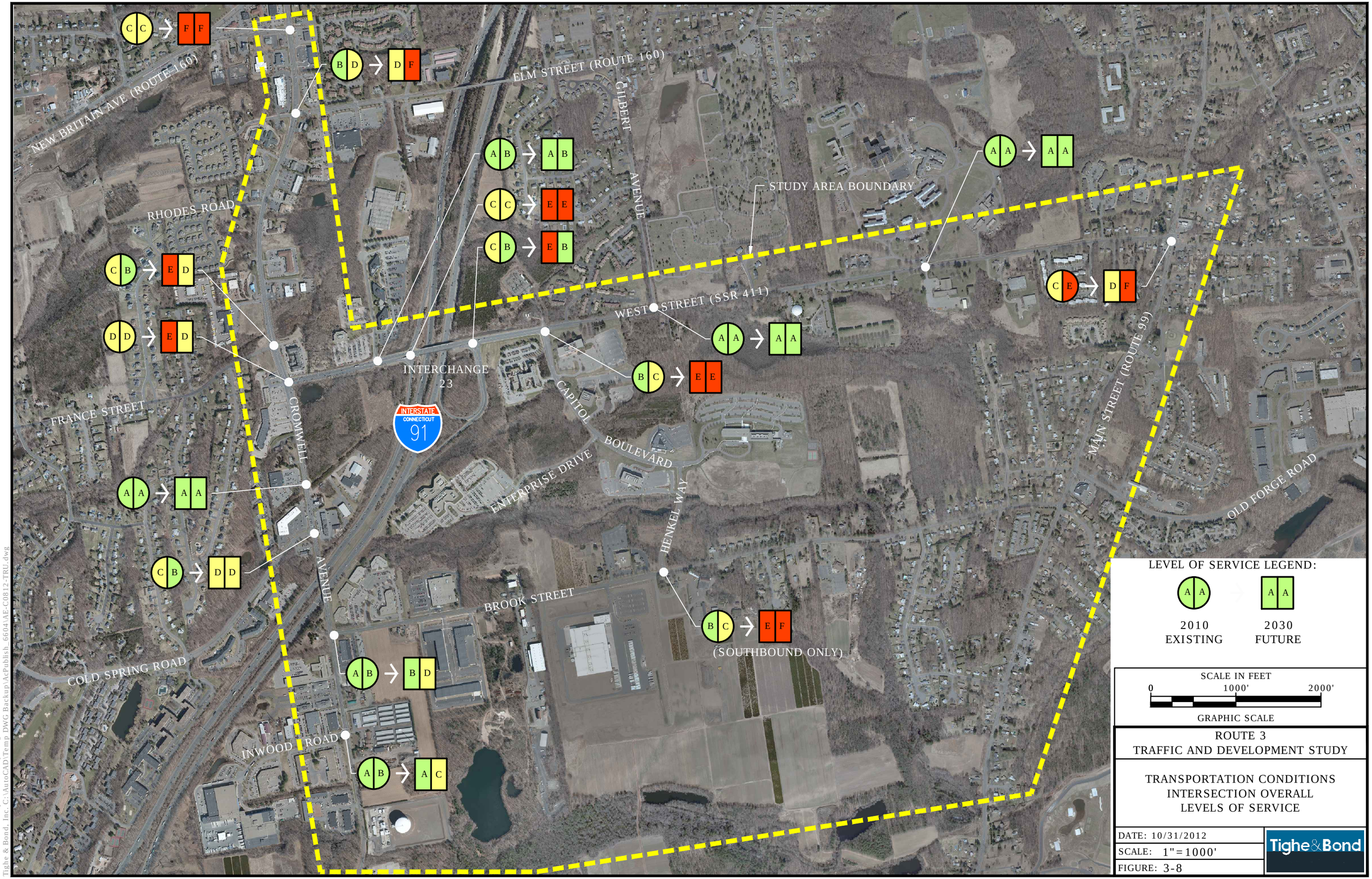
DATE: 10/31/2012
SCALE: NO SCALE
FIGURE: 3-6

Tighe&Bond

10/18/2012

Oct 18, 2012-3:58pm Plotted By: adm
Tighe & Bond, Inc. C:\Users\ADM-1.DOM\AppData\Local\Temp\AcPublish_4304\TV-C0812-02.dwg



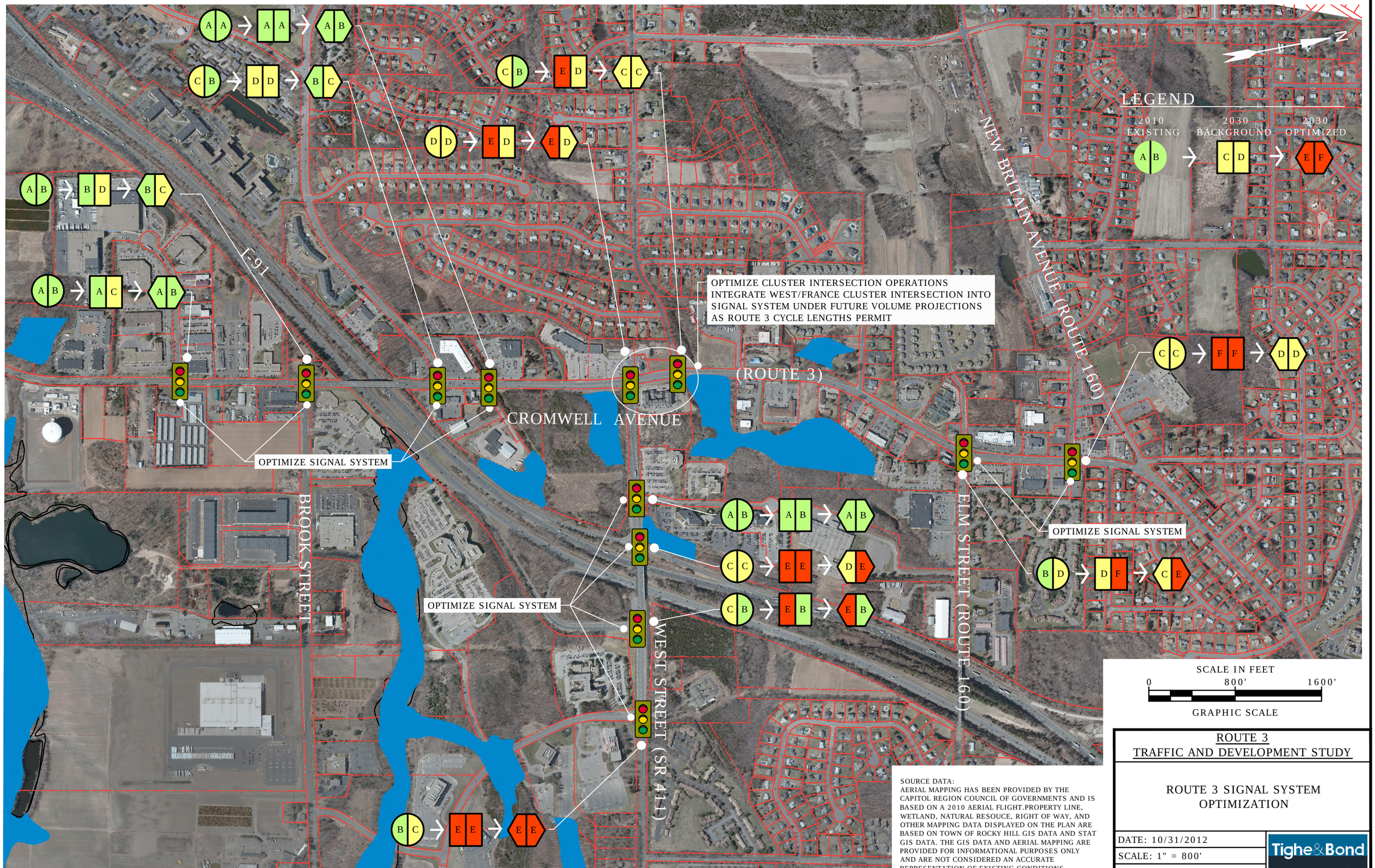


ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

TRANSPORTATION CONDITIONS
INTERSECTION OVERALL
LEVELS OF SERVICE

DATE: 10/31/2012
SCALE: 1"=1000'
FIGURE: 3-8

Tighe&Bond



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

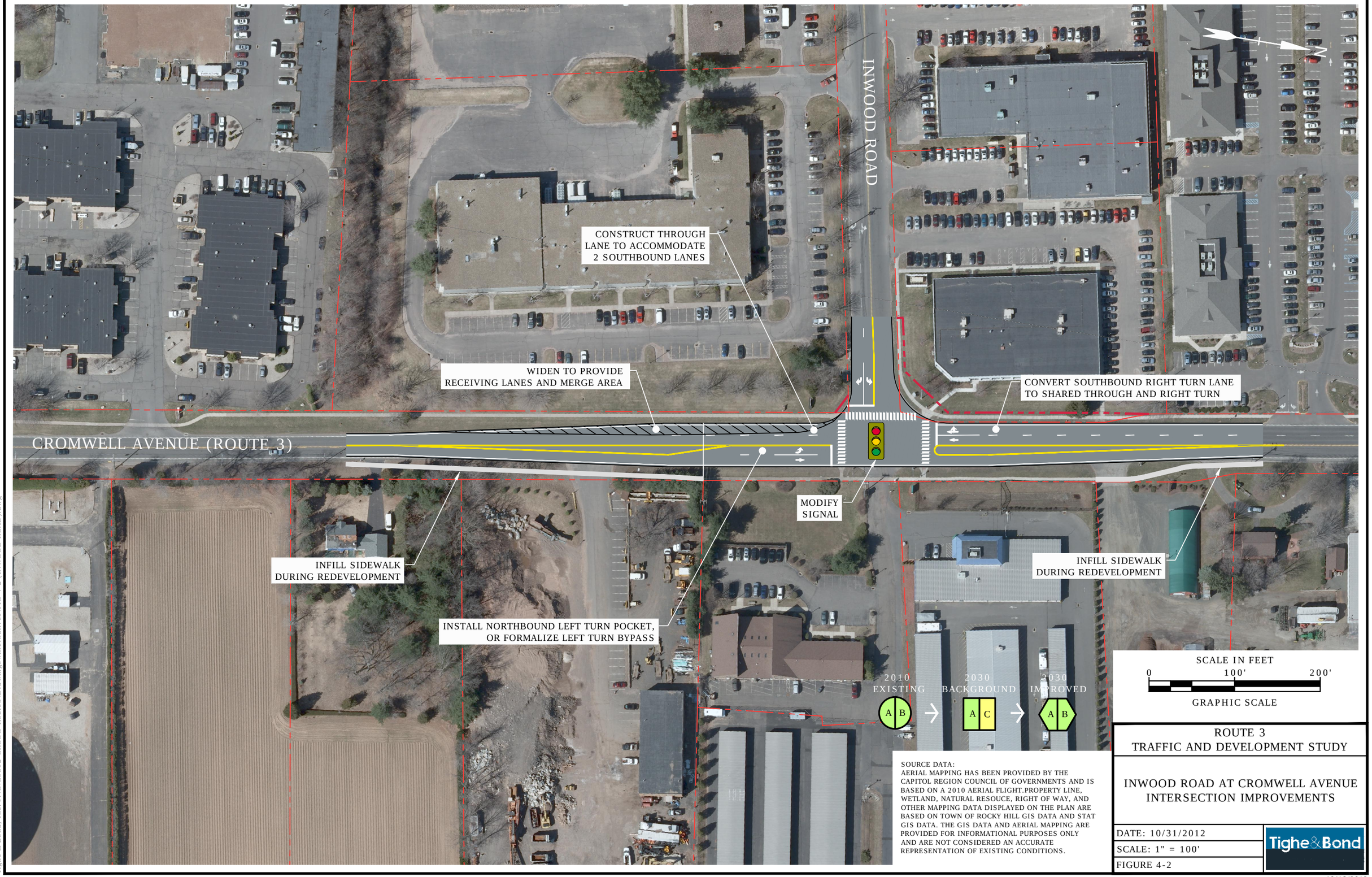
ROUTE 3 SIGNAL SYSTEM OPTIMIZATION

DATE: 10/31/2012
SCALE: 1" = 800'
FIGURE: 4-1

Tighe&Bond

10/18/2012

Oct 18, 2012-2:34pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AcPublish_6604\FIG 4-1 (ROUTE 3 IMPROVEMENTS).dwg



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

INWOOD ROAD AT CROMWELL AVENUE
INTERSECTION IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE 4-2

Tighe&Bond

10/18/2012

Oct 18, 2012-2:38pm Plotted By: cog
Tighe & Bond, Inc.\\CL\C0812-CRCOG-Route3\Drawings\Alternatives\FIG 4-2 (INWOOD ROAD).dwg

POTENTIAL MINOR RIGHT OF WAY TAKING

INSTALL SIDEWALK

MINOR WIDENING ALONG WEST SIDE OF CROMWELL AVENUE

INTERSTATE 91 NORTH

INTERSTATE 91 SOUTH

N

CROMWELL AVENUE (ROUTE 3)

IN-FILL SIDEWALK DURING REDEVELOPMENT

NEW TRAFFIC SIGNAL
ADJUST SIGNAL TIMING AND PHASING

IN-FILL SIDEWALK DURING REDEVELOPMENT

POTENTIAL MINOR RIGHT OF WAY TAKING

PROVIDE 75' LONG LEFT TURN LANE

INSTALL SIDEWALK

BROOK STREET

MAINTAIN EXISTING BROOK STREET LANE GEOMETRY

SCALE IN FEET
0 100' 200'
GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

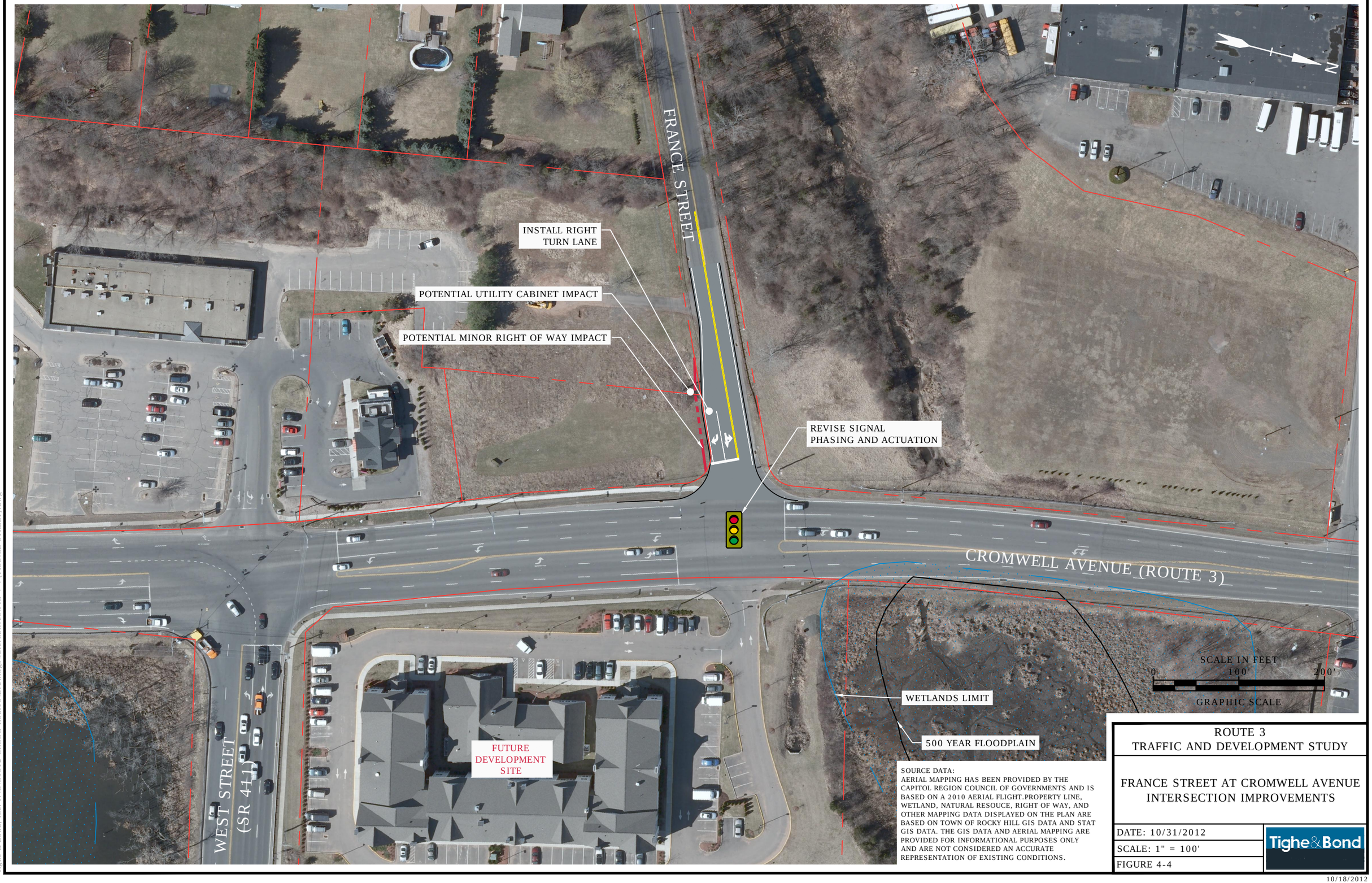
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

BROOK STREET AT CROMWELL AVENUE
INTERSECTION IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE 4-3

Tighe&Bond

10/18/2012



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

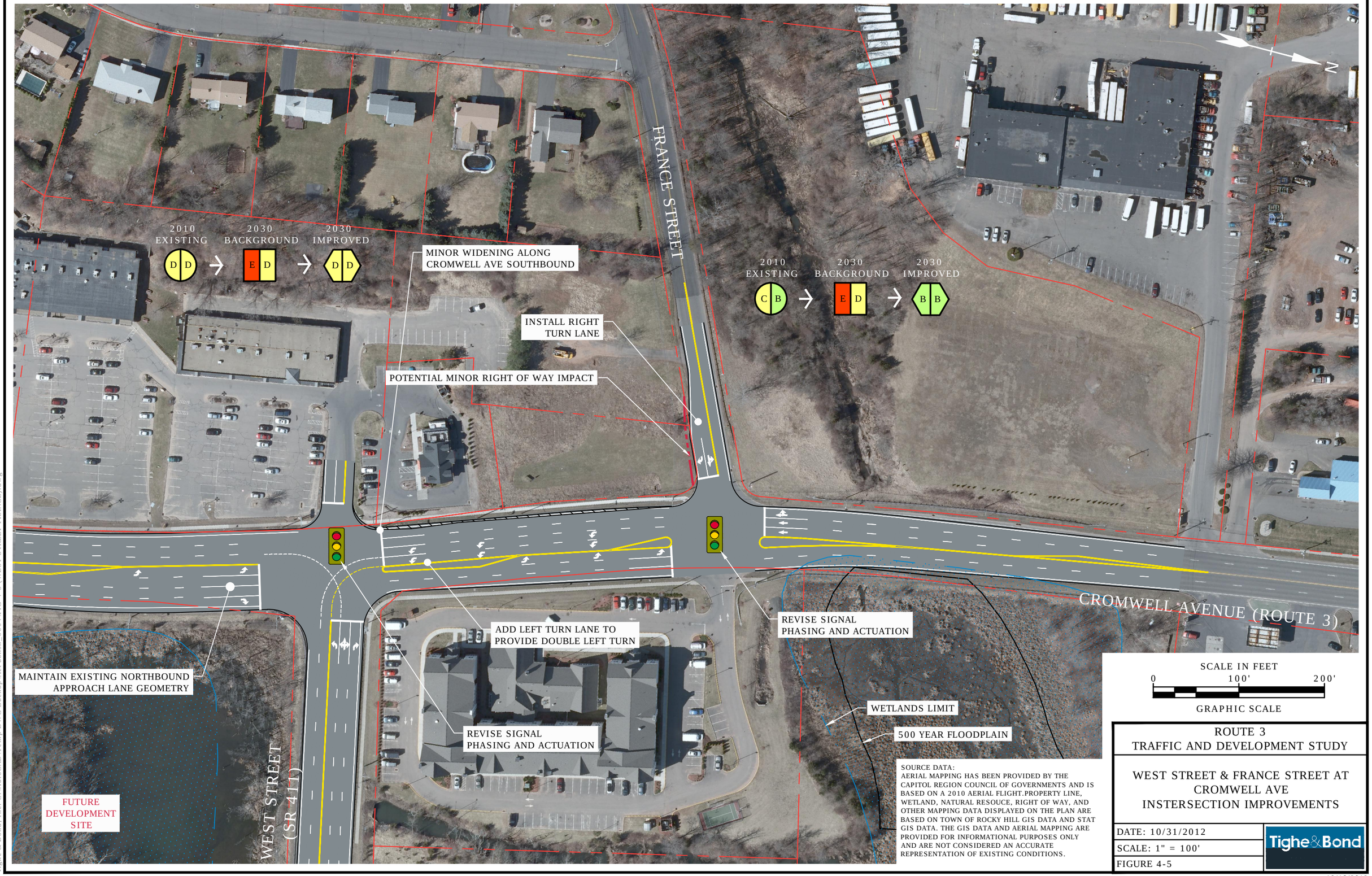
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

FRANCE STREET AT CROMWELL AVENUE
INTERSECTION IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE 4-4

Tighe&Bond

10/18/2012



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

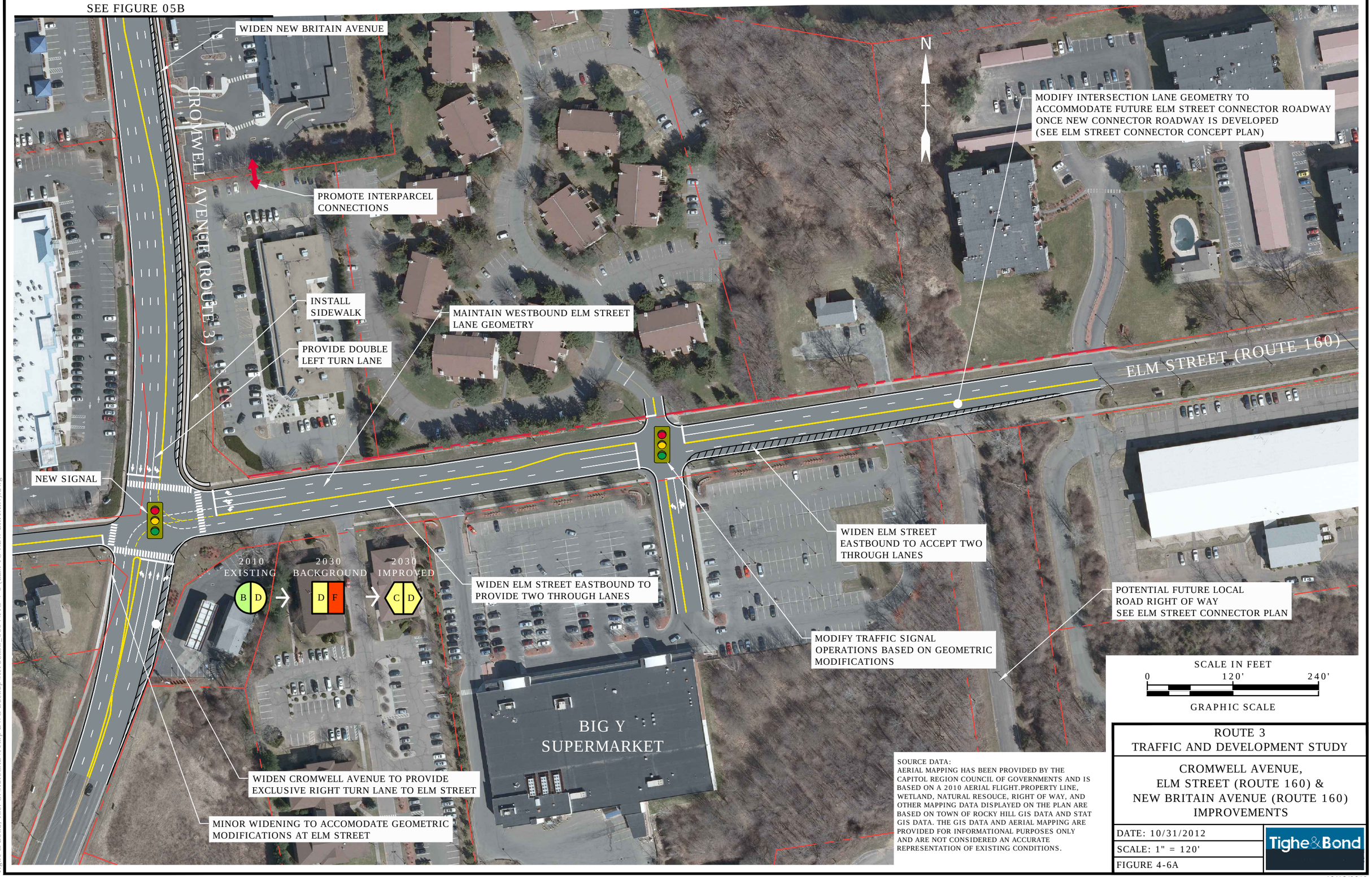
WEST STREET & FRANCE STREET AT CROMWELL AVE INSTERSECTION IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE 4-5

Tighe&Bond

10/18/2012

SEE FIGURE 05B



SCALE IN FEET

0 120' 240'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

CROMWELL AVENUE,
ELM STREET (ROUTE 160) &
NEW BRITAIN AVENUE (ROUTE 160)
IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 120'
FIGURE 4-6A

Tighe&Bond

10/18/2012

N

NEW BRITAIN AVE (ROUTE 160)

CROMWELL AVENUE (ROUTE 3)

WIDEN NEW BRITIAN AVENUE
TO PROVIDE 2 WESTBOUND LANES

2010 EXISTING	2030 BACKGROUND	2030 IMPROVED
C C	F F	D C

ADD CROSS-WALKS
TO ELM STREET INTERSECTION

MAINTAIN SOUTHBOUND
CROMWELL AVENUE LANE
GEOMETRY

MODIFY TRAFFIC SIGNAL
OPERATIONS AND ACTUATION

INSTALL
SIDEWALK

WIDEN CROMWELL AVENUE
TO PROVIDE DOUBLE LEFT
TURN LANE

EXTEND RIGHT
TURN LANE

PROMOTE INTERPARCEL
CONNECTIONS

SIDEWALK (INSTALLED BY
TOWN PROJECT)

EXTEND TWO WESTBOUND LANES TO EXISTING
TWO LANE SECTION AT HAYES ROAD

WIDEN CROMWELL AVENUE
FROM 5 LANES TO 6 LANES

SEE FIGURE 05A

SCALE IN FEET

0 120' 240'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

CROMWELL AVENUE,
ELM STREET (ROUTE 160) &
NEW BRITAIN AVENUE (ROUTE 160)
IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 120'
FIGURE 4-6B

Tighe&Bond

Oct 18, 2012-3:43pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AePublish_66041\FIG 4-6 (ELM TO NEW BRITAIN).dwg

10/18/2012

N

NEW BRITAIN AVE (ROUTE 160)

CROMWELL AVENUE (ROUTE 3)

WIDEN NEW BRITIAN AVENUE
TO PROVIDE 2 WESTBOUND LANES

2010 EXISTING	2030 BACKGROUND	2030 IMPROVED
C C	F F	D C

ADD CROSS-WALKS
TO ELM STREET INTERSECTION

MAINTAIN SOUTHBOUND
CROMWELL AVENUE LANE
GEOMETRY

MODIFY TRAFFIC SIGNAL
OPERATIONS AND ACTUATION

INSTALL
SIDEWALK

WIDEN CROMWELL AVENUE
TO PROVIDE DOUBLE LEFT
TURN LANE

EXTEND RIGHT
TURN LANE

PROMOTE INTERPARCEL
CONNECTIONS

SIDEWALK (INSTALLED BY
TOWN PROJECT)

EXTEND TWO WESTBOUND LANES TO EXISTING
TWO LANE SECTION AT HAYES ROAD

WIDEN CROMWELL AVENUE
FROM 5 LANES TO 6 LANES

SEE FIGURE 05A

SCALE IN FEET

0 120' 240'

GRAPHIC SCALE

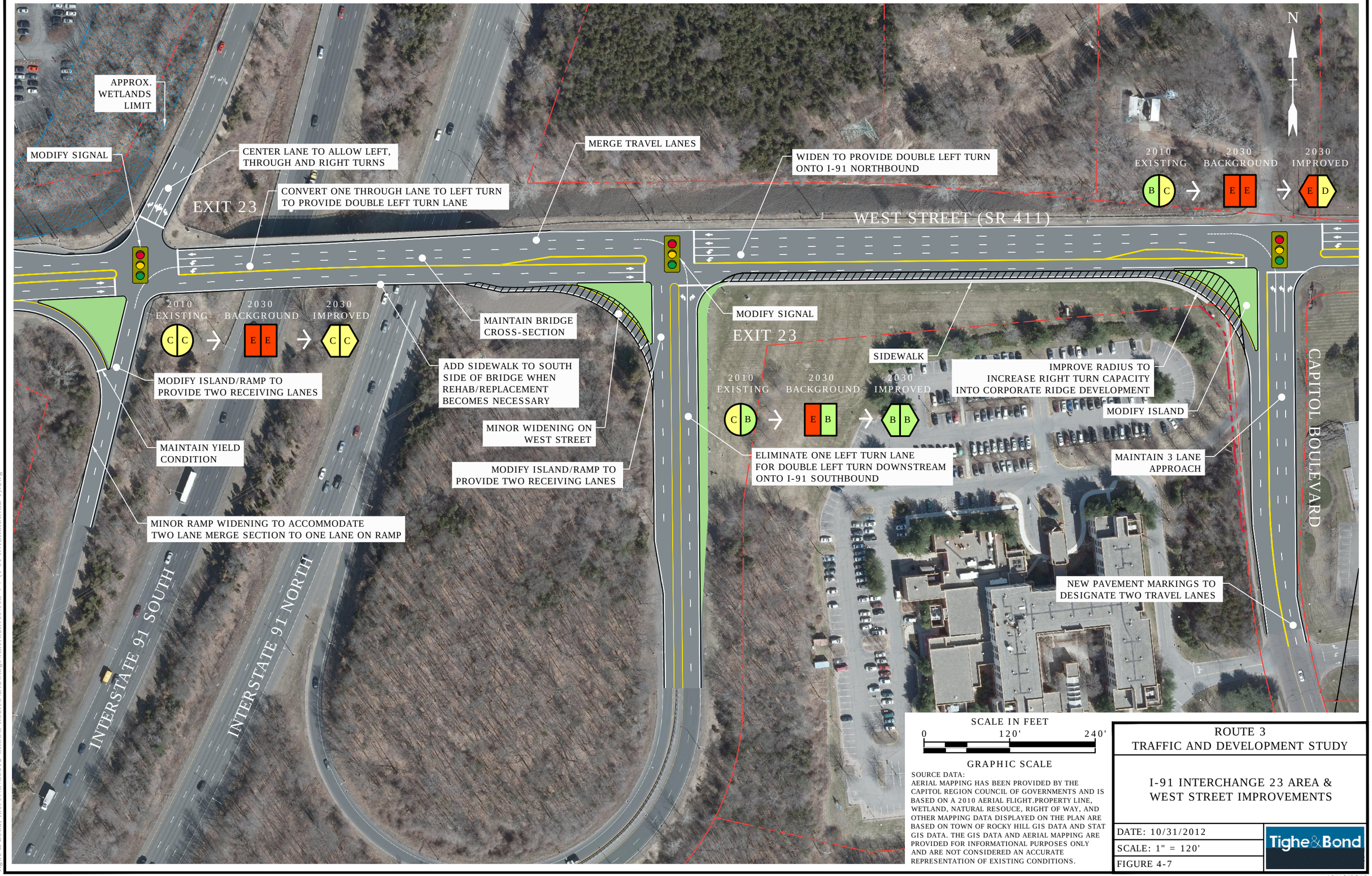
SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

CROMWELL AVENUE,
ELM STREET (ROUTE 160) &
NEW BRITAIN AVENUE (ROUTE 160)
IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 120'
FIGURE 4-6B

Tighe&Bond



SCALE IN FEET

0 120' 240'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

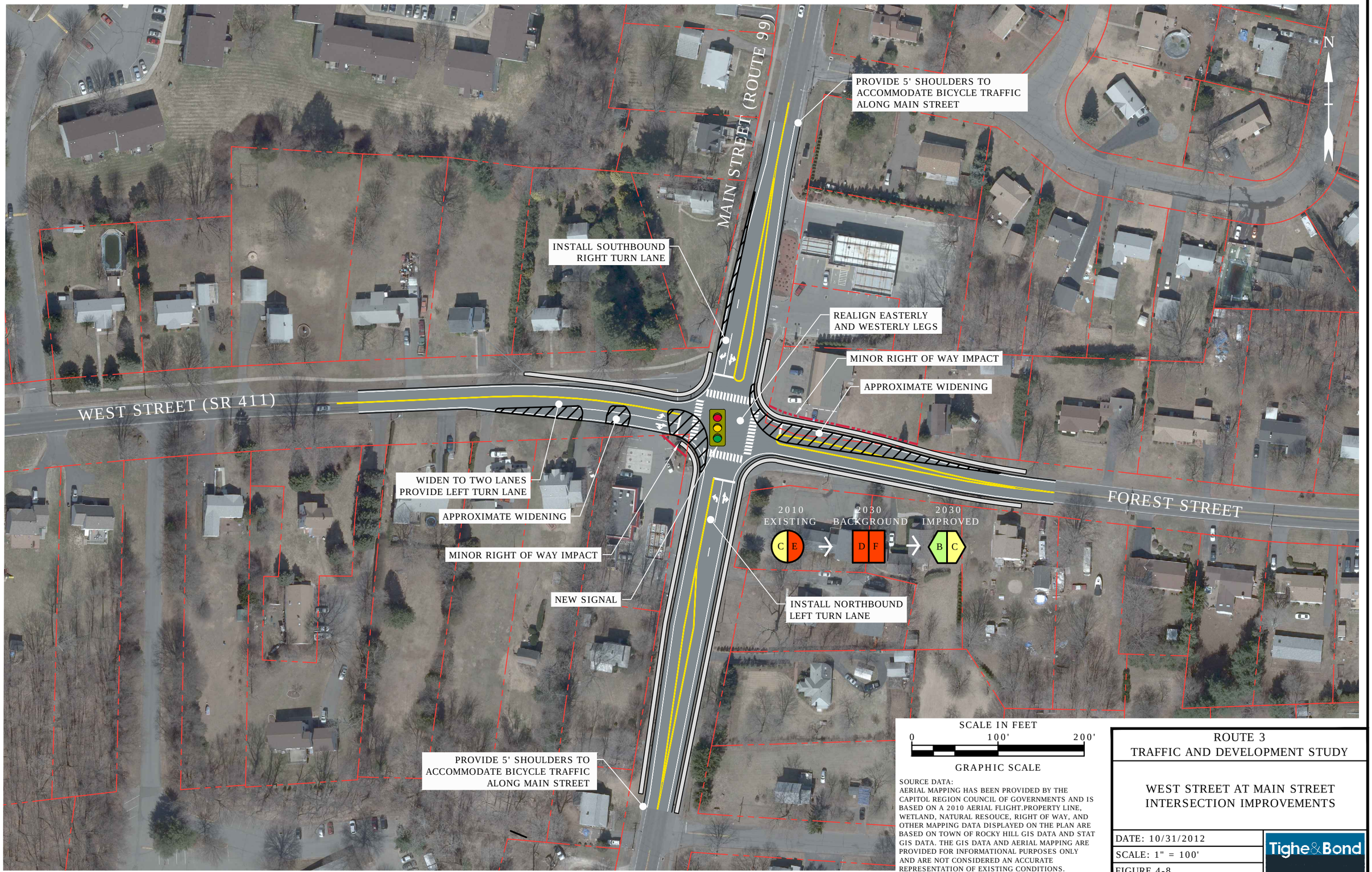
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

I-91 INTERCHANGE 23 AREA & WEST STREET IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 120'
FIGURE 4-7

Tighe&Bond

10/18/2012



SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

WEST STREET AT MAIN STREET
INTERSECTION IMPROVEMENTS

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE 4-8

Tighe&Bond

10/18/2012

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

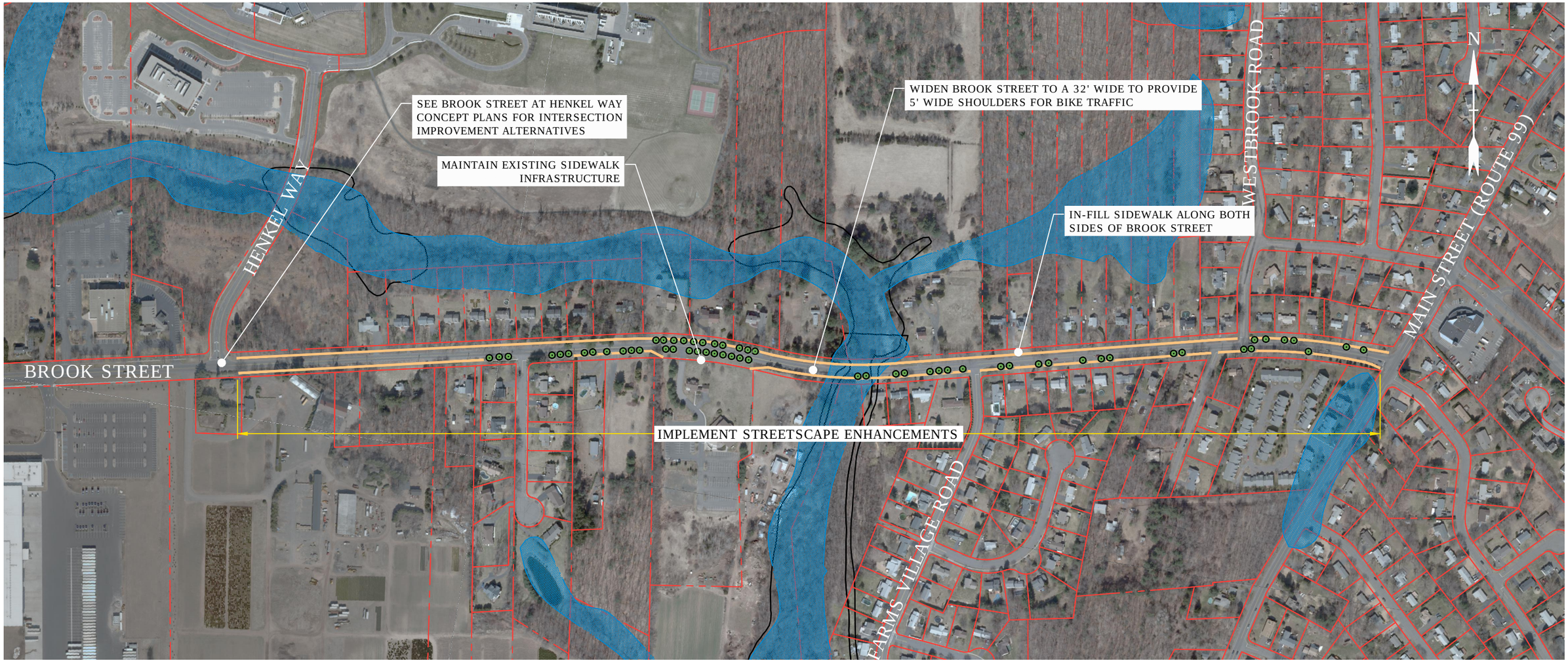
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

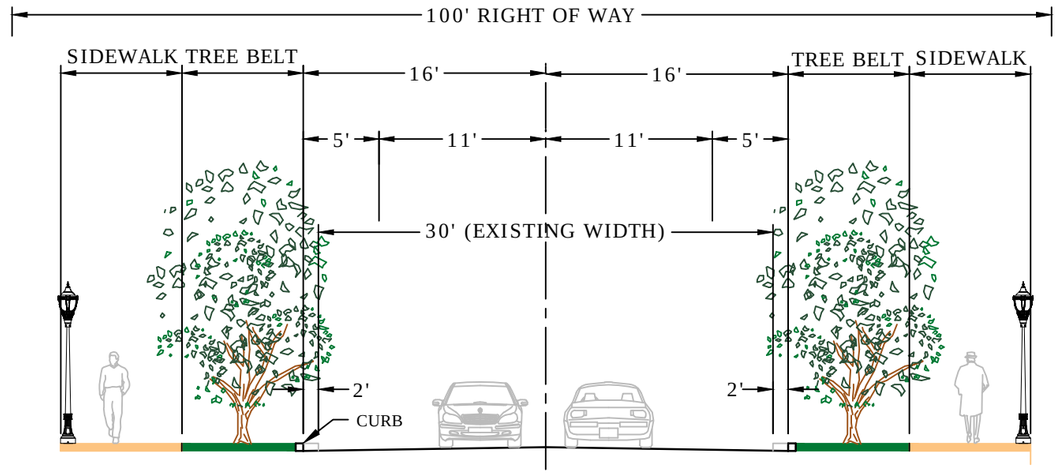
BROOK STREET AT HENKEL WAY
INTERSECTION IMPROVEMENTS

DATE: 10/31/2012	Tighe&Bond
SCALE: 1" = 100'	
FIGURE 4-9	

10/18/2012

Oct 18, 2012-3:54pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AePublish_6604\FIG 4-9 (BROOK STREET ROUNDABOUT).dwg





BROOK STREET STREETSCAPE ENHANCEMENT

SCALE: 1"=10'

SCALE IN FEET

0 400' 800'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

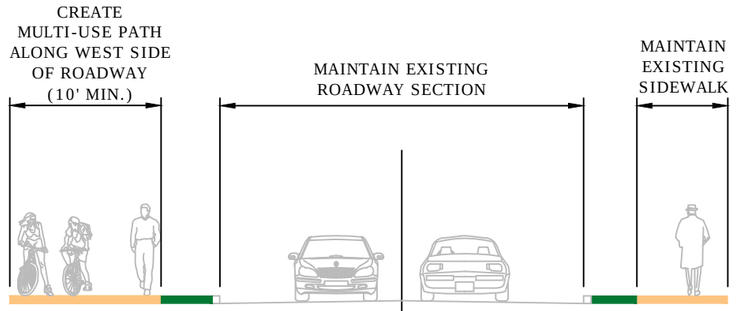
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

BROOK STREET
RESIDENTIAL STREETSCAPE
ENHANCEMENTS

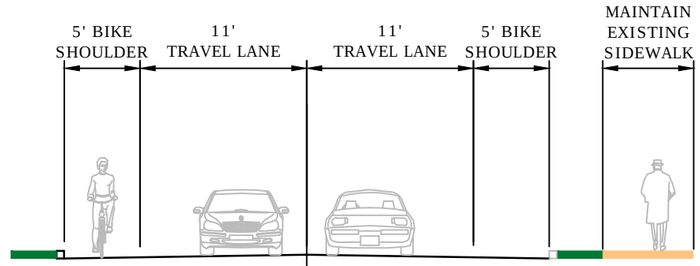
DATE: 10/31/2012
SCALE: 1" = 400'
FIGURE: 4-10

Tighe&Bond

N



OPTION A - MULTI-USE TRAIL
LOOKING NORTH



OPTION B - BIKE SHOULDERS
LOOKING NORTH

SCALE IN FEET
0 400' 800'
GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

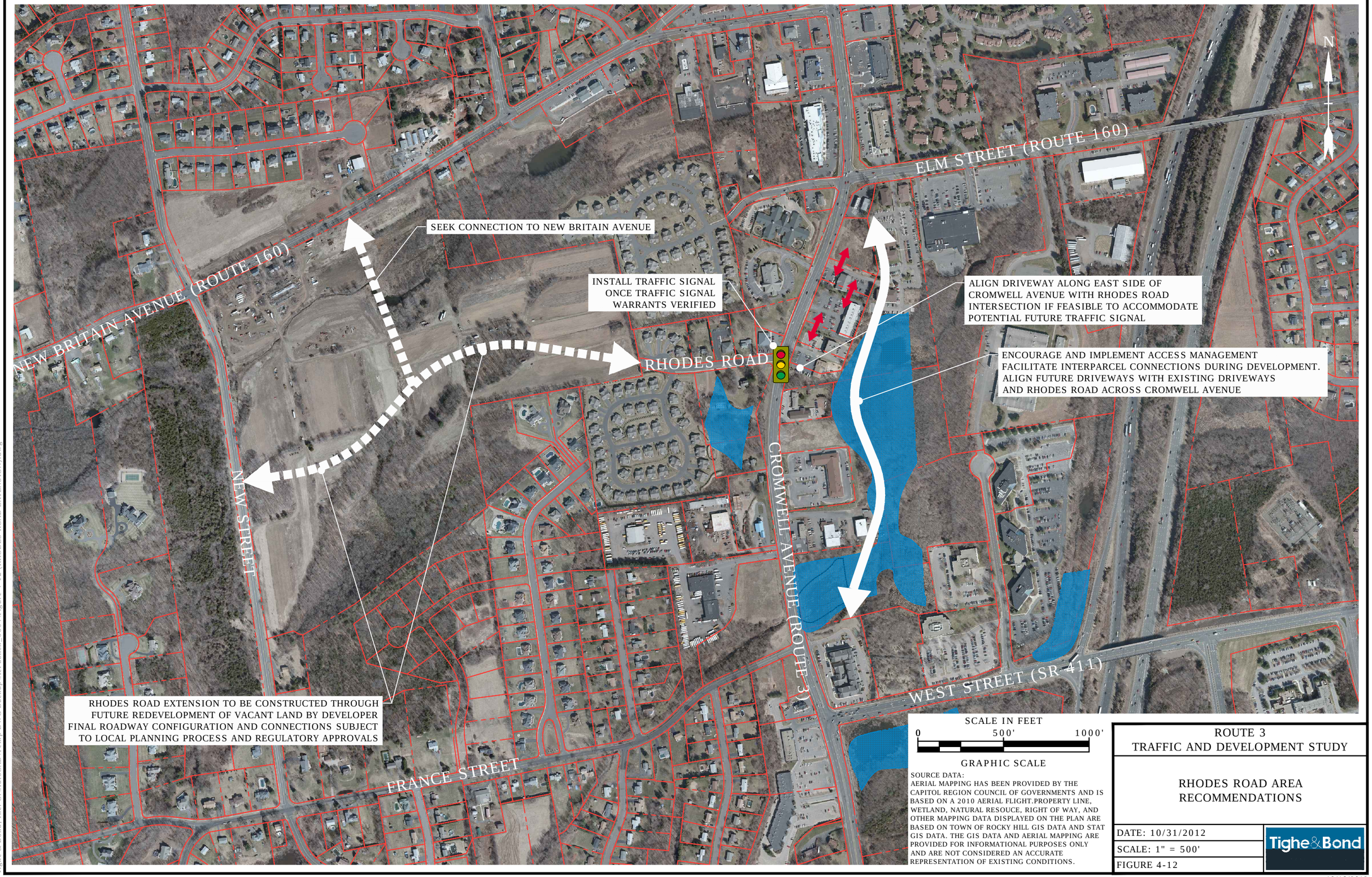
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

ELM STREET CONNECTOR

DATE: 10/31/2012
SCALE: 1" = 400'
FIGURE 4-11

Tighe&Bond

10/19/2012



SCALE IN FEET

0 500' 1000'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

RHODES ROAD AREA
RECOMMENDATIONS

DATE: 10/31/2012
SCALE: 1" = 500'
FIGURE 4-12

Tighe&Bond

10/18/2012

Oct 18, 2012-4:14pm Plotted By: cog
Tighe & Bond, Inc. C:\AutoCAD\Temp DWG Backup\AcPublish_6604\Figure 4-12 (RHODES ROAD EXTENSION).dwg

Cromwell Ave @ New Britain Ave (intersection & crosswalk improvements)

Elm Street @ Cromwell Ave (intersection & crosswalk improvements)

Elm Street Improvements

Transit Accommodations

Improve structure to accommodate 6' wide sidewalk

Elm Street Connector (sidewalk or multi-use path)

Cromwell Ave @ France & West Streets (intersection & crosswalk improvements)

Transit Accommodations

Town Center West (multi-use path)

Brook Street Improvements

Cromwell Ave @ Brook St (intersection & crosswalk improvements)

Cromwell Ave @ Inwood Rd (intersection & crosswalk improvements)

Legend

- Existing Sidewalk
- Existing Crosswalk
- Proposed Sidewalk or Multi-use Pathway
- Proposed Crosswalk
- Sidewalk Inventory Limits (Excludes minor side streets)

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

Pedestrian Recommendations

DATE: 10-31-12
SCALE: Not to Scale
FIGURE 4-13

Tighe&Bond

Bridge Improvements (5' shoulder)

Elm Street Improvements (5' shoulder)

Main Street Bike Route (5' shoulder)

Elm Street Connector (multi-use path or 5' shoulder)

Town Center West (multi-use path)

Cromwell Avenue (multi-use path)

Brook Street Bike Route (5' shoulder)

Legend

- Proposed Bike Route Shoulder Improvements for Bicycles

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

Bicycle Recommendations

DATE: 10-31-12
SCALE: Not to Scale
FIGURE 4-14

Tighe&Bond

Summary of Other Screened Improvements

Introduction

In addition to the recommendations presented in the Final Study Report, the Study Team prepared and the Technical Review/ Steering Committee (TR/SC) review several other conceptual improvement plans during the analysis of alternatives. This Appendix section briefly summarize the concepts that were developed and indicates the rationale that served as the basis to eliminate the concept from further consideration as a potential transportation recommendation. The scope of the recommendations described in this section varies from alternatives ideas that were reviewed at study intersections, where a preferred concept was selected, to a new I-91 interchange. The new interchange was located between the Silas Deane Highway (Route 99) interchange and West Street and was reviewed to determine if the concept was feasible and could help redistribute the projected traffic volumes away from the West Street interchange to reduce the load on the existing infrastructure. The following sections summarize each of the concept plans included in this Appendix.

West Street at Main Street Alternatives

In addition to the improvement plan for this intersection recommended in the Final Study Report, two other concept plans were reviewed and presented to the TR/SC. Both alternatives achieve similar goals as those achieved in the recommended plan, improving intersection operation by aligning the side streets into a conventional intersection configuration. However, the two concepts that were screened out were determined to result in impacts that were not acceptable to the Town, and not preferable given the recommended solution.

The first option that was screened out during the review process achieved the realignment of the intersection by relocating only the West Street approach to the intersection, See Figure B-1. This plan resulted in significant impacts to the existing gas station parcels located on the south side of West Street and would have affected the existing residential parcels located to the west of the gas station. This option was screened out by the TR/SC based on the extensive impacts associated with the plan.

Alternatively, the second concept that was screened out during the review process realigned only the Forest Street approach to the intersection, See Figure B-2. This plan resulted in significant impacts to small commercial building located on the east side of Main Street. In addition, due to the existing alignment of West Street, which intersects Main Street at a slight skew, the Forest Street alignment does not achieve a true 90-degree intersection with West Street. This option was screened out by the TR/SC based on the extensive impacts associated with the plan and the undesirable alignment when compared to the preferred alternative.

Brook Street at Henkel Way Alternatives

The intersection of Brook Street at Henkel Way is forecast to operate under poor to failing conditions under the existing two-way stop sign controlled intersection configuration. Additionally, the intersection delineates the transition from the commercial/ industrial areas to the west along Brook Street with the residential neighborhood to the east. One of the goals of the study is preserving the residential character of the neighborhood. In order to mitigate the effects of future traffic and seek alternatives that mitigate commercial traffic in

the residential areas, three concepts were developed. The preferred plan, a modern roundabout, is summarized in the Final Report. The two concepts described below were reviewed, but screened out by the TR/SC and Study Team.

In order to mitigate the effect of future projected travel demand on the Brook Street intersection with Henkel Way, one concept that was identified for this intersection involves converting the intersection from a two-way stop sign control to an all-way stop sign control operation, see Figure B-3. In addition, the concept requires minor widening along the south side of Brook Street to facilitate the development of a two lane eastbound approach, with a left turn and a through lane. This modification to the intersection traffic control and lane use is needed to provide additional gaps in the traffic flow along Brook Street to facilitate left turn movements from Henkel Way. However, after consideration by the TR/SC, it was determined that this concept was not the preferred alternative for this intersection.

Recognizing that the connection of the commercial areas may better discourage trucks and oversized vehicles from traversing the east section of Brook Street through the residential area, the concept presented in Figure B-4 proposes to realign Brook Street to the west of the intersection with Henkel Way to the north of the intersection. This reconfigured intersection reorients the through movement away from the east leg of the intersection. This concept improved the overall traffic operations for the Henkel Way, but results in failing operations on the westbound Brook Street approach. Additionally, the reconfiguration provides a physical indication of the roadways where commercial traffic should operate, rather than in the residential area. Ultimately, the option to realign Brook Street with Henkel Way was screened out in favor of a concept that provided more benefits from a transportation perspective by the TR/SC.

Elm Street Connector (East Alignment)

The Study Team presented a concept to provide a new north-south connection between Elm Street and West Street to improve access to the interchange area and improve overall mobility. A new connector also accommodated a redistribution of some traffic away from Cromwell Avenue, extending the function of the State route and delaying the need for potential improvement to the corridor to accommodate the future traffic flows. The Elm Street connector roadway was devised to provide that additional local roadway link. The initial alignment that was reviewed included a new connection on the east side of I-91, lining up the new road with the existing I-91 northbound ramps and extending north adjacent to the highway with a new intersection just east of the Elm Street I-91 overpass. The conceptual alignment can be found in Figure B-5. After reviewing the extensive impacts to the residential properties along the east side of the new roadway, the TR/SR determined that this alignment was not an appropriate plan for the Town. The determination was made to create a new Elm Street connector on the west side of I-91 as presented in the Final Report.

Elm Street Extension

A review of the future traffic volumes indicated that a large component of the forecast travel demand using Cromwell Avenue is regional traffic that is orientated in an east-west direction. Additionally, traffic on Elm Street that is travelling east-west only exacerbates the future operational issues along Cromwell Avenue within the Route 160 overlap area between Elm Street and New Britain Avenue. In an effort to mitigate the effect of projected traffic growth on the built-out commercial section of Cromwell Avenue north of Elm Street, the Study Team reviewed a concept to reroute the Route 160 roadway to the west one block south of New Britain Avenue via a new roadway. The Elm Street extension was devised to reduce projected travel demand along Cromwell Avenue and reduce the expected impacts at New Britain Avenue.

The Elm Street Extension concept plan would have created a new four lane State Highway extending to the west from the intersection of Elm Street before reconnecting with New Britain Avenue to the west of Hayes Road. The roadway would have required significant property acquisition in order to create a new roadway right of way. In addition, a review of the natural resources along the proposed alignment indicated that existing delineated wetlands would have been significantly impacted or expensive structures would have been required to minimize the potential impacts to the natural resources. Finally, during the discussions with the TR/SC it was determined that the scope of the project, the impacts to both private property and natural resources, not to mention the complexity and costs of the plan made the concept not feasible or desirable from the Town's perspective and was therefore screened out.

I-91 Interchange Area (Diverging Diamond Interchange)

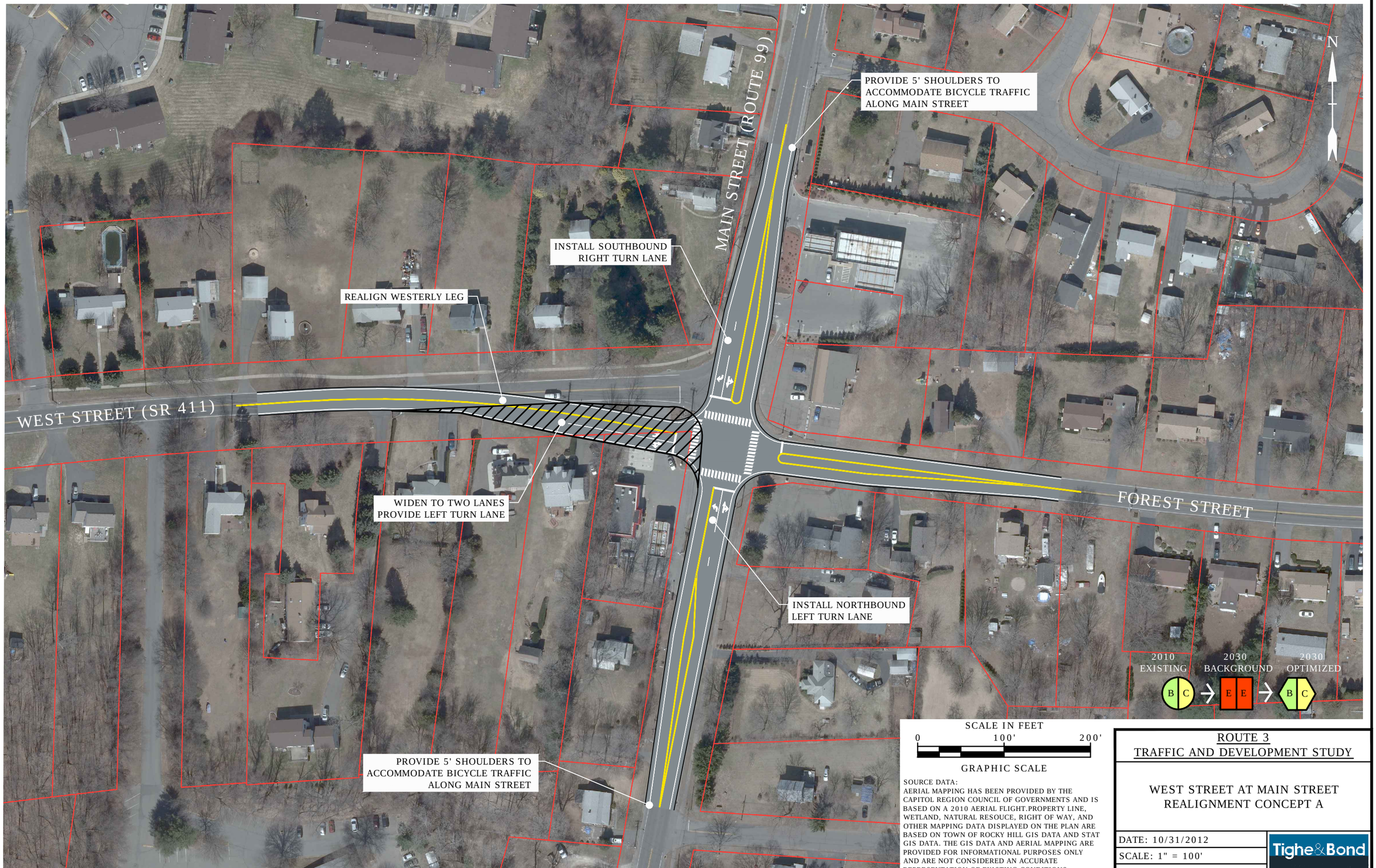
The I-91 interchange area acts as the hub for future traffic growth and mobility for the Town of Rocky Hill. During the public outreach process, the Study Team heard several times how important the interchange is for the town and that providing safe and efficient operations were critical to the Town. In order to address the forecast travel demand in the study area that travels through the interchange an alternative interchange configuration was reviewed to determine if modifications were needed to process the forecast travel demand and what impacts could occur if a more efficient interchange was implemented that could process more vehicles during the commuter peak periods.

The Study Team reviewed the concept of modifying the existing interchange to create a diverging diamond interchange, see Figure B-7. The diverging diamond concept is based on the premise of inverting traffic between the interchange ramps such that traffic can both free flow onto the highway and free flow off of the highway and only the through movements operate at traffic signals at the ramp terminals. The benefits of this interchange configuration are based on the high volume that can be processed given the free flow conditions at the ramp terminals. However, during the review of operations for a diverging diamond interchange, it was determined that the closely spaces signalized intersections on either side, including Corporate Place and Cromwell Avenue to the west and Capital Boulevard to the east provided limitations to the capacity of the diverging diamond configuration. Essentially, the volume of traffic that could be processed within the interchange was higher than the volume that could travel through the adjacent intersections and the operational issues that were mitigated at the interchange were only exacerbated at the adjacent intersections. Based on the impacts to the adjacent intersections, the diverging diamond was screened from further review based on the secondary impacts that would occur from the improvement at the interchange.

New Interstate 91 Interchange

The 2030 Future traffic projections exhibited a heavy regional component of east-west trips that would traverse the study area. In an effort to mitigate the impacts that this regional traffic would have along Cromwell Avenue and West Street, based on the orientation with the interchange area, opportunities to divert the forecast traffic were investigated. One of the ideas discussed with the TR/SC was the opportunity to develop a new I-91 interchange between the Silas Deane Highway (Route 99) interchange to the north and West Street to the south with ramps that would intersect Maple Street between Sandy Drive and Crystal Drive. The concept includes utilization of the existing I-291 right of way and ramps that were partially constructed, but ultimately never completed as part of the planned interstate loop roadway that was never finished. Two interchange concepts were reviewed, and are illustrated in Figures B-8A and B-8B. Figure B-8A presents a new interchange that would provide full access to the south, with a southbound entrance ramp and a northbound exit ramp. The concept also includes a southbound exit ramp. Conversely, Figure B-8B provides a full interchange to the north, with a southbound exit ramp and a northbound entrance ramp. The plan also provided a southbound entrance ramp. In addition to the concepts presented, the Study also investigated the opportunity to provide a full interchange at this location so that all movement could be addressed. However it was determined that the topography, configuration of the highway, and the proximity of private property to the east of the interstate proved insurmountable from an impacts perspective to facilitate a full interchange at this location.

During discussions with the TR/SC several concerns were raised related to the costs of the improvements, but more importantly, the TR/SC viewed the potential impacts to the residential areas along Maple Street that would result from a new interchange as undesirable results for the Town. In addition, CRCOG conducted a cursory review of the redistribution of traffic that would occur as a result of the new interchange and it was determined that the new ramps would not significantly reduce the volume of traffic at the West Street interchange, which was the goal of the new interchange. Based on the limited benefit that was provided by the new interchange and the cost and impacts that were identified by the TR/SC, it was determined that the new I-91 interchange concepts was not a feasible alternative at this time and the concepts were screened from further review.



SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

WEST STREET AT MAIN STREET
REALIGNMENT CONCEPT A

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE B-1

Tighe&Bond

10/18/2012

SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

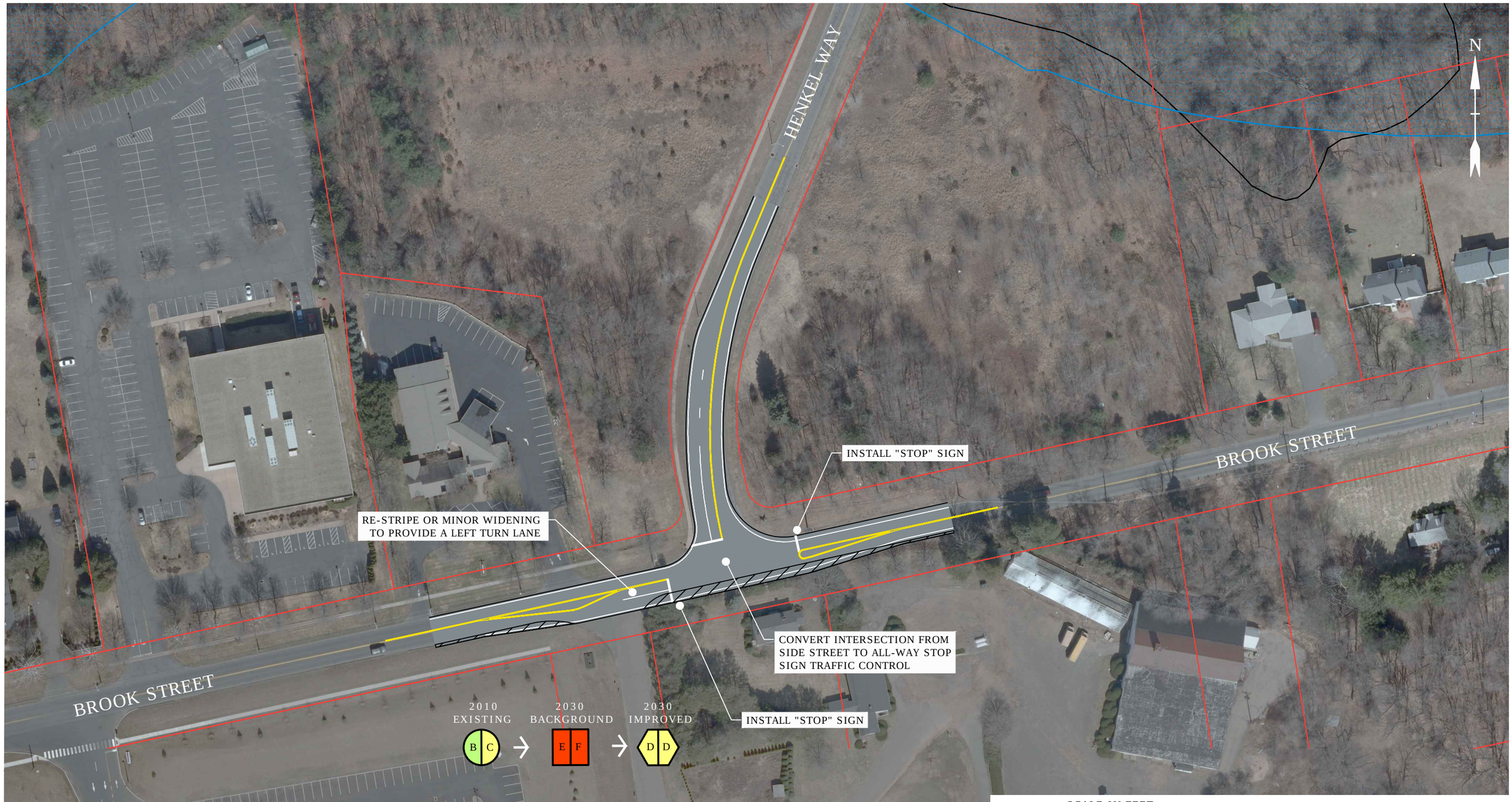
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

WEST STREET AT MAIN STREET
REALIGNMENT CONCEPT B

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE B-2

Tighe&Bond

10/18/2012



SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

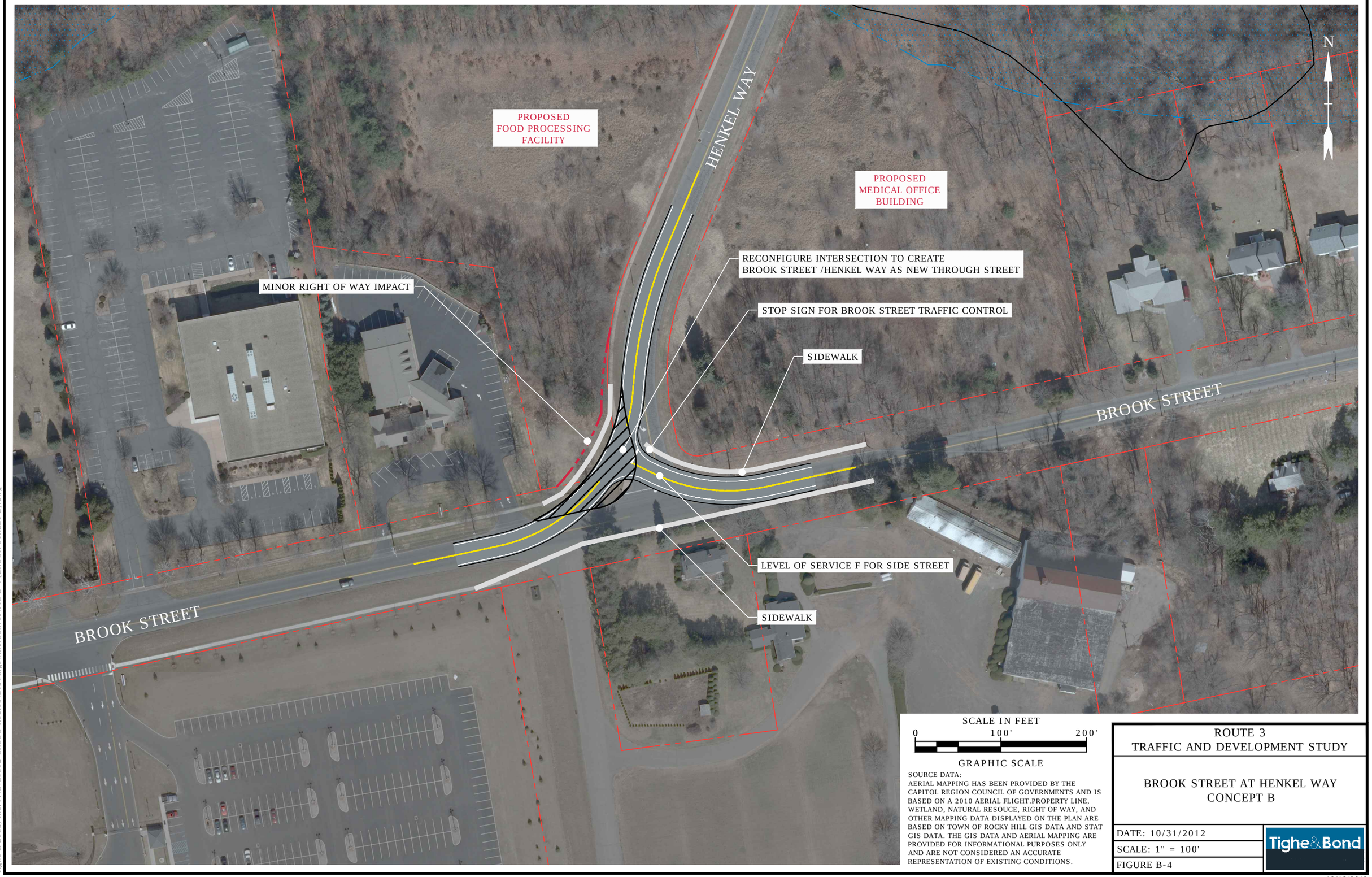
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

BROOK STREET AT HENKEL WAY
CONCEPT A

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE B-3

Tighe&Bond

10/18/2012



SCALE IN FEET

0 100' 200'

GRAPHIC SCALE

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

BROOK STREET AT HENKEL WAY
CONCEPT B

DATE: 10/31/2012
SCALE: 1" = 100'
FIGURE B-4

Tighe&Bond

10/18/2012

ELM STREET (ROUTE 160)

RHODES ROAD

CROMWELL AVENUE (ROUTE 3)

FRANCE STREET

I-91

GILBERT AVENUE

WEST STREET (SR 411)

EXIT 23

TRAFFIC MODELING INDICATES A
25% INCREASE IN 2030 TRAFFIC VOLUMES

TRAFFIC MODELING INDICATES A
30% REDUCTION IN 2030 TRAFFIC VOLUMES

POTENTIAL TRAFFIC CONTROL SIGNAL
BASED ON WARRANT STUDY

RESIDENTIAL PROPERTY TAKINGS
REQUIRED FOR NEW ROAD RIGHT OF WAY

NEW ROADWAY BETWEEN
WEST STREET AND ELM STREET
(80' WIDE RIGHT OF WAY)

NEW TRAFFIC CONTROL SIGNAL
MODIFY TRAFFIC OPERATIONS INCLUDING
POTENTIAL PEDESTRIAN PHASE

N

SCALE IN FEET
0 400' 800'
GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

ELM STREET CONNECTOR
(EAST)

DATE: 10/31/2012
SCALE: 1" = 400'
FIGURE B-5

Tighe&Bond

10/18/2012

Oct 18, 2012-6:05pm Plotted By: cog
Tighe & Bond, Inc. J:\CC\C0812-CRCOG-Route3\Drawings\Alternatives\FIG B-5 (ELM STREET CONNECTOR EAST).dwg

MAINTAIN NEW BRITAIN AVENUE FROM CROMWELL AVENUE TO HAYES ROAD AS A TOWN ROADWAY

MODIFY TRAFFIC SIGNAL OPERATIONS

LIKELY IMPACTS TO NATURAL RESOURSES

ABANDON PORTIONS OF EXISTING NEW BRITAIN AVENUE

NEW ROADWAY DIVERTS PROJECTED TRAFFIC FROM CROMWELL AVENUE BETWEEN ELM STREET AND NEW BRITAIN AVENUE

NEW ROADWAY LIKELY TO REQUIRE RETAINING WALL ALONG WEST SIDE OF ROADWAY THROUGH HILLY TERRAIN

ELM STREET (ROUTE 160)

MODIFY INTERSECTION OPERATIONS
NEW TRAFFIC SIGNAL
MODIFY INTERSECTION GEOMETRY

REASSIGN ROUTE 160 DESIGNATION TO NEW CONNECTOR ROADWAY

SIGNIFICANT RIGHT OF WAY IMPACTS AND PROPERTY ACQUISITION TO ESTABLISH NEW ROADWAY CORRIDOR

NEW BRITAIN AVENUE (ROUTE 160)

NEW STREET

CROMWELL AVENUE (ROUTE 3)

WEST STREET (SR 411)

N

SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

SCALE IN FEET

0 500' 1000'

GRAPHIC SCALE

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

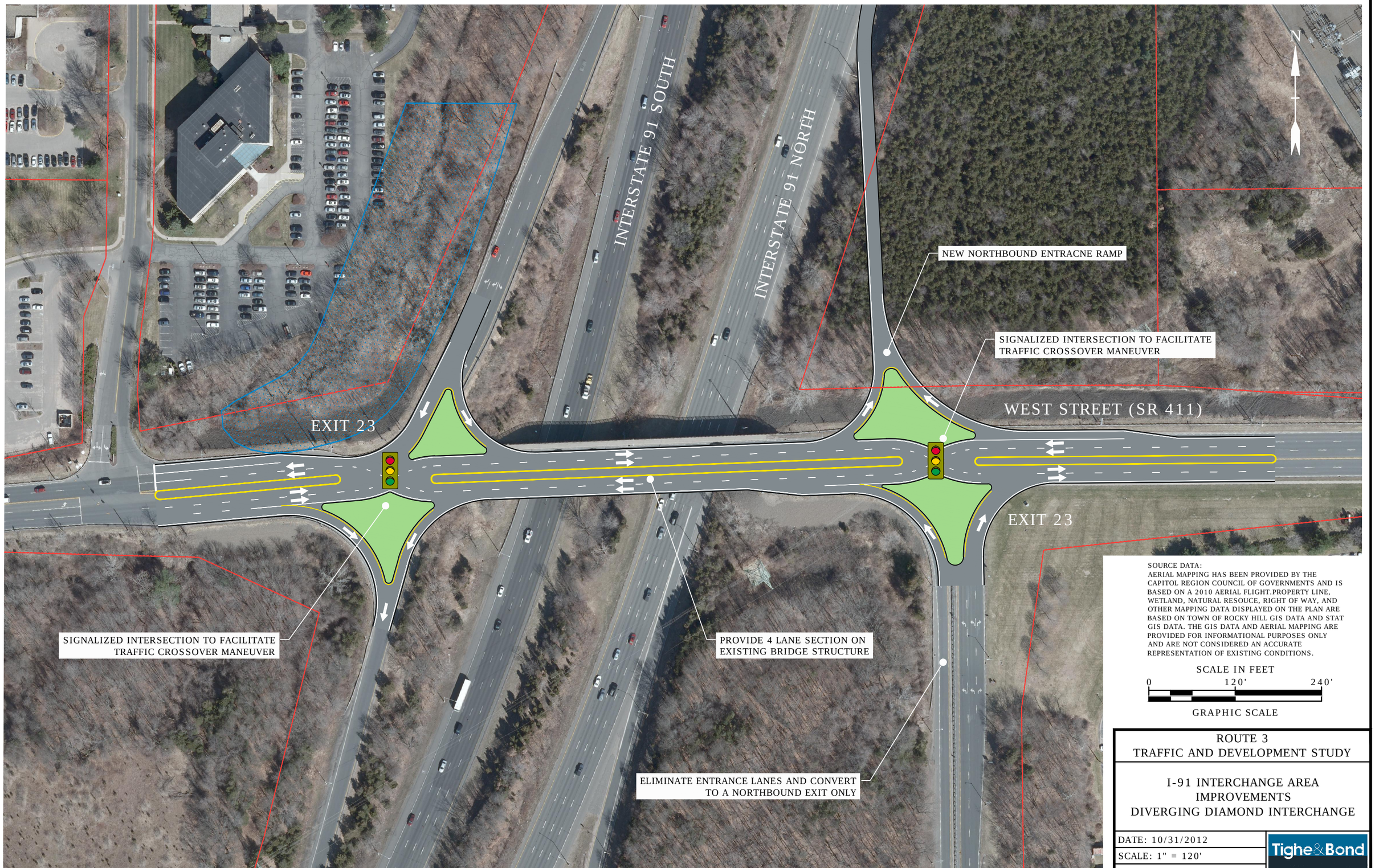
ELM STREET EXTENSION

DATE: 10/31/2012
SCALE: 1" = 500'
FIGURE B-6

Tighe&Bond

10/18/2012

Oct 18, 2012-6:08pm Plotted By: cog
Tighe & Bond, Inc. J:\CC\C0912-CRCOG-Route3\Drawings\Alternatives\FIG B-6 (ELM STREET EXT).dwg



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

SCALE IN FEET

0 120' 240'

GRAPHIC SCALE

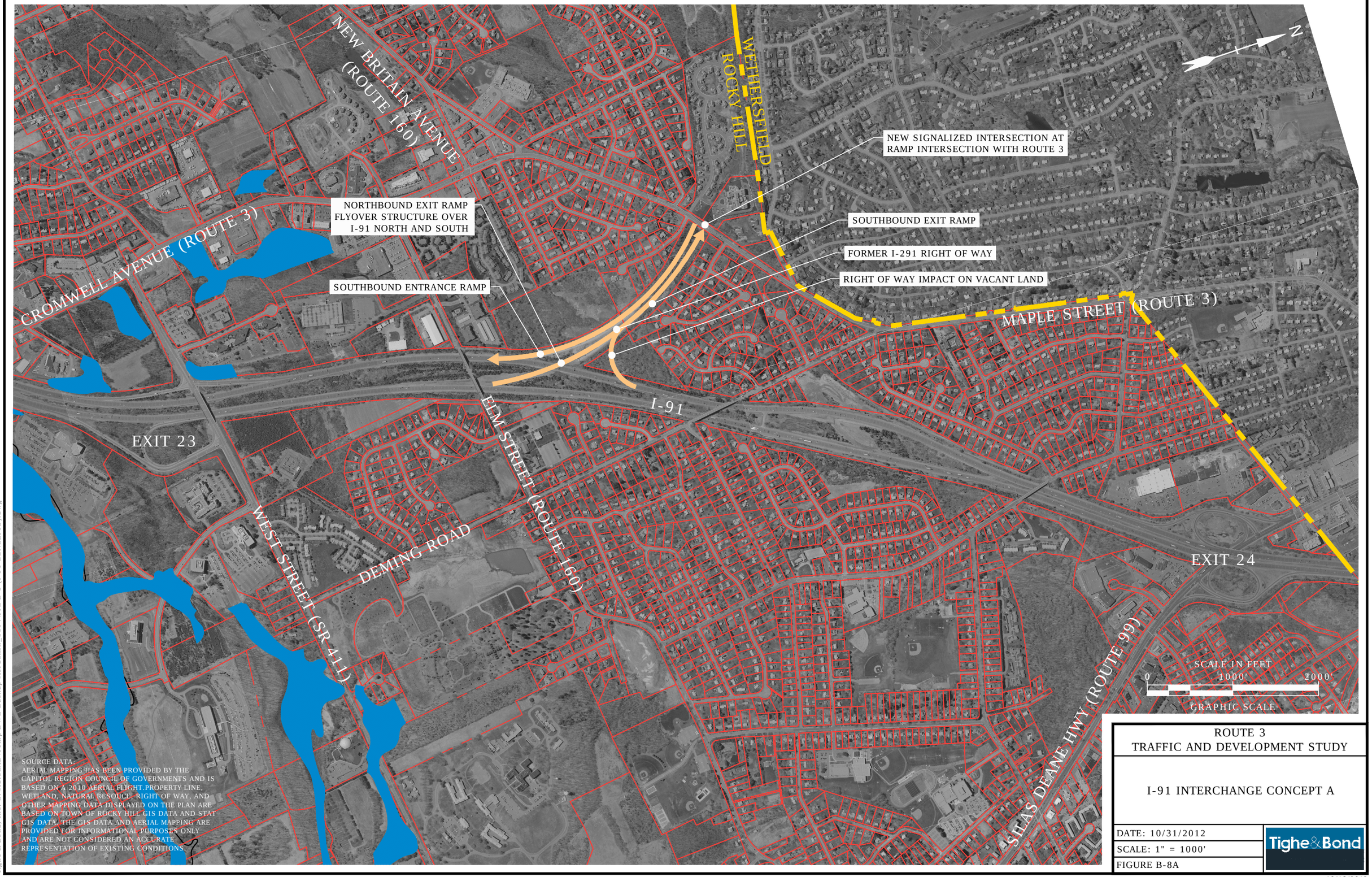
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

I-91 INTERCHANGE AREA IMPROVEMENTS
DIVERGING DIAMOND INTERCHANGE

DATE: 10/31/2012
SCALE: 1" = 120'
FIGURE B-7

Tighe&Bond

10/18/2012



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

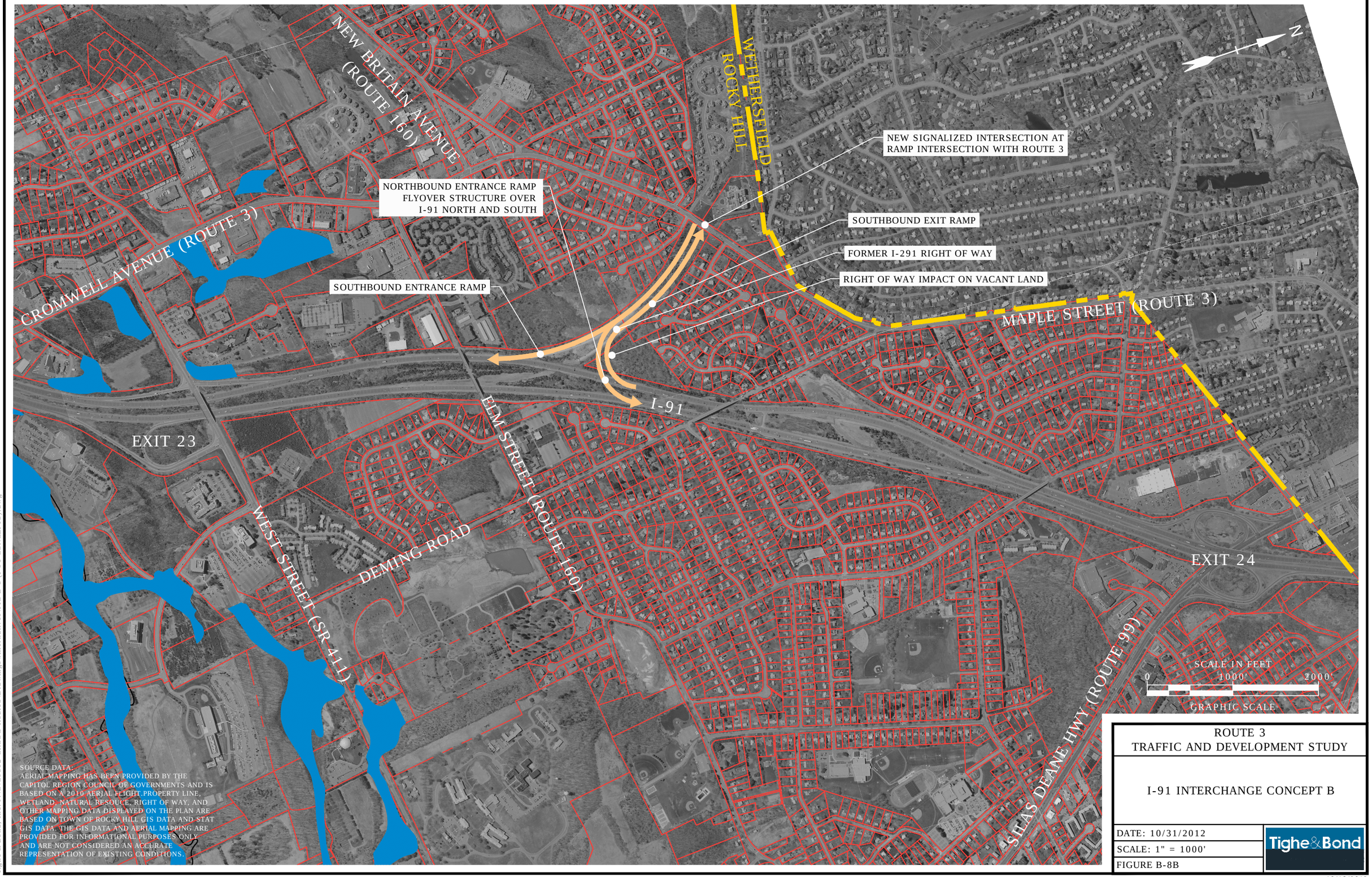
ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

I-91 INTERCHANGE CONCEPT A

DATE: 10/31/2012
SCALE: 1" = 1000'
FIGURE B-8A

Tighe&Bond

10/18/2012



SOURCE DATA:
AERIAL MAPPING HAS BEEN PROVIDED BY THE CAPITOL REGION COUNCIL OF GOVERNMENTS AND IS BASED ON A 2010 AERIAL FLIGHT.PROPERTY LINE, WETLAND, NATURAL RESOUCE, RIGHT OF WAY, AND OTHER MAPPING DATA DISPLAYED ON THE PLAN ARE BASED ON TOWN OF ROCKY HILL GIS DATA AND STAT GIS DATA. THE GIS DATA AND AERIAL MAPPING ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT CONSIDERED AN ACCURATE REPRESENTATION OF EXISTING CONDITIONS.

ROUTE 3
TRAFFIC AND DEVELOPMENT STUDY

I-91 INTERCHANGE CONCEPT B

DATE: 10/31/2012
SCALE: 1" = 1000'
FIGURE B-8B

Tighe&Bond

10/18/2012

Oct 18, 2012-6:18pm Plotted By: cog
Tighe & Bond, Inc. J:\C\C081-CRCOG-Route3\Drawings\Alternatives\FIG B-8 (I-91 CONCEPTS).dwg

Public Outreach Summary

The Route 3 Corridor Study has been conducted with input from a Technical Review Steering Committee, municipal staff, Connecticut Department of Transportation officials, stakeholders, and the community. A series of public informational meetings were held to share information with and receive comments and suggestions from the public. Stakeholder meetings were also held. This summary describes the community involvement process, reporting on activities and comments received.

Technical Review Steering Committee

A Technical Review Steering Committee (TR/SC) was established during the initiation of the study. The TR/SC had regular meetings to guide the study and comment on proposed concepts and ideas and attended the Public Meetings over the course of the study.

The following table identifies the TR/SC members and the dates of the TR/SC meetings. Specific meeting minutes are on record at CRCOG's offices.

TR/SC Committee Members	
Name	**Agency/Representing**
Jim Sollmi	Town Engineer, Rocky Hill
Kim Ricci	Town Planner, Rocky Hill
Ray Carpentino	Economic Development Director, Rocky Hill
Larrye deBear	Councilman/Economic Development Subcommittee Chair
Frank Szeps	Councilman/ Economic Development Subcommittee Member
Henry Vasel	Planning & Zoning Committee, Rocky Hill
David Head	Transportation Supervising Planner, Connecticut Department of Transportation
Anna Bergeron	Transportation Planner, Connecticut Department of Transportation

TR/SC Meeting Dates
November 10, 2010 1:00 PM
January 19, 2011 11:30 AM
February 23, 2011 11:30 AM
May 11, 2011 11:30 AM
June 14, 2011 11:30 AM
November 9, 2011 11:30 AM
January 10, 2012 11:30 AM
September 12, 2012 11:30 AM
October 31, 2012 11:30 AM

Public Information Meetings

Four Public Information Meetings were held throughout the study process. Reports of each meeting, presentation materials, and links to each meeting Audio and Video Recordings were available on the project website.

Rocky Hill's Economic Development Subcommittee (of the Town Council) hosted each of the Public Meetings. The first meeting focused on study process and soliciting input on existing transportation conditions. The next focused on the results of the existing conditions analyses, projected study area development and associated traffic growth, and future no-build transportation conditions. The third meeting presented potential recommendations and concept plans designed to address the identified issues and deficiencies. The final meeting focused on the draft recommended set of improvements including their costs, benefits, and prioritization. Public input was solicited at each of the meetings to verify findings, and vet recommended ideas, concepts, and strategies.

Comments from these public meetings that relate to the Corridor Study are summarized as follows:

December 8, 2010 - Rocky Hill Town Hall, Rocky Hill, CT (46 people signed in)

Key concerns raised by the public at this meeting involved current traffic operations and issues, specifically at the I-91 interchange and along segments of Route 3 including the Route 160/Route 3 intersections. There was concern regarding increased development and its negative effects on traffic operations and residential areas. There was desire to better accommodate bicycles and pedestrians, and to mitigate the effects of truck traffic in the study area.

June 21, 2011 - Rocky Hill Town Hall, Rocky Hill, CT (16 people signed in)

A key concern raised by the public at this meeting was related to development in Cromwell's northern tier. The remaining questions mainly concerned clarification on the standard transportation study methodologies.

February 14, 2012 - Rocky Hill Town Hall, Rocky Hill, CT (18 people signed in)

Attendees were primarily concerned with traffic operations and safety entering Route 3 from side-streets and businesses, the potential negative effects on business associated with any diversion of traffic from Route 3 to a recommended new parallel roadway, operations at the Route 3/New Britain Avenue intersection, and future prioritization of projects. The study team heard accolades regarding the described bicycle and pedestrian improvement recommendations.

November 13, 2012 - Rocky Hill Town Hall, Rocky Hill, CT (11 people signed in)

This meeting provided an overview of the draft study recommendations. The key concerns raised by the public included desired revisions to project prioritization (making some additional projects immediate priorities), the level coordination with other imminent developments, and truck traffic mitigation.

Stakeholder Meetings

Town of Cromwell – As part of the project's data acquisition phase, a meeting was held on January 4, 2011 with the Town of Cromwell's Planning Department to gather information regarding development plans along Cromwell's northern tier, near the Rocky Hill Town Line.

Connecticut Department of Transportation – A meeting was held on January 26, 2011 to review Route 3 Study travel demand model projection methodology, land use inputs, and study economic development/land use analysis tasks. Inquiries and clarifications regarding methodologies acceptable to all parties were sought.

CTTransit – A meeting was held with CTTransit staff on January 11, 2011 to present the identified study area transit deficiencies and needs, and gather information regarding the agency's stance on any proposals for improvements and/or funding capabilities.

Rocky Hill Economic Development Commission – A meeting was held with the commission on May 10, 2011 to present the project findings to date and solicit questions and comments. The meeting was open to the public.

Chamber of Commerce - Meetings were held with the Rocky Hill Chamber of Commerce on January 12, 2012 and November 8, 2012 to present the project findings to date and solicit questions and comments.

Other Outreach Initiatives

- All project information was available on the CRCOG website including meeting announcements, meeting minutes, newsletters, presentations, and reports.
- Appearances on "The Mayor's Report" Public Access Television Show to present the study findings/progress and take questions and answers on December 16, 2010 and March 15, 2012
- ConnDOT – In lieu of a meeting to review conceptual improvement alternatives, ConnDOT's Project Liaison requested the receipt of concept designs for alternatives and traffic analyses. The liaison distributed the materials to various ConnDOT units to for review and comment.
- Public Survey – A public survey was conducted to determine the community's perception of the project area's transportation deficiencies and needs, and the desired improvements. The survey was made available electronically (on-line) or could be completed via hardcopies made available at Rocky Hill's Library and Town Hall. Results were compiled, tabulated, and provided in the Appendix of the study's Existing Condition Technical Memorandum.
- All DRAFT major study documents were distributed to TR/SC and Town Council, and posted on the study website for public comment.

- Flyers for all Public Meetings were prepared and posted in the Town Hall and on the Route 3 website. The flyers were also distributed by the Town to other locations such as libraries, area businesses, and other interested parties.

- Study updates were prepared prior to each of the four Public Meetings explaining the study, summarizing the latest developments and announcing upcoming meetings. The study updates were posted on the study website and handed out at Public Meetings.

- Public Meeting announcements were posted by the Town in local newspapers. Representatives from the press were at each public meeting and resulted in articles that have been published in local newspapers.

- Comment sheets and study mailing list sign-up sheets were available at all Open House meetings to solicit comments and ideas.

- A mailing list was compiled of interested parties at public meetings and through the study website. Individuals on the mailing lists were sent e-mails informing them of the study's major public outreach events.

- Letters of invitation to the fourth Public Meetings were hard-mailed to landowners along Route 3 along with study update materials.

- Presentations to the Rocky Hill Town Council were made on February 6, 2012 and December 3, 2012. The meetings were open to the public.

- Presentations to CRCOG's Transportation Committee were made on May 21, 2012 and December 10, 2012.

- Numerous emails and phone calls to respond to resident questions and concerns.