

Memo

To: Town of Caledon
From: Jason Stahl, Wood E&IS
Date: October 10, 2018
File: TP166090
cc: David Sinke, Wood E&IS
Re: **McLaughlin Road and Spine Road Class EA
Cost Estimate for Proposed Highway 410 Interchange Modifications**

Introduction

The following estimate has been prepared using the Ministry of Transportation Ontario (MTO) Parametric Estimating Guide (PEG), 2016. This guide is used by the MTO for costing of Ministry projects during conceptual planning and preliminary design phases. This document relies on historical bid price data, knowledge of specific parameters, and identifying correlations between costs and key factors. Given this, the costs provided in the PEG reflect the average construction costs for major types of work. However, the costs in the PEG (and by extension this estimate) do not include property acquisition (including purchasing and legal fees) costs of moving or altering utilities or building removals. Engineering costs such as design engineering, contract administration, construction inspection, or material testing are also not included.

The following categories from the 2016 PEG were used to complete a cost estimate based on the Spine Road / Hurontario Street interchange preliminary design as shown at the PIC held on July 5, 2018:

- Section 4: New Bridges
- Section 7: New Illumination and Signals

Section 4: New Bridges

New flyover for NB ramp (Steel Beam Box Girder)

- Total deck area 700 sq.m
- 2016 PEG Typical Cost Range (Table 14) = \$2,200 - \$5,200 / m²
- Assume \$5,000 / m² (due to curved structure, lack of repetition of elements, and relatively narrow bridge)
- Estimated Cost = \$3,500,000



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Section 7 – New Illumination and Signals

With the proposed modifications, approximately 5 high mast lights will need to be relocated. Based on the 2016 PEG (Table 30), High Mast Lighting costs approx. \$125,000 per pole. Assuming all 5 lights will need to be relocated, the estimated cost is \$625,000.

The new roadway will also require new light standards to illuminate the proposed roadways. For the new intersection with Spine Road, Hurontario Street, and the on/off ramps, approximately 6 new conventional light standards will be required. In addition, approx. 15 existing light standards will need to be removed and replaced. Based on the 2016 PEG (Table 30), conventional light standards cost approx. \$30,000 per pole. Assuming all 15 existing light standards will need to be relocated, and 6 new light standards will be required, the estimated costs for this portion of the work is \$630,000.

Additionally, 3 new traffic signals are required at the following locations: Valleywood Boulevard/Snelcrest Drive/Royal Valley Drive, Highway 410 northbound off-ramp/Valleywood Boulevard, and Spine Road/Valleywood Boulevard/Hurontario Street/Highway 410 off and on ramps. Based on the 2016 PEG (Table 32), signals cost approx. \$60,000 per intersection leg. The estimated costs per intersection is as follows:

Intersection	Estimated Cost
Valleywood Boulevard/Snelcrest Drive/Royal Valley Drive	\$240,000
Highway 410 northbound off-ramp/Valleywood Boulevard	\$180,000
Spine Road/Valleywood Boulevard/Hurontario Street/Highway 410 off and on ramp	\$240,000
TOTAL ESTIMATED COST	\$660,000

Other Works not identified by the 2016 PEG

The 2016 PEG does not itemize ramps or interchange work separately, and instead relies on mainline length and assumes that the area to be estimated crosses through multiple interchanges. This approach is not applicable to the estimate for the proposed interchange modifications. As such, the estimate has been supplemented with unit rates determined by Wood E&IS's experience with rural and urban roadway construction. Based on historical data from similar projects, construction costs are roughly \$2,500/lane/m. This unit rate is inclusive of the following: widened pavement platform or new roadway, left and right turn lanes at intersections, concrete curb & gutter, storm sewer, stormwater management, structural culverts (less than 10m span), removals, pavement markings, signage, multi-use trail or sidewalk, landscaping, and traffic staging. The

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following table summarizes the number of lanes and length for the various alignments for the proposed interchange modification:

Road Segment	# of Lanes (through lanes only)	Length of Segment (m)	Estimated Cost
N-E/W Ramp	2	400	\$2,000,000
Spine Road (to end of turning lane tapers)	4	170	\$1,700,000
Hurontario Street (to tie-in with existing at Collingwood Avenue)	4	230	\$2,300,000
Valleywood Boulevard (from new intersection to existing overpass)	4	220	\$2,200,000
Valleywood Boulevard (from existing overpass to tie-in with existing at Snelcrest Drive)	4	260	\$2,600,000
S-E Ramp	1	510	\$1,275,000
E-N/S Ramp	2	480	\$2,400,000
E/W-N Ramp	1	910	\$2,275,000
TOTAL ESTIMATED COST			\$16,750,000

Summary

In summary, the total estimated cost *without property acquisition (including purchasing and legal fees), moving or altering utilities, building removals, engineering, contract administration, construction inspection, or material testing* is as follows.

Item	Estimated Costs
New Bridge	\$3,500,000
High Mast Lighting	\$625,000
Conventional Lighting	\$630,000
Traffic Signals	\$660,000
Other Works not identified by PEG	\$16,750,000
Sub Total	\$22,165,000
Contingency (30%)	\$6,649,500
TOTAL ESTIMATED COST	\$28,814,500