

Project Delivery Review and Cost Estimating – Attachment 4

Construction Risk Factors

Construction Risk Factor	Description ¹	Range (% of Construction Cost)	
		Transportation (new infrastructure)	Water/ wastewater linear & facilities
Geotechnical Risk	<p>Uncertainties tied to subsurface and/or groundwater conditions, which can require specialized measures like blasting, drainage, material replacement, and other special construction methods. Potential scenarios:</p> <ul style="list-style-type: none"> • Ground and <u>soil</u> conditions are considered average; • Ground conditions likely include weathered silty <u>clay</u>, silty sand, or sand underlain by grey silty clay; • Shallow <u>bedrock</u> conditions are expected; • The project is expected to traverse areas of wetland where <u>peat</u> might be expected; or • Special <u>hydro-geological</u> conditions are expected. 	<ul style="list-style-type: none"> • 5% (soil) • 15% (clay) • 50% (bedrock) • 65% (peat) 	<ul style="list-style-type: none"> • 1% -15% (soil) • 1% - 10% (bedrock) • 5% - 10% (grey silty clay) • 1% - 10% (hydro-geological conditions)
New Design Standards	Potential changes to City, provincial, federal or other applicable standards and guidelines for design, materials, and infrastructure specifications.	0% - 1%	1% - 5%
AODA Compliance	Potential cost impacts from evolving requirements under the Accessibility for Ontarians with Disabilities Act.	0% - 1%	Not applicable
Phasing of Implementation	When a project is built in stages rather than its ultimate configuration, requiring separate tendering and construction efforts.	2.5%	2% per year
Planning, Design & Land Use Approvals	Potential delays or changes in planning, design, and land use approvals, or projects involving federal and provincial approvals/ partners, that can impact project timelines and costs, and which may lead to redesigns, additional studies, or extended approval processes. For roads projects that pass through Design Priority Areas, special approvals and design enhancements such as improved landscaping, pedestrian and cyclist infrastructure, or compliance with urban design standards may be required.	0% - 5%	5% - 10%
Environmental Assessment	Costs related to completing or updating environmental assessments required by legislation, including potential amendments for older or expired studies.	5%	5% - 10%

¹ For detailed background studies, refer to:

- Update of Cost Calculations for Road and Transit Projects in the 2013 TMP Affordable Plan (IBI Group, 2017).
- 2020 Class D Capital Cost Estimating User Guidelines – Water and Wastewater Infrastructure Projects (Ainley Group, 2020).