

Standard Pipe Crossing Agreement No.: _____

THIS AGREEMENT entered into at Edmonton, Province of Alberta, this 12th day of September, 2016.

BETWEEN: **CANADIAN NATIONAL RAILWAY COMPANY**, a corporation having its head office at 935 de la Gauchetière Street West, Montreal, Quebec H3B 2M9

(hereinafter the "Railway")

AND: **THE CITY OF WINNIPEG**, a corporation having its office at 510 Main Street, Winnipeg, Manitoba R3E 1B9 (hereinafter the "Applicant")

WHEREAS the Railway hereby grants the Applicant the right and privilege to install, use and maintain New Underground Reinforced Concrete Sewer Pipe Crossing within the Railway's right-of-way, at Mile 2.91, on the Rivers Subdivision (hereinafter the "works"), in the City of Winnipeg, Province of Manitoba, as shown on Plan(s) No. LD-XXXX, REV. B, dated/revise 06/07/2016 (hereinafter the "Plan(s)"), attached hereto as Appendix A and forming an integral part hereof.

NOW THEREFORE THIS AGREEMENT WITNESSES THAT, in consideration of the mutual covenants and agreements herein and subject to the terms and conditions set out in this Agreement, the parties agree as follows:

1. The Applicant will carry out the work as shown on the Plan(s) and in accordance with Railway requirements respecting safe railway operations, and no works shall proceed until the Agreement has been signed and the Plan(s) has/have been approved by the Railway.
2. The works shall be constructed and at all times maintained in accordance with the *Railway Safety Act* and regulations, plans or specifications in force, adopted or approved by Transport Canada respecting pipe crossings under Railways, including the latest *Standards Respecting Pipeline Crossings Under Railways, TC E-10*, attached hereto as Appendix B and forming an integral part hereof, as amended from time to time, and any subsequent replacement document, according to the plans and specifications approved by the Railway.
3. No maintenance work shall be done without first obtaining the Railway's consent.
4. Under certain circumstances, before giving its permission to proceed to any work, the Railway may, at its discretion, assign an inspector to supervise the work to take place on its property. While so engaged, the inspector's wages and expenses will be chargeable to the Applicant and shall be paid by the Applicant immediately upon request by the Railway.
5. All costs associated with the construction, the replacement, the use and the maintenance of the works,

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including flagging, location of underground cables and engineering fees, shall be paid by the Applicant.

6. Should it become necessary or expedient for the purposes of repair or improvement on the said Railway that the works be removed, relocated or modified, the Applicant shall, at its risk and expense, comply with the request of the Railway, failing which the Railway shall have the right to execute or have executed, at the risk and expense of the Applicant, any work required to remove, relocate or modify the said works.
7. In addition to any other amounts payable by the Applicant pursuant to this Agreement, as compensation for the rights and privileges herein granted and until clause 13 is invoked, the Applicant shall immediately pay a non-refundable one-time lump sum of \$2,200, plus the applicable G.S.T. All sums payable pursuant to this clause shall be payable to the order of the Railway, care of its authorized representative, at such address as the authorized representative shall provide.
 - 7.1. The Applicant shall also pay all taxes, rates and assessments of any other nature that may be levied from time to time during the course of this Agreement against the Railway's property as a result of the works constructed by the Applicant. The Railway's G.S.T. Registration Number is R100768779.
8. The Applicant shall indemnify and hold harmless the Railway from any losses, liens, damages, liability, and expenses ("Damages") incurred by the Railway arising from the Applicant's, or its employees, agents, contractors or sub-contractors', breach of its obligations or warranties under this Agreement; any third party claims associated with or arising under this Agreement; or the Applicant's access to the Railway's or the Railway's affiliates' premises. In the event that the Railway has incurred Damages, the Railway shall notify the Applicant and the Applicant shall indemnify the Railway for the Damages and defend and hold harmless the Railway against any third party legal claims associated with the Damages. No third party claim may be settled without the consent of the Railway, which consent shall not be unreasonably withheld.
9. The Applicant shall immediately carry out all measures which the Railway, in its sole discretion, considers necessary to keep the works free and clear of all environmental contaminants or residue (hereinafter referred to as "Environmental Contamination") resulting from the Applicant's occupation or use of the Railway's premises (hereinafter the "Premises"), such condition to be confirmed (at the option of the Railway and at the sole expense of the Applicant) by a post-termination environmental inspection/audit of the Premises to be carried out by the Railway. The Applicant shall be solely responsible for the cost of all work carried out to correct any Environmental Contamination which occurs on the Premises, or which occurs on other lands as a result of the Applicant's occupation or use of the Premises.
 - 9.1. Notwithstanding the foregoing, in the event that the Railway, at any time, suspects that a potential source of Environmental Contamination may be either present on the Premises or at risk of escaping from or onto the Premises to or from the adjoining lands, the Railway shall have the right to enter upon the Premises, at all reasonable times and from time to time, in order to inspect the Premises and conduct or require the Applicant to conduct, at the Applicant's expense, such tests as may be required to verify the condition of the Premises. The Applicant shall, at its expense, take any and all action as shall be required to prevent such Environmental Contamination from occurring or escaping from or onto the Premises.
 - 9.2. The Applicant shall be responsible to notify the Railway of all Environmental Contamination

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that the Applicant suspects is occurring on or escaping onto the Premises from adjacent lands or resulting from third party occupation.

- 9.3. If the Applicant fails to correct any Environmental Contamination to the satisfaction of the Railway and any public authority having jurisdiction, the Railway may have such work performed by its employees or agents. The Railway may charge the Applicant from time to time for all the costs incurred by the Railway in correcting such Environmental Contamination, plus fifteen per cent (15%) for overhead, and the Applicant shall pay the Railway's invoice or invoices for such costs within ten (10) days of receipt of each invoice. In the event such remedial work is carried out by any public authority, the cost of such work shall be borne by the Applicant.
- 9.4. The Applicant shall comply with the provisions of any federal, provincial or municipal laws applicable to the Premises with respect to maintaining a clean environment. If any public authority having jurisdiction with respect to environmental protection or fire protection requires the installation of equipment or apparatus on the Premises to improve the environment or to improve fire protection facilities, then the Applicant shall promptly install such equipment or apparatus or take such measures as may be required by such public authority. The Applicant shall be solely responsible for the cost of all work carried out to comply with the requirements of a public authority.
- 9.5. Upon the termination of this Agreement, the Applicant shall leave the Premises in a clean and tidy condition, free of any Environmental Contamination resulting from or occurring during the Applicant's occupation or use of the Premises. If the Applicant has installed any facility on or under the Premises, the Applicant shall remove such facility, subject to the provisions of clause 15. The Applicant shall have the burden of proving that any Environmental Contamination has not resulted from or occurred during its occupation or use of the Premises.
- 9.6. The responsibility of the Applicant to the Railway with respect to the environmental obligations contained herein shall continue to be enforceable by the Railway notwithstanding the termination of this Agreement.
10. The Applicant shall, at its sole expense, provide and maintain in full force and effect during the term of this Agreement, and for any subsequent renewal term, insurance coverage as follows:
 - 10.1. Commercial General Liability, in the amount of no less than ten million dollars (\$10,000,000) per occurrence, combined single limit for bodily/personal injury (including death), or for damage to or destruction of property (including loss of use) caused by accident or occurrence. This policy shall name the Railway as an additional insured and shall contain a cross-liability clause.
 - 10.2. The Applicant shall provide the Railway with proof of insurance in the form of an insurance certificate, which certificate shall detail the coverage requirements and shall obligate the insurers to give the Railway a thirty (30) day prior written notice of cancellation or non-renewal, or of any material change affecting the coverage provided therein.
11. The Applicant's property, and any other person's property, shall, while located on the Railway's premises to fulfill any obligation covered by the present Agreement, be deemed to be there at the risk of the Applicant as to damages, loss or theft attributable to any cause whatsoever.

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12. This Agreement is binding upon the respective employees, agents, successors and representatives of the Railway and the Applicant; however, the Applicant may not assign or transfer this Agreement, in whole or in part, or any of the rights and privileges resulting there from, without the prior written consent of the Railway. Said consent may not be unreasonably withheld.
13. This Agreement will continue in force from the date hereof to its termination by either party, at any time, by giving a written notice to the other party at least thirty (30) days prior to the proposed date of termination. In the event of any failure by the Applicant to comply with any provisions of this Agreement, and upon the Applicant being notified in writing by the Railway alleging such failure and failing to remedy the failure within (thirty) 30 days of receiving such notice, the Agreement will be forthwith terminated upon receipt of written notice of termination. In either case, it is understood that the Railway will not reimburse the Applicant for any monies paid in advance under the provisions of this Agreement.
14. Unless otherwise specified, all notices, accounts, statements, reports, documents or instructions to be given by any party under the terms of this Agreement must be given in writing at the following address:

FOR THE RAILWAY:

Canadian National Railway Company
c/o Business Development & Real Estate
2nd Floor – Building B, 10229 – 127 Avenue
Edmonton, Alberta T5E 0B9

Attention: Contracts Department
Facsimile: (780) 377-4281

FOR THE APPLICANT:

City of Winnipeg Water and Waste Department
110-1199 Pacific Avenue
Winnipeg, Manitoba R3E 3S8

Attention: Kas Zurek, P. Eng – Branch Head, Design and Construction Branch
Facsimile: (204) 986-5345
Phone: (204) 986-2025

Notice shall be sufficiently given if delivered by courier or facsimile, or if mailed by prepaid registered mail to the above address or to such other place as may be specified in writing. Any notice or other document, if delivered by courier or facsimile, shall be deemed to have been given or made on the date delivered or the date that a confirmation of receipt of the facsimile was recorded by the sender, and if mailed, on the third business day following the date on which it was mailed. In the event of an actual or imminent disruption of postal service in Canada, the notice shall be delivered by courier.

15. At the expiry of the present Agreement or, in the case of cancellation of the Agreement within the period determined in writing by the Railway, the Applicant will, at its risk and expense, remove from the

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Railway's property all works constructed under this Agreement, as well as all material not belonging to the Railway, except for the metal casing which will remain in place in perpetuity. As for the pipe installed inside the metal casing, the Applicant will, at its discretion, have the option of either leaving the pipe or removing it. The Applicant will be required to fill the casing and any pipes left within with cement and restore the Railway's property to the satisfaction of the Railway. Should the Applicant fail to comply with the requirements of this clause, the Railway reserves the right, at its discretion, to do the work that the Applicant should have done in accordance with this clause, or to have the work done, at the risk and expense of the Applicant. Under such circumstances, all the material located on the Railway's property shall become the property of the Railway, without compensation to the Applicant and without prejudice to the Railway's right to recourse against the Applicant for compensation for any costs or damages incurred by the Railway as a result of the Applicant's default.

16. The Applicant shall not, at any time and in any way, impede the operation, the maintenance or the enjoyment of the Railway's property by the Railway and its representatives. If the Railway deems, at its discretion, that the work being undertaken or the method used to undertake the work will impede the Railway in any way, the Railway may order the work stopped, recommend a different methodology, require that adequate protective measures be taken and generally impose any measures or any combination of measures that the Railway may deem necessary under the circumstances. The Applicant will comply with the requirements of this clause, at its risk and expense and without recourse against the Railway except for damages, if justified.
17. The Applicant agrees not to register this Agreement or to file or register any caveat or other encumbrance based on this Agreement against the title for the said Works without first obtaining the written consent of the Railway.
18. This Agreement shall be governed by and construed in accordance with the laws of the Province of Manitoba, and all applicable federal laws and regulations.
19. The parties agree to settle disputes by way of negotiations. Should negotiations fail, the parties agree that any dispute relating to the wording and interpretation of the clauses in this Agreement will be resolved in accordance with the Arbitration Act of the Province in which the works are located.
20. The preamble to this Agreement and all of its Appendices form an integral part of the Agreement.

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IN WITNESS WHEREOF the parties hereto have executed these presents as of the day and year first above written.

CANADIAN NATIONAL RAILWAY COMPANY

Signed in the presence of:

Witness Signature

PENNY PFOH

Witness Name

Date

Signature

ANITA FLEMING

Name

Director, Western Canada

Business Development & Real Estate

Title

Date

CITY OF WINNIPEG

Signed in the presence of:

Witness Signature

Witness Name [please print]

Date

Signature

Name [please print]

Title [please print]

Date

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Railway

Applicant

PLAN(S)



Standards Respecting Pipeline Crossings Under Railways

TC E-10 (June 21, 2000)



Transport
Canada

Transports
Canada

Canada

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APPENDIX 'A' - Plans and Design Requirements for Pipelines Crossing under Railways

STANDARDS RESPECTING PIPELINE CROSSINGS UNDER RAILWAYS

1. SCOPE

- 1.1 These standards may be known as the "Pipeline Crossing Standards".
- 1.2 These standards are intended to ensure that pipeline crossings under Railways are installed, renewed and maintained in a safe manner. These standards apply to Railway Companies subject to the jurisdiction of the Minister of Transport pursuant to the Railway Safety Act.

2. GENERAL APPLICATIONS AND EXCLUSIONS

- 2.1 Pipeline Installation Procedures shall be in strict conformance with all Federal, Provincial and local safety regulations.
- 2.2 These standards do not include overhead cable crossings, overhead pipeline crossings, and underground cable crossings.
- 2.3 These standards do not apply to any pipe installed under a railway right-of-way prior to the date of approval of these standards, unless the pipeline crossing is to be reconstructed.

3. GENERAL CONDITIONS

- 3.1 No person shall commence the installation of any pipe under a railway without:
 - a) submitting to the railway company detailed plans of the proposed installation in accordance with the requirements outlined in Appendix 'A'; and
 - b) obtaining a written approval from the railway company that owns, operates or has control of the railway.
- 3.2 No person shall commence the repair, maintenance or removal of any pipe under a railway without obtaining a written approval from the railway company that owns, operates or has control of the railway.

- 3.3 Every owner of a pipe installed under a railway, shall at all times maintain the pipe in good working order and condition, so that:
- a) the safety of railway operations is not threatened in any manner;
 - b) the safety of the public, including the lives, well-being and health of people is safeguarded; and
 - c) the environment is protected.

4. **REQUIREMENTS FOR PIPELINES CROSSING UNDER RAILWAYS - GENERAL**

For oil and gas pipelines crossing under railways, the requirements of C.S.A. Standard Z662-99, and subsequent revisions, will apply as modified and amended in Section 5 herein.

For steam, water, sewer or other non-flammable substance pipelines crossing under railways, the requirements of Section 6 shall apply.

The term "Engineer" used herein means the Chief Engineer of the railway company or his authorized representative.

General: Railway design loading applicable to all pipelines crossing under railways shall be Cooper's E80 track loading, with diesel impact as specified in C.S.A. Standard Z662-99. The use of optional limits states design processes under C.S.A. Standard Z662-99 will not apply to the design of oil and gas pipelines crossing under railways.

5. **REQUIREMENTS FOR OIL AND GAS PIPELINES UNDER RAILWAYS**

- 5.1 **Amend** C.S.A. Standard Z662-99 Clause 4.7 Cover and Clearance Requirements as follows:

Table 4.8 "Minimum Cover and Clearance Requirements": In the case of oil and gas, and hazardous* gas pipelines crossing under railways, Table 4.8 shall be amended as follows:

Table 4.8
Minimum Cover and Clearance Requirements

(1) Minimum cover for buried pipelines, cm (measured to top of carrier or casing pipe, as applicable)

Location	Type of Pipeline	Class Location	Normal Excavation	Rock excavation requiring blasting or removal by comparable means
Crossings of railway rights-of-way : below base of rail ** All Tracks:				
Cased	Flammable or hazardous* gas or liquid	All	168 (5.5 ft)	168 (5.5 ft)
Uncased	Flammable or hazardous* gas or liquid	All	305 (10.0 ft)	305 (10.0 ft)
Crossings of railway rights-of-way: below bottom of ditches or ground surface ***				
Cased	Flammable or hazardous* gas or liquid	All	91 (3.0 ft)	91 (3.0 ft)
Uncased	Flammable or hazardous* gas or liquid	All	183 (6.0 ft)	183 (6.0 ft)
Railway rights-of-way for cased or uncased buried longitudinal pipelines ***				
Between 762 cm and 1524 cm from centre-line of nearest track	Flammable or hazardous* gas or liquid	All	183 (6.0 ft)	183 (6.0 ft)
Greater than 1524 cm from centre-line of nearest track	Flammable or hazardous* gas or liquid	All	152 (5.0 ft)	152 (5.0 ft)

* Non-flammable gas or liquid products which, from their nature or pressure, might cause damage or endanger the lives, well-being and health of people, or the environment, if escaping on or in the vicinity of railway property.

** Within 7 metres of centre of outside rail, measured at right angles to the centre-line of the track.

*** On portions of the right-of-way where carrier or casing pipe is not directly beneath any track.

5.2 **Amend** C.S.A. Standard Z662-99 Clause 4.7.1 as follows;

Add to end of Clause 4.7.1: For oil and gas pipelines crossing under railways, minimum cover requirements shall be in accordance with Table 4.8 of the referenced standard C.S.A. Z662-99, as amended herein. For any proposed pipeline crossing physically unable to meet the minimum cover requirements specified in Table 4.8 as amended herein, the applicant will propose alternative methods and shall obtain approval of the Engineer to use such methods.

5.3 **Amend** C.S.A. Standard Z662-99 as follows;

Add as a new Clause 4.8.5 called "Pipe installation near railway bridges and buildings" the following:

Pipelines carrying flammable or hazardous gas or liquids under railways shall not be placed within a culvert, under railway bridges nor closer than 13.7m to any portion of any railway bridge, building or other important structure on a railway right-of-way, except in special cases and then by special design as approved by the Engineer.

Add to Clause 10.2.2:

Emergency response procedures shall be developed by the applicant to handle a situation in which a pipeline leak or railroad derailment or incident may jeopardise the integrity of the pipeline. Local conditions shall be considered when developing these procedures.

Add to Clause 10.2.8.4:

Oil and gas pipeline crossings shall be prominently identified where pipelines enter and exit railway right-of-way, approximately on the limits thereof, by signs in a language or languages appropriate to the region in which the sign is located. Such signs shall meet the requirements of C.S.A. Standard Z662-99, as amended herein. Additional signage will be required by the Engineer where the above signs are not readily visible from the track.

Add as a new Clause 4.4.11 called "Emergency Shutoff Valves" the following:
For oil and gas pipelines, accessible emergency shutoff valves shall be located each side of the railway within effective distances as mutually agreed to by the Engineer and the pipeline company. These valves shall be marked with signs for identification. Where pipelines are provided with automatic control stations and/or valves that are remotely operated, no emergency shutoff valves are required at the crossing.

Add as a new Clause 4.7.4 called "Longitudinal installations" the following:
Longitudinal oil and gas pipelines on the railway right-of-way shall be located as far as possible from any track. They shall not be within 7.62m of the centre-line of any track, and shall be marked by a sign approved by the Engineer every 152.4m and at every road crossing, streambed, other utility crossing, and at locations of major change in direction of the line. In exceptional situations, where it is not physically possible to locate the pipeline beyond 7.62m of the centre-line of a track, the carrier pipe shall be encased or of special design and must be approved by the Engineer.

- 5.4 **Amend** C.S.A. Standard Z662-99 Table 4.9 "Least Nominal Wall Thickness for Steel Casing Pipe in Cased Crossings and Carrier Pipe in Uncased Crossings" as follows;

All least nominal wall thicknesses for steel casing pipe in cased crossings and steel carrier pipe in uncased crossings shall be as shown in Table 4.9, except that the least nominal wall thickness shall not be less than 4.8 mm in any case.

Add new Notes under Table 4.9, as follows:

Notes:

- 1) When steel casing pipe or carrier pipe is installed under a railway without benefit of a protective coating or is not cathodically protected, the least nominal wall thickness shown in Table 4.9 shall be increased by a minimum of 1.6mm.
- 2) Steel casing or carrier pipe installed under a railway shall have a specified minimum yield strength of 241 Mpa or greater.

- 5.5 **Amend** C.S.A. Standard Z662-99 Clause 4.8.3 "Crossings of Roads and Railways" as follows;

Add new item to Clause 4.8.3.3 Cased Crossings:

(h) Casing pipe and joints under railways shall be of leakproof construction capable of withstanding railway loadings specified herein, and shall be of steel unless otherwise indicated herein, or as approved by the Engineer.

5.6 **Replace** C.S.A Standard Z662-99 Clause 12.4.6 with the following:

Polyethylene carrier pipe may be used in pipeline systems for the transportation of gaseous hydrocarbons under railways if:

- (i) The design pressure does not exceed 700 kPa.
- (ii) The carrier pipe is made from polyethylene materials permitted by C.S.A. Standard CAN/CSA-B137.4-92 (R1998), and subsequent revisions.
- (iii) The outside diameter of the carrier pipe is not greater than 168.3mm.
- (iv) The polyethylene carrier pipe within the entire limits of the railway right-of-way, is encased in a steel casing pipe meeting the requirements of C.S.A Standard Z662-99, as amended herein.

5.7 **Replace** C.S.A. Standard Z662-99 Clause 15.4.5 with the following:

Aluminum pipe is not acceptable for use in pipeline crossings under railways.

6. **REQUIREMENTS FOR STEAM, WATER, SEWER AND OTHER NON-FLAMMABLE SUBSTANCE PIPELINES UNDER RAILWAYS**

6.1 **Carrier and Casing Pipe Requirements**

Pipelines carrying steam, water (other than oilfield steam and water), sewer, and other non-flammable or non-hazardous substances under railways shall be encased in a larger pipe or conduit called the casing pipe. Casing pipe may be omitted under the following conditions:

- (a) under secondary or industrial tracks as approved by the Engineer, provided maximum operating pressure in the carrier pipe does not exceed 700 kPa.;
- (b) 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.

Carrier pipe, casing pipe, and joints shall conform to the applicable requirements of AREMA Ch. 1 Section 5.3 with respective materials in conformance with C.S.A. Standards, and be:

- (a) of acceptable material and construction as approved by the Engineer, and
- (b) of sufficient strength to withstand the internal pressure and external loading, and
- (c) properly connected at the joints and leakproof.

Joints for carrier line pipe shall be leakproof mechanical or welded type.

For steel carrier or casing pipe the least nominal wall thickness shall be in accordance with C.S.A. Standard Z662-99 as amended in Section 5 of this Pipeline Crossing Standard.

For pressures under 700 kPa in the carrier pipe, the casing pipe, if required, may be reinforced concrete pipe conforming to specifications in AREMA Manual for Railway Engineering Chapter 8 "Concrete Structures and Foundations", Part 10 "Reinforced Concrete Culvert Pipe", or coated corrugated metal pipe conforming to AREMA Manual Chapter 1, Part 4, all as approved by the Engineer. Respective materials shall conform to applicable C.S.A. standards.

6.2 Minimum Cover and Clearance Requirements

(a) Minimum cover for buried pipelines, cm (measured to top of carrier or casing pipe, as applicable)

Location	Type of Pipeline	Class Location	Normal Excavation	Rock excavation requiring blasting or removal by comparable means
Crossings of railway rights-of-way : below base of rail ** Main Tracks:				
Cased	Water, sewer, steam or non-flammable or non-hazardous* substance	All	168 (5.5 ft) or below frost line	168 (5.5 ft) or below frost line
Crossings of railway rights-of-way: below base of rail ** Secondary or Industrial Tracks:				
Cased	Water, sewer, steam or non-flammable or non-hazardous* substance	All	137 (4.5 ft) or below frost line	137 (4.5 ft) or below frost line
Uncased	Water, sewer, steam or non-flammable or non-hazardous* substance	All	137 (4.5 ft) or below frost line	137 (4.5 ft) or below frost line
Crossings of railway rights-of-way; below bottom of ditches or ground surface ***				
Cased	Water, sewer, steam or non-flammable or non-hazardous* substance	All	91 (3.0 ft) or below frost line	91 (3.0 ft) or below frost line
Uncased	Water, sewer, steam or non-flammable or non-hazardous* substance	All	91 (3.0 ft) or below frost line	91 (3.0 ft) or below frost line
Railway rights-of-way for cased or uncased buried longitudinal pipelines ***				
Up to 1524 cm from centre-line of nearest track	Water, sewer, steam or non-flammable or non-hazardous* substance	All	122 (4.0 ft) or below frost line	122 (4.0 ft) or below frost line
Greater than 1524 cm from centre-line of nearest track	Water, sewer, steam or non-flammable or non-hazardous* substance	All	91 (3.0 ft) or below frost line	91 (3.0 ft) or below frost line

* Non-flammable gas or liquid products which, from their nature or pressure, might cause damage or endanger the lives, well-being and health of people, or the environment, if escaping on or in the vicinity of railway property.

** Within 7 metres of centre of outside rail, measured at right angles to the centre-line of the track.

*** On portions of the right-of-way where carrier or casing pipe is not directly beneath any track.

6.3 **General Installation Requirements**

For water and sewer crossings under railways, the highest point of carrier pipe shall be below the frost line. In regions of permafrost or where other obstacles make it impossible to place the pipe below the frost line, the applicant will propose alternate methods to protect the pipe in sub-freezing temperatures and shall obtain approval of the Engineer to use such methods.

Pipelines carrying steam, water (including oilfield steam and water), sewer and other non-flammable or non-hazardous substances under railways, shall not be placed within culverts nor under railway bridges where there is likelihood of restricting the area required for the purposes for which the culverts or bridges were built, or of endangering the foundations. Any such pipelines laid longitudinally on railway rights-of-way shall be located as far as practicable from any tracks or other important structures. If located within 7.62 metres of the centre-line of any track, or where there is significant risk of damage from leakage to any bridge, building or other important structure, the carrier pipe shall be encased or of special design as approved by the Engineer.

Every open drain crossing tracks in a railway yard shall be safely covered for at least 3.0m from the centre-line of track, except in times of flood when uncovered open drains may be provided as may be necessary. In this case warning signs shall be erected.

C.S.A. Standards current at time of constructing the pipeline, shall govern the inspection and testing of the facility within the railway rights-of-way. The proof testing of the strength of carrier pipe shall be in accordance with C.S.A requirements.

APPENDIX 'A'
Plans and Design Requirements for Pipelines
Crossing under Railways

For all pipeline crossings under railways (including oil and gas, steam, water, sewer, storm drain, etc.), plans for proposed installation shall be submitted to and meet the approval of the Engineer before construction is begun.

Plans shall be drawn to scale showing the relation of the proposed pipeline to railway tracks, angle of crossing, location of nearest shut-off valves, railway mileage, right-of-way lines and general layout of tracks and railway structures and facilities. Plans should also show a cross-section (or sections) from field survey, showing pipe in relation to actual profile of ground and tracks, with location of any joints in the carrier or casing pipe within the railway right-of-way, and necessary geo-technical boreholes (soil type) and ground water levels. Pipelines shall be installed under tracks by boring and/or jacking, if practicable. If open-cutting or tunneling is approved, the proposed limits of excavation, details of sheeting and method of supporting tracks or driving tunnel shall be shown, with supporting engineering calculations.

In addition to the above, plans should contain the following data:

Railway Mileage & Subdivision
Municipal Descriptions of Adjoining Properties
Name of Pipeline Owner

	Carrier Pipe	Casing Pipe
Contents to be handled
Outside Diameter
Pipe Material
Specification and grade
Wall thickness
Maximum Operating Pressure
Maximum Surge & Test Pressure
Maximum Operating Temperature
Minimum Operating Temperature
Type of joint
Coating
Method of installation

Vents: Number Size..... Height above ground
Seals: Both ends..... Type.....

Bury: Base of rail to top of casing m
Bury: (Not beneath tracks) m
Bury: (Roadway ditches) m

Extent of casing measured perpendicular to centre-line of track m
Type, size and spacing of insulators or supports
Distance C.L. track to face of jacking/receiving pits m
Bury: Base of rail to bottom jacking/receiving pits m

Cathodic Protection : yes..... no.....
Geotechnical Boreholes: yes..... no.....

Soil Type
Base of Rail to ground waterm

Plans shall be sealed and signed by a professional engineer, competent in this field, registered in the province or territory in which the pipeline crossing is located.

The execution of work on railway rights-of-way, including the supporting of tracks, shall be subject to the inspection and direction of the Engineer.

Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree of protection so prescribed shall be deemed a part of this Standard.