Crossing Requests
Information & Guidelines for Crossing - Canada

PURPOSE: This document is intended to help all third parties understand the Pembina crossing and encroachment application process and related Pembina requirements. This document includes information about:

- what types of crossing and encroachment activities require consent.
- information about applying for consent and what must be submitted as part of a Crossing request.
- the related Pembina technical requirements for Crossing requests.

SCOPE: This document applies to all Crossing requests in respect to planning, design, construction of facilities, and development in proximity to pipeline rights-of-way and buried infrastructure owned and/or operated by Pembina.

This document contains the minimum information required to be included in a Crossing request. Depending on the scope and nature of the Crossing, additional information may be required.

AUDIENCE: This document is intended to be used as guidance by anyone submitting a Crossing request to Pembina in Canada (Requestor). This includes landowners, homeowners, municipal planners, utility owners, general contractors and their sub-contractors, pipeline/utility contractors, real estate developers, brokers and agents, and other parties including their representatives (each a “Third Party” or “Applicant”).

Regulatory Requirements

Pembina Pipeline and its operations are regulated by both federal and provincial authorities including the Canada Energy Regulator (CER), the Alberta Energy Regulator (AER), the British Columbia Energy Regulator (BCER), the Saskatchewan Ministry of Energy and Resources, and the Ontario Technical Standards and Safety Authority. All third parties must ensure that all work associated with its application complies with local, provincial and federal rules, laws and regulations. For more information on any of the regulators, visit their respective websites:

- Canada Energy Regulator: https://www.cer-rec.gc.ca/
- Alberta Energy Regulator: https://www.aer.ca/
- British Columbia Energy Regulator: https://www.bc-er.ca/
- Saskatchewan Ministry of Energy and Resources: https://www.saskatchewan.ca/government/government-structure/ministries/energy-and-resources
- Ontario Technical Standards and Safety Authority: https://www.tssa.org/

Activities Requiring Consent

To ensure Pembina pipelines and facilities operate safely, written consent from Pembina must be received before any of the following activities occur:

- ground disturbance activities within 30 meters (100 ft) of a CER regulated pipeline.
- ground disturbance activities within the Right-of-Way of a provincially regulated pipeline.
- operation of vehicles or mobile equipment across the Right-of-Way, outside the travelled portion of a highway or public road.
- construction of a facility across, on, along or under a pipeline and/or Right-of-Way.
- storing anything on the Right-of-Way
- using explosives within 300 meters (1000 ft) of a pipeline and/or Right-of-Way.
- any activity that the company deems may negatively impact the safety of the pipeline.

Applying for Consent

Pembina will provide written consent before any crossing or encroachment activities begin. Third Parties must apply to Pembina so that Pembina can fully assess the proposed activity.

The Pembina 'Technical Information Form for Crossing Submissions' document shall be completed by third parties conducting construction activities along, across or within proximity to Pembina's underground assets to ensure all required information is submitted when applying for third-party agreement(s).

The drawing(s) must be prepared in accordance with the minimum standards provided in each applicable section below.

Category and Types of Crossings Requests

Category of Request	Types of Crossings
Permanent	• Communications cable (telephone, fibre optic, cable, etc.) • Power line (buried or aerial) • Pipeline (steel or non-steel) • Road or Highway • Parking Lots • Pathways • Ditching, Berms or Earthworks that Change Cover Profile • Drainage Tile • Railway • Fence • Grading (adding fill) • Landscaping
Temporary	• Vehicle & Equipment Crossings • Access of Right-of-Way • Temporary Road (in use for <1 year) • Temporary Power Supply (in use for <1 year) • Temporary Workspace • Temporary Waterline • Blasting – Including Seismic and Geophysical Activities • Compaction Equipment • Pembina Owned Road Use

Vehicle or Equipment Crossings

If your activity involves mobile equipment or vehicles driving across Pembina's buried infrastructure outside the traveled portion of a high-grade access or public road, please use the 'Pembina Weight Sheet' and 'Pembina Weight Sheet User Guide' for vehicle weight submissions.

This applies to, with the exception of agriculture vehicles:

- any vehicles or equipment greater than 2 tons that will cross Pembina's AER regulated asset
- any vehicles or equipment that will cross Pembina's CER regulated assets

Complete these forms as required and submit them by email to: landrequests@pembina.com, along with all other applicable information.

If you are applying for consent to use a Pembina owned road, please submit your request by email to roaduse@pembina.com.

In addition to written consent, when carrying out construction activities across, over, on, along or under a Pembina facility and/or Right-of-Way, a Pembina representative must be present unless deemed otherwise by Pembina. The Pembina representative may stipulate additional safety measures or conditions which will be documented in the locate report, the written consent, or communicated in the field.

Agricultural Activity

Agricultural activity is defined as the production of crops and the raising of animals, and includes tillage, plowing, disking, harrowing and pasturing, but does not include the construction of new buildings or impervious areas or the placement of footings, foundations, pilings or posts, including fence posts.

Agricultural activities are permitted on or near a pipeline Right-of-Way if:

- The loaded axle weight, ground pressure and tire pressure of the vehicle or mobile equipment are within the manufacturer's approved limits and operating guidelines.
- The point of crossing has not been the subject of a notification from Pembina stating that a crossing at that location could impair the pipeline's safety or security.
- The depth of cultivation is less than 45 cm (18 inches) below the ground.

Agricultural activities that do not meet the above conditions require written consent.

Complex Crossings

Upon receipt and analysis of crossing activities, such as new highways, railways or land development, they may be deemed “complex”. This will require additional engineering analysis and consultation between Pembina and the Applicant to ensure the protection of Pembina Assets as well as safety of people and environment.

A **Complex** Crossing request is one that:

- is part of a larger undertaking by the requestor, such as subdivision development, highway expansion, railway crossing etc., or
- does not meet Pembina Requirements for that Type of Crossing
- requires mitigation or modification of a Pembina asset; or
- requires a Backstop agreement with Pembina. (i.e. Terms for financial reimbursement to Pembina for infrastructure alterations or improvements or supervision of construction around Pembina facilities, etc.)

In the case of large projects involving Complex Crossings, Pembina should be consulted as early as possible in the design process.

General information to be included in the application utilizing a completed Technical Information Form for Crossing Request and the appropriate drawings for crossing requests, as listed in the applicable sections below. Each section outlines additional scope specific requirements for different crossing activities that need to be included in addition to the general requirements.

GENERAL INFORMATION
to be Submitted for a Crossing Request

- Scope of Work
- Purpose of Activity (e.g., new construction, maintenance, other)
- Anticipated Activity Start Date
- Anticipated Activity End Date
- Existing Land Use (commercial, industrial, agricultural, residential)
- Survey plan or design drawings that include plan view and profile view of proposed activity in relation to Pembina pipeline assets as well as the following information:

PLAN Drawings:

- Plan number, including any revision number and the respective date
- North arrow
- Legend
- Scale
- Location indicator, including:
  - Legal Land Description
  - GPS coordinates of each Crossing (decimal format)
  - Land Identifier Numeric Code (LINC)
- Locations of existing buried facilities, road allowances, and rights-of-way(s) boundaries
- Locations of property boundaries, including road and utility easements and all associated easements/limits within property
- Location and identification of all Pembina assets
- Proposed:
  - Crossing location(s) relative to property line or Right-of-Way boundary
  - Crossing angle(s)
  - Clearance between facilities
- Dimensions of the proposed infrastructure/work in relation to Pembina assets

PROFILE Drawings:

- Cross section view and/or profile view including:
  - For surface structures, show the profile along pipeline(s) with the highest elevation
  - For underground facilities, show the profile along the Pembina facility
  - Property lines and pipeline(s)
  - Drill path plans for subsurface installations, including alignment and entry and exit angles
  - Unsupported span (m/ft) of Pembina pipeline for open cut installations
- Location of the pipeline(s) and the depth of cover
- Proposed minimum horizontal and vertical clearances from the pipeline(s)
- Surface elevations along with existing grade and proposed grade

UNDERGROUND CABLE Requirements
a. Information
· Cable type (i.e. electrical, communications) · Cable material (i.e. copper, fibre-optic) · Cable insulator · Conduit material · Conduit diameter · Cable voltage · Energization date · Installation method (i.e. bore, open cut) · Vibratory compaction details (if applicable) · Crossing coordinates (decimal degree format) · Crossing angle · Crossing position (i.e. above or below Pembina, above ground) · Vertical clearance between facilities · Paralleling Pembina? (if yes, provide length)
b. Drawings
· Clearance between facilities · Proposed Crossing location and coordinates (decimal degree format) and angle (90 degrees preferred) · Drill path plan for HDD installations, including alignment and entry and exit angles · Unsupported span (m/ft) of Pembina pipeline for open cut installations
c. Pembina Requirements
· All underground utilities to cross below the Pembina pipeline unless site conditions make it impractical. · For open cut, minimum vertical clearance from nearest edge of pipeline is 1.0 m (3.3 ft). · For directional drills / boring, minimum vertical clearance from nearest edge of pipeline is 1.5 m (5 ft). · Crossing will be made at as close to 90 degrees as possible to Pembina's pipeline for the entire width of the Right-of-Way. · Cable to maintain constant direction and elevation (no bends) throughout the crossing of the entire width of Right-of-Way. · No electrical grounding element will be installed within 10 m (33 ft) of a Pembina pipeline or within the Right-of-Way, whichever is greater. · Cable must be installed within a continuous, non-conductive conduit (HDPE, PVC) across the Pembina Right-of-Way**.** · Install caution tape above Pembina pipeline directly over the cable or utility line for at least 5 m (16 ft) each direction from the pipe's centreline (for open cut installation). · Vaults, Hand wells or other associated structures are not permissible within 7.5 m (25 ft) of the pipeline or within the Pembina Right-of-Way, whichever is greater. · For electrical systems 25kVL-G or greater, the Grantor will provide information (voltage, grounding locations, structures, route) on any part of the electrical system associated with the installation that approximately parallels the Grantor's pipeline system for a total (intermittent or continuous) of more than 3 km (1.9 miles), within 300 meters or 1000 feet of the Grantor's pipeline system.

OVERHEAD POWER LINE or PARALLELING POWER LINE Requirements
a. Information
· Distribution or Transmission · Type of power (AC/DC) · Line voltage · Energization date · Distance of grounding system/element to Pembina · Distance of poles, guy wires, and/or structures to Pembina facilities(s) · Crossing coordinates (decimal degree format) · Crossing angle · Paralleling Pembina? (if yes, provide length)
b. Drawings
· Locations of all proposed poles, towers, guys, anchors, or other support structures o Horizontal clearance of all support structures to pipeline o Vertical clearance of all support structures to pipeline o Pole number(s) · Location of grounding system and distance to pipeline · Crossing coordinates (decimal degree format) · Proposed Crossing angle · Section view drawing showing dimension of proposed height of the overhead cables (line to ground clearance) across ROW.
c. Pembina Requirements
· Crossing will be made at as close to 90 degrees as possible to Pembina's pipeline for the entire width of the Right-of-Way. · No permanent structures including poles, guy wires, anchors, piles etc. will be placed within 7.5 m (25 ft) of Pembina's pipeline nor within the Pembina Right-of-Way, whichever is greater. · No electrical grounding element, including tower footings, will be installed within 10 meters (33 ft) of Pembina's pipeline nor within the Pembina Right-of-Way, whichever is greater. · Aerial markers to be installed by requestor for crossings of a Pembina pipeline where powerlines may pose a risk to aerial patrols. · For electrical systems 25kVL-G or greater, the Grantor will provide information (voltage, grounding locations, structures, route) on any part of the electrical system associated with the installation that approximately parallels the Grantor's pipeline system for a total (intermittent or continuous) of more than 3 km (1.9 miles), within 300 meters or 1000 feet of the Grantor's pipeline system. *NOTE: Changes in power line operating characteristics or configuration that are outside the parameters of the original power line consent (e.g., increased maximum load, introducing or removing a phase transposition) must be reported to Pembina for assessment.* Voltage >35 kV L-G (69kV L-L) - Additional Requirements: - An assessment of impact to Pembina facilities will be undertaken by Pembina at the applicant's cost. - The applicant may not energize the system until the assessment, and any required mitigations are completed. - Written notice shall be provided to Pembina 30 days and 48 hours prior to energization.

PIPELINE Requirements (including Water/Sewer Lines, Culverts, etc.)
a. Information

· Pipeline material (i.e. steel, plastic, composite, etc.)
· Pipeline specifications:
  ○ Grade
  ○ Diameter
  ○ Wall thickness
  ○ Coating type
  ○ Maximum operating pressure
· Product(s) transported
· Installation method (i.e., Bore, Open Cut)
· Cathodic protection (Voltage and Current)
· Vibratory compaction details (if applicable)
· Crossing location and coordinates (decimal degree format) and angle (90 degrees preferred)
· Crossing position (above or under Pembina, above ground)
· Vertical clearance between facilities
· Structures/Piles included in design? (if yes, detail on plan/drawing)

b. Drawings
· Crossing coordinates (decimal degree format) · Proposed Crossing angle · Clearance between facilities · Location of cathodic test lead terminals · Drill path plan for HDD installations, including alignment and entry and exit angles · Unsupported span (m/ft) of Pembina pipeline for open cut installations
c. Pembina Requirements
· All buried pipelines must cross below the Pembina pipeline unless site conditions make it impractical. Minimum Separation: ○ Open cut installation minimum vertical clearance from nearest edge of pipeline is 1.0 m (3.3 ft) · Trenchless installation minimum vertical clearance from nearest edge of pipeline is 1.5 m (5 ft) non-metallic/non-conductive pipelines shall have a tracer wire or other alternative locate marking method acceptable to industry. Horizontal direction drilling installations should include a double-run of tracer wire. · Crossing will be made at as close to 90 degrees as possible to Pembina's pipeline for the entire width of the Right-of-Way. · Pipeline to maintain constant direction and elevation (no bends) throughout the crossing of the entire width of Right-of-Way. · Not cross within the immediate area of a Pembina pipeline bend location. · No permanent structures including piles are permitted within the Grantor's Right-of-Way, or within 7.5m (25 ft) where a Right-of-Way does not exist, whichever is greater. No vibratory compaction shall be used within 5m (16.5 ft) of Pembina's facility.

ROAD, HIGHWAY or PARKING LOT Requirements
a. Information

· Road type/use
· Temporary, permanent, or duration road is required for
· Road surface material (i.e., Gravel, asphalt, etc.)
· Width of proposed road surface
· Coordinates (decimal degree format) indicating the intersection of the edges of the road and road centerline with the pipeline (decimal degree format)
· Existing and proposed road grades
· Vibratory compaction details (if applicable)
· Proposed crossing location coordinates (decimal degree format) and angle (90 degrees preferred)
· Maximum excavation/milling/removal of material from above the pipeline
· If there will be any milling activity, provide:
  ○ depth of milling
  ○ equipment used for milling
· Ditch crossing (yes or no)
  ○ Include existing and proposed grades

b. Drawings

· Locations of all access roads
· Crossing angle
· Design drawing of road including:
  ○ Width of proposed road (travelled surface)
  ○ Finished road surface thickness
  ○ Finished road surface slopes
  ○ Sub soil material and compaction level
  ○ Depth of cover over Pembina pipeline at centreline of road
  ○ Depth of cover over Pembina pipeline at invert of ditch
· If construction of new ditches or re-contouring of existing ditches is required, indicate them on the plan and profile drawings.

c. Pembina Requirements
· Minimum depth of cover will be 1.5 m (5 ft) throughout the road or highway Right-of-Way   ○ If proposed final depth of cover exceeds 5 m (16.5 ft) it will require a detailed review by Pembina · Crossing will be made at as close to 90 degrees as possible to Pembina's pipeline for the entire width of the Right-of-Way. · Any paralleling road including appurtenances, must be outside the boundary of the Right-of-Way and must be located a minimum of 7.5 m (25 ft) from the edge of Pembina pipeline(s). · No permanent structures including piles are permitted within Pembina's Right-of-Way, or within 7.5m (25 ft) where a Right-of-Way does not exist, whichever is greater. · No vibratory compaction shall be used withing 5m (16.5 ft) of Pembina's pipeline. · Pembina shall retain access to their Facility for maintenance activities as required. · Pembina facility markers or signage to be installed as required. · Cathodic Protection test stations will be installed at each side of the crossing as directed. *NOTE: Roads and highways are complex crossings that require Engineering Assessment to determine the potential impacts to the pipeline.*

DRAINAGE DITCHES AND BERMS Requirements
a. Information

· Ditches:
  o Ditch dimensions (width, depth, etc.)
  o Description of a ditch liner and material type, if proposed to be used
  o Description of ditch cleaning activities and expected frequency of activities
· Berms:
  o Dimensions including width, depth or height of earth material being installed or removed
  o Type of earth or material
· Proposed crossing location and angle (90 degrees preferred)

b. Drawings
· Section view showing dimensions of width at top of ditch, invert width of ditch, and depth of ditch or swale · Depth of cover from invert of ditch or swale to top of pipeline
c. Pembina Requirements

· Minimum depth of cover is 1.5 m (5 ft) from top of pipeline to invert of ditch.
· Minimum requirements for minor berms are:
  o Up to 1 m (3.3 ft) high
  o Not to exceed total depth of cover of 2.0 m (6.6 ft) above a facility
· Cross as close to 90 degrees as possible.
· Parallel installations shall be located outside Right-of-Way.
· Surface drainage must be directed away from pipeline Right-of-Way.
· Erosion protection measures may be required.

DRAIN TILE Requirements
a. Information
· Tile material · Tile diameter · Method of installation · Proposed Crossing location and angle (90 degrees preferred)
b. Drawings
· Locations and orientations of all tile runs (the entry point into the Right-of-Way, crossing point over the facility and the exit point or the parallel distance from the facility) in addition to the above information.
c. Pembina Requirements
· Cross Pembina facility and Right-of-Way at or as near to 90 degrees as possible. · Minimum vertical clearance is 0.6 m (2 ft) from nearest edge of pipeline. · Minimum horizontal clearance to be outside the Pembina Right-of-Way or a minimum of 5 m (16.5 ft) from pipeline. · Drain tile is not permitted to drain onto a Pembina Right-of-Way.

RAILWAY Requirements
a. Information
· Railway type/use · Temporary, permanent, or duration railway is required for · Track foundation information (i.e., Gravel, asphalt, etc.) · Width of proposed railway · Coordinates (decimal degree format) indicating the intersection of the edges of the railway and railway centerline with the pipeline (decimal degree format) · Existing and proposed grades · Vibratory compaction details (if applicable) · Proposed crossing location and coordinates (decimal degree format) and angle (90 degrees preferred) · Maximum excavation/removal of material from above the pipeline · Ditch crossing (yes or no), include existing and proposed grades · Crossing Angles
b. Drawings
· Location of proposed railway crossing relative to pipeline · Design drawing of railway including: o Width of proposed railway o Finished railway surface thickness o Finished railway surface slopes o Sub soil material and compaction level o Depth of cover over Pembina pipeline at centreline of railway o Depth of cover over Pembina pipeline at invert of ditch o Crossing angle · If construction of new ditches or re-contouring of existing ditches is required, indicate them on the plan and profile drawings.
c. Pembina Requirements
· Installation will be made at as close to 90 degrees as possible to Pembina's facility. · No additional permanent structures are permitted within Pembina's Right-of-Way. · No cover shall be permanently removed from over Pembina's facility. · Cathodic Protection test stations will be installed according to Pembina's specifications and on their facility at each side of the Installation. *Note: Specific requirements for new railway crossings will be determined based on location and other considerations, including the required Engineering Assessment.*

FENCE Requirements
a. Information
· Temporary, permanent, or duration of use · Fence material · Fence height · Fence post location coordinates (decimal degree format) · Proposed crossing location and angle (90 degrees preferred)
b. Drawings
· Include the above specified information at minimum · Fence post spacings and locations relative to pipeline
c. Pembina Requirements
· No posts, sign or bollard within 1.5m (5 ft) of the edge of the pipeline. · Crossing will be made at as close to 90 degrees as possible to Pembina's pipeline for the entire width of the Right-of-Way. · Gate access may be required at locations within/across Grantor's Right-of-Way. · Permanent metallic fence posts must be fully encased in cement from above the soil interface to 150 mm (0.5 feet) below the bottom of the post. *NOTE: Sound Barriers, industrial/commercial fences or fences that are more structural in nature may not be permissible within the Pembina Right-of-Way and will be assessed on a case-by-case basis.*

VEHICLES & HEAVY EQUIPMENT Requirements
a. Information
· Vehicle name, make, and model · Axle load · Axle or track separation · Vehicle load (if tracked) · Tire or track contact width · Track length · Tire pressure · Non-standard vehicle information (i.e. equipment with rollers, vehicles with >5 axles, custom made, etc.) · Proposed crossing location and angle (90 degrees preferred)
b. Drawings
· Completed Pembina Weight Sheet that conforms to the guidance contained in the Pembina Weight Sheet User Guide for each tired and tracked vehicle · Crossing location and angle of crossing
c. Pembina Requirements
· Temporary vehicle and equipment crossings require a surface loading calculation completed by Pembina Integrity to ensure the pipe does not incur any damage. · Surface loading calculation results may require the applicant to add additional soil, install rig mats, or bridge the crossing. · Storage of vehicles, equipment, and materials on a Pembina Right-of-Way is not permitted without additional approvals.

GEOPHYSICAL – BLASTING, QUARRYING AND SEISMIC Requirements
Information
· Type and material specification of source · Charge layout (including number of units/lines) · Charge weight and density per hole · Site dimensions, including explosive depth, distribution, and maximum charge and weight per delay, and hole depth, diameter, and pattern, and number of holes per delay · Distance from Pembina facilities
Drawings
· Detailed blasting plan that shows the above information at minimum
Pembina Requirements
· Blasting and geophysical activities proposed within 300 m (1000 ft) of Pembina facilities must be submitted to Pembina with a blasting plan outlining such proposed activity submitted at least ten (10) working days prior to the blasting event. · Applicants must also apply to the CER for any blasting activities related to prospecting for mines and minerals within 40 m (130 ft) of a CER regulated pipeline Right-of-Way. · Seismograph monitoring is required for calculated PPVs 0.5 – 2.0 inches/sec. At PPV > 2.0 inches/sec, work shall cease and Pembina to be contacted for further geotechnical/integrity review.

LANDSCAPING/VEGETATION PLANTING Requirements
Information
· All landscaping within any Pembina Right-of-Way needs to be approved by Pembina before installation
Drawings
· Detailed landscape drawings indicating location and type of plantings
Pembina Requirements
· No cover shall be permanently removed from over Pembina Facility. · No trees or shrubs permitted within Pembina's Right-of-Way. · No trees or shrubs shall be planted less than 5 m (16.5 ft) from Pembina-owned fences, buildings and above-ground Facilities.

SIDEWALKS AND PEDESTRIAN PATHWAY Requirements
Information
· Sidewalk/path type and usage · Width of sidewalk/path · Surface material · Elevation at centre of path · Elevation at ditch (if applicable) · Proposed crossing location coordinates (decimal degree format) and crossing angle (90 degrees preferred)
Drawings
· Include the above specified information at minimum · Depth of cover over pipeline
Pembina Requirements
· Must not exceed 3 m (10 ft) in width. · Must maintain a minimum clearance of 5 m (16.5 ft) from the edge of the facility at all points where the pathway parallels the facility within the Right-of-Way. · Cross the facility as close to 90 degrees as practicable, but not less than 45 degrees. · Limit crossings to 1 per city block (approx. 200 m or 660 ft). · Minimum 1.2 m (4 ft) depth of cover over the pipeline. · Pembina supplied signage to be installed at crossings by applicant. · Surface drainage directed away from Right-of-Way.

GRADING Requirements
Information
· Proposed crossing location coordinates (decimal degree format). · Existing and proposed grades over pipeline and across Right-of-Way · Maximum planned removal of existing material over pipeline and across Right-of-Way · Type and depth of fill to be added over pipeline and across Right-of-Way
Drawings
· Include the above specified information at minimum
Pembina Requirements
· No cover shall be permanently removed from over pipeline. · Maintain a minimum of 1.2 m (4 ft) depth of cover across Pembina Right-or-Way. · Additional clay fill up to 2 m (6.5 ft) may be added to Pembina Right-of-Way provided the final depth of cover does not exceed 5 m (16.5 feet). · No vibratory compaction within 5 m (16.5 feet) of pipeline. · No equipment staging, materials storage or stockpiling within 5m (16.5 feet) of the pipeline. · Access matting & temporary fencing may be required.