

Northfield Tilton – 16147 –Rehabilitation Alternatives Matrix

June 6, 2013

Final Alternatives	Description	Advantages	Disadvantages	Cost
Alternative A: Two-Lane Temporary Bridge	A four-span temporary bridge was used in the median for the 1978 superstructure replacement and widening. This was necessary because the 1959 bridges were replaced from the pier caps up so staged construction wasn't possible. The temporary bridge spanned between towers supported on a reinforced concrete pile cap. The pile cap was 2 feet above Normal High Water on a minimum of eight H-piles. The bridge was salvaged to NHDOT, so it may still be available for use.	<ul style="list-style-type: none"> • Eliminates Staged construction of NB bridge deck, and eliminates or reduces staged construction of SB bridge deck. This decreases construction costs and length of construction. • Shorter construction duration lessens impact to travelers. • Does not separate same-direction traffic lanes. • Construction impacts only one barrel at a time. • Safer SB on-ramp merge, leave on SB bridge. • Opportunity for NHDOT to secure another temporary panel bridge. 	<ul style="list-style-type: none"> • Temporary bridge support will be required in/near Winnepesaukee River. • Temporary bridge support will be required near NHRR. • Pile installation may affect RR. • Additional RR coordination required. • Additional permitting required. • Roadway crossovers required. • Cost of temporary bridge – Approximately \$1.5 to 2 million price increase (15-20%+/- of total project cost) over crossover option. • Temporary bridge cross section will not be superelevated. • U.S. Rte 3 / NH Rte. 11/132 bridge has been replaced since the temporary bridge last used 1978, complicating the temporary alignment to avoid the bridge pier. 	Bridge – \$6,767,000 Roadway – \$3,754,000 Total - \$10,521,000
Alternative B: Northbound/Southbound Crossover with permanent minor widening	In this option, both existing bridges would be widened. The widening would take place on each side of each bridge, resulting in an outside overhang of 3' on both sides of each bridge. The required widening is 9" to 11" at each location, generally adding about 18" to 22" to the width of each bridge. The northbound barrel would be split first, with one lane being placed on the southbound barrel. The northbound bridge would be built in two stages, including the widening, with traffic shifting around each stage. The added width will then allow one of the southbound lanes to be placed with two northbound lanes on the northbound bridge. A single southbound lane will remain on the southbound bridge while the southbound bridge is rehabilitated and widened in two stages.	<ul style="list-style-type: none"> • Eliminates cost and associated impacts of temporary bridge option. • Minor widening allows four through lanes to be accommodated during crossover to northbound barrel • Median crossover work is largely "off-line." • Median crossover work may be less costly. • Median crossovers work may be left in place to facilitate future bridge replacement. • Closure pours should help mitigate live load deflections for portion of being constructed. • Removal and placement limits of bridge deck should allow similar beam deflections for closure pours. • Minor widening provides additional shoulder width in permanent condition. 	<ul style="list-style-type: none"> • Roadway crossovers required. • Less than ideal lane widths required - minimum of 24'-8" for two lane section and 14'-2" for single lane section. Preferred widths of 26' and 15' to allow 11' lanes and 2' shoulders. This configuration would be for one stage of construction, when one southbound lane is crossed over to the northbound barrel. • NB traffic is split, with no Exit 20 access for passing lane. • Substandard SB On-ramp merge distance, may result in a yield condition at the ramp end. • Affects both barrels of I-93 for entire construction duration. • Staged construction of both bridge decks will increase bridge construction costs. • Temporary shimming of the existing barrels may require guardrail replacements. 	Bridge – \$5,277,000 Roadway – \$3,649,000 Total - \$8,926,000