

Linear Infrastructure (Regional/Municipal)

The following checklist has been compiled to assist the applicant in preparing their application for approval under the Conservation Authorities Act and Ontario Regulation 41/24. This checklist is valid for a period of six months following issuance. The level of detail required in the application will depend on the proposed works, as well as the natural hazards and environmental conditions on site. We recommend that applicants contact Conservation Halton staff prior to submitting the application to determine what level of detail is deemed appropriate.

This checklist **must be returned** with the Permit application indicating in the appropriate spaces that all required information has been provided.

PROJECT TITLE:	DATE:
LOCATION:	CH FILE NO:
REGIONAL FILE NO:	

		Applicable	Provided
General Submission Requirements			
Application Form	Completed and signed application form. <i>At a minimum, the landowner must sign the form. If an agent is representing the landowner, the agent must also sign the form.</i>	<input type="checkbox"/>	<input type="checkbox"/>
Application Fee	Non-refundable administrative fee as per category____ on the current year fee schedule attached to permit application at time of submission.	<input type="checkbox"/>	<input type="checkbox"/>
Electronically Submitted	All materials submitted electronically on a flash drive or through digital transfer.	<input type="checkbox"/>	<input type="checkbox"/>
Project Description	Detailed design brief for projects that underwent an environmental assessment. The brief should: a. Articulate commitments made during the EA and explain how these commitments have been fulfilled in the 90% detailed design submission b. Confirm project scope, and the preferred alternative solution and design and outlines any changes since the EA was completed	<input type="checkbox"/>	<input type="checkbox"/>
Photographs	Photographs of the watercourse, banks, adjacent vegetation and/or representative vegetation communities (if applicable) and existing crossing (if applicable) during ice-free conditions.	<input type="checkbox"/>	<input type="checkbox"/>
Drawings	Digital drawings in standard metric scale. See 'Drawing Requirements' section.	<input type="checkbox"/>	<input type="checkbox"/>
Reports	Digital reports listed under 'Technical Study Requirements'.	<input type="checkbox"/>	<input type="checkbox"/>

		Applicable	Provided
Qualified Persons	Where a drawing or report is required to be prepared by a P.Geo., P.Eng., OALA, or OLS, it must be stamped, dated and signed.	<input type="checkbox"/>	<input type="checkbox"/>
Drawing Requirements			
Digital Copies	<p>Technical drawings and plans provided in the most recent version of AutoCAD and properly georeferenced to real world coordinates (i.e. NAD83, UTM, Zone 17). File formats in order of preference are dgn, dwg, and dxf.</p> <p>GIS data and mapping should be submitted in an acceptable ESRI format and be properly georeferenced to real world coordinates (i.e., NAD83, UTM, Zone 17). It is highly desirable that mapping related data be submitted in ArcGIS Geodatabase format, containing all spatial, attribute, metadata and spatial joins/data rules. ESRI shape file format is an acceptable alternative.</p>	<input type="checkbox"/>	<input type="checkbox"/>
Topographic Survey (Culverts & Bridges)	<p>Detailed topographic survey of the site by an OLS or qualified professional extending a minimum ___m upstream and downstream of the limits of the proposed crossing and 15m beyond the right-of-way, with information collected at 1m intervals along the creek. The survey is to identify/confirm/include items such as:</p> <ul style="list-style-type: none"> • Creek inverts, creek thalweg • Stream bank locations (top and bottom of bank) • Existing crossing details (low cord; obvert/invert, wing-walls, parapet walls, etc.) • Observed water level • Survey datum • Dams/weirs/knick points • Slopes/valley walls/retaining walls (top and bottom of bank) • Limits of wetland, staked by CH • Ditch lines • Benchmarks • Date surveyed, etc. 	<input type="checkbox"/>	<input type="checkbox"/>
Plan View(s)	<p>Plan view(s) showing existing conditions and proposed development conditions including:</p> <ul style="list-style-type: none"> • Detailed grading (clearly illustrate how the proposed works will blend in with the undisturbed areas) • Limit of work/disturbance • Watercourse (bankfull width) • Location of boreholes • Survey datum • Meander belt • Culvert/Bridges • Vegetation • CH staked wetland limit • Structures/buildings • Utilities/infrastructure • Location of cross-sections and profile views, etc. <p>• Location of regulated features, regulation limits and applicable setbacks, specifically:</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/>	<input type="checkbox"/>
Aerial Photograph(s)	Plan view of the proposed works and limits of disturbance (or other, specifically _____), superimposed over top of a recent aerial photograph of the site. Please specify date of imagery.	<input type="checkbox"/>	<input type="checkbox"/>

		Applicable	Provided
Profile View(s) (Culverts and Bridges)	Existing and proposed longitudinal profile view (s) of the structure and channel (extending a minimum ___m upstream and downstream of crossing) clearly illustrating the existing conditions and proposed development conditions. Drawings must clearly illustrate the works and its interface with the upstream and downstream watercourse reaches (creek invert, bank details) that are to remain undisturbed. Countersinking of closed bottom culverts must be clearly demonstrated.	<input type="checkbox"/>	<input type="checkbox"/>
Profile View(s) (Storm Sewer Outfall)	Existing and proposed longitudinal profile view(s) of the storm sewer and outfall channel along the centreline to the bottom of the bed of the main channel.	<input type="checkbox"/>	<input type="checkbox"/>
Profile Views (Underground Utilities)	<p>Proposed profile view of the utility, entry and exit pits, and any mitigation measures (e.g. trench plugs), extending through the regulated area. Borehole logs, identifying soil conditions, if available should be provided on the drawing.</p> <p>For creek crossing, the thalweg of the channel or crossing structure inverts must be shown relative to the depth of utility crossing. The 100 year channel scouring should be delineated, if determined.</p> <p>For crossing of wetlands, wetland bathymetry relative to the depth of utility crossing must be provided.</p> <p>Please consult with staff regarding the appropriate depth of the utility crossing.</p>	<input type="checkbox"/>	<input type="checkbox"/>
Existing Utility	If an existing utility is to be abandoned, detailed information of the abandoning must be identified and labelled.	<input type="checkbox"/>	<input type="checkbox"/>
Channel/ Wetland Restoration	Existing and proposed plan, cross-sectional and longitudinal views of the natural feature, clearly illustrating restoration of the area to existing conditions or better. Provide details of proposed features (e.g. pools, riffles, etc.), as well as tie-in to the existing channel. For creek crossings, creek invert, low flow channel, bank details, overall gradient, etc. must be shown).	<input type="checkbox"/>	<input type="checkbox"/>
Cross-sectional View(s) (Culverts & Bridges)	Existing and proposed cross sectional views of the structure, wing walls, footings, etc., as well as the upstream and downstream watercourse. Bankfull width, creek inverts and low flow channel must be illustrated. Countersinking of closed bottom culverts must be clearly demonstrated.	<input type="checkbox"/>	<input type="checkbox"/>
Cross-sectional View(s) (Storm Sewer Outfall)	Existing and proposed cross sectional views of the outfall structure and connecting channel.	<input type="checkbox"/>	<input type="checkbox"/>

		Applicable	Provided
Cross-sectional View(s) (General)	Existing and proposed cross-sectional and/or profile views of the intended works. Drawings should be representative of the existing and proposed grades as shown on the plan view drawings. Specifically, Conservation Halton requires the following be represented through appropriate cross sections/profile views: _____	<input type="checkbox"/>	<input type="checkbox"/>
Substrate Materials	Type, size/gradation and depth of appropriate substrate material. Analysis supporting the selected sizing must be provided. Details of how granular or native materials will be mixed into the substrate to fill the void spaces must also be included.	<input type="checkbox"/>	<input type="checkbox"/>
Existing Vegetation	A vegetation inventory (including scientific names) and Tree Preservation Plan. Tree protection fencing location and details must be illustrated on the drawings. Recommend that Conservation Halton's <i>Guidelines for Landscaping and Rehabilitation Plans (2024)</i> be followed available at www.conservationhalton.ca .	<input type="checkbox"/>	<input type="checkbox"/>
Proposed Vegetation	Details on restoration, including a locally native, non-invasive seed mix for disturbed areas as well as compensatory trees and/or shrubs must be indicated on the drawings (including scientific names). Follow Conservation Halton's <i>Guidelines on Landscaping and Rehabilitation Plans (2024)</i> , available at www.conservationhalton.ca unless as directed below: _____	<input type="checkbox"/>	<input type="checkbox"/>
Staging, Phasing and Access Route Plans	Details regarding the sequence of construction with consideration of site management, best management practices, and aquatic/terrestrial timing window restrictions. The construction sequence should consider: <ul style="list-style-type: none"> • Location of Site Trailer • Access route(s) • Vegetation removal, • In-stream works, • Wildlife rescue plans, • Seasonal timing of landscaping and bioengineering, • Stockpiling operations, etc. <p>The full limits of disturbance for access to the site must be delineated with details regarding temporary crossings (if applicable). Efforts to minimize the extent of the disturbance must be demonstrated.</p>	<input type="checkbox"/>	<input type="checkbox"/>
Erosion and Sediment Control Plans	Details regarding sediment and erosion control measures, site dewatering, equipment, materials, access to and from work area, monitoring, site supervision, etc. See <i>Erosion & Sediment Guidelines for Urban Construction</i> prepared by the Greater Golden Horseshoe Area Conservation Authorities (www.sustainabletechnologies.ca) for additional guidance.	<input type="checkbox"/>	<input type="checkbox"/>
	Above plan is to be prepared by a qualified professional (i.e. CISEC, CPESC or an approved equivalent).	<input type="checkbox"/>	<input type="checkbox"/>

Technical Study Requirements			
<i>(Studies pertaining to flooding and erosion hazards must be completed in accordance with the Ministry of Natural Resources & Forestry (MNRF) Technical Guidelines (MNR, 2022) and current CH Guidelines.</i>			
Hydraulic Analysis	A hydraulic analysis by a qualified P.Eng to verify that the proposed works will not increase flooding risks to life or property. The analysis must verify that there will be no increased flood levels on adjacent properties and no increased on-site flood risks. The assessment must be completed for the full range of rainfall events (typically 2, 5, 10, 25, 50, 100 year and Regional Storm). A hard copy and digital copy of all models must be provided and must be accompanied by a summary table of pre and post development flood elevations. The source of the hydraulic model must also be specified. A plan view drawing showing the existing and proposed flooding hazard limit as well as the location of hydraulic cross-sections overlain on an existing topographic mapping and/or grading plan (if grading changes are proposed) must be provided.	<input type="checkbox"/>	<input type="checkbox"/>
Additional Engineering Analysis	Demonstration by a qualified P.Eng that the crossing is providing the appropriate level of access/egress for the intended adjacent and surrounding land use. The appropriate access/egress criteria is: _____	<input type="checkbox"/>	<input type="checkbox"/>
	Confirmation from a qualified P.Eng that the crossing meets the Ministry of Transportation requirements.	<input type="checkbox"/>	<input type="checkbox"/>
	Confirmation from a qualified P.Eng verifying that the proposed crossing can withstand the anticipated flood depths and velocities under Regulatory Storm conditions.	<input type="checkbox"/>	<input type="checkbox"/>
	Calculations by a qualified P.Eng for erosion protection works. Please note that where feasible, erosion protection measures should be buried by appropriate substrate within the natural channel boundary.	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical Assessment (Slope Stability) (General)	A geotechnical slope stability assessment by a qualified P.Eng. to ensure the proposed works will not negatively impact slope stability of the valley wall.	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical Assessment (Slope Stability – Culverts and Bridges)	A geotechnical slope assessment by a qualified P.Eng. The scope of the study must be determined through the completion of the Slope Stability Rating Chart (Table 4.2, MNRF, Understanding Natural Hazards and Technical Guide for River and Stream Systems: Erosion Hazard Limit). Where the location of stable top of bank is required, staff will require plan and cross-sectional views that illustrate, at a minimum, the site’s topographical information, location of watercourse, toe of slope, staked top of bank, recommended toe erosion allowance, recommended stable slope allowance and analyzed stable top of bank. The location of the analyzed cross-sections must be shown on plan view.	<input type="checkbox"/>	<input type="checkbox"/>

<p>Geotechnical Assessment (Slope Stability – Storm Sewer Outfall)</p>	<p>A geotechnical slope assessment by a qualified P.Eng to ensure the proposed works will not negatively impact slope stability of the valley wall.</p> <p>In situations where a storm sewer outfall is required to be constructed on valley walls greater than 6 metres in height, consideration must be given to a drop shaft and tunnel design to protect the natural integrity of the valley wall.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Geotechnical Assessment (Soil Investigation)</p>	<p>A geotechnical assessment by a qualified P.Eng for the purposes of mitigation of geotechnical risks at the site by providing recommendation for items such as footings, excavation limits, design parameters and construction. Indication of groundwater levels and potential for construction dewatering is required to determine if additional hydrogeological study is warranted.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Fluvial Geomorphic Assessment</p>	<p>A fluvial geomorphological assessment by a qualified licensed professional (e.g. P.Geo.) with demonstrated expertise in natural channel design to verify that the design has adequately allowed for natural channel migration, sediment transport, and minimizes the risk to infrastructure. The study is to include, but not be limited to:</p> <ul style="list-style-type: none"> • Details on how the proposed design provides a natural channel morphology consistent with anticipated drainage, gradient, and sediment transport regimes; • Channel migration, widening, potential downcutting/scour based on historical observations or acceptable modelling; • Potential changes in channel alignment and bank erosion in upstream and downstream reaches; • Appropriate bankfull flows, water depth and water velocities, and tractive forces. These parameters should be the same through the crossing as in upstream and downstream natural areas; • Natural bottom substrate matching upstream and downstream substrates (with due consideration given to the impacts of lack of vegetative control within the crossing); and • Bedload conveyance, ice jams and woody debris accumulation. 	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Downcutting/ Scour Analysis</p>	<p>Detailed analysis by a qualified licenced professional of the potential for downcutting/scour based on historical observations or acceptable modelling. Future channel migration and widening modifying the plan form of the creek should be considered.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Hydrogeological Assessment</p>	<p>A hydrogeological assessment by a qualified P.Eng or P.Geo. to study the potential impacts to surface/groundwater interactions related to dewatering, and discharge activities. The assessment must provide adaptive management, mitigation and monitoring strategies with considerations for discharge (quantity of water), construction phasing, etc.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>

<p>Hydrologic Evaluation</p>	<p>Assessment of the impact of hydrologic changes to wetlands using a multi-disciplinary approach by Qualified Person(s).</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Commissioning Plans (Utilities)</p>	<p>Details regarding commissioning of the utility, particularly the flow duration, quality, and location of discharge of any water during this phase.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Stormwater Management</p>	<p>A detailed Stormwater Management Plan. Please refer to the local municipality for design standards and reporting requirements. At a minimum, details of existing and proposed catchment areas must be provided as well as details for proposed water quantity and erosion controls.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>Monitoring Plan</p>	<p>A detailed adaptive management/monitoring plan outlining elements of the works that are to be monitored, and the methodology, frequency, and duration of monitoring.</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>

Other Requirements	
Fisheries Act	<p>On November 25, 2013, amendments to the <i>Canadian Fisheries Act</i>, associated Applications for Authorization (under Paragraph 35(2) (b) of the Fisheries Act Regulations) and Information Requirements Regulations came into force. Depending on the scale of works, as you will be conducting a project in/near water, the proponent has responsibilities under the Fisheries Act to ensure serious harm to fish is avoided. Please refer to the Department of Fisheries and Oceans (DFO) website for additional information. Alternatively, questions can be directed to DFO by phone 1 855 852-8320 or email fisheriesprotection@dfo-mpo.gc.ca.</p>
Timing Windows	<p>Please be advised that regulatory agencies such as the MECP and DFO (mentioned above), as well as other agencies such as the MNR (scp.aurora@ontario.ca or scp.quelph@ontario.ca) may have seasonal timing restrictions which dictate when in-water work can occur. Please be sure to contact regulatory agencies as appropriate.</p>
Endangered Species	<p>Staff are aware that the Ministry of Environment, Conservation and Parks (MECP) may have outstanding concerns with respect to species listed on the Species at Risk in Ontario list as it pertains to <i>the Endangered Species Act</i> (ESA) in the immediate area around this project. Please contact MECP directly to determine what detailed project information will be required to begin the ESA approval process: SAROntario@ontario.ca</p>
Prepared by:	Signature: _____

Additional Design Considerations

- The time of year that work is proposed may impact permit requirements for in-water works. Seasonal Design Considerations (SDCs) associated with works to occur during times of higher expected flow (e.g. freshet) may include enhanced ESC measures or increased monitoring and mitigation measures. Changes in work schedules may require a revised permit to address SDCs.
- Opportunities to incorporate fluvial geomorphic considerations for replacement crossings are encouraged due to the potential to reduce future infrastructure risks and maintenance requirements as well as the potential for positive impacts on natural heritage systems.
- Current channel conditions should be replicated (i.e. hydrograph, slope, etc.) or rationale provided for changing these channel features.
- The crossing should be located at an appropriate reach, typically at a stable and relatively straight section of the watercourse (avoid meander bends). Typically, crossings should be situated at right angles to the watercourse. All crossings must be designed to avoid constricting the waterway.
- Channel realignments associated with the crossing should be minimized.
- Substrate material must be an appropriate size for the watercourse. Natural substrate should be utilized where appropriate. Voids of new substrate material should be filled to avoid subsurface flow.
- For clear span structures, abutments should be protected. Erosion protection measures should be buried with appropriate substrate within the natural channel boundary.
- Scaffolding to be used during construction and demolition must be designed to allow for flood flows, and protection of the creek bed/banks.
- Instream work with heavy machinery should be minimized.
- Any existing crossing must be removed using appropriate techniques minimizing impact to the surrounding environment.
- Work area should be isolated from flowing water. Phasing of works should allow construction to be performed in the dry.
- Settling or filtering of water pumped from work area must be addressed.
- Monitoring by the proponent after construction is crucial to verify the success of the project.
- For dewatering of the work area to facilitate construction, a Permit to Take Water (PTTW) may be required from the Ministry of the Environment & Climate Change if dewatering is in excess of 50,000 litres per day
http://www.ene.gov.on.ca/environment/en/industry/assessment_and_approvals/water_taking/STDPROD_075554.html
- Closed bottom culverts should be countersunk by 10 to 15% and infilled with natural native materials to prevent future perched conditions. To maintain existing culvert capacity and depending on the current invert of the culvert, relative to the stream bed, the diameter of the culvert may need to be increased to account for the required countersinking.
- Outfall channel should be angled downstream and headwall recessed appropriately.

- Since releases are caused by pressurization of the drill hole beyond the containment capacity of the overburden material, a directional bore must be located a sufficient distance beneath the bed of the watercourse to ensure there is no release of drilling fluids into the watercourse.
- Crossing of wetlands should be carried out in the winter, under frozen ground conditions.
- Existing crossing must be abandoned using appropriate techniques. Removal of existing utility should be carried out where feasible without greatly impacting the natural environment.