Regional Engineering
Engineering Services
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Sanitary Pipeline Crossing Application

Applicants shall submit **three (3**) copies of an acceptable plan. Plans shall conform to Transport Canada (TC) Standards Respecting Pipeline Crossings Under Railways, and Part 5 of the AREMA Manual for overhead pipeline crossings.

The application fee, in the amount of **$1350.00** (+HST) to cover the cost of reviewing the application and plans, will be invoiced. The Applicant will be charged an additional fee of **$200.00** (HST included) for each review after the initial application due to inadequate or missing information. For more complex installations, separate purchase order authority will be requested in lieu of standard review fees.

- ❑ **The Applicant shall indicate the duration of construction on / above / below the CN right-of-way, provide an estimated construction schedule and provide a field contact name and phone number.**

The following information is required on the application drawing:

- ❑ Drawings must be to scale or have all dimensions shown.
- ❑ A site plan showing the location of crossing in relation to a legal description or road allowance or Railway mileage and subdivision.
- ❑ Dimension width of CN right-of-way, the number of tracks and the angle of crossing.
- ❑ Indicate direction of flow and location of nearest shut off valves.
- ❑ Provide a profile showing the depth of burial from the base of rail (minimum 5.5 ft. or below frost line) and ditch bottom to top of pipe (minimum 3.0 ft. or below frost line).
- ❑ Indicate type, grade and wall thickness (concrete pipe must be minimum class V). Ensure wall thickness meets TC E-10 requirements. (CN requires carrier & casing to be designed for cooper E-90 loading)
- ❑ Indicate design grade and invert elevations
- ❑ Pipelines carrying steam, water, sewer and other non-flammable or non-hazardous substances under the railway shall be encased in a casing pipe. Casing pipe may be omitted for non-pressure sewer crossings where the strength of the pipe and its joints are capable of withstanding railway loading, as approved by the Engineer.
- ❑ Show the cross-section of the pipe, or note that the carrier pipe will be held clear of the casing pipe by supports.

  NOTE: Every carrier pipe with a diameter of 3 inches or greater shall be held clear of the casing pipe by properly designed supports, insulators or centering devices, installed so that no external loads will be transmitted to the carrier pipe. Grouting of the space between the carrier and casing will not be permitted. The casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length except at the ends where free flow must be maintained. The casing shall be installed so as to prevent the formation of a waterway under the Railway, with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy). The ends of the casing pipe shall not be sealed by any load transferring material.

- ❑ Note intention to install warning markers at each edge of the CN right-of-way.
- ❑ Indicate type of cathodic protection (if used). Where the casing and/or carrier pipe is cathodically protected, suitable tests shall be undertaken to ensure that other railway structures and facilities are adequately protected from the cathodic current.
- ❑ When casing is used, it must extend the full width of CN's right-of-way or a minimum of fifty (50) feet on each side of the outermost track.
- ❑ Note method of installation (i.e. boring / augering).
- ❑ Indicate location of proposed jacking and receiving pits in relation to the gauge side (inside) of nearest rail.
- ❑ Include a caption stating "Construction and maintenance to be in accordance with Transport Canada Standards Respecting Pipeline Crossings Under Railways."
- ❑ Professional Engineer's stamp, date and signature required.
- ❑ Contact name, address and phone number of Utility Owner on plan or cover letter.
- ❑ Revised drawings shall be marked as revised and state reason for revision.

NOTE: The nearest point at which excavation can be undertaken, is as follows:
Starting ten (10) feet from the gauge side (inside) of the nearest rail, measured perpendicular to the rail, calculate a slope to the bottom of the proposed pipe at a 1.5:1 slope. If a 1.5:1 slope cannot be maintained or more restrictive conditions occur, approved shoring will be required.

Additional requirements for **underground** crossing application drawings:

- ❑ Supply pipes must be protected for the full width of CN's right-of-way.
- ❑ Indicate type and details of cable and mechanical protection.
- ❑ If cables are to be encased, the casing shall extend the full width of CN's right-of-way.
- ❑ Include a profile showing depth of burial from base of rail and ditch bottoms to cable.
- ❑ Minimum depth of burial below base of rail is 1.68 m Main Tracks.
- ❑ Minimum depth of burial below base of rail is 1.37 m Industrial Tracks.
- ❑ Minimum depth of burial below road surface is 1.0 m.
- ❑ Minimum depth of burial below ditch bottom is 1.52 m.

Additional requirements for **250 mm diameter (10 inches) or greater**:

- ❑ Submit a complete copy of the Geotechnical Report, including comments and recommendations with respect to construction methodology.
- ❑ Submit a detailed proposal for in-ground settlement monitoring, developed by a Geotechnical Engineer with experience in large diameter pipe installation.
- ❑ Provide, in writing, the name and phone number of the qualified site inspector(s) who will be on the job site on a full time basis for the duration of construction, as specified by NTA General Orders.