

# CCRPC Exit 17 Scoping Study

## Scope of Work

*Colchester, Vermont*

May 23, 2013

## Overview of Study

This scope of work describes the tasks that Parsons Brinckerhoff (“Consultant”) and its subcontractors will perform for a Scoping Study of improvements proposed for the I-89 Exit 17 area, including the highway interchange and Chimney Corners intersection of US Route 2 and US Route 7 in Colchester, VT. The Scoping Study will build upon prior work conducted for the Exit 17 Growth Center Transportation Study completed for the CCMPO in 2007 and subsequent analysis conducted in 2009.

The study is designed with two purposes in mind:

- (1) Identify options for the near-term that can help address congestion and safety issues present today without replacing the existing overpass. Near-term options will be evaluated based on their traffic performance and not be fully developed through the traditional scoping process.
- (2) Study in detail and evaluate long-term alternatives that may expand the existing overpass. Long-term alternatives will be fully developed through the traditional scoping process.

A scoping report will be completed documenting the two purposes articulated above.

### *Project Study Area*

The alternatives to be studied involve improvements to the Exit 17 interchange (overpass, northbound and southbound ramps) and the US Route 2/US Route 7 intersection (“Chimney Corners”). Figure 1 shows the approximate study area.

Prior study of the Exit 17 area additionally included recommendations for nearby intersections, to be studied in detail at a later date when traffic growth triggers the need for them. These locations are:

- US 2 at Jasper Mine Road
- US 7 at Brentwood Drive
- US 7 south of Chimney Corners

This study will update traffic information for these locations to gauge whether traffic growth is approaching the identified threshold values, but they are independent actions that are not included in the detailed scoping process for the Exit 17 interchange.



Figure 1: Approximate Study Area

## Task 1: Study Initiation and Administration

### 1.1. Project Management and Administration

Ongoing management tasks include:

- Preparation of monthly progress reports detailing work accomplishments for the reporting period, budget status, schedule status, outstanding issues and action items, overview of upcoming work.
- As needed project coordination conference calls between the Consultant project manager, the CCRPC and others as appropriate.
- Provide overall direction and coordination to the consultant team. Monitoring work progress and budget, facilitating team communication, assigning staff, overseeing technical work, and implementing quality control.

### **1.2. Study Coordination**

- The Consultant will typically coordinate with the CCRPC project manager by conference call. The Consultant will, as needed, attend up to two in-person meetings, in addition to the meetings described elsewhere in the scope.

#### **Task 1 Assumptions:**

- Invoices and progress reports will be submitted on a monthly basis.

#### **Task 1 Deliverables:**

- Invoices and progress reports.

## **Task 2: Public Involvement**

### **2.1. Study Team Meetings**

The Consultant will attend and facilitate up to four (4) Study Team Meetings. The CCRPC will take the lead in identifying the Study Team, expected to include the CCRPC, Town of Colchester, Town of Milton, and VTrans staff.

Study Team meeting agendas will be determined over the course of the study, but are expected to approximately correspond to the following project activities:

- Study overview, initial purpose and need statement, growth assumptions.
- Refine Purpose and need, site constraints and issues, preliminary alternatives.
- Alternatives evaluation.
- Final recommendations and Scoping Report.

### **2.2. Project website**

The CCRPC will host and manage the study website. Materials posted on the website will consist of public meeting notices and notes; major study documents; and a link to send comments, questions, and concerns to the project team.

### **2.3. Public Meetings**

- Local Concerns Meeting (Held between Tasks 4 and Task 5)  
The Consultant and subcontractor Third Sector Associates will facilitate a Local Concerns Meeting to solicit input from interested parties, including the general public, businesses, elected officials, public agencies and other stakeholders.

- Alternatives Presentation Meeting (Held concurrent with Task 7)  
The Consultant and Third Sector Associates will facilitate an Alternatives Presentation Meeting to review the study alternatives and their evaluation.

#### **2.4. Targeted Stakeholder Outreach**

The Consultant in close cooperation with the CCRPC will organize and facilitate up to five (5) Stakeholder Interviews early in the process to help identify issues and concerns of neighboring businesses. The Towns of Colchester and Milton, and the CCRPC will assist in identifying and initiating contact with Stakeholders.

##### **Task 2 Assumptions:**

- Study Team meetings will typically be attended by two (2) or three (3) Consultant staff.
- Public meetings will be attended by up to three (3) Consultant staff.
- Third Sector Associates in coordination with the CCRPC and the Town of Colchester will take the lead on securing public meeting locations. Third Sector Associates with assistance from the Consultant and the CCRPC will welcome attendees upon entry, provide sign-in sheets, arrange audio/visual needs, and set up refreshments.
- Third Sector Associates in collaboration with the Consultant and the CCRPC will develop publicity materials including press releases, postcard mailings, calendar listings and/or articles in the newspaper and in the electronic media. The project website will be used to keep updated project information available to the public.
- Third Sector Associates will create and maintain a database of all stakeholders, participants, and those who express interest in the project for ongoing publicity.

##### **Task 2 Deliverables:**

- Publicity materials (press releases, postcard mailings, newspaper notices, etc. as appropriate)
- Meeting agendas and materials (handouts, displays, etc. as appropriate)
- Meeting notes in electronic format and other formats requested by participants.

### **Task 3: Initial Data Collection and Base Mapping**

#### **3.1. Basemap**

The Consultant will prepare a basemap in ArcMap over available existing orthophotos to serve as a basis for subsequent constraint mapping outlined in Task 7.

#### **3.2. Collect and Summarize Prior Studies and Relevant Plans**

The Consultant will review and briefly summarize findings and recommendations from prior studies as a basis for furthering development of alternatives.

#### **3.3. Collect Existing Data**

The Consultant will gather available traffic data from CCRPC and VTrans, including traffic counts, crash history, and roadway data (access control designations, speed limits, classification, multimodal uses, etc). The Consultant will coordinate with CCRPC to identify additional traffic count needs (to be conducted by CCRPC in Spring/Early Summer 2013).

##### **Task 3 Assumptions:**

- Additional traffic counts will only be peak hour in nature (AM & PM)

**Task 3 Deliverables:**

- Basemap (ArcMap format).
- Traffic counts if needed (CCRPC)

## **Task 4: No Build Traffic Analysis and Growth Scenarios**

### **4.1. Establish Existing Conditions**

- The Consultant will use turning movement volumes collected in Task 3.3 in conjunction with historic growth rates to develop existing conditions volumes.

### **4.2. Existing Conditions Traffic Analysis**

- The Consultant will develop Synchro/SimTraffic (Version 8) model networks of the interchange area, including the US Route 2/US Route 7 intersection. SimTraffic simulation analysis will be conducted for existing conditions.
- The Consultant will conduct traffic analysis of the I-89 ramp junctures at Exit 17 using Highway Capacity Software (HCS 2010).

### **4.3. Establish Future Conditions**

- The Consultant will use historic growth rates and CCRPC model-predicted growth rates to develop an estimate of background traffic growth.
- The Consultant will confirm a projected growth scenario for the Colchester Growth area (adjacent to the interchange) and neighboring Milton in coordination with the Towns and CCRPC.
- The Consultant will review CCRPC model growth assumptions for the Colchester Growth Center and Milton area and adjust trip generation/distribution as necessary so that future baseline conditions reflect both regional growth and local growth.
- Include assessment of traffic conditions at nearby sites identified in the introduction (US Route 2/Jasper Mine Rd, US Route 7/Brentwood Dr, US Route 7 south of Chimney Corners).

### **4.4. Future Traffic Analysis**

- The Consultant will use existing conditions Synchro network as a basis for use with future baseline conditions. SimTraffic simulation analysis of interchange and adjacent intersections will be conducted for the future baseline conditions.
- The Consultant will conduct HCS analysis of I-89 ramp junctures for the future baseline conditions.

**Task 4 Assumptions:**

- The existing conditions year is assumed to be 2015.
- The future conditions year is assumed to be 2035.
- US Route 2 is presumed to be the only east-west connection across I-89 in the study area (i.e. – no new overpasses for local circulation), which presents a “worst case” scenario in terms of demand on the US 7 corridor.

**Task 4 Deliverables:**

- Existing and Future Baseline Conditions traffic analysis results (for incorporation into presentations and scoping report).

## Task 5: Purpose and Need

### 5.1. Develop Purpose and Need Statement

The Consultant will draft a Purpose and Need (P&N) Statement following the Local Concerns Meeting. The draft P&N will be refined with input from the Study Advisory Committee and finalized shortly thereafter.

#### **Task 5 Deliverables:**

- Draft and Final Purpose and Need Statement (for incorporation into alternatives presentation and scoping report).

## Task 6: Develop Build Alternatives

### 6.1. Establish Design Criteria

The Consultant will identify and tabulate relevant design criteria for the development of alternatives, to be confirmed with the Study Team. The Consultant will note and describe the need for deviations, if necessary, from the established design criteria during the development of conceptual designs (task 6.3).

### 6.2. Near-term Alternatives

The Consultant will identify up to three near-term alternatives intended to address current congestion and safety issues in the vicinity of Exit 17. These near-term alternatives will be limited to those that can function without replacement of the existing overpass. These may include minor widening to provide turn lanes or through lanes at intersections, traffic control/signal upgrades, or similar actions.

Near-term alternatives will only be developed to a basic level consisting of defining the improvement and quantifying potential traffic benefits, and will not be evaluated further as part of this scoping study.

#### 6.2.1. Traffic Operations Analysis

Synchro (HCM methodology) and SimTraffic (simulation) will be used to investigate the traffic operations of near-term alternatives. Alternatives will be assessed under existing and projected horizon year (2035) traffic volumes.

### 6.3. Interchange Upgrade Alternatives

Prior study of the Exit 17 area confirmed the need to upgrade the Exit 17 interchange to accommodate future growth in the Colchester Growth Center and the region. In particular, the effects such improvements would have on the existing overpass configuration are expected to drive the need for an expanded overpass.

Four primary alternatives (three of which are variations of a similar base concept involving a combination of roundabouts and signalized intersections) were recommended for detailed study in the prior analyses.

#### 6.3.1. Initial Traffic Operations Analysis

Synchro (HCM methodology) and SimTraffic (simulation) will be used to investigate the traffic operations of alternatives recommended for detailed study in the prior analyses. Alternatives will be assessed under future year (2035) traffic volumes.

#### 6.3.2. Alternatives confirmation and refinement

The Consultant will conduct an initial concept refinement and paring of alternatives that will result in a field of **three alternatives for detailed study**.

- Review alternatives recommended for detailed study in prior analyses and refine or create additional variations, if necessary, based on updated traffic projections or other factors.
- Determine whether additional interchange improvement concepts or variation should be considered based on updated traffic projections or other factors.
- Work with the Study Team to finalize selection of three (3) alternatives for detailed evaluation in the scoping study.

**Task 6 Assumptions**

- Traffic analysis will include the Exit 17 interchange and adjacent intersections only.

**Task 6 Deliverables:**

- Plan view conceptual design alignments
- Traffic analysis results (for incorporation into presentations and scoping report).

## Task 7: Constraint Mapping

### 7.1. Survey (ROW, Topo, Utilities) and Establish Basemap

Subcontractor Vermont Survey & Engineering (VS&E) will conduct a survey in areas determined to be necessary as a result of the Study Team's selection of three alternatives for detailed evaluation in Task 6.3.2. The survey will identify topography (up to 100 feet either side of roadways, and 200 feet at intersections), ROW limits, property lines, edge of pavement, existing features, structures and utilities (above ground). Any existing survey data will be utilized so as to not duplicate efforts. Files will be prepared in VTrans standard Microstation format.

Subcontractor Vermont Survey & Engineering (VSE) will establish semi-permanent control points to be used as the survey base points for this project, these points will be sketched and swing ties will be measured to existing features. The datums for these points will be: Horizontal – NAD 83 SPC (4400 VT) U.S. Survey Feet, Vertical – NAVD 88 expressed in Feet.

VSE will perform a detailed topographic survey of the US Route 2 bridge over I-89 at Exit 17. This survey will be limited to the abutments, piers, and that area under the bridge that is not included in the 2004 LIDAR coverage. The highway right-of-ways in this area will be researched, property and highway boundary monumentation within the survey limits will be located, and approximate property/right-of-way limits will be shown on the mapping.

Using the information obtained, VSE will develop base mapping and a three-dimensional model in MicroStation and InRoads format in accordance with current VTrans specifications.

### 7.2. Identify Natural Resources

Subcontractor EIV Technical Services will identify wetlands, streams/rivers/lakes, habitats, threatened/endangered species, high value natural areas, and floodplains within the areas determined to be necessary as a result of the Study Team's selection of three alternatives for detailed evaluation in Task 6.3.2. This effort will rely on existing, mapped data sources supplemented by field inspection. Wetlands delineation will **not** be conducted as part of this study.

### 7.3. Identify Cultural/Community Resources

EIV Technical Services will identify historic, archeological, agricultural areas, Section 4(f), Section 6(f), other community resources.

### 7.4. Identify Hazardous Waste sites

EIV Technical Services will identify known Hazardous Waste sites, if applicable.

### 7.5. Prepare Constraints Map

The Consultant will prepare a basemap over existing aerial orthophotos and map resource constraints identified in tasks 7.1 – 7.4 in ArcMap format.

#### **Task 7 Assumptions:**

- Current budget assumes limited survey at the overpass abutments. Should an expanded survey be required, project budget will need to be reexamined.

#### **Task 7 Deliverables:**

- Constraints mapping incorporated into Basemap (ArcMap format).
- Survey (Microstation format).

## Task 8: Refine Alternatives

### 8.1. Conceptual Design

The Consultant will prepare conceptual designs for three alternatives chosen by the Study Team. The conceptual designs will consist of plan view alignments and typical cross sections. The conceptual design will include proposed approaches for managing stormwater runoff. Alternatives may be further refined during the conceptual design process based on geometric and field conditions identified in Task 7.

#### **Task 8 Assumptions:**

- Conceptual designs are limited to project area as defined in Figure 1.

#### **Task 8 Deliverables:**

- Conceptual designs for three alternatives.

## Task 9: Evaluate Alternatives

### 9.1. Evaluation Process and Criteria

Working with the Study Team, the Consultant will develop evaluation measures that incorporate impacts, benefits and projected costs (based on VTrans' unit costs) of the proposed alternatives. These are expected to include impacts to natural and cultural resources constraints, right-of-way requirements, traffic and safety benefits, and consistency with town, regional and state planning objectives.

As part of the evaluation process, the Consultant and subcontractor EIV Technical Services will evaluate applicable environmental and permitting requirements. This will include identifying the expected NEPA class of action and an assessment of permitting requirements.

Evaluation results will be presented at the Alternatives Presentation meeting (task 2.4).

#### **Task 9 Deliverables:**

- Evaluation matrix and summary (for incorporation into presentations and scoping report).

## **Task 10: Scoping Report**

### **10.1. Draft Report**

The Consultant will prepare a draft Scoping Report documenting the study process. The report will be submitted to the CCRPC and the Study Team for review.

### **10.2. Final Scoping Report**

The Consultant will prepare a final Scoping Report document that addresses comments raised by the Study Team and CCRPC.

#### ***Task 10 Deliverables:***

- Draft scoping report in electronic format.
- Final scoping report in electronic format and five (5) printed/bound copies.
- All final electronic files associated with the project (e.g. Excel, Microstation, Synchro/SimTraffic, Word, etc.)