SILVER STREET (TH-4)  
HINESBURG, VERMONT

Prepared For:

Chittenden County Metropolitan Planning Organization

Town of Hinesburg

Prepared By:

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EXECUTIVE SUMMARY
This Scoping Report is a joint effort by the Chittenden County Metropolitan Planning Organization (CCMPO) and the Town of Hinesburg to develop solution alternatives to address transportation and safety needs along Silver Street in Hinesburg. The scoping report has been developed with input from local officials, residents, the CCMPO and field observations. Several alternatives were developed and evaluated during this process. These included the no-build option, cross sectional improvements to standard width, and a range of profile and roadway reconstruction improvements to address existing deficiencies. These alternatives were presented to the Town on February 17, 2005 and the preferred alternative was a combination of Alternative 2 – Widen Roadway to State Standard Width, Alternative 4 – Improve Profile at Key Locations, and Alternative 5.B – Reclaim, Widen and Resurface Roadway.

INTRODUCTION
This scoping report has been prepared to identify and develop alternative solutions which satisfy the project purpose and need. It identifies key issues and evaluates potential solutions. Included are plans, construction cost estimates, an evaluation matrix which summarizes the impacts and benefits of each alternative, and detailed recommendations.
Purpose and Need Statement

Purpose
The purpose of this project is to improve motorist, pedestrian and bicyclist safety on Silver Street in conjunction with solutions to the failed pavement structure. Roadway width and sight distance deficiencies should be addressed while also preserving the rural and residential character of the corridor by preserving aesthetics, limiting speeds and discouraging increased traffic where possible.

Need
The project need is largely defined by the concerns and deficiencies that are summarized in the following areas.

Pavement Condition
The existing pavement is in need of rehabilitation and/or reconstruction. It is showing signs of subbase failure in some segments, and it is questionable whether the continued application of pavement overlays is a cost effective solution to the pavement degradation.

Clear Zone / Roadside Hazards:
There are segments along Silver Street where there are unprotected hazards within the clear zone. These hazards primarily include large diameter trees, ledge outcrops, steep embankments and utility poles.

Narrow Pavement Width
The existing roadway pavement is approximately 22-feet wide. Silver Street is classified as a Major Collector on a Town Highway. The Vermont State Standards would prescribe a minimum width of 28 feet for Silver Street, comprised of 11-foot lanes and 3-foot shoulders. The lack of shoulders compromises motorist, pedestrian and bicyclist safety, especially in light of increasing traffic volumes and high observed speeds. The lack of paved or gravel shoulders also makes speed enforcement difficult and dangerous for police.

Vehicle Speeds
The residents of Silver Street report that they regularly observe vehicle speeds between 10 and 20 MPH above the posted 40 MPH speed limit. The design team has made similar observations, though an actual speed study has not been conducted. Enforcement of the speed limit is currently inadequate due in part to the lack of safe shoulders where police would conduct the enforcement operations. Speed, in combination with increased traffic volumes and other roadway deficiencies such as road width and limited sight distance, is a primary safety concern along this corridor.

Sight Distance
In addition to the profile related sight distance concerns, there are horizontal sight distance deficiencies that are related to horizontal curvature in combination with narrow road width, encroaching vegetation and ledge outcrops. Limited sight distance reduces motorist reaction times to roadway hazards and other vehicles that are stopped, passing, turning, crossing or entering the roadway.

Traffic Concerns
- There are congestion and safety concerns at the Silver Street/Route 116 Intersection. These are currently being addressed as part of a VTrans safety improvement project that is slated to be constructed in 2007.
- Traffic volumes on Silver Street are impacted by regional population trends. Increased development in outlying areas is seen as a contributing factor to expected increases in traffic volumes on Silver Street.
- Silver Street has become an alternate route to Route 7 and Route 116 for some commuters, and the community is concerned that this trend will continue.
The project study area encompasses Silver Street from the Monkton / Hinesburg town line northward to the existing bridge over the LaPlatte River.

The project length is approximately 5.31 kilometers (3.27 miles).

The project does not include the existing two lane bridge over the LaPlatte River or the intersection of Silver Street and Route 116. Both of these projects are well advanced in the project development process and are expected to be reconstructed in the near term.
GENERAL

Silver Street is classified as a major collector on a town highway. Like many rural roadways in Vermont it has evolved from a country lane to a commuter route and it now sees traffic volumes and speeds that it was never designed for. In contrast to this, the adjacent land use has not changed as dramatically over the decades, and this has heightened the general conflict between motorists and abutting agricultural and residential property owners.

This project was initiated by the community to investigate the existing deficiencies and to fully explore potential solutions that would address the project purpose and need. The Town recognized that significant roadway pavement reconstruction might be necessary and that this may provide a rare opportunity to also improve the typical section and the horizontal and vertical geometric deficiencies. This scoping report represents the results of the problem identification and solution evaluation processes.

EXISTING ROADWAY INFORMATION

Roadway

Silver Street is a two lane paved rural roadway. The travel lanes vary in width from 3.0m to 3.6m (10’ to 12’), and defined paved shoulders are essentially nonexistent. Graded gravel shoulders are also absent along the project corridor. Much of the roadway is built up above the surrounding ground, and the lack of paved or unpaved shoulders is considered a serious safety deficiency. The photo at right shows a typical section on Silver Street where there are no shoulders but there are trees, slopes and utility poles within the clear zone.
Right-of-Way
The existing Silver Street right-of-way width varies between 15m (50 feet) and 20m (66 feet). The right-of-way lines shown on the plans contained in this report are based on a best fit of the information contained in available GIS mapping, and are approximate only. Right-of-way research and ground survey would be required to more accurately establish the existing right-of-way lines. This is normally done at the preliminary plans stage. It should be noted that during scoping there was disagreement between members of the town and a local surveyor as to the actual width of the Silver Street right of way. This should be resolved during the right-of-way research stage, especially in areas where right-of-way impacts appear unavoidable.

Horizontal and Vertical Alignments
Silver Street is relatively curvy and the profile would be described as rolling. This combination of horizontal and vertical curvature leads to sight distance limitations and it is an important factor in assessing the roadway safety. Roadways with these characteristics demand driver attention since the direction changes are accompanied by limited sight lines.

The profile is substandard in two locations for a design speed of 65 kph (40 mph) to even match the posted speed. The profile crest at the top of the hill by the Kohn residence is a concern that is well known to those using this roadway. The existing profile is suitable for less than 50 kph (30 mph). In addition, the gradient south of the crest is approximately 13%. This class of roadway would normally be designed with a maximum grade of 8%, so 13% is considered to be steep. This was confirmed by the public at the Local Concerns Meeting and it was noted that the steepness is of particular concern in the winter.

Drainage
There is no curbing within the project, and as a result, the roadway runoff is allowed to flow off the sides of the pavement. Much of the roadway is elevated above the surrounding ground so the water either flows overland away from the road or it collects in roadside ditches that run along the bottom of the embankment. Most of the storm runoff eventually finds its way to adjacent wetlands, or to the LaPlatte River or Lewis Creek. Drainage was not noted as a concern at the Local Concerns Meeting, however, satisfying the Vermont Stormwater Rules may be challenging if the impervious surface area is increased by widening the roadway. Adding paved shoulders would likely increase the pavement are by approximately two acres.

Structures:
There are two bridges on Silver Street. The first over Lewis Creek (STA 10+710) is in relatively good condition and was not noted as a concern in terms of width or other safety concerns.

The bridge over the LaPlatte River is in much worse condition and will be replaced under a separate project when funding becomes available. The new bridge will reportedly be constructed at the same elevation as the existing bridge, and it will serve as the northern limit of work for this project.
Sight Distance
Sight distance is limited by three factors on Silver Street. First and foremost are the substandard crest and sag vertical curves. These limit a driver’s ability to see far enough in advance of an object in the road to safely stop while traveling at the design speed. Second is horizontal curvature, which limits the driver’s ability to see around the inside of a curve far enough in advance of a situation requiring a stop. Lastly is one factor that is often overlooked, and that is encroaching vegetation. On Silver Street this is a factor because there are no paved shoulders and the vegetation grows up to the edge of the pavement. The design team observed that the Town does a good job controlling the vegetation within about the first six feet of the edge of road. But with the combined horizontal and vertical curvature of this road the vegetation still plays a role in hindering sight distances around curves. This is particularly true for vehicles entering the roadway from driveways or side streets on a curve.

There are also a few locations, such as the vicinity of Isham Road, where approaching vehicles seem to momentarily drop out of sight due to modest profile undulations in combination with horizontal curves.

All of the above factors make passing difficult and/or dangerous within the project limits. Many residents report, however, that they still observe motorists taking chances by passing slower moving vehicles in areas with limited sight distance, even if the slower vehicles are traveling at the speed limit.

Intermodal
Through observations and discussions with local residents it appears that bicycle traffic is very low along the project. This may be in large part due to the hazardous conditions presented to cyclists by the lack of paved shoulders, curvy roadway, high vehicle speeds and increasing peak hour traffic volumes. There are currently no sidewalks or pedestrian paths within the project. This is not to say that bicycle demand does not exist on this route. The lack of alternative bike friendly north-south roadways would likely place this route along the desire lines of more touring and recreational cyclists than currently use it. During initial brainstorming about potential improvements along this corridor there were discussions about constructing a separate recreation path parallel to the roadway. The lack of a southern destination, the expected right-of-way and wetland impacts, and the likely construction costs dropped this idea from further consideration early in the scoping process.

Additional multi-modal opportunities exist in the form of public transit, and certainly these types of programs would be encouraged, but they are outside of the scope of this study. Consideration of potential park and ride facilities along Route 116 and even Silver Street are also encouraged as a means to absorb some of the traffic growth that is expected to be generated in outlying areas.

Accidents:
The accident data provided by the Town for the years 2000 through 2004 listed 22 crashes. Injury data was not provided, however there was a head-on crash with 2 fatalities on Silver Street in 2004. The crash locations have been plotted on the enclosed project plans. It is evident from the plans that no single location would be categorized as a high accident location, but rather that the entire roadway has conditions that may contribute to crashes. The fact that 50% of the crashes involved vehicles sliding off the road points to the lack of shoulders as a likely contributing factor.

<table>
<thead>
<tr>
<th>Crash types</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head on</td>
<td>1</td>
</tr>
<tr>
<td>Slid Off the Road</td>
<td>11</td>
</tr>
<tr>
<td>Rear End</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crash Causes and/or Contributing Factors :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive Speed:</td>
</tr>
<tr>
<td>Failure to Yield R.O.W.</td>
</tr>
<tr>
<td>Falling Asleep</td>
</tr>
<tr>
<td>Alcohol</td>
</tr>
<tr>
<td>Following Too Close</td>
</tr>
</tbody>
</table>
In studying the crash data it is not possible to say with certainty how many accidents would have been prevented by improving the roadway width to Vermont State Standards. It is, however, possible to generalize about how increased roadway width would reduce the likelihood of certain types of crashes. Crashes where motorists had no room to avoid other vehicles would likely benefit most from the addition of shoulders, as would crashes where motorists lost control of their vehicles and left the pavement. Paved shoulders provide far better recovery space than no shoulders at all.

Excessive speed was listed as one of the top two most frequent crash causes. Adding shoulders would not do anything to slow vehicles down. In fact, perceptible increases in traveling speeds are expected if the roadway width, condition, and clear zone are improved. It is expected that the dangers associated with the increased speeds will be offset by the added safety due to the addition of the shoulders. It has also been noted by local representatives that speed enforcement by police is difficult along this corridor because the lack of shoulders makes it very unsafe to pull vehicles over. The best way to deal with excessive speed is to enforce the speed limits, and providing safe shoulders for the police to perform enforcement operations would assist in making this possible.

A 1992 Federal Highway Administration publication titled “Safety Effectiveness of Highway Design Features” gives useful information on the amount of accident rate reduction that can be expected for incremental increases in travel lane and shoulder widths. The following observations were made for two lane rural highways:

<table>
<thead>
<tr>
<th>Amount of Shoulder Widening</th>
<th>Percent Reduction in Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>(paved/unpaved)</td>
<td></td>
</tr>
<tr>
<td>2'</td>
<td>16% / 13%</td>
</tr>
<tr>
<td>4'</td>
<td>29% / 25%</td>
</tr>
<tr>
<td>6'</td>
<td>40% / 35%</td>
</tr>
</tbody>
</table>

From the data it can be seen that adding 3' paved shoulders along Silver Street would result in an expected reduction in width related accidents of approximately 23%. It is noteworthy that the 1992 study was based on actual crash data, so it is probable that the improved crash rates were realized even after any increases in vehicle speeds that may have occurred due to the wider pavement. This answers the concern that is often voiced by the public that adding shoulders will only increase speeds. It may be so that speeds will increase, but the added safety is born out by the empirical crash data.

Traffic Information

The Silver Street traffic volume information is as follows:

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Average Daily Traffic (AADT):</td>
<td>4,900</td>
<td>5,200</td>
</tr>
<tr>
<td>% Trucks ( Peak Hour )</td>
<td>3.9%</td>
<td></td>
</tr>
</tbody>
</table>

This information was derived from 2003 VTrans ATR counts and grown to 2006 using approximate regional growth factors. Field observations and local opinion indicate that traffic delays generally only occur at the Silver Street / VT 116 intersection, which is outside the project limits. Delay accessing Silver Street from any of the side streets are driveways is of course expected to increase as volumes on Silver Street increase. It should be clearly understood that the above information is provided for background purposes, and that the intent of this project is to address safety concerns, and not to add capacity.
RESOURCE INFORMATION

Following is a description of the environmental and cultural information that has been collected and assessed to date on this project.

Historic

In accordance with the scope of work for the Silver Street Improvement Project, we have conducted a review of the National and Vermont State Registers of Historic Places to identify listed properties and sites within the immediate project vicinity. According to the files at the Vermont Division for Historic Preservation (VDHP), there are no properties in Hinesburg listed on the National Register. There are nine individual properties and one district in the vicinity of the proposed project listed on the State Register of Historic Places. Two of these properties, the Marsh House at 1086 Silver Street (0407-09) and the Dorwin House (0407-16) have been determined individually eligible for the National Register. The Vermont Advisory Council on Historic Preservation (VACHP) also determined the State Register-listed properties along Silver Street were eligible for the National Register as a rural historic district in 1993. Descriptions and photographs of the individual properties are included in Appendix A.

Archaeological

A preliminary Phase IA archaeological assessment of the study area should be performed in subsequent stages of project development if segments of the roadway are to be improved. The type of construction that is currently envision, which consists primarily of on-alignment pavement rehabilitation and shoulder widening, has a very low potential for affecting archaeological resources, and an even lower potential for affecting undisturbed resources since the limits of construction would be largely within ground previously disturbed when the roadway was built or from adjacent land uses such as farming.

Visual

The visual characteristics of the project area include rural residences and properties (some of which include historic structures), farms, pastures, and newly-constructed homes located within a bucolic and agrarian setting. Stone walls, farm fences, bedrock outcrops, woodlands, shrub thickets and open fields are interspersed along the corridor. Vistas from roadway high points look out over rolling hills and drumlins that characterize the broader area. One such view is evident by looking south and west from Silver Street between Lewis Creek Road and the bridge over Lewis Creek. Another attractive view of the landscape is realized by looking north and east toward Lewis Creek and adjacent farmland from the portion of Silver Street located near the southern project terminus at Monkton.

The views along Silver Street are considered to be typical of this region, so they are not significant for their uniqueness. But to the residents of the area the visual character is very important. This was clearly voiced at the Local Concerns meeting as well as the Alternatives Presentation Meeting. The consensus was that safety improvements are necessary, but that they should be done in a way that minimizes the impacts on the visual character of the area. This topic is very much at the center of the common struggle between providing safe transportation infrastructure and preserving rural character. The narrow, winding and hilly roadway with overhanging vegetation is at the same time dangerous and enchanting. It could be interpreted that there are in fact two landscapes, consisting of all of the land outside of the roadway right-of-way, and the roadway corridor itself. Residents expect to experience both landscapes when driving the corridor, and though improvements to the roadway may not alter the surrounding landscape, they could dramatically change the visual character within the roadway corridor.
**4(f)/6(f) Properties**

Under Section 4(f) of the Department of Transportation Act, publicly-owned parks, recreation areas, and wildlife or waterfowl refuges, and privately or publicly-owned historic sites cannot be impacted by federally-funded highway projects unless there is no prudent or feasible alternative to such use of the land. At this time, there are no known 4(f) resources within the project study area.

The Land & Water Conservation Fund Act (LWCF) requires that entities receiving LWCF funding establish a 6(f) boundary area, which identifies the land to be set aside for public outdoor recreation into perpetuity. The boundary area cannot be encroached upon for reasons other than those related to public outdoor recreation.

The Vermont Department of Forests, Parks & Recreation was contacted for information on Land and Water Conservation Fund [6(f)] (LWCF) sites within the proposed project area. According to the agency, a LWCF-assisted project boundary (the Hinesburg Recreation Area) is located near the northern terminus of the project study area just south of the Hinesburg Community Schools. The recreation area includes athletic/recreational fields, tennis courts, a basketball/skating facility, picnic areas, and parking facility. Encroachment within the 6(f) boundary requires National Park Service approval of a “Conversion of Use” request by the project proponent.

**Rare, Threatened and Endangered Species and Significant Habitat Types**

Information relative to rare, threatened and endangered species was obtained from the Vermont Agency of Natural Resources (VANR) Department of Fish and Wildlife and the United States Fish and Wildlife Service (USFWS). According to VANR database, there is a record of a state threatened eastern pearlshell freshwater mussel, *(Margaritifera margaritifera)* from Lewis Creek. VANR requests careful coordination with Vermont Agency of Transportation should there be substantial water quality impacts or direct impacts to stream bank from the proposed work. According to USFWS, there are at least two sites of potential summer roosting habitat of the Indiana bat *(Myotis sodalis)* in the vicinity of the Silver Street project corridor. With the exception of the occasional transient bald eagle *(Haliaeetus leucocephalus)*, no other federally-listed or proposed threatened or endangered species under the jurisdiction of the USFWS are known to occur in the project area.

**Agricultural lands**

The Vermont Agency of Agriculture (VAA) was contacted to determine whether prime farmland is located within or near the project study area. VAA has indicated that primary agricultural soils could be affected by the project.

**Wetlands**

Vermont Wetland Rules (Title 10 V.S.A. Chapter 37, Section 905(a) (7)-(9)) identify three classes of wetlands. Class I and II wetlands are considered “significant wetlands” requiring specific levels of protection under the Rules. Class I wetlands include only those specially designated as such. Class II wetlands include only those wetlands shown on the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, although Riverine types are specifically excluded.

The USFWS NWI map *(Hinesburg, VT quadrangle)* indicates that there are several types of wetlands (forested, scrub-shrub and emergent) within the project study area. These habitats are designated as: Palustrine, Unconsolidated Bottom, Intermittently Exposed/Permanent (PUBZ); Palustrine, Emergent, Intermittently Flooded/Temporary (PEMW); Palustrine, Forested, Broad-
Leaved Deciduous Saturated/Semipermanent/Seasonal (PFO1Y); and Palustrine, Forested, Broad-Leaved Deciduous/Scrub-Shrub, Broad-Leaved Deciduous, Saturated/Semipermanent/Seasonal (PFO1/SS1Y). Riverine habitats designated on the maps include the La Platte River and Lewis Creek (which are both R3OWZ; Riverine, Upper Perennial, Open Water, Intermittently Exposed/Permanent).

Field reconnaissance conducted on November 18, 2003, identified areas of wetlands along the Silver Street corridor that appear to meet the US Army Corps of Engineers definition for jurisdictional wetlands. Wetland boundaries were estimated and sketched onto the best available corridor aerial mapping. Some of the identified wetlands lie contiguous with NWI mapped wetlands, and are therefore designated as Class II wetlands under Vermont Wetland Rules. Other wetlands are classified as Class III as they consist of roadside drainage ditches and narrow upgradient drainage swales with intermittent flow that are not adjacent to or contiguous with Class II wetlands. Potential impacts to these Class III wetlands as well as to any of the Riverine types described above (provided they meet the federal definition for wetland), will require an application to the Army Corps of Engineers.

Class II wetlands along the project corridor include areas of PFO1Y and PEM1E, which are found adjacent to, and contiguous with, other Class II forested and emergent wetlands that drain to the La Platte River near the northern end of the project. Principal functions of these wetlands include water storage and treatment for flood water and storm runoff, surface and groundwater protection, and erosion control through vegetative stabilization of underlying soils. The herbaceous wetland is located within an area used for pasturing livestock and/or haying.

A third area of probable Class II wetlands is located in the vicinity of Isham Road. Areas of PEM1E wetland found on both sides of Silver Street appear to drain to a Class II wetland designated as PUBZ, although a definite hydrologic connection will need to be determined during future field investigations. The emergent wetlands provide similar functions and values to other herbaceous wetlands. In addition, the open water area likely provides fisheries and wildlife and migratory bird habitat.

Elsewhere along the Silver Street corridor, additional areas of emergent marsh, scrub-shrub, and forested wetlands meeting the federal definition for wetlands are found in several locations; these areas are designated Class III wetlands under Vermont regulations.

**Rivers and Streams**

Four upper perennial streams or rivers occur within the immediate vicinity of the project area: Lewis Creek, the La Platte River, and two tributaries to the La Platte River. Any fill or other disturbance to these watercourses will require an application to the US Army Corps of Engineers. At the State level, a Stream Alteration Permit would also be necessary.

**Floodplains**

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Town of Hinesburg, Vermont, Chittenden County, September 27, 1985, there are 100-year floodplains associated with the La Platte River and Lewis Creek. The FIRM indicates that Zone A extends into the Silver Street corridor beyond the bridged crossings of these waterways. Base flood elevations and flood hazard factors are not available as no Flood Insurance Studies have been performed for this community. Floodways would have to be determined should any fill or alteration of a stream channel in a defined floodway be impacted. This would involve a formal hydraulic analysis, including modeling, to demonstrate that floodway elevations will not increase by more than one foot. As conceptual designs are developed, impacts to the 100-year floodplain and encroachment into the floodway will be avoided and minimized to the extent practicable.
Hazardous Waste Liabilities

The *Vermont Active Hazardous Sites List* (September 2003) indicates that there are no sites located within the project study area proper. There are several sites located to the immediate north of the study area, along Route 116. Additionally, above ground storage tanks were observed on several agricultural properties located along Silver Street. Portions of these sites will only be minimally impacted by roadway widening and would not affect the storage tanks per se.
LOCAL CONCERNS

A Local Concerns meeting was held on September 8, 2003 at the Hinesburg Municipal Building. The objectives of the meeting were to introduce the project, explain the scoping process, and to solicit input from the local officials, residents, regional planner, and agency representatives on their concerns relative to the study area. Based on the information that was gathered at the Local Concerns meeting, the project Purpose and Need Statement was developed (see page 2).

The primary local concerns are listed as follows:

- Narrow Roadway Width
- High Vehicle Speeds
- Steep Grades
- Sharp Crest of Hill / Limited Sight Distance
- Increasing Traffic Volumes
- Roadside Hazards
- Bicycle and Pedestrian Safety
- Preservation of Community Character
ALTERNATIVE - 1: DO NOTHING / CONTINUE REGULAR MAINTENANCE

This alternative would leave the roadway in its current condition, and it assumes that normal maintenance would continue. This alternative is included as a baseline for comparing the build alternatives. It is also a viable alternative in the event that consensus is never reached on a preferred build alternative.

Advantages:
- Low initial Cost
- No new direct cultural or environmental impacts

Disadvantages:
This alternative does not satisfy the Purpose and Need Statement for this project. The local concerns would go unanswered. It should also be noted that in some areas the pavement is in poor condition as a result of subbase failure, and in those areas the long term costs of continued pavement repairs are likely to be high if the pavement is not reconstructed. This simply makes the point that the do nothing alternative is definitely not the spend nothing alternative.

ALTERNATIVE - 2: WIDEN ROADWAY TO STANDARD WIDTH

This alternative primarily involves widening the existing pavement more or less about the existing centerline. The widening would essentially amount to adding paved shoulders which are absent from the majority of the existing roadway.

The Vermont State Standards (V.S.S.) would prescribe the following widths for a roadway with this classification and traffic loading.

- Travel Lanes: 3.35m (11’)
- Shoulders: 0.90m (3’)

DESIGN PARAMETER DOCUMENTATION

ROADWAY TYPICALS

<table>
<thead>
<tr>
<th>Route No.</th>
<th>Design Speed</th>
<th>Functional Class</th>
<th>Const. Yr. ADT</th>
<th>Design Year</th>
<th>Typical ADT</th>
<th>DHV</th>
<th>V.S.S.</th>
<th>Used</th>
<th>CZ Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH4 Silver Street</td>
<td>70 km/hr (40 MPH)</td>
<td>Major Collector Rural</td>
<td>Estimate 5200 for Yr 2006</td>
<td>Est. 4000, 6000</td>
<td>3.000.9</td>
<td>3.7 m</td>
<td>43 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1 Vermont State Standards
   a) Minimum width of shoulder for shared use with bicycles is 3 ft (Table 5.8). Therefore, standard shoulder is adequate.
   b) Level of service is Level C or better. Level D is acceptable for high traffic volumes or rolling/mountainous terrain (5.2).
2 Indicate reasons for deviating from V.S.S. and date of design exception
3 Clear Zone Policy (Refer to Chapter Nine of the V.S.S.)
   a) Design speeds lower than 45 MPH may use a 3.1 m (10 ft) clear zone regardless of the V.S.S. recommendations (5.9).
Many residents expressed concern about motorists speeding on Silver Street, and as a result the current proposal is to stripe narrower lanes and wider shoulders than the standards call for. The overall new paved roadway width would still meet the standards. This would result in the proposed typical section shown below.

**Advantages:**
- The additional paved width would improve motorist safety since maneuvering and recovery room would be increased by approximately 20%. It is expected that this would reduce the high incidence of run-off-the-road crashes on Silver Street.
- The additional paved width would improve pedestrian and bicyclist safety by providing additional space for them to share the road with motor vehicles. This would even benefit residents as they access their mail boxes.
- The wider shoulders would improve sight lines for motorists entering the roadway from driveways and side streets. This is particularly true wherever vegetation currently grows close to the road.

**Disadvantages:**
- The added width would impact wetlands adjacent to the existing road bed, and the increased impervious area would increase peak stormwater runoff flows.
- The proposed widening and improved side slopes and clear zone would result in linear right-of-way impacts. For the most part these are of little consequence since the abutting land tends to be open space, however there are some locations where houses are close to the road, and front lawns, fences and/or trees would be impacted.
- The added paved width may encourage a minor increase in observed travel speeds due to perceived safer conditions.
- The proposed wider roadway and the resulting improvements to side slopes and drainage ditches would impact the visual character within the corridor. Trees that are within the clear zone would either be removed or protected with guardrail. Both results would impact the visual character.

**ALTERNATIVE - 3: IMPROVE ROADWAY PROFILE DEFICIENCIES TO 45 MPH (70 KPH) DESIGN SPEED**

This alternative would utilize the widened typical section proposed under Alternative 2, but it would resolve the existing profile deficiencies in order to bring the design speed up to 45 MPH in order to support a posted speed of 40 MPH. This alternative would result in significant alterations to the existing roadway profile since the existing crests and sags in the roadway are grossly deficient today. It would also reduce the maximum grades on the roadway, which are currently as high as 13%.

**Advantages:**
- This improvement would greatly improve reaction times and therefore motorist safety at locations where the profile currently limits sight distance.

**Disadvantages:**
- The construction costs and impacts to abutting properties and resource areas would be enormous.
- The visual character of the roadway would be altered dramatically.
The flatter and smoother profile would likely increase the tendency for motorists to exceed the speed limit since the roadway would support significantly increased design speeds.

Access to some residential drives would be severely affected by raising or lowering the roadway.

**ALTERNATIVE 4: IMPROVE ROADWAY PROFILE DEFICIENCIES AT KEY LOCATIONS ONLY**

This alternative improves the profile related design speed and therefore the sight distance and safety at a few key locations. The extent of the improvement is limited by the potential costs, property impacts and resource area impacts. One such location is at the severe crest of the hill adjacent to the Kohn property (STA 13+095). The sight distance will be improved to satisfy a 63 km/h (39mph) design speed at the Kohn hill.

**Advantages:**

- This alternative would improve vertical sight distances and motorist safety at the locations that are currently of greatest concern.
- The construction costs and impacts to abutting properties and resource areas would be considerably less than for the 45 mph design (Alternative 3).

**Disadvantages:**

- The visual character of the roadway would be altered at the spot improvement locations, but not nearly as much as under Alternative 3.
- The flatter and smoother profile would likely increase the tendency for motorists to exceed the speed limit since the roadway would safely support higher speeds than it does today.

**5. ROADWAY PAVEMENT IMPROVEMENT ALTERNATIVES:**

The following three roadway pavement improvement alternatives are applicable to this roadway:

**A. Widen to Meet the Width Under Alt 2, and Resurface the Existing Pavement**

This consists of widening the paved shoulders to the desired width, and resurfacing the existing pavement.

**Advantages:**

- Lowest initial cost
- Minimal disruption during construction

**Disadvantages:**

- Highest long term maintenance costs
- Inability to improve profile
B. Reclamation, Widening and Resurfacing
This consists of pulverizing the existing pavement in place and blending it with the gravel base, widening to provide the desired shoulder widths, and resurfacing with all new asphalt pavement.

**Advantages:**
- Significantly lower cost and disruption than full depth reconstruction (C).
- Better expected long term durability than resurfacing alone (A).

**Disadvantages:**
- Inability to improve profile
- Does not provide well drained base materials to frost free depth as in full depth reconstruction (C), especially in areas where subbase failure is already evident.

C. Reconstruct to New Width and Full Depth
This consists of complete replacement of the existing pavement, gravel base and even existing subbase layers prior to placing all new granular base materials and pavement surface. This alternative is necessary wherever profile revisions are required, and it is recommended in areas where subbase failure is evident due to poor subsoils and/or groundwater inundation.

**Advantages:**
- Best finished product
- Provides ability to set all new roadway profile
- Best long term durability

**Disadvantages:**
- Highest initial cost and disruption during construction
## Evaluation Matrix

The following evaluation matrix contains a list of all potential issues and concerns with all possible affected parties who may have a concern with a proposed alternative. (A "No" in a space indicates that there are no concerns, impacts or permits required, and a "Yes" indicates that there is concern associated with the alternative, or a permit is required.)

### COST

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<th>+ ALT 2 With Spot Profile Modifications</th>
<th>+ ALT 4 with Mostly Widen &amp; Overlay</th>
<th>+ ALT 4 with Mostly Widen &amp; Rearchain</th>
<th>+ ALT 4 with All Full Reconstruction</th>
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### ENGINEERING

| Alternative | No Change | Improved | Best | Improved | Minor | Improved | Improved | Improved | Improved | Improved | Improved | Improved | Improved |
|-------------|------------|----------|------|----------|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Traffic Safety | No Change | Improved | Best | Improved | Minor | Improved | Improved | Improved | Improved | Improved | Improved | Improved | Improved |
| Alignment Change | No Change | Improved | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations |
| Bicycle Access | No Change | Improved | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations |
| Hydraulic Performance | No Change | Improved | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations |
| Utility | No Change | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations | Pole Relocations |

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<th>Archeological</th>
<th>Historic Structures</th>
<th>Sites, and Districts</th>
<th>Hazardous Materials</th>
<th>Floodplain</th>
<th>Fish &amp; Wildlife</th>
<th>Deer Wintering Areas</th>
<th>Raptor, Threatened &amp; Endangered Species</th>
<th>Public Lands 41</th>
<th>LACPS - Section 6(f)</th>
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### OTHER

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* Total Costs do not include Right of Way costs at this time.

TSD = "To Be Determined"
INTRODUCTION

The alternative that is recommended herein is established by evaluating all factors associated with the project in relation to the objectives of the Purpose and Need Statement. The factors that are considered in selecting a recommended alternative include public benefit (safety), cost, local concerns, and impacts to private property, environmental resources and community character.

RECOMMENDED ALTERNATIVE:

ALTERNATIVE 5-B: Improve Roadway Profile Deficiencies at Key Locations Only, Widen and Reclaim Existing Pavement with Spot Full Depth

This alternative improves the profile related design speed and therefore the sight distance and safety at a few key locations. The existing pavement will be reclaimed and widened to match the proposed standard width. Full Depth reconstruction is recommended in the low lying segment just south of the LaPlatte River.

This alternative satisfies the project purpose and need and is selected because of the following:

1. This alternative was endorsed by the Town following the Alternatives Presentation Meeting.
2. This alternative improves safety, primarily by adding pavement width in the form of paved shoulders.
3. The horizontal alignment is maintained for the most part to reduce impacts to environmental resources and adjacent lands.
4. The proposed pavement reclamation is viewed as the most cost effective pavement treatment since full depth reconstruction is so much more costly and disruptive.

Detailed Summary of Recommendations:

The following is a detailed listing of recommendations to accompany the preferred alternative:

Cross Section:

The proposed roadway width represents a widening to meet the minimum state standards for this roadway. It will widen the existing roadway pavement 2 to 3 feet on each side and represents the most significant improvement of the overall project.

• Embankments:
  1:4 maximum side slopes are proposed except in areas where impacts to wetlands or other important resources should be minimized. Steeper slopes may be used in those areas with guardrail as appropriate.

Clear Zone:

There are areas along the project where large diameter mature trees, stone walls, utility poles and fences pose safety concerns because they fall within the clear zone, which typically runs between 10’ and 12’ measured from the travel lane. These obstacles should be removed, relocated or protected. Special consideration should be given to items that are deemed to be contributing to the historic significance of the properties within the corridor. These might include mature trees or stone walls. In those cases, alignment shifts should be considered to achieve the required clear zone. It is recognized that the installation of large amounts of new guardrail will have an impact on the visual character of the roadway, so it should generally be used last as a solution to solve clear zone issues.
Visual Impacts:
It is recognized that the wider typical section and obstacle free clear zones will result in a changed visual appearance along the corridor. This is an unavoidable consequence, but there are things that can be done to lessen the impact. One is to strictly control tree removal and clearing to within the grading limits and clear zone. The other is to limit the use of “engineered” slopes. In other words, the side slopes in both cut and fill sections should be made to vary in naturally flowing contours so they do not look so man made. The intent would be to blend the road into the natural landscape more than is typical of highway projects. The other method that can be employed is to do new plantings along the road to enrich the landscape.

Signing:
Signing along the corridor is somewhat sparse. Given the great open spaces and adequate sight distances, caution is advised against over signing for aesthetic reasons. Certain signing improvements are recommended however. There are relatively few side streets, so advance warning signs with the aside street names should be included so motorists have time to decelerate at the turns and to anticipate exiting and entering traffic at those locations. Speed limit signs are definitely needed since speeding has been noted as a major concern. The Town may also want to erect special signing that alerts motorists that this is still a residential area even if it is their commuting route. These signs may include such messages as “be courteous, residential area” as suggested at the Alternatives Presentation Meeting by one resident.

Traffic Calming:
In a quest to reduce speeds along the corridor many residents asked whether there are any traffic calming measures that could be employed. VHB suggested adding some type of gateway treatment near the bottom of the north side of the big hill by the Kohn property. This might consist of a raised and landscaped center island that forces a reduction in speed in order to negotiate the associated roadway curves. Since that time, VTrans developed draft traffic calming guidelines. One of the primary considerations in those guidelines is that the traffic calming measures be appropriate for the setting. One of their primary evaluation criteria is whether or not the measure will be employed in a village setting. In this case, it would be installed on a rural highway, so it is not considered a compatible use. Nonetheless, we recommend that the traffic calming options be explored during conceptual design, and either included, modified or discounted. We do not recommend traffic calming measures that involve vertical deflection, such as speed humps since the speeds are too high along this corridor.

Profile Modifications:
The recommended alternative includes profile modifications at a few locations where existing sight distances are far below standard for the posted speed. The hill by the Kohn property is the most notable location. We learned from residents that the profile had been lowered approximately 5 feet at that location in years past. The profile that is shown in the attached plan set will improve the design speed to just under 40 mph. During preliminary design the profile should be refined to consider the affects on the Kohn driveway and the entrance to the historic Cemetery. The ledge cut at the top of the hill will also include widening of the cut to accommodate the new typical section. The combined effect of the lower profile and the wider section will increase sight distance at the drives and will enhance safety through greater maneuvering and crash avoidance space.

Maintenance of Traffic:
The segments of Silver Street that are proposed to be fully reconstructed due to profile changes or pavement replacement will require special attention for the purposes of traffic control. The lowering of the hill at the Kohn property will require lane closures and even road closures during certain operations. Unfortunately, detouring traffic around such work zones will be difficult and inconvenient for some people. The rest of the road will have the pavement reclaimed in place and widened. This will require substantial segments of alternating one-way traffic during construction, and there will be periods when motorists will be required to drive on a granular surface.
Assuming that the upgrade of Silver Street is funded in part with federal funds the project will be reviewed subject to the National Environmental Policy Act (NEPA). The Federal Highway Administration (FHWA) reviews appropriate project documentation for compliance with NEPA regulations. Project Development proceeds through identification and quantification of environmental constraints. Coordination of Interagency reviews at the state and federal level are accomplished. Public informational hearings are also planned to obtain public comment. This information and feedback allows the development of project constraints and identification of the Least Environmentally Damaging and Practicable Alternative (LEDPA). When the LEDPA is determined and the level of proposed impacts become more defined, development and preparation of environmental permits will begin.

Conceptual and preliminary project engineering design is developed concurrently with the environmental studies and information gathering phase of project development. NEPA documentation is begun at the conceptual stage (project definition) and permitting is generally begun during preliminary design and concluded with semi-final plan completion. FHWA review of the NEPA documentation is generally completed at this time. The scope of environmental permits that may be required for this project, based upon current knowledge of the project, can be divided into state and federal jurisdictions. It should be noted that there exists an overlap of federal and state jurisdictions for some resources.

FEDERAL PERMITS:

National Environmental Policy Act of 1969 (NEPA)

NEPA requires the Federal Highway Administration (FHWA) to consider all environmental impacts for federally funded projects. Environmental issues may include air, noise and water quality; wetlands; water bodies; wildlife; floodplains; Threatened & Endangered species; historic and archaeological resources; social impacts; aesthetics etc. Based upon current information it is our opinion that a Categorical Exclusion will be prepared to satisfy the requirements found in 23 CFR Part 771. The VAOT’s Categorical Exclusion Environmental Analysis Form will be utilized in the preparation of the document.

Section 106 of the National Historic Preservation Act of 1966

Section 106 involves the identification and protection of potentially significant historic and/or archaeological resources. Section 106 permits consist of documentation and preservation if a resource is identified and determined to be significant or if no resources are found the project is cleared ("clearance") from further investigation. Investigations and reviews of documentation by state (State Historic Preservation Office) and federal (Advisory Council on Historic Preservation) agencies begins during resource identification and review.

Section 404 of the Clean Water Act of 1972

A Section 404 permit, administered by the Army Corps of Engineers (ACOE) regulates the discharge of dredged or fill material into waters of the United States. Two types of permits are issued which include General Permits and Individual Permits. General Permits are issued for minor projects with specific qualification requirements. An Individual Permit will be required for larger projects that do not meet the criteria of a general permit. Early indications are that an individual permit would apply to this project, but it is premature for a position on this as yet. ACOE representatives will be involved with the development of this project and will be consulted to determine the most appropriate permit coverage.

Section 404 permits are generally submitted later in the process due to the short life span of the permit however, submission should occur prior to semi-final plan submission.

Section 401 of the Clean Water Act of 1972

A Section 401 Water Quality Certification is required prior to issuance of a Section 404 permit. This certification is actually issued (or waived) by the Vermont Agency of Natural Resources (ANR) which assesses the project for water quality impacts. The certification usually requires the implementation of Best Management Practices (BMPs) to protect the quality of adjacent water resources.
A Section 401 Water Quality Certification is generally issued by the ANR as part of a Stream Alteration Permit, a Conditional Use Determination or Lakes and Ponds Permit.

STATE PERMITS:

Title 10 VSA Chapter 37 Section 905 (7) (Vermont Wetland Rules)
The Vermont Wetland Rules protect significant wetlands which are determined to be so significant that they merit protection under the Rules. Class I and Class II wetlands are significant wetlands which must be evaluated for wetland functions and values. A Vermont Agency of Natural Resources Water Quality Division (ANR) Wetlands Biologist will review a wetland to determine what functions the wetland provides. The Rules list certain activities in significant wetlands which are considered Allowed Uses. If the activity is not an Allowed Use then it is a Conditional Use and a Conditional Use Determination (CUD) is required. Conditional uses can occur within a significant wetland or within the buffer zone of that wetland. Meetings with the ANR early in the permitting process for informal reviews will allow identification of impacts requiring a CUD.

It is expected that a CUD application will be required for the project. Project impacts will be cumulatively considered under one application. Application will be made after preliminary plans are completed.

Title 10 VSA Chapter 41 Regulation of Stream Flow
This law protects all waters of the state and establishes the ANR as the certifying agency for the Section 401 Water Quality Certification that is required for obtaining Federal Section 404 permits. This permit is usually included with the CUD permit or a Stream Alteration Permit (SAP).

Consultation is required under Chapter 41 regulations when activities are proposed which alter or modify the course, current or cross-section of waters of the State. The Stream Alteration Permit process satisfies this requirement. The permit is obtained after preliminary plans are completed. The permit will be required for any work near the LaPlatte River and will require the implementation of Best Management Practices (BMP’s) to protect the water quality of the waterways.

Stormwater Permit
This project will require a stormwater permit. The new impervious area will exceed 1 acre. The stormwater rules, along with their interpretation, have been evolving rapidly over recent years. The impacts on the design, right-of-way, and funding needs for this project are expected to be significant under the current rules, and it is hoped that by the time the project is ready for the permit to be filed the rules have become more refined for linear projects such as this.

Act 250 Land Use Development Law
This law was established to protect and conserve lands and valuable resources and insure that the States resources are utilized in ways that are not detrimental to the public interest. The state environmental board and district environmental commissions review and regulate the use of lands under Act 250. Act 250 permits are granted only after it has been determined that the project meets the 10 criteria found in the Act. For transportation projects, if the activities are determined to be normal maintenance activities or the area of impact is under 10 acres then the project is most likely to be exempt from Act 250 review. A determination of jurisdiction from the District Environmental Coordinator can be obtained to ensure compliance with the Act 250 review process.

The Act 250 review process is initiated with a determination of jurisdiction at the resource identification and review phase of project development. It is estimated that this project will have in excess of 10 acres of disturbance and would therefore require an Act 250 permit.

Endangered Species Act of 1981
This law protects threatened and endangered plants and animals from development impacts. The Nongame and Natural Heritage Program supported by the Agency of Natural Resources Division of Fish and Wildlife maintains a data base of rare, threatened and endangered plants, animals and habitats in the state. If a threatened or endangered species is found within the project area a Threatened and Endangered Species (T&E) permit must be obtained prior to
moving the plant or animal. An investigation and inventory of each known area may be performed to document the existence of the known occurrence and determine a means for avoidance or minimization of project impact. The investigation will be coordinated through the Nongame and Natural Heritage Program and the U.S. Fish and Wildlife Service (USFWS). Initial coordination and investigations have begun and will continue as the project develops.

**Executive Order No. 52-80, 3 VSA App. Chapter 3**

This Order requires coordination with the Vermont Department of Agriculture Land Use Planner to minimize impacts to agricultural lands that are designated as Prime Agricultural Farmland. The Agriculture Land Use Planner has indicated minimal concern with impacts to Prime Agricultural Land for the current project concept.

Permitting for this project will begin with a review of all available resource data collected during field investigations and correspondence with resource agencies and meeting notes. Further progress in permitting and documentation will include preparation of the appropriate NEPA documentation. This is expected to include a Categorical Exclusion document, a Section 4(f) evaluation to identify the areas of use, and documentation and initiation of the Section 106 investigations of the project area. Further study of the rare, threatened and endangered species in the area may require systematic inventories of listed species to determine presence or absence within the project corridor. Additional coordination with the Nongame and Natural Heritage Program will occur as the project develops.

When the LEDPA has been agreed upon and preliminary plans are completed, the environmental permits will be prepared and submitted for the applicable state and federal permits.
The Hinesburg Village Historic District (0407-18) is comprised of 44 residential, religious, civic, and commercial buildings along Route 116 (Main Street) between Pond Road and Silver Street. Though listed on the State Register, the VACHP determined in 1982 that the district is not eligible for the National Register. Several buildings within the district directly abut the work area, however none of these buildings appear individually eligible for the National Register due to a loss of physical integrity (Figure X, Photos 1-3).

The ca. 1800 Partch-Lowell House at 2468 Silver Street (0407-15) is a 1 ½-story cape with a single-story wing (Photo 16). Since being listed on the State Register in 1980, the Partch-Lowell House has been drastically altered with new windows, synthetic siding, removal of a carriage shed from the wing, raising of the story height of the wing, reconstruction of the wing porch, and the addition of a front entry porch.

The ca. 1810 house at 706 Silver Street (0407-08) is a 2 ½-story, Federal wood frame house with a raised basement story of pink granite (Photo 4). Since being listed on the State Register, the house has been remodeled and the Federal doorway altered. A small subdivision has also been constructed on the hillside above the house.

The ca. 1812 Dorwin House at 1086 Silver Street (0407-09) is a remarkably well-preserved 2 ½-story, 5x2 bay, brick Federal house with a wood-frame 1 ½-story wing (Photos 17-18). The house has a centered entrance with a single, wide paneled door and fanlight. There are small half-elliptic windows in the half-story on the gable ends and four interior end chimney stacks. The property also contains several early twentieth-century agricultural buildings, including a dairy barn, milk house, and silo (Photo 19). The VDHP determined the Dorwin House (also known as the Gwendolyn Pearce House) individually eligible for the National Register in 1991.

The 1812 Marsh House at 706 Silver Street (0407-16) is a 2 ½-story, Federal brick house with a modillion cornice, door surround with fanlight, and quarter round windows in the half-story (Photos 5-6). There is a 1 ½-story ell and attached carriage shed projecting from the rear of the building. The VACHP determined this house individually eligible for the National Register in 1884.

The ca. 1820 Mead-Brown House on the east side of Silver Street (0407-10) is a 2 ½-story, Greek Revival house with an end gable orientation, centered entrance, and single-story wing (Photo 7). Since being listed on the State Register in 1980, a new addition has been added to the rear of the main block.

The ca. 1840 Mead-Tufo House at 1742 Silver Street (0407-11) is a 2 ½-story, brick Greek Revival house featuring an elaborate recessed center entrance with a large entablature, sidelights, and Ionic columns (Photos 8-9). The house also has some Italianate features added later, such as the paired brackets at the cornice line. The Mead-Tufo property also includes an early twentieth-century dairy barn across Silver Street and cleared agricultural land (Photo 10).

The ca. 1850 Mead-Delaire House at 1912 Silver Street (0407-12) is a 1 ½-story Greek Revival cape with a single-story wing. The house has a centered entrance with a classical door surround and a screen porch on the wing. The Mead-Delaire property also contains several later period agricultural buildings and extensive cleared agricultural land (Photos 11-13).

The 1852 Patch House on the east side of Silver Street (0407-13) is a 2 ½-story, Greek Revival end gable house with a pedimented half-story, sidehall entrance with sidelights and classical surround, and two single-story wings with engaged porches (Photo 14).

Note that the Isham House (Photo 15) at 2360 Silver Street (0407-14) is not listed in the State Register, and does not appear eligible for the National Register due to a loss of physical integrity.

The ca. 1800 Partch-Lowell House at 2468 Silver Street (0407-15) is a 1 ½-story cape with a single-story wing (Photo 16). Since being listed on the State Register in 1980, the Partch-Lowell House has been drastically altered with new windows, synthetic siding, removal of a carriage shed from the wing, raising of the story height of the wing, reconstruction of the wing porch, and the addition of a front entry porch.

The 1812 Dorwin House on the west side of Silver Street (0407-16) is a remarkably well-preserved 2 ½-story, 5x2 bay, brick Federal house with a wood-frame 1 ½-story wing (Photos 17-18). The house has a centered entrance with a single, wide paneled door and fanlight. There are small half-elliptic windows in the half-story on the gable ends and four interior end chimney stacks. The property also contains several early twentieth-century agricultural buildings, including a dairy barn, milk house, and silo (Photo 19). The VDHP determined the Dorwin House (also known as the Gwendolyn Pearce House) individually eligible for the National Register in 1991.

The ca. 1790 Smith Homestead on the east side of Silver Street (0407-17) is a 2 ½-story Federal style center-chimney, wood-frame house with a side gable orientation and center entrance (Photo 20). The staff of the VDHP noted on the 1977 survey form that this house is one of the best preserved Federal houses in northwest Vermont, retaining over 90% of its original materials and interior finishes. The property also contains several outbuildings and a small orchard.

On December 3, 2003, VHB conducted a field investigation to document the presence of historic resources that may be eligible for inclusion in the National and Vermont State Registers of Historic Places. Field investigation revealed two additional potentially eligible properties. The small cemetery on the west side of Silver Street, adjacent to the drive for 1652 Silver Street, is potentially eligible under Criterion Consideration D due to its age (Photo 21). The cemetery contains stones from the early-mid nineteenth century, when the majority of the land in this portion of Hinesburg was settled and developed. The farmstead at 3256 Silver Street also appears eligible for the National Register for its association with the regional dairy farming industry, and for its well-preserved Italianate house and agricultural buildings (Photos 22-24).

Field investigation also revealed that since 1993 there have been numerous modern intrusions into the determined National Register-eligible Silver Street Historic District, particularly at the north end of the district. Further review of the National Register status of this district may be warranted. However, several individual properties within the Silver Street Historic District appear to be individually eligible for the National Register for their association with the dairy farming context of the region or architectural style.

These include the ca. 1840 Mead-Tufo Farm at 1742 Silver Street (0407-11), the ca. 1850 Mead-Delaire...
Farm at 1912 Silver Street (0407-12), the 1852 Partch House on the east side of Silver Street (0407-13), and the ca. 1790 Smith Homestead on the east side of Silver Street (0407-17).

Photographs

1. Hinesburg Village Historic District: Old High School (1915, 0407.18.23) and Masonic Temple (1954, 0407.18.24), Main Street/Route 116 (not within project)

2. Hinesburg Village Historic District: House (ca. 1810, 0407.18.26), Main Street/Route 116 (not within project limits)

3. Hinesburg Village Historic District: Tobey-Emmons House (ca. 1840, 0407.18.25), Main Street, Route 116 (not within project limits)

4. Silver Street Historic District: 706 Silver Street (0407.08)
5. Silver Street Historic District: Marsh House, 1086 Silver Street (0407-09)

6. Silver Street Historic District: Marsh House, façade and south elevation

7. Silver Street Historic District: Mead-Brown House, east side of Silver Street (0407-10)

8. Silver Street Historic District: Mead-Tufo Farm, 1742 Silver Street (0407-11)
9. Silver Street Historic District: Mead-Tufo House, 1742 Silver Street (0407-11)

10. Silver Street Historic District: Barn on Mead-Tufo property, 1742 Silver Street (0407-11)

11. Silver Street Historic District: Mead-Delaire Farm, 1912 Silver Street (0407-12)

12. Silver Street Historic District: Mead-Delaire House, 1912 Silver Street (0407-12)
13. Silver Street Historic District: Mead-Delaire agricultural buildings, 1912 Silver Street (0407-12)

14. Silver Street Historic District: Partch House, east side of Silver Street (0407-13)

15. Isham House, 2360 Silver Street (0407-14) – not listed in State Register

17. Silver Street Historic District: Dorwin House, west side of Silver Street (0407-16)

18. Silver Street Historic District: Dorwin House façade, west side of Silver Street (0407-16)

19. Silver Street Historic District: Barn on Dorwin House property, west side of Silver Street (0407-16)

20. Silver Street Historic District: Smith Homestead, east side of Silver Street (0407-17)
21. Cemetery, west side of Silver Street, adjacent to drive for 1652 Silver Street

22. Italianate house, 3256 Silver Street

23. Dairy barn and silo, 3256 Silver Street

24. Auxiliary barn at 3256 Silver Street
The following is a list of comments/concerns raised by local residents surrounding the proposed Silver Street improvement project:

- One of the concerns raised by VHB was that roadway construction might cause significant delays during the morning and evening commutes. However, many residents claimed that delays were minor when Silver Street was resurfaced last summer.

- A resident, who claimed to be a local surveyor, stated that the right-of-way information shown along Silver Street for the preferred alternative was incorrect. Greg stated that right-of-way and property lines were established based on tax map info provided to VHB by the Town. VHB will investigate further with the Town to more accurately delineate right-of-way information.

- One area local residents would like to see improved is the intersection of Silver Street and Lewis Creek Road. According to local residents, numerous accidents have occurred at this intersection (primarily in the southbound direction) attributable to Silver Street's poor geometry, both horizontally and vertically, and lack of shoulders. Mr. Bakos stated that significantly improving the geometry of Silver Street would be difficult to do because of the large cost involved, and the number of homes surrounding this intersection. However, there are a few things that could be done to improve the safety of this intersection. Traffic calming devices, such as increased signing, raised median islands, and treating the asphalt by discoloring or roughing it, were all mentioned as acceptable measures for improving the safety of this intersection. Adding a widened or bypass shoulder in the southbound direction was also mentioned as a practical safety improvement. One local resident would like VHB to examine the drainage implications to modifying this intersection.

- Many residents raised concerns that widening the roadway would demolish the existing vegetation that line Silver Street. They stated that this vegetation acts as a sound buffer and protection against vehicles that may veer off of Silver Street. They also raised concerns that removing the vegetation may decrease the visual character of the corridor.

- Another section of Silver Street local residents felt was a problem was just north of Isham Farm. Owners of the Isham Farm stated their house has been hit by a couple of vehicles, all traveling southbound. Local residents stated that many commuters illegally use the straightaway just north of the Isham Farm for passing.

- The hill just south of the LaPlatte River Bridge is a concern. Residents would like VHB to improve the profile of this hill by filling in the dip (Station 14+400).

- The house, approximately 340 ft north of the Lewis Creek Road intersection, has moved.

- Another concern raised by a number of residents is the extensive amount of work recommended under the preferred alternative. Many residents believe that there are only a few critical areas throughout the corridor that need to be improved. One resident would like VHB to prioritize those areas where work is needed most.

- Many residents believed that reducing the posted speed limit and increasing the law enforcement would noticeably improve the safety of the Silver Street corridor. Town official Jon Trefry stated that local police officers have difficulty enforcing the speed limit because the lack of shoulders produces an added safety issue for the officers pulling vehicles over and the other vehicles traveling along Silver Street.
<table>
<thead>
<tr>
<th>Name</th>
<th>Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe Kiellman</td>
<td>277 Turkey Ln, 05461</td>
</tr>
<tr>
<td>Dan Duffy</td>
<td>1070 Silver St.</td>
</tr>
<tr>
<td>RicArd deBib</td>
<td>336 Turkey Lane</td>
</tr>
<tr>
<td>Rocky Martin</td>
<td></td>
</tr>
<tr>
<td>Jeanne Wilson</td>
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<td>Sandy White</td>
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<td>Lorna Arguera</td>
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<tr>
<td>Richard MacCain</td>
<td></td>
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<tr>
<td>Berry Langbeek</td>
<td>2053 Silver St.</td>
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<tr>
<td>Tom Hackett</td>
<td></td>
</tr>
<tr>
<td>Louise Ream</td>
<td>15 Lewis Crk</td>
</tr>
<tr>
<td>Chris Moorin</td>
<td>294 Shaw St.</td>
</tr>
<tr>
<td>Bobbi Stahler</td>
<td>0993 Silver St.</td>
</tr>
<tr>
<td>Ken Brown</td>
<td>87 Coyote Bridge Rd</td>
</tr>
<tr>
<td>Catherine Seidenberg</td>
<td>5175 Main Rd Huntington</td>
</tr>
<tr>
<td>Mark F. &amp; Jan B. Holt</td>
<td>2047 Silver St. Hinesburg 05461</td>
</tr>
<tr>
<td>Terry Harris</td>
<td>83 Nenon Rd, 05461</td>
</tr>
<tr>
<td>Nancy Gomer</td>
<td>520 Turkey Lane, 05461</td>
</tr>
<tr>
<td>Vicki Gomer</td>
<td>520 Turkey Lane, 05461</td>
</tr>
<tr>
<td>Howard Russell</td>
<td>1ST #1063</td>
</tr>
<tr>
<td>Jonathan Bremsy</td>
<td>492 Baldwin Rd, 05461</td>
</tr>
<tr>
<td>RicArd Bell</td>
<td>593 Silver St, 05461</td>
</tr>
<tr>
<td>Susan Bell</td>
<td></td>
</tr>
<tr>
<td>Jane &amp; Chris Moppell</td>
<td>344 Silver St.</td>
</tr>
<tr>
<td>Jon &amp; Jim A. &amp; M.</td>
<td>2360 Silver St.</td>
</tr>
<tr>
<td>Diane Johnson</td>
<td>80 Box 340</td>
</tr>
<tr>
<td>Gary F. Keller</td>
<td>1456 Silver St, 05461</td>
</tr>
<tr>
<td>Doody Schutte</td>
<td>49 Heron Rd Rd</td>
</tr>
<tr>
<td>Carol Bloomholt</td>
<td>1381 Silver St.</td>
</tr>
<tr>
<td>Mark Shudin</td>
<td>438 Mean Farm Rd.</td>
</tr>
<tr>
<td>Stephanie Scorer</td>
<td>307 Turkey Lane</td>
</tr>
<tr>
<td>Kathy Ferris</td>
<td>2503 Silver St</td>
</tr>
<tr>
<td>Jokell Fairbanks</td>
<td>2105 Silver St.</td>
</tr>
</tbody>
</table>
even the introduction of an escape bypass on the right of the southbound lane will not really solve the problem. Any attempt to alter the plan of the road or improve the sightlines would badly effect two historic properties. Indeed, short of buying the Hodgkins house (it's presently for sale) and squiggling the end of Lewis Creek Road far to the south (and no one can afford that), it seems that this is an alligator we have to live with.

Then there's the issue of speed. Many people seem to believe that reducing the speed on Silver Street will somehow improve something. I'm not convinced, at least from a safety standpoint. Nearly all of the houses on Silver Street are well back from the road, and I know of no place where small children are playing unsupervised anywhere near the road: so the residents are not greatly endangered by the present speed limits nor even the speeds at which drivers actually drive. (Some children, to be sure, walk home from school to houses at the north end of Silver Street; but they don't walk the whole length of the street, and an improved gravel shoulder might be sufficient for their needs.) It is true that drivers have had accidents from driving at speeds unsafe for the conditions. But in this day and age of people driving with a cellphone in one hand and a coffee mug in the other, that's going to happen at any speed.

I suspect that the issue of speed limits is really a surrogate for the true problem, a sort of alligator in sheep's clothing: the real problem, I believe, is traffic volumes, which have increased in recent years to really quite unacceptable levels. I maintain that homeowners, desperate to reduce the number of commuters using Silver Street, have fastened on the idea of severely reducing speed limits to discourage outside traffic. But the only way to make lower speed limits work is with more and more enforcement. I question how much money these same homeowners are willing to put into greater enforcement we'd have to increase the Hinesburg Community Police Force markedly to make greater enforcement workable, and anyway there must surely be better uses of police time than chasing cars up and down Silver Street.

Better, I should think, to study the issue of traffic volumes. Is there any way to divert traffic from this route? I am discouraged to hear that there is no discussion of this problem regionally. Indeed, it appears that no one has even been in recent contact with Monkton, the next town south, who themselves are unwillingly taxed by the same commuter traffic.

I confess that I haven't the imagination to conceive what solution might come from talks between the towns that are obliged to serve as sluices for all this traffic. But I am convinced that any significant upgrade of Silver Street beyond improving the pavement will damage the rural character of the road and will only lead to an increase of traffic. And I do not believe that any greater enforcement of speed limits is going to have a significant impact on the root cause of the problem, the traffic volumes.

Where do I come down on the options? Simple: mulch the sucker and resurface; correct the most glaring problems that can be corrected, that is, the two sides of the first big hill south of the village; do the minimum possible to the rest of the road to avoid encouraging any more traffic. Other than that, I can only suggest running like hell to stay
I agree with all that my husband wrote in his letter to you on February 21. In addition, I'd like to offer a few thoughts of my own.

Wherever widening of the road occurs, I believe it will have more than a minor visual impact on the rural aesthetic character of the corridor. It seems to me that you are softening the description of the disadvantage here. Increasing the shoulder width and filling and cutting the slopes will surely damage, if not kill, the trees along the roadside. In many places, the only trees are those along the roadside. Without the trees that line the fields, the whole road will look as barren as it does on the west side of the street just north of Isham’s farm where hayfields abut the road. In addition, for many of the houses, these trees provide both a visual and a sound buffer.

Where widening must occur, wouldn't it make sense where possible to do all of the work on the side of the road without the trees? For example, we have a tree line in front of our property on the west side, while across the street the field already is adjacent to the road and no trees would be damaged.

If widening the road results in making the road faster and easier for cars, there will be more cars using the road; and trucks, which shouldn't be using the road in the first place, will use it as well. Since the commuters accept the poor quality of the route through Monkton and Bristol, why make the street a grander road through Hinesburg?

I would like to quote my husband's letter here, but instead will simply say, please sign my name as well to his letter.

Jane B. Holt

PS Another rather picky concern - the yellow triangle of cut-and-fill on the west side at the very south end of the street in Hinesburg needs to be corrected before you finish your part of the project. If this is left unattended, the next people who get involved may not know that it is a computer error and I envision hard work ahead to convince them of same.
Bakos, Greg

From:  Jean Isham [jisham1@gmavt.net]
Sent:  Monday, February 28, 2005 11:57 PM
To:  Bakos, Greg
Subject:  Silver Street Improvements, Hinesburg, Vermont

I have given additional thought to the proposals made for improving Silver Street and had some further discussions with people on the street. An interesting note, one of my neighbors who is in her 80s, says that the road by Roger Kohn's driveway was lowered by 12 feet several years ago. She said they could walk from the road directly into the cemetery before they lowered it.

I would support the improvements in the hill by Roger Kohn's driveway, strategically widening the road to include shoulders where there are safety issues, taking steps to make the area where you turn onto Lewis Creek Road safer, avoiding significant impacts on wetland areas, not doing the 10' clear strip beyond the shoulders. Basically, I would like to see the character of the road substantially maintained while taking steps to improve safety.

Thank you for your presentation and what I felt was a very thorough report.

Jean Isham
2360 Silver Street
Hinesburg, Vermont 05461
jisham1@gmavt.net

Bakos, Greg

From:  Roomet [roomet@madriver.com]
Sent:  Tuesday, March 01, 2005 11:33 AM
To:  Bakos, Greg
Subject:  RE: Silver St. Improvements

Thank you for your response. Existing alternatives include Rte 116 which is a much busier road and runs parallel to Silver St., close to a mile away. Commuters traveling north of 116 don't mind the North Rd., but the Hinesburg-Richmond Rd. is posted at 35 (a limit we would love to see on Silver St.) Route 7 is a bit further away, but we would guess it is a more direct, if less pleasant route for much of the traffic (especially from Middlebury). Friends tell us they would take Spear or Dorset St. extensions except for the fact that these are better patrolled and they want to avoid the ticket.

Once again, this issue seems to pivot on the question on whether the town and Highway Dept. will make a choice for safety and the quality of a neighborhood or if they sacrifice these to the pressure of enabling passers-through to go faster on a road that will never be safe at speeds over 40 mph.

At 09:16 AM 3/1/05, you wrote:
> Thank you for your letter. It will become part of the project
> documentation. I liked one concept that you suggested, which is
> reducing the speed limit in dangerous areas. This would probably be
> supported by roadway policy in areas, such as the hill by the Kohn
> property, where the roadway geometry does not support the posted speed
> limit, even if we cut the hill down some more.
> > Under your item number 4 I am curious what you mean when you say "more
> > suitable alternatives exist". These are the types of things that are
> > easy to say in a comment letter, but without explanation of what the
> > alternatives are the comment loses the desired effect. If you could
> > elaborate I would be happy to replace your current letter with an
> > updated letter in the files.
> > I have received several other emails from residents which reflect
> > similar concerns as yours, and you should encourage your neighbors to
> > send written comments.
> > Thanks again.
> > Greg Bakos
> > -----Original Message-----
> > From: Roomet [mailto:roomet@madriver.com]
> > Sent: Monday, February 28, 2005 10:25 PM
> > To: Bakos, Greg
> > Subject: Silver St. Improvements
- The Isham house has been hit by a couple of vehicles. All vehicles were heading southbound.
  - Increased traffic coming out of farm
  - Some people use straightway north of Isham house for passing.
- There is significant favor for reducing the posted speed.
- There are concerns that removing some of the trees along the corridor will reduce the protection around certain houses.
- Look at filling in the dip just north of the Mead Cemetery.
- Consider prioritizing areas where work is needed the most.
- From Hinesburg public, there is considerable bike traffic along this corridor.
- Park & Ride study in Hinesburg in the very near future.
- Dangerous area near hill just south of LaPlatte River Bridge.

Alternatives Presentation Meeting – Silver Street
Hinesburg, VT
February 17, 2005 19:00

Attendees:  Greg Bakos, VHB – Presenter
Daniel Peck, VHB

Comments/Questions:
- During resurfacing last summer, Town did not experience dramatic delays due to flaggers controlling traffic.
- Right-of-Way information may not be correct. From Monkton town line north, right-of-way is supposed to be 66-ft, not 50-ft.
- Look at improving intersection at Lewis Creek Rd. Additional widening should help a little.
- Look at possibly avoiding existing vegetation along corridor, especially large trees close to the road.
- House at Station 11+400 has moved.
- Look at putting traffic calming near Lewis Creek Rd.
- More accidents than reported at Lewis Creek Rd.
  - Safety concerns are more for southbound traffic
  - Consider a widened or bypassed shoulder southbound
  - No sign indicating an intersection ahead
  - Investigate treating asphalt to get vehicles to slow down
    - Discoloration
    - Roughing the surface
- There are some concerns that improving the road would attract more commuters.
- Look at drainage in the area of Lewis Creek Rd.
Silver Street Improvements

Please send or email any additional comments by February 28th to:

Vanasse Hangen Brustlin, Inc.
Six Bedford farms, Kilton Road
Bedford, New Hampshire 03110

Attn. Mr. Gregory L. Bakos

Email: GBakos@VHB.com
Phone: (603) 644-0888
FAX: (603) 644-2365

Meeting date: February 17, 2005
Remarks:

[Handwritten notes on the page]

1. As residents of Hinesburg who live on Silver Street, we feel the volume and speed of traffic on this road has had significant adverse impacts on the residential qualities of our neighborhood. Any so-called improvements that encourage further speeds or volume of travel would further deteriorate those qualities.

2. Widening the road and improving lines of sight would encourage speed and volume.

3. Widening the shoulders as you propose would result in damage to trees and other hedgerow vegetation. The 28 foot roadway does not account for drainage ditches, power and telephone poles which will eliminate most of Silver Street’s old trees and hedgerows, and many front yards. This corridor will result in a significant adverse visual impact on our neighborhood.

4. For Hinesburg residents to seek road changes that result in high volume, high speed roads through some of our most scenic corridors to accommodate commuter traffic when more suitable alternatives exist makes no sense.

5. Strict speed enforcement could alleviate most of the safety concerns. Delineating 10 ft. travel lanes with center no passing stripes and stripes to separate the existing narrow shoulder from the travel lanes might have some traffic calming effects. Under no circumstances should the speed limit be raised. In fact, designating a 35 mph neighborhood speed limit should be considered (as on the Hinesburg-Richmond Road, a similar roadway). At no more than, reduced speed zones should be established in the unsafe sections. Speed limit and no passing signs should be prominently displayed.

6. Solutions for any unsafe areas as supported by historic accident records need to be discussed with residents living close to those areas. Such changes should have minimal impact on neighboring properties.

Thank you for your thoughtful inputs. We trust you will give some consideration to our concerns and suggestions.

Andres and Louise Roomet
Silver Street residents in Lewis Creek Road area.
Dear Mr. Bakos,

As a resident living on Silver Street I attended your two presentations over the past several months and I especially appreciate your engineering recommendations presented to us a couple of weeks ago. The compromises struck between improving road safety and maintaining the character of our rural road was well thought out and I feel effectively communicated through sound engineering recommendations. I hope that the process towards this approach to road improvement continues at a reasonable pace and we can see the road safety improve in the foreseeable future. As one who has to navigate the road on a daily basis, driving can become a dreaded activity say nothing of my several near collisions during walking or bicycling over the years.

Is there a possibility that I could obtain a copy of the site drawing depicting the length of the street which included abutter and traffic accident information? It was extremely helpful in understanding the numerous poor driving spots and the suggested renovation remedies. I believe it was a rather larger file in .PDF format which I can receive no problem at the following email. Thanks again for the engineering work you’ve done on this project.

Ray Keller, PE
Manager MEP Services
Bread Loaf Corporation
Phone 802-368-9871 x244
Fax 802-368-3915
RKeller@breadloaf.com
CONCEPTUAL COST ESTIMATES
EXPLANATION OF FACTORS

1. Roadway Factors

The total roadway cost, as derived using the factors given below, includes costs for utilities and erosion control cost does not include so called "special" items or items not common to most projects. The lump sum costs of items must be estimated and included in the total cost separately. A few examples of these special items are given below. The roadway factors to be used are:

- new construction = 1.76
- rural reconstruction = 1.72
- urban reconstruction = 2.35
- roadway/approach constr @ bridge replacement/rehab = 2.25

Special Roadway Items

Special roadway items would include, but are not limited to the following:

- PCC pavement costs (all factors based on AC pavement)
- Interchanges
- Noise or Glare Barriers
- Major utility items (eg. Sewage pumping station)

2. Bridge Factors

Use the factors below to calculate bridge costs:

- Welded plate girder bridges = 130 / sf
- Rolled beam or composite plate/girder bridges = 135 / sf
- Concrete rigid frame of light weight concrete slab = 240 / sf
- Bridge rehab = 160 / sf

Note: The first three cost factors as noted above are set up as the cost of removing an existing structure and replacing it with new. The designer may wish to modify (decrease) these values slightly when dealing with the installation of a new structure only.

Special Structure Items

Special structure items would include but are not limited to the following:

- Major channel excavation
- Tunnels
- Retaining walls
- Bridge lighting
- Cofferdams
- Railroad costs

3. Traffic and Safety Factors

The costs per linear foot as given below account for signs and lines only. They do not include the costs of "special" items such as traffic control signals and associated hardware, flashing beacons, street lighting, traffic control, or temporary traffic barrier.

Use $3.00 / ft. for projects that involve only signs and lines and that do not include intersections or traffic control signals. (Usually longer, rural / semi-rural projects)

Use $20.00 / ft. for signs and lines on projects that include intersections and add the lump sum costs of all "special" items as given below.

Note that shorter, urban projects result in higher linear costs.

Special T&S Items

Use $50 000 / traffic control system. (Includes lights, conduits, detector loops, pull boxes, etc.)

Use $25 000 / flashing beacon system.

4. Miscellaneous Special Items

There may be miscellaneous cost on some projects perhaps due to unique construction methods, unique items, or due to environmental conditions under which construction must take place.
<table>
<thead>
<tr>
<th>Project: Silver Street - Hinesburg, VT</th>
<th>Date: 20-Dec-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project #: 51522.00</td>
<td>By: Daniel M. Peck</td>
</tr>
</tbody>
</table>

### Conceptual Plans Estimate (Metric) - Reclamation (Sta. 12+250 - Mead Farm Road)

#### Earthworks
- Common excavation: 250 m³ $ 20.00 /m³ $ 5,000
- Earth borrow: 480 m³ $ 10.00 /m³ $ 4,800
- Solid rock excavation: 6 m³ $ 50.00 /m³ $ -

**Earthworks Cost**

$ 9,800

#### Pavement Structure
- Reclaiming Existing Pavement: 2540 m² $ 5.00 /m² $ 12,700
- Bituminous Pavement: 1000 ton $ 60.00 /ton $ 60,000
- Dense Graded Crushed Stone: 190 m³ $ 30.00 /m³ $ 5,700
- Sand subbase: 330 m³ $ 18.00 /m³ $ 5,940

**Pavement Structure Cost**

$ 154,340

#### Earthworks and Pavement Cost
- Roadway Factor: 1.72

**Roadway Cost**

$ 196,321

- "Special" roadway items (guardrail): 163 m $ 50.00 /ton $ 8,000

**TOTAL ROADWAY COST**

$ 204,321

#### Traffic & Safety Data
- Project length: 350 m $ 10 /m $ 3,500

**Traffic & Safety Cost**

$ 3,500

- T & S Factor: 1.72

**Factored Traffic & Safety Cost**

$ 6,020

- Special T & S Items: $ -

**TOTAL T & S COST**

$ 6,020

**TOTAL CONCEPTUAL ESTIMATED CONSTRUCTION COST**

$ 210,341

**CONSTRUCTION ENGINEERING (10%)**

$ 21,034

**CONTINGENCIES (10%)**

$ 21,034

**ROUNDED PROJECTED TOTAL (Exclusive of R.O.W. Costs)**

$ 260,000

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<tr>
<th>Project: Silver Street - Hinesburg, VT</th>
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</tr>
</tbody>
</table>

### Conceptual Plans Estimate (Metric) - Reclamation (Sta. 10+220 to Sta. 12+000) ALT 2

#### Earthworks
- Common excavation: 1000 m³ $ 20.00 /m³ $ 20,000
- Earth borrow: 3100 m³ $ 10.00 /m³ $ 31,000
- Solid rock excavation: 5 m³ $ 50.00 /m³ $ -

**Earthworks Cost**

$ 51,000

#### Pavement Structure
- Reclaiming Existing Pavement: 12840 m² $ 5.00 /m² $ 64,200
- Bituminous Pavement: 8750 ton $ 60.00 /ton $ 528,000
- Dense Graded Crushed Stone: 1300 m³ $ 30.00 /m³ $ 39,000
- Sand subbase: 2250 m³ $ 18.00 /m³ $ 40,500

**Pavement Structure Cost**

$ 683,700

#### Earthworks and Pavement Cost
- Roadway Factor: 1.72

**Roadway Cost**

$ 1,263,684

- "Special" roadway items (guardrail): 220 m $ 50.00 /ton $ 11,000

**TOTAL ROADWAY COST**

$ 1,274,684

#### Traffic & Safety Data
- Project length: 1780 m $ 10 /m $ 17,800

**Traffic & Safety Cost**

$ 17,800

- T & S Factor: 1.72

**Factored Traffic & Safety Cost**

$ 30,616

- Special T & S Items: $ -

**TOTAL T & S COST**

$ 30,616

**TOTAL CONCEPTUAL ESTIMATED CONSTRUCTION COST**

$ 1,305,300

**CONSTRUCTION ENGINEERING (10%)**

$ 130,530

**CONTINGENCIES (10%)**

$ 130,530

**ROUNDED PROJECTED TOTAL (Exclusive of R.O.W. Costs)**

$ 1,567,000
### Conceptual Plans Estimate (Metric) - Full Depth Reconstruction (Mead Farm Road to Sta. 13+200)

<table>
<thead>
<tr>
<th>Project:</th>
<th>51522.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>20-Dec-06</td>
</tr>
<tr>
<td>By:</td>
<td>Daniel M. Peck</td>
</tr>
</tbody>
</table>

#### Earthworks
- **Common excavation**: 2800 m³ $20.00 /m³ $56,000
- **Earth borrow**: 400 m³ $10.00 /m³ $6,000
- **Solid rock excavation**: 4500 m³ $50.00 /m³ $225,000

**Earthworks Cost** $287,000

#### Pavement Structure
- **Bituminous Pavement**: 1750 tons $80.00 /ton $140,000
- **Dense Graded Crushed Stone**: 2000 m³ $30.00 /m³ $60,000
- **Sand subbase**: 2500 m³ $18.00 /m³ $45,000

**Pavement Structure Cost** $245,000

#### Earthworks and Pavement Cost
- **Roadway Factor**: 1.72

**Roadway Cost** $915,040

- **"Special" roadway items (guardrail)**: 220 m $50.00 /m $11,000

**TOTAL ROADWAY COST** $926,040

#### Traffic & Safety Data
- **Project length**: 250 m $10 /m $2,500

**Traffic & Safety Cost** $2,500

#### Factorized Traffic & Safety Cost
- **T & S Factor**: 1.72

**Factorized Traffic & Safety Cost** $4,300

- **Special T & S Items**: $-

**TOTAL T & S COST** $4,300

**TOTAL CONCEPTUAL ESTIMATED CONSTRUCTION COST** $930,340

CONSTRUCTION ENGINEERING (10%) $93,634

CONTINGENCIES (10%) $93,634

ROUNDED PROJECTED TOTAL (Exclusive of R.O.W. Costs) $1,120,000

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### Conceptual Plans Estimate (Metric) - Full Depth Reconstruction (Sta. 12+000 to Sta. 12+250)

<table>
<thead>
<tr>
<th>Project:</th>
<th>Silver Street - Hinesburg, VT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>20-Dec-06</td>
</tr>
<tr>
<td>By:</td>
<td>Daniel M. Peck</td>
</tr>
</tbody>
</table>

#### Earthworks
- **Common excavation**: 300 m³ $20.00 /m³ $6,000
- **Earth borrow**: 900 m³ $10.00 /m³ $9,000
- **Solid rock excavation**: 0 m³ $10.00 /m³ $-

**Earthworks Cost** $15,000

#### Pavement Structure
- **Bituminous Pavement**: 750 tons $80.00 /ton $60,000
- **Dense Graded Crushed Stone**: 850 m³ $30.00 /m³ $25,500
- **Sand subbase**: 1050 m³ $18.00 /m³ $18,900

**Pavement Structure Cost** $104,400

#### Earthworks and Pavement Cost
- **Roadway Factor**: 1.72

**Roadway Cost** $205,368

- **"Special" roadway items (guardrail)**: 250 m $50.00 /m $12,500

**TOTAL ROADWAY COST** $217,868

#### Traffic & Safety Data
- **Project length**: 250 m $10 /m $2,500

**Traffic & Safety Cost** $2,500

#### Factorized Traffic & Safety Cost
- **T & S Factor**: 1.72

**Factorized Traffic & Safety Cost** $4,300

- **Special T & S Items**: $-

**TOTAL T & S COST** $4,300

**TOTAL CONCEPTUAL ESTIMATED CONSTRUCTION COST** $222,168

CONSTRUCTION ENGINEERING (10%) $22,217

CONTINGENCIES (10%) $22,217

ROUNDED PROJECTED TOTAL (Exclusive of R.O.W. Costs) $267,000
### Conceptual Plans Estimate (Metric) - Full Depth Reconstruction
(Sta. 15+380 to LaPlatte River Bridge)

**Project:** Silver Street - Hinesburg, VT  
**Project #:** 51522.00  
**Date:** 20-Dec-06  
**By:** Daniel M. Peck

#### Earthworks
- **Common excavation** 800 m³ $20.00/m³ $16,000  
- **Earth borrow** 500 m³ $10.00/m³ $5,000  
- **Soil rock excavation** 0 m³ $50.00/m³ -

**Earthworks Cost** $21,000

#### Pavement Structure
- **Bituminous Pavement** 450 ton $80.00/ton $36,000  
- **Dense Graded Crushed Stone** 450 m³ $30.00/m³ $13,500  
- **Sand subbase** 600 m³ $18.00/m³ $10,800

**Pavement Structure Cost** $56,300

#### Earthworks and Pavement Cost
- **Roadway Factor** 1.72

**Roadway Cost** $132,956

**TOTAL ROADWAY COST** $132,956

#### Traffic & Safety Data
- **Project length** 140 m $10/m  $1,400

**Traffic & Safety Cost** $1,400

#### Factored Traffic & Safety Cost
- **Special T & S Items** $2,408

**TOTAL T & S COST** $2,408

**TOTAL CONCEPTUAL ESTIMATED CONSTRUCTION COST** $135,364

**CONSTRUCTION ENGINEERING (10%)** $13,536

**CONTINGENCIES (10%)** $13,536

**ROUNDED PROJECTED TOTAL (Exclusive of R.O.W. Costs)** $163,000

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### Conceptual Plans Estimate (Metric) - Reclamation
(Sta. 13+200 - Sta. 15+380)

**Project:** Silver Street - Hinesburg, VT  
**Project #:** 51522.00  
**Date:** 20-Dec-06  
**By:** Daniel M. Peck

#### Earthworks
- **Common excavation** 2850 m³ $20.00/m³ $57,000  
- **Earth borrow** 2050 m³ $10.00/m³ $20,500  
- **Soil rock excavation** 0 m³ $50.00/m³ -

**Earthworks Cost** $77,500

#### Pavement Structure
- **Reclaiming Existing Pavement** 14890 m³ $5.00/m³ $74,450  
- **Bituminous Pavement** 6250 ton $80.00/ton $496,000  
- **Dense Graded Crushed Stone** 1200 m³ $30.00/m³ $36,000  
- **Sand subbase** 2050 m³ $18.00/m³ $36,900

**Pavement Structure Cost** $543,400

#### Earthworks and Pavement Cost
- **Roadway Factor** 1.72

**Roadway Cost** $1,239,948

**TOTAL ROADWAY COST** $1,239,948

#### Traffic & Safety Data
- **Project length** 2180 m $10/m  $21,800

**Traffic & Safety Cost** $21,800

#### Factored Traffic & Safety Cost
- **Special T & S Items** $37,496

**TOTAL T & S COST** $37,496

**TOTAL CONCEPTUAL ESTIMATED CONSTRUCTION COST** $1,289,444

**CONSTRUCTION ENGINEERING (10%)** $128,944

**CONTINGENCIES (10%)** $128,944

**ROUNDED PROJECTED TOTAL (Exclusive of R.O.W. Costs)** $1,550,000
### Conceptual Plans Estimate (Metric) - Full Depth Reconstruction

**Project:** Silver Street - Hinesburg, VT  
**Project #:** 51522.00  
**Date:** 20-Dec-06  
**By:** Daniel M. Peck

#### Earthworks
- Common excavation 25900 m$^3$ 20.00 $/m^3$ $519,000$
- Earth borrow 9680 m$^3$ 10.00 $/m^3$ $96,800$
- Solid rock excavation 2800 m$^3$ 50.00 $/m^3$ $140,000$

**Earthworks Cost**  
$796,800$

#### Pavement Structure
- Bituminous pavement 16000 ton 80.00 $/ton$ $1,280,000$
- Dense Graded Crushed Stone 18000 m$^3$ 30.00 $/m^3$ $540,000$
- Sand subbase 16500 m$^3$ 18.00 $/m^3$ $297,000$

**Pavement Structure Cost**  
$2,027,000$

#### Earthworks and Pavement Cost
- Roadway Factor 1.72

**Total Roadway Cost**  
$4,998,496$

#### Traffic & Safety Data
- Project length 5300 m 10 $/m$ $53,000$

**Traffic & Safety Cost**  
$53,000$

#### Factored Traffic & Safety Cost
- Special T & S Factor 1.72

**Total T & S Cost**  
$91,160$

**Total Conceptual Estimated Construction Cost**  
$4,969,616$

**Construction Engineering (10%)**  
$496,962$

**Contingencies (10%)**  
$496,962$

**Rounded Projected Total (Exclusive of R.O.W. Costs)**  
$6,000,000$

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### Conceptual Plans Estimate (Metric) - Spot Full Depth

**Project:** Silver Street - Hinesburg, VT  
**Project #:** 51522.00  
**Date:** 20-Dec-06  
**By:** Daniel M. Peck

#### Earthworks
- Common excavation 11000 m$^3$ 20.00 $/m^3$ $220,000$
- Earth borrow 11900 m$^3$ 10.00 $/m^3$ $119,000$
- Solid rock excavation 2850 m$^3$ 50.00 $/m^3$ $140,000$

**Earthworks Cost**  
$489,000$

#### Pavement Structure
- Reclaiming Existing Pavement 25000 m$^3$ 5.00 $/m^3$ $125,000$
- Bituminous Pavement 15500 ton 40.00 $/ton$ $1,240,000$
- Dense Graded Crushed Stone 11000 m$^3$ 30.00 $/m^3$ $330,000$
- Sand subbase 9000 m$^3$ 18.00 $/m^3$ $162,000$

**Pavement Structure Cost**  
$1,722,000$

#### Earthworks and Pavement Cost
- Roadway Factor 1.72

**Total Roadway Cost**  
$3,903,920$

#### Traffic & Safety Data
- Project length 5340 m 10 $/m$ $53,400$

**Traffic & Safety Cost**  
$53,400$

#### Factored Traffic & Safety Cost
- Special T & S Factor 1.72

**Total T & S Cost**  
$91,848$

**Total Conceptual Estimated Construction Cost**  
$3,994,768$

**Construction Engineering (10%)**  
$399,477$

**Contingencies (10%)**  
$399,477$

**Rounded Projected Total (Exclusive of R.O.W. Costs)**  
$4,800,000$
DATE: 1/28/2006
TIME: UNKNOWN
CONDITIONS: SNOW/SLIPPERICE
DESCRIPTION: SOUTHBOUND CAR SLID OFF THE ROAD
CAUSE: OPERATOR TRAVELLING TOO FAST FOR CONDITIONS.