

From: Goyette, Gregory <greg.goyette@stantec.com>  
Date: Tue, Dec 31, 2019 at 1:02 PM  
Subject: RE: Plainfield NH 028-3(41)  
To: dstrong@vtlink.net <dstrong@vtlink.net>  
Cc: Parizo, Erin <erin.parizo@vermont.gov>, Bram Towbin (hihoau@gmail.com) <hihoau@gmail.com>, Sasha Thayer <selectboard11@gmail.com>

Hello Dave, The following summarizes our review of existing water and sewer mains within the project limits and recommended next steps. Since Erin and I have been working closely with Bram and Sasha as well, we thought it would be a good idea to cc them as well until a primary point of contact has been established by the Town.

## SEWER

### Background and Initial Analysis:

Sewer mains run along both the north side and south side of US 2 from the west end of the project to the intersection with Main Street. The north side main is highlighted in green and south side in pink on the attached plan. The north side sewer main crosses over to the south side of US 2 and merges with the south side sewer main at sewer manhole #5 (SMH #5). From there, the sewer main runs along the south side of US 2 to the east end of the project.

Based on town maps, the existing sewer mains consist primarily of 8" asbestos cement (AC) pipe. Given the pipe material, the sewer main will be susceptible to damage during construction. AC pipe is brittle and highly susceptible to breaking under the loads and vibrations associated with construction equipment and activities. The pipe will be most susceptible to damage where the final roadway grade will be lowered since the bottom of roadway excavation will be closest to the pipe in these areas. We estimate 450 feet of sewer main is located in the highest risk areas. Pipes located outside of the highest risk areas may still be susceptible to damage depending on pipe condition and specific construction activities. If sewer pipe breaks during construction, it will need to be replaced as a change order likely resulting in additional cost and schedule delay.

### Recommendation:

Given existing pipe materials and likely age of the pipes, it is recommended that the Town plan for replacement of sewer mains within the project limits (approximately 720 feet).

### Next steps:

1. Run a camera through existing sewer mains to determine condition of existing pipe and location of services. Recommend camera be run from sewer manhole #1 (SMH #1) to sewer manhole #5 (SMH #5) and also from SMH #2 to SMH#6. VTrans will pay for and complete this investigation, likely sometime this spring.
2. Contract with an engineering firm to review pipe replacement recommendations, and prepare construction plans and cost estimate for the pipe replacement. The Town will need to fund this and contract with an engineering firm. Stantec can provide a proposal if the Town desires. Please advise.
3. Determine how to fund construction of the sewer main replacement.

## WATER

### Background and Initial Analysis:

Starting at the west end of the project, a water main runs along the south side of US 2 and crosses under the bridge on Main Street. At the intersection of US 2 and Main Street, the water main branches and continues along the south of US 2 to the east end of the project. The water mains are highlighted in orange and blue on the attached plan.

The size, material, and depth of the existing water main is currently unknown. For initial analysis purposes, it is assumed the depth of the water main is 6 feet below existing ground elevation. Based on this assumption, reconstruction of the intersection will result in impacts to the existing water main. The cover over the water main will be reduced by approximately 1 to 2 feet for approximately 200 feet along US 2 due to the lowering of the roadway grade, leaving only 4.5 feet of cover over the existing water main and possibly less if the water main depth is less than 6 feet below existing ground elevation. Reduced cover increases the potential for water to freeze within the main, especially under paved areas that are plowed during the winter.

In addition, approximately 100 feet of water main will be within the proposed subbase of US 2. Water main located within the subbase will be susceptible to damage during roadway excavation and subbase placement and compaction. Picture heavy excavator buckets digging around and possibly through water mains and vibratory equipment running next to and over the top of the water mains. If existing water main depth is less than 6 feet below existing ground surface, then more than 100 feet of water main will be located within the proposed subbase.

If the water main breaks during construction, it will result in a lengthy disruption to water service, and will need to be replaced as a change order likely resulting in additional cost and schedule delay. If the water main freezes post-construction, then the Town will need to replace the pipe; likely at a greater expense than if it were replaced during construction of the intersection.

### Recommendation:

It is recommended that the Town complete further investigation of the existing water pipe to determine horizontal location and depth of existing pipe and the length of pipe that should be replaced.

### Next Steps:

1. Perform subsurface utility engineering to determine exact depth and location of water mains at 50 foot intervals. VTrans will pay for and complete this investigation, likely this spring.
2. Based on results of SUE, determine which pipes should be replaced as part of the roadway project. The Town will need to fund this and contract with an engineering firm. Stantec can provide a proposal if the Town desires. Please advise.
3. Contract with an engineering firm to review pipe replacement recommendations and prepare construction plans and cost estimate for the pipe replacement. The Town will need to fund this and contract with an engineering firm. Stantec can provide a proposal if the Town desires. Please advise.

4. Determine how to fund construction of the water main replacement.

Hopefully this information helps facilitate discussions with Greg Chamberlin and the Selectboard. Let me know if you have any questions.

Thanks,  
Greg