

Chittenden County Regional Planning Commission
VT 117/North Williston Road Scoping Study

Scope of Work
May 21, 2013

PROJECT UNDERSTANDING

As one of several areas recommended for improvement to come out of the Williston Essex Network Transportation Study (WENTS), the CCRPC is exploring options for improving the intersection of Route 117 and North Williston Road to address peak period traffic congestion, safety deficiencies, and bicycle/pedestrian safety and mobility. In addition, options to alleviate the intermittent flooding of North Williston Road between the Winooski River bridge and the Route 117 intersection are to be considered. While the primary study area is in the Town of Essex, any improvements done at this location have the potential to affect the entire North Williston Road corridor, as this is a facility of regional importance, and is an alternative to the Route 2A corridor and Five Corners in Essex Junction. Therefore, the study will need to be coordinated with both the Towns of Essex and Williston.

The study follows the VTrans Scoping Study requirements, and includes public involvement, an analysis of alternatives, and will result in conceptual designs, permitting requirements, cost estimates and an implementation strategy. Of particular concern will be natural/water resources, river hydrology and agricultural soils, so there will be strong focus on evaluating resource impacts and potential permitting requirements or obstacles. There will also be a need for ample coordination with the Agency of Natural Resources to provide input on any alternatives that may alter the floodplain.

This effort will also include a targeted public involvement and public outreach campaign that involves transportation, community and other stakeholders. This will include outreach to the immediately affected communities of Williston and Essex, but also an effort to communicate with the users who commute on this corridor, most likely through social media outlets.

D&K will conduct the following scope of work for this project:

A. PROJECT INITIATION

D&K will meet with the Towns and CCRPC to review the following:

- 1) Review the final scope of work, schedule, and deliverables, and to discuss any additional concerns or specific goals that have emerged.
- 2) Request from the Towns dates of roadway overtopping and any available documentation including photographs, anecdotal reports of extent of roadway overtopping, and the duration and timing of overtopping.
- 3) Confirm definition of primary and secondary study areas.
- 4) Review the community and public involvement plan for the project, and identify important stakeholders to consult with during the project.

Assumptions

- D&K will coordinate and schedule the meeting.

Deliverables

- D&K will produce draft meeting notes, and circulate to attendees for review.

B. DATA COLLECTION

Services

- 1) **GIS Base Map.** D&K will obtain available GIS data from the CCPRC, Vermont Center for Geographic Information (VCGI) mapping, and towns of Essex and Williston. The following available natural, historical and cultural resource information will be included on the base map:
 - a) Wetlands and Water Quality
 - b) Historic Sites and Archeological Resources (to be provided by Hartgen Archaeological Associates, see attached scope)
 - c) Section 4(f) (e.g. Land and Water Conservation Fund Lands, Public Recreational Land)
 - d) Fish and Wildlife
 - e) Endangered/Threatened Species/Unique Natural Areas
 - f) Agricultural Lands
 - g) Hazardous Waste Sites
- 2) **Transportation.** Identify and review existing transportation and land use context and patterns.
 - a) *Site Visit.* Conduct site visit to assess and photograph existing conditions on the road and intersection. This will include existing roadway widths and geometry, grades, presence of bike and pedestrian facilities, overhead and subsurface utilities, signing, drainage systems, transit routes and stops
 - b) *Traffic Data.* Obtain recent traffic counts. Turning movement counts of the intersection are available for 1999, 2005 and 2009. VTrans will be counting this summer as well, and will provide the data by September. Review traffic history and growth trends, and review crash data.
 - c) *Context.* Review local and regional plans for relevant information and assess compatibility of the project. Evaluate the landscape and identify important views and features that should be preserved or enhanced by any improvements.
- 3) **Hydrology and Hydraulics.**
 - a) *Obtain and Review H&H Data.* Request available river-related data and information including the HEC-RAS model that serves as the basis for the FEMA Flood Insurance Study, associated GIS data including LiDAR coverage, and bridge plans. Review the information and evaluate its suitability for use in the study.
 - b) *Topographic Survey / Bridge Measurement.* Conduct a topographic survey of North Williston Road between the limits of the 500-year floodplain elevation. Include the roadway

embankment and 20 feet beyond the toe of slope on both sides of the road. Survey the bridge and channel underneath the bridge for inclusion in the hydraulic model. The roadway and bridge topography will be used to update the current HEC-RAS model, which includes the former bridge that had a center pier. The survey information will also be used to help identify and prepare conceptual designs of potential roadway modifications. Prepare a base map of the surveyed area.

- c) *Site Reconnaissance.* D&K's hydraulic engineer will conduct a site reconnaissance to observe landscape and site features that may impact hydraulic conditions at the site. This includes items such as bridge abutment location and orientation, potential downstream ice jam locations, and sediment deposition patterns within the channel and on the floodplain.
- d) *Floodplain Analysis.* Develop a flood-frequency curve using the 10-, 50-, 100-, and 500-year peak flow values in FEMA's 2011 Flood Insurance Study. Interpolate to determine intermediate flows (e.g., 25-year) and extrapolate to smaller flows of interest (e.g., annual flood event). Review flow data from the downstream USGS gage corresponding to documented times of road closure, if available, to determine a flow that is representative of the common road overtopping conditions.
- e) *Update Existing FEMA HEC-RAS Model.* We will update the current FEMA HEC-RAS model using the updated topographic survey data and bridge measurements. In addition, we will evaluate and adjust as appropriate the cross section locations used in the current model. Additional flood flows representing the more common events that cause road closures will also be added to the model. We anticipate modeling two variations of existing conditions. The first will be extreme-flow, open-water conditions as is modeled for the FEMA FIS. The second will reflect the more common spring flood flows with ice jam conditions downstream that are reported as the typical cause of roadway overtopping and closure.

Assumptions

- D&K will coordinate with the Town of Essex to gain permission from adjoining landowners to conduct a topographic survey and environmental investigations.
- VTrans is scheduled to conduct a turning movement count in July, 2013, and data will be provided in a timely fashion.

Deliverables

- D&K will prepare a memorandum that will document the natural resources investigation, transportation review and analysis, and hydrology/hydraulics analysis.
- Hartgen Archaeological Associates will provide an assessment of historic and archaeological resources in the study area.

C. DEFINE PROJECT NEED

- 1) **Public Outreach.** We will discuss options for public involvement with the Towns and CCRPC, which will include a Local Concerns Meeting to discuss the project with affected property owners, local officials, the public, and other stakeholders. Other options for public outreach may include social media such as the Front Porch Forum and Facebook sites for the Towns of Williston and Essex. Issues identified in these venues will be taken into consideration during the preparation of the Purpose and Need Statement and throughout the study.
- 2) **Purpose and Need.** DuBois & King will prepare a draft Purpose and Need Statement for the project. This statement will clearly define the goals and rationale for this study, which will be used as the basis for all proposed alternatives. The statement will be submitted to the Towns, CCRPC and VTrans for review and comment, which will be addressed as appropriate in the final Purpose and Need Statement.

Assumptions

- D&K will coordinate with the Town of Essex to schedule the local concerns meeting, in coordination with the Town of Williston, to assure all key stakeholders will be able to attend.
- D&K will take meeting notes and distribute to all project team members for review.

Deliverables

- Meeting Notes from the Local Concerns Meeting
- Draft and Final Purpose and Need Statement

D. DEVELOP ALTERNATIVES

We will work with the Towns, an advisory committee (if established), CCRPC and VTrans to identify potential alternatives for the proposed improvements. The alternatives will address current and future needs and safety concerns for all users, and the seasonal road closures due to flooding. Alternatives will consider the concerns of the Towns and State agencies, which may include impacts to agricultural soils, disturbance in the Winooski floodplain, and the potential for increased traffic volumes on North Williston Road. The alternatives will have both hydraulics and transportation components, as described below.

1) **Hydraulics Alternatives.**

- a) *Identify and Define Alternatives.* With input from transportation engineers, identify up to three roadway modification scenarios that have potential to reduce the frequency of roadway overtopping without inducing an increase in the 100-year baseflood elevation (which, in general, is not permissible under NFIP regulations). These alternatives are expected to include combinations of raising the elevation of the road and the addition of new culverts (size and location to be determined).

- b) *Model Alternatives.* Update the hydraulic river model to test the alternatives. As with the existing conditions model, evaluate each alternative under extreme-flow, open water conditions (including the 100-year event, during which no increase in flood level is permitted) as well as spring ice-jam conditions. Determine the change in frequency of roadway overtopping and the impact of the alternative on the 100-year baseflood elevation.
- 2) **Transportation Alternatives.** An analysis of transportation alternatives will be conducted as follows.
- a) **Develop Multimodal Traffic Forecasts.** Working with the CCRPC staff, traffic volumes from the WENTS model will be used for the traffic analysis. Volumes from the WENTS model will come from Hybrid Strategy Package 2 (HSP-2) which was the strategy package endorsed by the CIRC Alternatives Task Force. While the primary users of the intersection will be motor vehicles, we will assess the current and project use of other modes of transportation, based on potential land use changes in the area.
 - b) **Evaluate Alternatives.** A number of options for the improvement of the intersection of VT 117 and North Williston Road will be evaluated. These may include unsignalized improvements, signalization, or a roundabout. They will be designed with consideration of the existing intersection deficiencies and safety records, and will reflect a range of options for the communities to consider. Alternatives will be evaluated for operations and capacity using Synchro/SimTraffic, or aaSIDRA for roundabout options. All modes of transportation and users will be considered in the analysis. There will also be consideration of alternatives involving ITS components that could address congestion related to temporary road closures.

Assumptions

- CCRPC will provide traffic forecasts from the CCRPC model. These may be used directly, or pivoted from the most recent turning movement counts.
- D&K will coordinate a meeting with the key project team members (CCRPC, Towns, and VTrans) to review background information and define potential alternatives.

Deliverables

- A memorandum will be prepared that assesses the roadway, hydraulics, and intersection alternatives, and compares to the project purpose and need.

E. IDENTIFY CONSTRAINTS AND PERMITTING REQUIREMENTS

Our objective will be to identify constraints and potential permitting requirements early in the project development process, so that they can be considered in the alternatives analysis, timeline and cost estimates.

1. **Hydrology and Floodplain Impacts.** Meet with Agency of Natural Resources staff to review hydrologic and hydraulics modeling results, alternatives analysis, and potential floodplain impacts.
2. **Right of Way Impacts.** Existing right-of-way and easement information will be compiled from Town and VTrans records and added to the base mapping. This information will identify the width and extent of existing roadway rights-of-way, public/private property ownership boundaries within the project limits, and recorded easements and restrictions (such as ACT 250 permits) that exist within the project limits. Property boundary surveys will not be conducted to precisely determine property limits, but we will identify potential impacts to private properties outside of the existing available rights-of-way and factor these impacts into the report.
3. **Utilities.** We will identify the presence, extent, and ownership of overhead and underground utilities through a review of Town records and field observations. Exact locations will not be determined. Through the development of alternatives, we will identify obvious and potential conflicts with these utilities. For each alternative, D&K will identify which utilities may be affected, conflicts, and probable relocations that may be necessary. If relocations are envisioned, we will identify where probable relocations would occur and identify if these locations are within or outside of the existing right-of-way.
4. **Natural Resources.** Natural resources within the project area will be identified through the use of the VCGI database and incorporated into our base map. Our preliminary review of this data indicates that there are wetlands, wildlife habitat and flood plains that could potentially be affected, so our scope also includes field investigation and wetlands delineation in the study area. Anticipated impacts to any known resource will be identified and considered in our recommendations. We will identify the permits that may potentially be needed for this project, which may include:
 - Amendments to existing Act 250 permits
 - Conditional Use Determination for wetlands
 - USACOE General Permit for wetlands
 - Construction General Permit for Stormwater
 - Operational Permit for Stormwater
 - Stream Alteration Permit
 - Local approvalsIn cases where there are known permit requirements, such as potential wetlands impact, we will arrange to meet with state agency representatives to obtain their input on the alternatives.
5. **Historic and Archeological.** Our subconsultant, Hartgen Archaeological Associates, will undertake archeological and architectural history assessments. Their scope of work is attached, and includes the following elements:
 - Conduct a preliminary review of the proposed project plans that have the potential to affect archeological or historic resources.
 - Conduct necessary background research to determine significance of the potentially affected resources.

- Review project plans to determine the effect of the project on the historic and archeological resources.
- Make recommendations concerning proposed plans to ensure that the project does not adversely affect historic or archeological resources.

Draft Archeological Resource Assessment and Historic Review Reports will be provided for review and comment. Based on the results of the research and archeological site visit, recommendations will be made as to whether archeological testing may be necessary. These recommendations will be reviewed by VTrans. A final report will be provided after comments have been addressed.

Assumptions

- D&K will coordinate meetings and discussion with ANR, the Towns of Essex and Williston, VTrans, and CCRPC.
- Other agencies or departments will be contacted as indicated by potential resource impacts.

Deliverables

- A memorandum documenting the analysis of alternatives; potential resource, utility, and right-of-way impacts, permitting requirements; and feasibility in light of these issues.

F. DEVELOP PRELIMINARY COST ESTIMATES

Construction cost estimates will be prepared for the alternatives based on the conceptual designs, using information and costs for similar projects, or VTrans pay items. Quantities will be computed for each item using the conceptual alignment alternatives. Unit prices will be obtained from the most current edition of the VTrans Unit Price for preliminary engineering estimates. In addition to construction costs, the estimates will include project management, engineering, construction inspection, and utility relocations.

Assumptions

- D&K will likely use a combination of typical project costs for the roadway, structural and ITS elements, and unit costs for the intersection alternatives. We will seek the most recent and relevant cost data for to identify typical costs.

Deliverables

- Project cost estimate spreadsheets for each alternative will be prepared, along with a memorandum discussing the results.

G. ALTERNATIVES ANALYSIS AND PRESENTATION

- 1) **Alternatives Analysis.** Using the information developed in the preceding tasks, the alternatives will be compared based on their effectiveness in meeting the purpose and need, estimated cost, and likely environmental impacts and permitting requirements in a memorandum. D&K will

coordinate and schedule a project team meeting to review and discuss the alternatives with CCRPC, VTrans, the Towns of Essex and Williston, and ANR staff. This will provide an opportunity to identify any concerns and potential refinements.

- 2) **Alternatives Presentation.** D&K will conduct the meeting and present the alternatives for the hydraulics and transportation components of the project at a public meeting in the Town of Essex. It is anticipated that the meeting would occur in the Town of Essex, and schedule in coordination with the Town of Williston to assure attendance by interested parties. The presentation will include the conceptual plans, a matrix comparing the various alternatives, and other means to illustrate the alternatives, such as photo-simulations or sketch-up models. This information will be presented in a PowerPoint presentation. We will work to build a consensus for a preferred alternative, which may be one of the alternatives presented, or a hybrid including elements of several alternatives.

Assumptions

- D&K will coordinate a meeting with VTrans, CCRPC, the Towns of Essex and Williston, and ANR to review the alternatives analysis and discuss potential refinements.
- D&K will coordinate with CCRPC and the Towns of Essex and Williston to schedule the public Alternatives Presentation meeting.

Deliverables

- A draft and final memorandum documenting the alternatives analysis
- A PowerPoint presentation summarizing the alternatives, to be presented at a public meeting.

H. ALTERNATIVE REFINEMENT

Based on input from the project team, state agencies, and the public, the project team (CCRPC, Towns, VTrans and ANR) will meet to review the input received at the alternatives presentation, as well as all other relevant information and update the alternatives analysis. The project team will develop recommendations, which may include a recommendation of a specific alternative, or an identification of several alternatives, along with concerns and considerations.

We will convene a final public meeting, likely to be held at a Town of Essex Selectboard meeting, and scheduled in coordination with the Town of Williston and CCRPC. At the meeting, D&K will present the alternatives analysis, including input from the public and agencies, and recommendations of the project team. The adoption of a preferred alternative will be a decision of the Town of Essex.

Assumptions

- D&K will coordinate a meeting of the project team to review the input from the public at the alternatives presentation and develop recommendations to the Town of Essex.
- D&K will attend and present at the final public meeting, and provide meeting notes as needed.

Deliverables

- Meeting notes for the project team meeting and final public meeting.
- Powerpoint slides for the final public meeting.

I. REPORT AND PLAN PRODUCTION

DuBois & King will compile the results of the above tasks and prepare a draft Report, which will generally follow VTrans' *Recommended Outline for Scoping Studies*. The report will summarize the methods and results of the previous tasks, and recommend a preferred alternative. It will also suggest refinements to the conceptual design to be addressed during future design phases, as well as unresolved issues. The report will include the following sections:

- Executive Summary
- Introduction
- Project Purpose & Need
- Existing Conditions
 - Hydraulics and hydrology
 - Traffic and Transportation
 - Resources and Constraints:
 - Right-of-Way
 - Utility Impacts
 - Natural and Cultural Resources
 - Permitting
- Identified Alternatives
 - Description and function and relation to Purpose and Need
 - Conceptual Plans
 - Preliminary Project Cost Estimate
 - Hydrologic function and impacts to the Winooski River
 - Permitting requirements and environmental impacts
 - Compatibility with planning goals for the towns and region
- Recommend Preferred Alternative
- Public Involvement
- Summary & Recommendations

Deliverables

- DuBois & King will submit hard copies and electronic copies of the draft version of the Report to VTrans, the CCRPC, and the Towns for review and comment.
- Upon receipt of all review comments, D&K will address the comments, implement appropriate changes, and prepare the final Report.
- D&K will submit a hard copy and electronic copy of the final Report to the Towns of Essex and Williston, the CCRPC, and VTrans.