

MEMORANDUM

(225241)

Date: September 30, 2019  
To: Stephen Pilcher, Town of Monkton Selectboard Chair; Mike Winslow, ACRPC  
Cc: Town of Monkton: Anne Layne (selectboard), Thea Gaudette (selectboard), Ben Hollwedel (road foreman), David Layn (fire chief)  
  
Subject: States Prison Hollow Road and Monkton Ridge Road Intersection Study Memorandum

The planning and engineering services of DuBois & King, Inc. (D&K) were retained by the Addison County Regional Planning Commission (ACRPC), in collaboration with the Town of Monkton, to provide planning and conceptual level design for the States Prison Hollow Road and Monkton Ridge Road Intersection Planning Study project. The following provides a summary of this project.

## 1. Background

In 2013 the Monkton Ridge Village Complete Streets Planning & Feasibility Study (2013 Scoping Study) was prepared for the Town of Monkton, Vermont by LandWorks. The goal of the 2013 Scoping Study was to consider traffic calming, pedestrian and bicycle mobility, and help plan for a future park and ride facility on the west side of Monkton Ridge. The 2013 Scoping Study looked at the following:

- Creating gateways to the Village;
- Providing pedestrian and bicycle facilities;
- Addressing intersection geometries at three Monkton Road intersections, including Bristol Road, States Prison Hollow Road, and Silver Street / Davis Road;
- Encouraging public transit and reducing overall traffic through a park and ride facility;
- Provide green space to enhance the Village environment and address parking;
- Improve signage at the Village approach areas and along Monkton Ridge; and
- Access management at the General Store.

The 2013 Scoping Study recommended the following improvements for the States Prison Hollow Road and Monkton Ridge Road intersection:

- Remove horizontal curve on States Prison Hollow Road approach, reducing the skew of the intersection and pulling the roadway south away from the Monkton General Store;
- Redevelopment of the driveway access points to the Monkton General Store;
- Relocation of a utility pole south of the existing intersection; and
- Modifications to the Monkton General Store parking area.

The Town of Monkton received funding through the Addison County Regional Planning Commission's (ACRPC) Addison County Transportation Planning Initiative to conduct this project, which includes a compilation of planning and early design for improvements to the States Prison Hollow Road and Monkton Ridge Road intersection.

## 2. Project Tasks Summary

This project includes a compilation of planning and early design for improvements at the intersection, building off the work that was done as part of the 2013 Scoping Study, and includes the following tasks.

### 2.1 Kick-Off Meeting

A Kick-Off Meeting for the project was held on May 15, 2019 at the Monkton Town Office. Representatives from the Town, ACRPC, and D&K were present to discuss the project, deliverables, assumptions, and schedule. At this meeting it was noted that the 2013 Scoping Study sketches for this intersection show improvements into the adjacent side road to the south of the intersection that extends down to Monkton Ridge Road. The Russell Memorial library is located on this side road, as well as parking spaces for the library. The project area was confirmed to be limited to the intersection, and not include potential improvements to the adjacent side road that were identified in the larger-scale 2013 Scoping Study. It was also confirmed that the elevation along Monkton Ridge Road would remain unchanged with this project. See Attachment 1 for Kick-Off Meeting notes.

### 2.2 Existing Conditions

The 2013 Scoping Study was reviewed in regards to existing conditions. In addition, a site visit was conducted to become more familiar with the intersection and both its' challenges and potential opportunities. In addition, D&K conducted topographic survey to use for developing a basemap and existing road profile along States Prison Hollow Road within proximity to the intersection.

### 2.3 Project Meetings

Steering Committee Meeting #1: A Steering Committee Meeting was held on September 4, 2019 at the Monkton Town office with representatives from the Town, ACRPC, and D&K. D&K presented a conceptual sketch of proposed improvements. The project area, layout, and profile was discussed to provide input on changes for D&K to make to sketches to move forward.

Steering Committee Meeting #2: Prior to Steering Committee Meeting #2, the Town Road Foreman, Ben Hollwedel, attended the September 9<sup>th</sup> Selectboard meeting to present sketches discussed at Steering Committee Meeting #1. At this meeting a road grade of 10% was suggested, instead of the 11% previously discussed. Steering Committee Meeting #2 was held via email on September 11. D&K confirmed the 10% grade via this email trail. In addition, it was noted that the potential for

closing the side road at the south side, at its' intersection with Monkton Ridge Road, was met with mixed reactions. In addition, the email trail also confirmed the length of 25' relatively flat section of States Prison Hollow Road approach.

A Public Informational Meeting was held on September 30, 2019 for the project. At this meeting the overall project was discussed, and the proposed improvements and road profile were presented. Comments regarding the project included wanting to make sure that the turning radii at States Prison Hollow Road are adequate, general parking related discussion, intersection control type, general safety concerns of the intersection, questions regarding the retaining wall on the General Store and who would pay for it, and the interaction between vehicles on the adjacent side road and States Prison Hollow Road.

Meeting notes for the above are included in Attachment 2. Additional project related correspondence are included in Attachment 3.

#### **2.4 Conceptual Plans & Conceptual Level Opinion of Probable Construction Cost**

As noted above, initial sketches were brought to Steering Committee Meeting #1 for discussion. These drawings were modified based on input received from two Steering Committee Meetings, one Selectboard meeting, and one Public Meeting. A conceptual level opinion of probable construction cost was developed for the proposed improvements shown in the Conceptual Plans. Further detail regarding the conceptual layout is given in the sections below. Conceptual Plans and a conceptual level opinion of probable construction cost are included in a later section of this memorandum.

Opinion of Probable Construction Cost estimates are included in Attachment 4. Conceptual Plans are included in Attachment 5.

#### **2.5 Technical Memorandum**

This memorandum constitutes the Technical Memorandum for this project.

### **3. Conceptual Layout**

Conceptual layout for this Study used the 2013 Scoping Study as a starting point for a conceptual design layout and adjusted based on the above tasks. The following is a summary of design considerations during the process of developing Conceptual Plans.

#### **3.1 Project Area Constraints and Deficiencies Considered**

The following are project area constraints and deficiencies noted either in the 2013 Scoping Study or during the site visit for this project that were used to help shape conceptual design:

- The horizontal curve along States Prison Hollow Road at the approach to the intersection is a concern. Providing a straight approach of States Prison Hollow Road to the intersection was desired and noted in the 2013 Scoping Study.
- There is a steep grade on the States Prison Hollow Road approach. The Vermont Agency of Transportation (VTrans) Standards were used as a guideline for developing the proposed profile of this road approaching the intersection.
- The pavement where the side street east of the intersection meets States Prison Hollow Road is approximately 100' wide and there is the potential to improve the access management at this location.
- The close proximity of Monkton General Store and undefined definition between roadway and parking is currently lacking.
- The 2013 Scoping Study references potential new drainage infrastructure. Drainage was considered during this project, however drainage improvements proposed are limited to new drive culverts needed due to the proposed changes in roadway profile. There is a catch basing on the opposite side of Monkton Ridge Road where during the next phase of design it will be important to determine where this outlets, as the outlet was not found during survey.
- The 2013 Scoping Study notes that based on surrounding land use, available parking spaces, and potential for a park and ride that considerable pedestrian traffic can be anticipated in this area. It is our understanding that at this time a future park and ride is not anticipated in the immediate vicinity of this intersection. It is our understanding that there are pedestrians that use this area to go between the Town Office, Monkton General Store, and parking areas. There has been generic discussion of potential future crosswalk(s) in the vicinity of the intersection. There is currently a crosswalk located on Monkton Ridge Road approximately 90-feet south of the intersection. Vermont Guidelines for Pedestrian Crossing Treatments (2015) recommend crosswalks not be placed where there are no connecting sidewalks or adequate shoulders (3-foot minimum). Because there are no sidewalks proposed between the existing crosswalk and the Store and shoulders are narrow, we do not recommend a crosswalk across the States Prison Hollow Road approach to the Monkton Ridge Road at this time.

### 3.2 Design Considerations

#### Profile of States Prison Hollow Road

The 2013 Scoping Study sketch suggests that States Prison Hollow Road be flattened starting at the intersection with Monkton Ridge Road and extending back approximately 90-feet from the intersection. D&K used topographic survey to assist in developing the proposed profile of States Prison Hollow Road, including a recommended length for the relatively flat (3%) grade at the approach. D&K presented three options to the Town in regards to the proposed road profile at the first Steering Committee Meeting: (1) a relatively flat (3% grade) section of States Prison Hollow

Road extending back as shown on the 2013 Scoping Study sketch, (2) a 20' length of relatively flat approach, and (3) a 25' length of relatively flat approach. Because the Monkton Fire Department is located on States Prison Hollow Road and fire trucks going through this intersection, the third option was developed to make it easier for vehicles such as fire trucks to maneuver through the intersection.

D&K showed two potential proposed road profiles to the Town for input at the first Steering Committee Meeting, one of which was 10% and a second showing 11%. VTrans standard A-76, Standards for Town and Development Roads, recommends a maximum of 10% grade. A 10% grade was preferred by the Town for development of Conceptual Plans.

#### Turning Radii at States Prison Hollow Road

The Conceptual Plans developed are able to accommodate a fire truck of 39' length (using vehicle tracking software within Cadd). There were concerns at the Public Informational Meeting regarding making sure that the turning radii of the States Prison Hollow Road will accommodate larger vehicles turning right from the States Prison Hollow Road at the intersection. The primary concern voiced at the public meeting was for agricultural vehicles. The turning radii shown on the Conceptual Plans presented at the Public Informational Meeting was tweaked in order to accommodate a WB-40 making this turn. It will be important at the next stage of design to solidify what the design vehicle is for maneuvering through this intersection.

#### Connection to Adjacent Side Road

As discussed at the Kick-Off Meeting, the conceptual plan design does not include the area along the side road between Monkton Ridge Road and States Prison Hollow Road to the southeast of the intersection. As directed during Steering Committee Meeting #1, the plans show tying back to existing conditions on the northern end of this side road. On the south side of this road plans show a potential future closing of the side road from the south, as directed by the Town. At the September 9, 2019 Selectboard meeting the potential for closing this road was met with mixed reactions. There was discussion with the Town that with improvements made at the project area intersection that it would be easier for vehicles to make a right turn onto States Prison Hollow Road from Monkton Ridge Road, and therefore there would be fewer vehicles using the side road as a cut-through to get to States Prison Hollow Road.

#### Adjacent Monkton General Store

Modifications at the adjacent Monkton General Store are not required for the geometric (horizontal and vertical) changes proposed for States Prison Hollow Road. However, there are improvements shown that are located on the property of the Monkton General Store as it relates to providing definition between the roadway and parking area for safety reasons, and improving the parking

delineation at the Store. This would include the construction of a retaining wall to maximize the parking at the store and also to optimize delineation opportunities between the roadway and Store. Prior to moving forward with the next phase of design, it should be determined the extent of which proposed improvements related to the Monkton General Store are eligible for funding depending on the funding source.

#### 4. Conceptual Level Opinion of Probable Construction Cost

A conceptual level opinion of probable construction cost (OPCC) was developed for the project for the conceptual design shown on the plans. The VTrans pay items and latest available 2-year and 5-year unit cost averages were used for developing this estimate. The conceptual level OPCC developed for this project is summarized as follows:

Opinion of Probable Construction Cost (OPCC) for Proposed Intersection Improvements, Conceptual:

|                            |                 |
|----------------------------|-----------------|
| OPCC (Conceptual Level)    | \$265,000       |
| <u>20% Contingency</u>     | <u>\$53,000</u> |
| Subtotal                   | \$318,000       |
| Town Administration        | \$32,000        |
| Engineering / Design       | \$48,000        |
| ROW Fees                   | \$10,000        |
| <u>Construction Admin.</u> | <u>\$38,000</u> |
| Grand Total Costs          | \$446,000*      |

\* not including retaining wall

Retaining Wall (conceptual level OPCC, including town administration, engineering/design, construction administration, and assuming no ROW fees due to its' benefit to the Store): \$200,000

An OPCC was developed for the same proposed improvements with a change in the road profile to 11% along States Prison Hollow Road. This was developed using the above as a baseline and applying adjustments to quantities based on approximate quantity changes based on changes in proposed roadway elevations. This was not developed based on revised cross sections, but instead approximated based on rough estimates at the planning level to changes in quantities based on road grade adjustments. The OPCC (Conceptual Level) Subtotal for this option is estimated to be \$198,000 (as compared to \$318,000 above); and the Grand Total Costs, not including the retaining wall, is estimated to be \$322,000 (as compared to \$446,000 above).

In addition, an OPCC was developed with the 11% grade on States Prison Hollow Road and no improvements at the Monkton General Store (no paving at Monkton General Store, no retaining wall, and no parking stall striping at the Store parking). For this option, the OPCC (Conceptual Level) subtotal is anticipated to be \$145,000; and the Grand Total Costs is estimated to be \$288,000.

## 5. Future Design Considerations

The following are items that will need further consideration and/or design during the next phase for this intersection:

1. Monkton General Store property
  - a. Prior to the next phase of design, the Town will need to determine which elements that are shown on property owned by Monkton General Store will be designed and constructed as part of the intersection project, taking into account the future funding source and determining the parking and retaining wall elements eligibility as it relates to the intersection. Due to safety concerns at the intersection and the need for the proposed intersection to provide delineation between the roadway and parking, these improvements are related to improving safety at the intersection. In addition, the proposed improvements will allow for improved circulation at the Store, which has been a safety concern as it is adjacent to the intersection and there are conflicting movements here.
  - b. The design of the retaining wall will need to be implemented in the next stage of design and engineering.
  - c. There is a catch basin on the west side of Monkton Ridge Road across from the intersection. The outlet of such could not be located during topographic survey. The Town road foreman believes the outlet is located on the north side of States Prison Hollow Road east of the Monkton General Store driveway. During the site visit for this project it was noted that this general location appears to be the most feasible location based on existing topography. The next phase of design for this project should include further investigations of this pipe, whether the outlet is buried, and consider options for improvements related to drainage as it relates to this catch basin and buried pipe, including potentially a new pipe and ditching at the outlet for adequate drainage.
  - d. The 2013 Scoping Study alternative sketch notates surface differentiation between the parking area and pump area. Whether or not this is included as part of the intersection project or a separate project by the Store owner is to be determined at a later time. Depending on the funding source, this may not be eligible to be part of a transportation infrastructure improvement project.
2. One utility pole will need to be relocated.
3. Grading at driveways and drive culverts along States Prison Hollow Road will need to be taken into consideration. Proposed improvements currently show two new drive culverts.
4. As discussed above, potential improvements that were identified in the 2013 Scoping Study in the vicinity of the adjacent side road in front of the Library are not part of this project.

5. Intersection control type was discussed at the Public Informational Meeting. There was interest by public attendees in making this intersection a three-way stop in order to open up gaps for States Prison Hollow Road to turn onto Monkton Ridge Road. Traffic analyses were not part of the scope of this project. If the Town would like to pursue a three-way stop or any type of flashing or signalization, it is recommended that the latest available Manual on Uniform Traffic Control Devices (MUTCD) be reviewed to determine whether the Town's desired intersection control type meets the appropriate MUTCD criteria. Correspondence from the ACRPC is included in Attachment 3 for reference in regards to the current criteria for multi-stop applications.

## 6. Short Term Improvements (interim steps)

This Study does not provide short term improvement alternatives for this intersection. The primary improvement being evaluated is a reconfigured intersection to a more standard "T" shaped three-leg intersection. There are no portions of this alternative that can be designed in advanced of the full intersection reconfiguration. However, the following are some items that could move forward in advance of the intersection project if the Town chooses to make interim changes:

- Add temporary definition between the road and the Monkton General Store parking area. This could potentially be some sort of material that is similar to what is used for speed bumps used for traffic calming.
- Relocate the utility pole located in the green space between Monkton Ridge Road and the side road in advance of the project.
- Realign the southern end of the side road where it meets Monkton Ridge Road to reduce opportunities for speeding along the side road. In addition, speed bumps or similar measure could be installed to reduce speeds of cut-through vehicles taking this road.
- Conduct further work to find the outlet of the catch basin on Monkton Ridge Road on the west side of the intersection.