

Crossing and Encroachment Typical Drawings

Drawing Requirements

Drawing Requirements for Permanent Installations

For all permanent crossings, complete a) Drawing Requirements for all Permanent Crossings. Then identify the type of facility being crossed, see b) to f) below, and provide the related information on the drawings.

a) Drawing Requirements for all Permanent Crossings

Items to Include on all Permanent Drawings

- Plan number, including any revision number and the respective date
- North arrow
- Scale
- Legend or properly labelled on the site plan
- Location indicator, including:
 - legal land description
 - property index number (PIN)
 - Global Positioning System (GPS) coordinates (decimal format)
- Plan view of the whole quarter section or affected area including:
 - lot lines and road limits
 - proposed facilities (including e.g., curbs, footing, guard rails, guy wires, poles and fences) with tie
 - location of cathodic test lead terminals, if known and applicable
- 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 facility
 - property lines and pipeline(s)
 - drill path plans for subsurface installations, including alignment and entry and exit angles
 - unsupported span (m/ft) of Enbridge pipeline for open-cut installations
- Crossing angle
- Crossing location clearly labelled
- Identification of all affected Enbridge facilities and right(s)-of-way, if applicable
- Method of installation
- Minimum clearance from Enbridge facility

Note that other items, e.g., depth of cover or right-of-way(s), might be required as a revision after preliminary drawings are reviewed.

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b) Pipe, Cable, Wire or Line

Items to Include on Pipe, Cable, Wire or Line Drawings

- Pipe diameter
- Pipe material
- Product conveyed
- Cathodic protection system (if applicable)
- Cable, wire or line size
- If cable, wire or line is within a conduit, conduit material and size
- Voltage, if cable, wire or line is electric

c) Above-Grade Installations

For example, road, path, parking lot or railway.

Items to Include on Above-Grade Installation Drawings

- Dimensions of road, path or parking lot
- Elevation at ditch
- Elevation at the centre of the road, path or parking lot
- Surface material
- Road, path type or usage
- Changes to right-of-way
- GPS coordinates (decimal format) of the beginning and end of the limits of the crossings
- Maximum excavation/milling/removal of material from above the pipeline

d) Overhead Distribution Power

For transmission power lines, see Section 5.11 of the “Crossing and Encroachment Guide and Requirements” ([Canadian](#) or [US](#) version) for additional drawing requirements.

Items to Include on all Overhead Distribution Power Drawings

- Pole number(s)
- Location of e.g., pole, guy wire or anchors, with GPS coordinates and distance from Enbridge pipeline
- Method of installation of e.g., pole, guy wire or anchors
- Vertical clearance to ground or grade
- Width of the applicant’s right-of-way easement
- Voltage

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e) Drainage Tile

Items to Include on Drainage Tile Drawings

- Location of tile (the entry point into the easement, crossing point over the facility and the exit point or the parallel distance from the facility)
- Incremental cost analysis, if applicable
- Tile diameter
- Tile material
- Method of installation

f) Berms or Earthworks that Change the Cover Profile

For example, excavations and ditching.

Items to Include on Berms and Earthworks Drawings

- Dimensions including width, depth or height and length of earth material being installed or removed
- Type of earth or material

Drawing Requirements for Temporary Activities

For all temporary crossings, complete g) Drawing Requirements for all Temporary Activities. Then identify the type of facility being crossed, see h) to k) below, and provide the related information on the drawings.

g) Drawing Requirements for all Temporary Activities

Items to Include on all Drawings for Temporary Activities

- Plan number, including any revision number and the respective date
- North arrow
- Scale
- Legend or properly labelled on a site plan
- Location indicator, including:
 - legal land description
 - PIN
 - GPS coordinates (decimal format)
- Plan view of the whole quarter section or affected area
- Temporary activities (including location) clearly labelled
- Identify all affected Enbridge facilities, right-of-way(s) and/or easement ownership. Enbridge facilities must be field verified.
- Soil type, if known

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h) Workspace

Items to Include on Workspace Drawings

- Location
- Measurement of workspace
- Purpose

i) Blasting – Including Seismic and Geophysical Activities

Items to Include on Blasting Drawings

- Charge layout (including number of units/lines)
- Type and material specification of source
- Charge weight per hole
- Distance from Enbridge facilities
- Project name and prospect name (Canada, or if applicable)

j) Access of Right-of-Way

Items to Include on Access of Right-of-Way Drawings

- Location
- Kilometre or mile usage of right-of-way
- Width of access
- Egress/ingress points
- Complete the vehicle crossing information (see [Vehicle Equipment Form](#))

k) Enbridge Owned Road Use

Items to Include on Enbridge Owned Road Use Drawings

- Indicate road(s) to be used
- Kilometre or mile usage
- Reason required
- Frequency of use

Typical Crossing Drawings

See typical drawings below for:

- road crossing (see [Figure 1: Road Crossing – Typical Drawing](#))
- facility crossing (see [Figure 2: Facility Crossing – Typical Drawing](#))
- test lead connection for steel pipeline (see [Figure 3: Test Lead Connection for Steel Pipeline – Typical Drawing](#))
- railway crossing (see [Figure 4: Railway Crossing – Typical Drawing](#))
- crossing ramps (see [Figure 5: Crossing Ramp – Typical Drawing](#))
- crossing ramp with mats (see [Figure 6: Crossing Ramp with Mats – Typical Drawing](#))

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- air bridges (see [Figure 7: Air Bridges – Typical Drawing](#))
- resurfacing or re-gravelling (see [Figure 8: Resurfacing or Re-gravelling – Typical Drawing](#))
- ditch restoration (see [Figure 9: Ditch Restoration – Typical Drawing](#))
- minor berms (see [Figure 10: Minor Berms – Typical Drawing](#))
- above-ground installations (see [Figure 11: Above-Ground Installations – Typical Drawing](#))

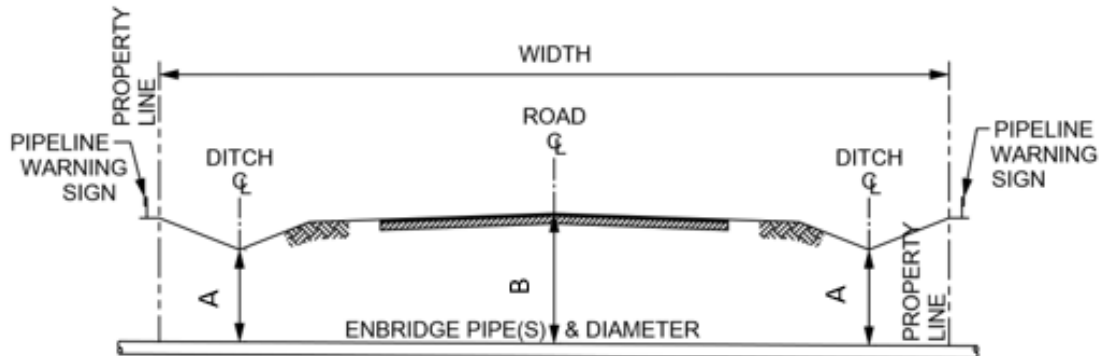


Figure 1: Road Crossing – Typical Drawing

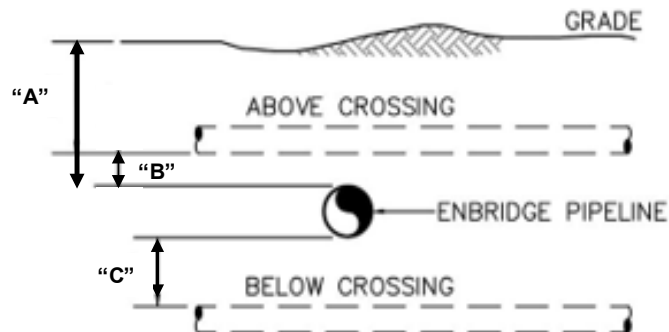


Figure 2: Facility Crossing – Typical Drawing

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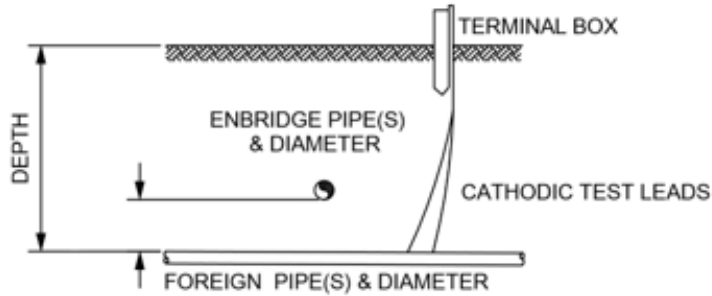
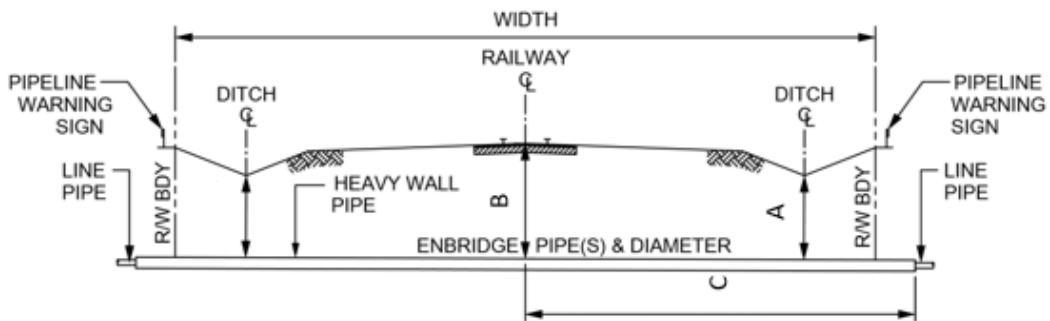
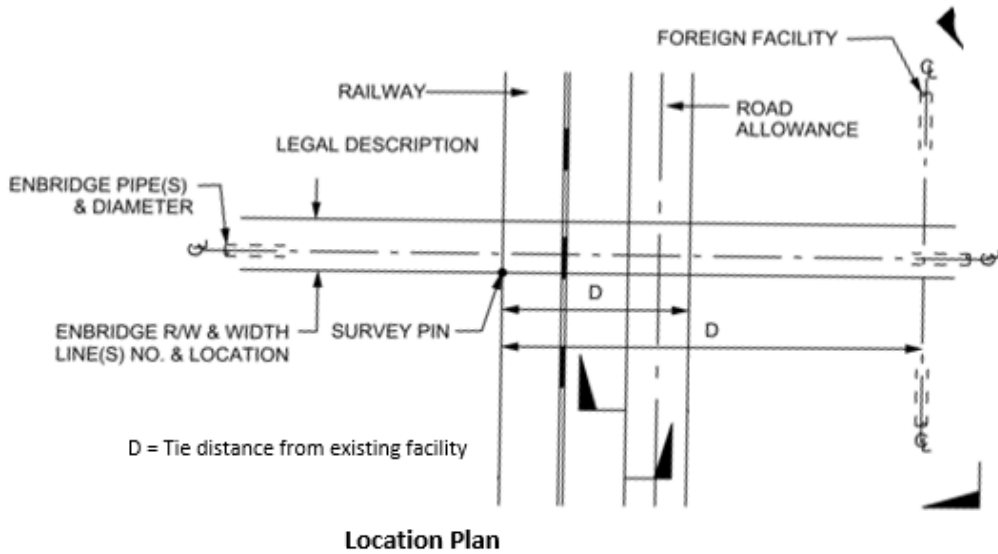


Figure 3: Test Lead Connection for Steel Pipeline – Typical Drawing



Note: Because Enbridge pipelines operate under high pressure, an Enbridge Representative(s) must be present during construction.

Figure 4: Railway Crossing – Typical Drawing

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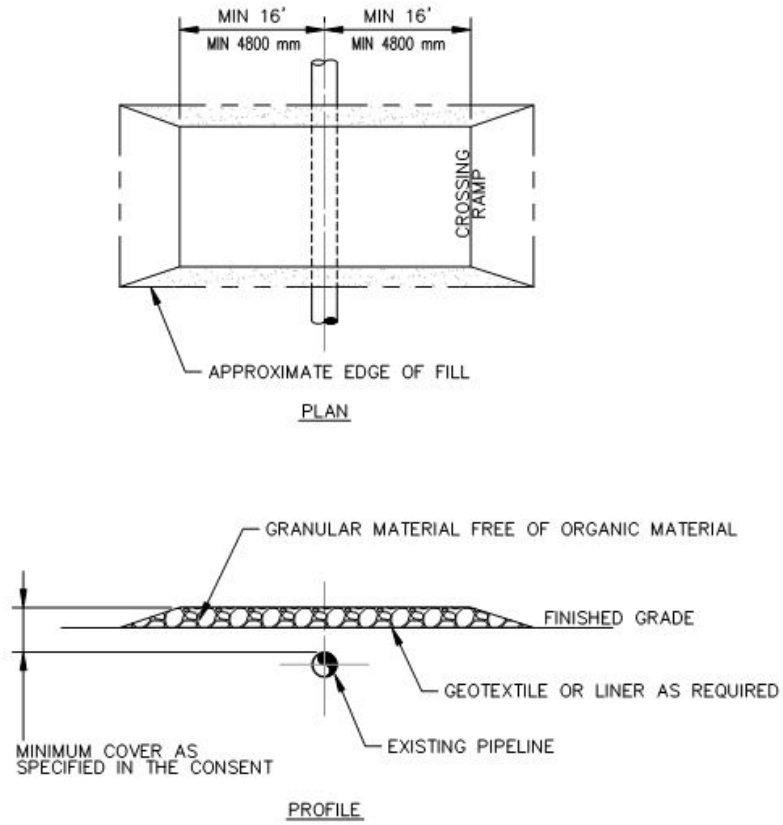


Figure 5: Crossing Ramp – Typical Drawing

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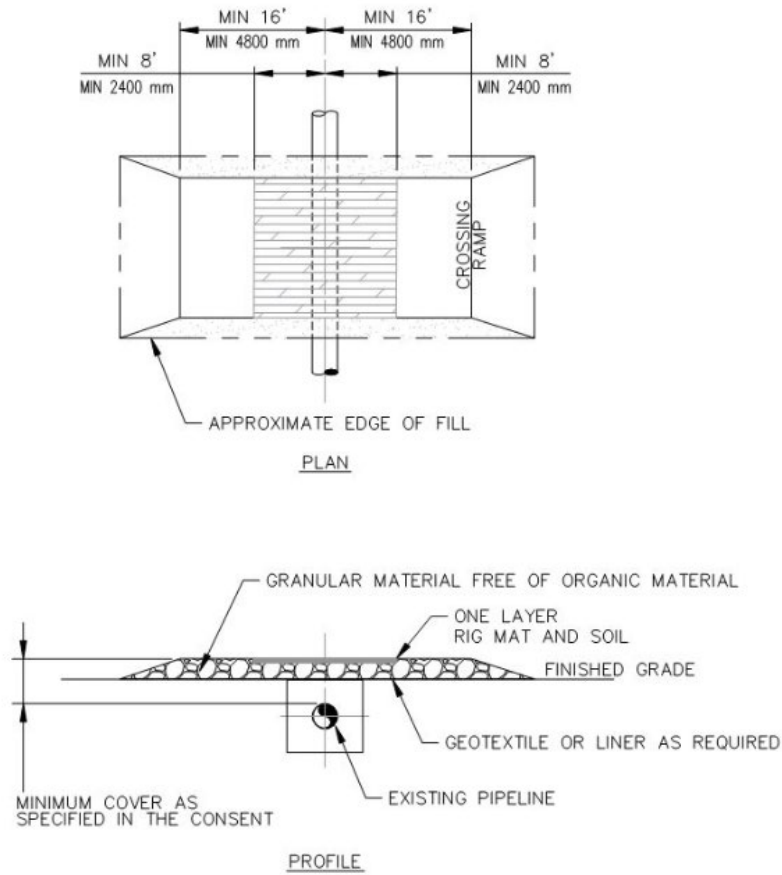


Figure 6: Crossing Ramp with Mats – Typical Drawing

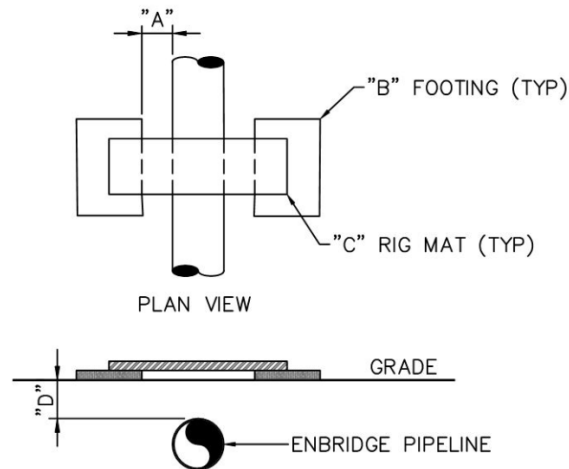
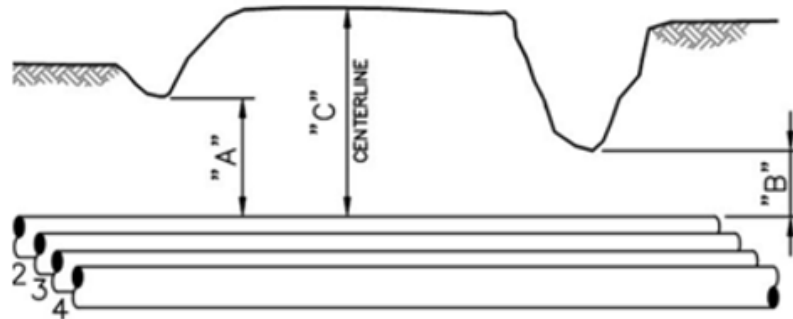


Figure 7: Air Bridges – Typical Drawing

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All measures to the top of pipe

Figure 8: Resurfacing or Re-gravelling – Typical Drawing

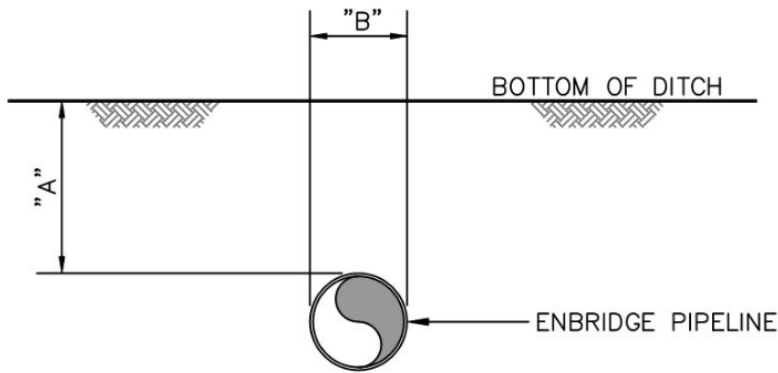


Figure 9: Ditch Restoration – Typical Drawing

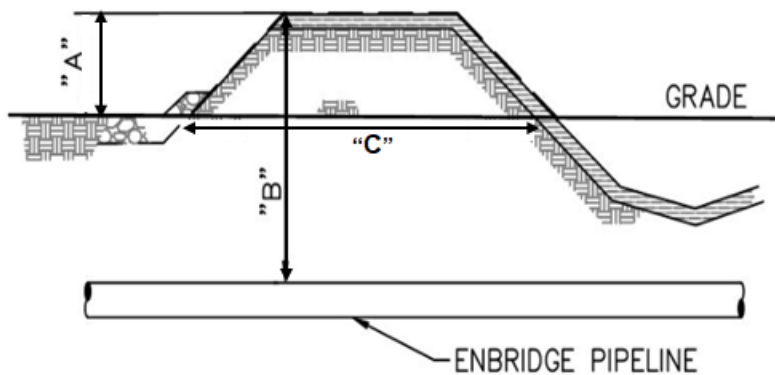


Figure 10: Minor Berms – Typical Drawing

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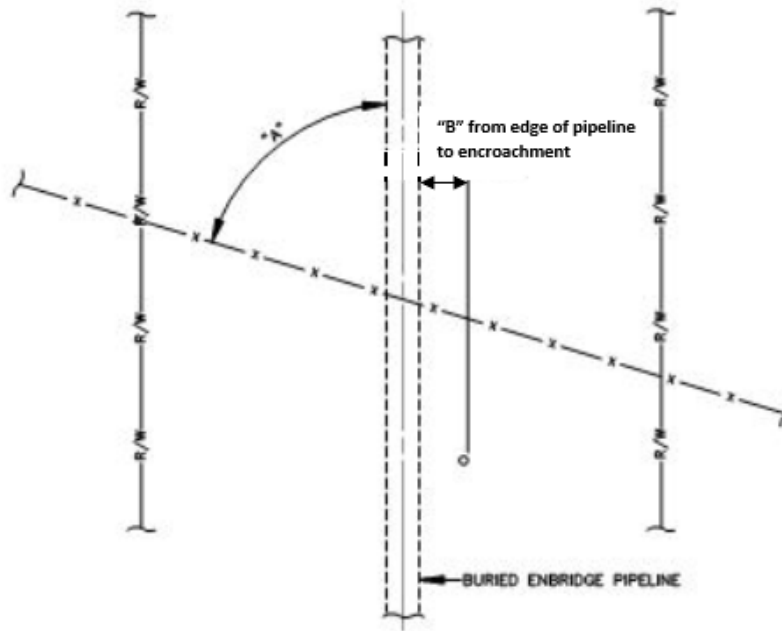


Figure 11: Above-Ground Installations – Typical Drawing