



Stantec
5 Dartmouth Drive
Auburn, NH 03032

September 4, 2020
File: 195113194

Attention: Mr. Guy Scaife, Town Manager
Thetford Town Offices
3910 Vermont Route 113
P.O. Box 126 Thetford Center, VT 05075

Dear Mr. Scaife,

Reference: Rte. 132 Phase 2 – Roadway Rehabilitation and Reconstruction Options

Based on our recent discussions with you, it is our understanding that some town leaders are interested in considering additional alternative roadway rehabilitation approaches for Phase 2 of the Route 132 project in to the design approaches outlined in our July 9th letter.

The following are additional roadway rehabilitation approaches and associated conceptual level estimated construction costs for each option in order of associated costs from least to greatest:

OPTION#1 - Shim and Overlay

A shim and overlay option is a short-term, mostly cosmetic repair approach for a roadway with this level of degradation. After a few years, cracks would reflect through the new pavement. Frost heaves would be reduced in the first couple years after the repairs are made but the frost heaves and extensive roadway cracking would return in short order. This approach is not recommended for this roadway. A conceptual level Opinion of Probable Construction Costs is as follows:

Option 1A – Shim and Overlay w/out cross culvert repair.....\$1,345,000

Option 1B - Shim and Overlay with cross culvert repair.....\$1,680,000

OPTION#2 – Reclaim and Repave

This roadway repair option includes reclaiming and then repaving the entire roadway. This repair approach does not provide an expected service life equal to a full-box reconstruction or that of Option#3A. With this less costly option the service life is anticipated to be limited to 7 to 10 years prior to requiring resurfacing and some remedial repairs. In addition, we have seen premature cracking of recently completed roadways using this method within a year or two after completion. This repair approach also significantly limits the correction of deficient existing roadway geometry (vertical and horizontal curves) because once the roadway surface is reclaimed it is left in place then the road surface is regraded and then paved which includes 3.5" of ¾" binder asphalt pavement mix and an installation of 1.5" wearing course asphalt pavement. This approach does however allow drainage, guardrail, and signage improvements to be incorporated into the project. Based on the prior geotechnical and roadway assessment report, this approach is not recommended for the entire length of the roadway in Phase 2, but it could be applied in certain sections of the roadway; however

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significantly more geotechnical exploration (i.e.: soil borings) would be necessary to safely confirm this approach as suitable in certain sections of Phase 2.

Option 2A -- Reclaim and Pave.....	\$2,500,000
Option 2B -- Reclaim and Pave w/out Overlay.....	\$2,190,000
Overlay Cost the Following Year.....	\$ 310,000

OPTION#3 -- Reclaim, added Base Gravel, and Repave (Recommended)

This roadway repair option includes reclaiming the existing roadway pavement and base gravel to a depth of 8", the reclaimed material would be removed and stockpiled. Then the roadway will be excavated another 12", that material would be trucked and disposed of. Then the new roadway cross section would be installed that includes placement of 12" course of sub-base gravel, then placement of the stockpiled reclaim material to a depth of 8" and then the installation of 5" of pavement. This would provide a consistent roadway cross-section that is slightly more robust than the Phase 1 approach. This roadway repair approach provides an expected service life of greater than 15-years and allows correction of roadway geometry and improvements to the drainage systems, guardrail, and signage.

Option 3A -- Reclaim, added Base Gravel, and Repave.....	\$3,600,000
Option 3B -- Reclaim, added Base Gravel, and Repave w/out Overlay.....	\$3,260,000
Overlay Cost the Following Year.....	\$ 340,000

OPTION#4 - Full Box Reconstruction

A Full-Box roadway reconstruction, as recommended in the referenced geotechnical report for the roadway is an aggressive and expensive approach. This approach involves the removal, excavation and disposal of the top 3 ft. or so of the existing roadway and the replacement with an 18" to 24" layer of sub-base gravel, then the installation of 6" of base gravel course and then 5" of pavement is installed. This approach provides an expected 20-year service life and allows correction of roadway geometry and improvements to the drainage systems, guardrail and signage.

Option 4A -- Full Box Reconstruction.....	\$4,470,000
Option 4B -- Full Box Reconstruction w/out Overlay.....	\$4,130,000
Overlay Cost the Following Year.....	\$ 340,000

As noted, we have separated the overlay cost for Options 2, 3 and 4. Overlaying the project the year following the reconstruction work is a useful approach that can result in a better final product for the project.

However, it may be in the Town's best interest to include the overlay costs in the overall project bond vote to avoid using the following years paving budget or state paving grants for this one project.

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If you have any questions or need any additional information, please feel free to contact us

Respectfully Submitted,

Stantec



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