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Technical Memorandum

To: David Ford, P.E.
From: Daniel Rochette, P.E.
Date: December 16, 2019
Subject: **2017 Roadway Evaluation – November 2019 Update**

The Purpose of this memorandum is to provide updated budget information for the Town's use in CIP planning as a supplement to the Draft Summary Report dated April 2019. The budget information provided in the draft report was based on unit pricing for similar work completed in other communities in the Lakes Region of New Hampshire. Though these budgets are designed to provide the Town with anticipated CIP needs for as long as a twenty-year period (the design life of a newly constructed road), we recognize that communities have competing needs that make these budgets difficult to achieve. As a result, the Town has asked UE to identify reductions in the proposed plan to fit the with the Town's targeted budgets.

It is understood the Town appropriated a budget of \$800,000 for roadway maintenance and improvements (overlays, drainage, and reconstruction) in 2019 and \$900,000 for fiscal year 2020. It is also understood that the requested yearly budget increase following fiscal year 2020 would be \$50,000 per year through fiscal year 2028 where the project budget would be \$1.3M. Based on these parameters, we provide the budget as summarized in Attachment "A" and note the following:

- The Town's appropriated budget of \$900,000 for 2020 is 25% lower than the \$1.34M budget recommended in the April 2019 Draft report.
- The total updated budget over the next ten years of \$10.7M for 23.9 miles is approximately 16% lower than the total budget of \$12.78M for 34.6 miles recommended by UE over the same time.

It is also important to note that the scope of the April 2019 UE budget included instances of maintenance overlays where the Town's typical standard is to reconstruct some of these roads instead to get the maximum life span benefit and is therefore not a direct comparison. A cost per linear foot comparison over the extended ten-year shows that the UE recommended budget is 20% less than the linear footage price from Attachment "A" over the combined ten-years required to maintain the Town's current roadway program (\$70/LF and \$85/LF respectively). In other words, the cost of road reconstruction is higher. Further creating a budget gap.

UE recommends the Town endeavor to increase roadway budgets to maximum extent possible so that at minimum the yearly budget presented in the April 2019 Draft is reached and more is additional road reconstruction is planned.

Additional Considerations

The following is provided as additional information that can be considered by the Town in project planning.

Project Planning

The lengths presented in Attachment “A” is based on estimated linear foot costs. Since projects typically differ in scope, a range of linear footage costs should be considered when determining how much roadway could be completed on a single year given the available budget. The range of linear footage costs can also differ whether or not the work is completed by using in-house resources or selecting a general contractor by competitive bidding. Typical range of project costs per linear foot could be as follows:

- Projects completed by using town resources = \$70/LF to \$100/LF
 - Projects similar to Allen Road
- Projects solicited for competitive bids
 - Rural projects similar to Bryant Road = \$100/LF to \$150/LF.
 - These projects are typically limited to roadway reconstruction and drainage improvements.
 - Urban projects similar to Pine Street = \$300/LF to \$400/LF.
 - In addition to reconstruction and drainage improvements these projects are typically in the downtown area and could include sidewalk, curbing, and other landscape features.

Project Duration

From project inception through construction, and individual project can take typically as long as three years to complete. As a result, projects will generally fall into a three-year planning cycle requiring a single project to be itemized on the budget over the entire three-year period. The description of work over the three-period can be described as follows:

- Year 1 – Conceptual phase to identifies scope and preliminary construction budgets
- Year 2 – Design and permitting phase to finalize construction drawings and prepare Contract Documents to solicit bids
- Year 3 – Construction
 - Dependent on the size of project construction can take up to two years to complete. Some projects also have final paving and clean-up work completed in a fourth year.

Project Bundling and Warrant Articles

It could be cost effective for the Town to bundle and bond multiple infrastructure improvements into one project for a certain area or neighborhood. This creates a project with bigger scope and opportunity for contractors to provide better pricing. An example of this would be to bundle together roadway improvements in the Maplewood/Berrywood Drive where the Town is currently considering water main and stormwater improvements into a bonded warrant article. Combining roadwork into these types of projects also allows for additional roadwork to be completed outside the normal budget constraints.

ATTACHEMENT "A"

10-Year CIP budget Plan

2017 Roadway Assessment - 2019 CIP Update

11/18/2019

Description	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028	
	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)	Budget	Length (mi)
Town Projects	\$100,000	0.22	\$100,000	0.22	\$100,000	0.22	\$100,000	0.22	\$150,000	0.33	\$150,000	0.33	\$150,000	0.33	\$200,000	0.44	\$200,000	0.44	\$200,000	0.44
Competitive Bid Projects	\$550,000	0.69	\$650,000	0.82	\$700,000	0.88	\$700,000	0.88	\$700,000	0.88	\$750,000	0.95	\$750,000	0.95	\$750,000	0.95	\$800,000	1.14	\$800,000	1.01
Engineering	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A	\$50,000	N/A
Gravel Road Maintenance	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies	\$50,000	Varies
Overlay Program	\$50,000	0.53	\$50,000	0.53	\$50,000	0.53	\$100,000	1.06	\$100,000	1.06	\$100,000	1.06	\$150,000	1.57	\$150,000	1.57	\$150,000	1.57	\$200,000	2.10
	\$800,000	1.44	\$900,000	1.57	\$950,000	1.63	\$1,000,000	2.16	\$1,050,000	2.27	\$1,100,000	2.34	\$1,150,000	2.85	\$1,200,000	2.96	\$1,250,000	3.15	\$1,300,000	3.55

Assumptions

Town Projects - Length improved based on \$85/LF

Competitive Bid Projects - Length improved based on \$150/LF however could be as much as \$400/LF if in an urban area

Overlay Program - Length improved based on \$18/LF (22' pavement, 1.5" thickness, \$78 per ton, and placement of gravel shoulders)