

**Attachment D**  
**Winter Construction Plan**



# Winter Construction Plan

Enbridge Energy, Limited Partnership • Line 3 Replacement Project

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## **ACRONYMS AND ABBREVIATIONS**

ATWS	additional temporary workspace
BMPs	Best Management Practices
BWSR	Minnesota Board of Water and Soil Resources
EI	Environmental Inspector
EMCP	Environmental Monitor Control Plan
Enbridge	Enbridge Energy, Limited Partnership
EPP	Environmental Protection Plan
HDD	Horizontal Directional Drill
INS	invasive and noxious species
L3R or Project	Line 3 Replacement Project
MDNR	Minnesota Department of Natural Resources
MPCA	Minnesota Pollution Control Agency
Plan	Winter Construction Plan
ROW	right-of-way
VMP	Post-Construction Vegetation Management Plan for Public Lands and Waters
WQC	Section 401 Water Quality Certification

## INTRODUCTION

The Winter Construction Plan (“Plan”) provides an overview of the procedures that will be employed by Enbridge Energy, Limited Partnership (“Enbridge”) during winter conditions on the Line 3 Replacement Project (“L3R” or “Project”). Winter construction weather conditions assume the presence of frozen surface soils or frozen precipitation covering the ground surface, and an extended forecast of below freezing temperatures. Due to the variability in weather conditions and site-specific conditions along the Project route, Enbridge will determine if frozen or non-frozen conditions apply at a given site and will select the construction technique and associated Best Management Practices (“BMPs”) as appropriate for the conditions at the time of crossing. Requests to change the proposed crossing method will follow the process outlined in Section 6.0 of the Environmental Monitor Control Plan (“EMCP”). Written approval from Enbridge and the applicable agency(ies) must be obtained prior to implementing an alternative crossing method.

This Plan has been formatted to match Enbridge’s Environmental Protection Plan (“EPP”). Only pertinent sections with winter construction methods that differ or are additive to the EPP are included in the Plan. BMPs that differ from the standard BMPs described in this Winter Construction Plan and that will be implemented on public lands<sup>1</sup> and waters<sup>2</sup> as required by Minnesota Department of Natural Resources (“MDNR”) licenses and leases are underlined.

## 1.0 GENERAL MITIGATION MEASURES

### 1.1 IDENTIFICATION OF AVOIDANCE AREAS

During winter construction activities, Environmental Inspectors (“EI”) will confirm that signage or flagging for the avoidance areas described in Section 1.1 of the EPP has been maintained or replaced for visibility during winter conditions.

Enbridge’s Rare and Sensitive Environmental Resources Plan will include additional mitigation and conservation measures to be implemented near sensitive biological resources. Enbridge’s NHIS Review and Avoidance Plan will include Project required mitigation and conservation measures to be implemented near sensitive biological resources on public lands. Federally or state-listed species observations within the construction workspace will be reported to the appropriate agency(ies).

### 1.3 WET WEATHER SHUTDOWN

The transitional periods between fall and winter, and winter and spring may require a wet weather shutdown period. Weather conditions that fluctuate between above freezing temperatures during the day and below freezing temperatures at night often result in soils that are wet and “greasy,” which are susceptible to rutting, defined as the creation of linear depressions made by tire tracks of machinery 6 inches or greater in depth,<sup>3</sup> that results in the mixing of topsoil and subsoil.

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<sup>1</sup> All tracts or lots of real property belonging to the state and under the control and supervision of the commissioner of natural resources

<sup>2</sup> Public waters as defined in Minnesota Statutes 103G.005, Subd. 15 and depicted in Public Waters Inventory maps authorized by Minnesota Statutes 103G.201.

<sup>3</sup> MDNR State Land Rutting Guidelines and Erosion and Sediment Control Decision Tree accompanying the SWPPP.

Enbridge will follow the process described in Section 1.3 of the EPP to determine the need for and duration of a wet weather shutdown or other mitigative actions in these situations.

## **1.4 RIGHT-OF-WAY ACCESS**

Construction of frost/ice roads may be needed to access the right-of-way (“ROW”). Development will begin as soon as weather conditions allow. Enbridge will clear all woody vegetation from areas where the frost/ice roads are to be located. After clearing, lightweight equipment such as snowcats and/or amphibious all-terrain vehicles (e.g., Argos) will be used to push and pack existing ice and snow together. This process is referred to as “snow pack.” This initial snowpack provides the foundation for frost/ice roads. As the snowpack builds up and hardens, larger and heavier equipment will be used to progressively increase the thickness and density of the snowpack. Typically, a minimum of 30 inches of snow pack is necessary to safely support construction equipment. In some cases, water may be added to the surface to help build snow pack from the top. If there is insufficient snow pack to safely support construction activities, it may be necessary to lay construction mats in addition to snow pack.

No deicing products will be used on the Project; however, snow removal may be required to allow safe access to the ROW. Snow is typically pushed off of an access road with equipment such as a grader, snowplow, or bulldozer and then stockpiled along the edge of the access road. To minimize scraping off underlying soil or gravel during snow removal, snowblower attachments will be installed on compatible equipment. All equipment will remain on the access road and snow will not be pushed or blown onto environmentally sensitive features (refer to Section 1.1 of the EPP) off ROW.

### **1.4.1 Bridges and Culverts**

Enbridge will utilize the clear span or non-clear span bridge types described in the Summary of Construction Methods and Procedures (Appendix A of the EPP) and in Section 2.4.2 of the EPP. Enbridge may also utilize ice bridges to cross small waterbodies (see Table 1.4-1).

### **1.4.2 Temporary Access Road Restoration**

After construction, Enbridge will return improved ice/frost roads to their pre-construction condition. Revegetation of temporary access roads will proceed as described in Section 7.0. Decompaction can be accomplished using tillage radish on public lands as described in Section 1.18 of the EPP. No temporary infrastructure in wetlands or waterbodies (e.g., bridges, construction mats) will be permanently left in place without the appropriate regulatory permits, authorizations, and certifications.

**TABLE 1.4-1**  
**Ice Bridges**

<b>Type</b>	<b>Description</b>	<b>Applicability</b>	<b>Advantages</b>	<b>Disadvantages</b>
Ice Bridge	Ice bridges are constructed over waterbodies on ice. Bridges can be strengthened by removing snow and flooding if needed.	Suitable over small waterbodies where the ice is thick and solid, generally on relatively shallow, low velocity and narrow watercourses.	<ul style="list-style-type: none"> <li>• Limited sediment release</li> <li>• Can be easily constructed where needed</li> </ul>	<ul style="list-style-type: none"> <li>• Susceptible to winter thaw</li> <li>• Potential safety hazard</li> </ul>



## **1.5 RIGHT-OF-WAY REQUIREMENTS**

All construction equipment and vehicles will be confined to the approved construction workspace and additional temporary workspace (“ATWS”), except where landowners or land-managing agencies have given permission for construction dewatering activities outside of the construction workspace (see Section 5.0).

The width of the construction workspace for the Project will vary and is co-located with Enbridge’s existing corridor, third-party (foreign) utilities, roads, railroads, or highways along the majority of the route. The construction workspace is inclusive of the permanent ROW, permitted temporary workspace, and site-specific extra workspaces (referred to as ATWS) as defined in Section 1.5 of the EPP. The construction workspace width will be reduced (i.e., necked down) in selected locations (e.g., wetlands, waterbodies, in/near sensitive features), as indicated on the Project construction alignment sheets and in the field by the use of staking. Appendix A illustrates the typical winter construction workspace configurations in wetlands where the Project is co-located with existing Enbridge pipelines, foreign utilities, and greenfield.

## **1.6 MANAGEMENT OF UNDESIRABLE SPECIES**

Enbridge will minimize the potential for introduction and/or spread of undesirable species (i.e., invasive or noxious species [“INS”]) along the construction workspace and temporary access roads due to pipeline construction activities. The measures that Enbridge will implement to manage the spread of terrestrial and aquatic INS are described in more detail in Enbridge’s INS Management Plan provided in Appendix B of the EPP.

## **1.8 UPLAND CLEARING**

Clearing during winter conditions will proceed as described in Section 1.8 of the EPP. Removal of snow from the construction workspace may be necessary to provide safe and efficient working conditions and to expose soils for grading and excavation. Snow is typically pushed off the working area with equipment such as a grader, snowplow, or bulldozer and then stockpiled along the outer portions of the workspace. To minimize scraping off underlying soil or gravel during snow removal, snowblower attachments will be installed on compatible equipment. All equipment will remain within the workspace, and snow will not be pushed or blown onto environmentally sensitive features (refer to Section 1.1 of the EPP) off ROW. When snow is stored on the ROW, a physical barrier such as mulch or separation of snow piles from spoil piles will be conducted to avoid mixing.

Construction of frost/ice roads to serve as travel lanes may be needed in upland areas within the construction workspace. Where needed, development will begin as soon as weather conditions allow following the process described in Section 1.4.

## **1.9 TEMPORARY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES**

Due to frozen conditions, installation of certain temporary BMPs (also referred to as erosion control devices) to minimize erosion and control sediment (e.g., silt fence and staked straw bales) may not be practicable. In this case, alternative BMPs (such as compost filter socks, erosion control blankets, or straw wattles) will be installed on bare frozen ground or snow (less than 2 inches deep) to mitigate erosion and sediment migration.

Installed slope breakers and erosion and sediment control BMPs will be subject to inspection and repair requirements as outlined in Section 1.9 of the EPP and/or applicable permits. When thawing conditions begin, BMPs will be monitored and upgraded as needed to prevent sediment deposition into resources or off site. Should final grading and cleanup be completed the following spring, then temporary slope breakers and sediment barriers will be installed during backfill and/or rough grade activities.

BMPs will be installed as needed to provide a conduit for the concentrated flow of melt water to ensure that snow melt will not cause erosion and sediment loss.

### **1.9.2 Mulch**

Enbridge will stabilize exposed ground surfaces within the timeframes described in Section 1.9.1 of the EPP. In most cases, Enbridge will utilize certified weed-free straw or hay mulch<sup>4</sup> to disturbed areas (except for actively cultivated land and most wetlands) as required by applicable permits, certifications, or licenses, or as required by Enbridge, and as approved by the landowner or land-managing agency. Mulch will be anchored (if possible). Mulch will specifically be used on:

- slopes greater than 5 percent; and
- dry, sandy areas that can blow or wash away, as determined in the field.

Mulch may be applied regardless of snow cover to cover at least 90 percent of the ground surface; sunlight will melt the straw into the snow to melt onto bare soil in the spring. Mulch will not be applied in wetlands or conveyance systems, except potentially in peatlands as described in Section 7.7.3 of the EPP or requested by applicable agencies.

## **1.10 UPLAND TOPSOIL SEGREGATION AND STORAGE**

Once the frost road is established (as needed), crews will mobilize to the area where they will string, assemble, and install the pipeline. Special equipment, such as a trencher, ditching machine, or rock saw, will be used to cut down through the frost layer along both trench boundaries. Where frozen blocks have been cut, excavation equipment (e.g., a backhoe or excavator) will be used to remove the large frozen blocks and to place them adjacent to the trench. Depending on the depth of frost, trenching may be completed using conventional excavators. Trench topsoil will be segregated as practicable but modified dependent on depth of frost, thickness of topsoil, and the trenching method used.

### **1.10.2 Topsoil Storage**

Gaps will be left and erosion and sediment control BMPs installed where stockpiled topsoil, spoil piles, and snow piles intersect with water conveyances (i.e., ditches, swales) to maintain natural drainage. Separation will be maintained between the topsoil, subsoil, and/or snow piles to prevent mixing. Where the separation cannot be maintained, the EI may approve the use of a physical barrier on a site-specific basis, such as a thick layer of certified weed-free straw or hay mulch or silt fence, between the spoil, topsoil, and/or snow piles to prevent mixing.

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<sup>4</sup> Minnesota Department of Transportation 3882 Type 3 specifications: <http://www.dot.state.mn.us/pre-letting/spec/2018/2018-spec-book-final.pdf>.

## **1.15 UPLAND BACKFILLING**

After trench excavation, the assembled pipeline sections will be lowered into the trench. The amount of open excavation will be minimized during winter construction to reduce the amount of frozen backfill and facilitate restoration to pre-construction contours. Unless otherwise specified by regulatory permits or certifications issued for this Project's construction, Enbridge will limit the cumulative amount of excavated open trench to a maximum of 3 days of anticipated welding production or 14,000 linear feet per spread. Within each spread, site-specific activities, such as horizontal directional drill ("HDD"), bores, valve work, and pump station construction may be performed independent of open trench work. Excavated soil material will then be used to backfill the trench; the subsoil will be replaced first, and then the topsoil in cases where topsoil has been segregated (see Section 1.10).

In some situations, frozen upland topsoil will not be replaced during frozen conditions. This option will be implemented when the trench, subsoil backfill, and topsoil are frozen preventing proper replacement of soils and compaction of the trench. Instead, the trench will be backfilled with subsoil only, and topsoil replacement and final grading will occur during the subsequent spring or early summer. Subsoil will be graded to the extent possible to avoid channeling of surface water if topsoil restoration is delayed for an extended amount of time. Additional erosion and sediment control BMPs will also be installed as need to prevent channeling of surface water prior to topsoil restoration (see Section 1.9 of the EPP).

This option will prevent multiple trips into an area to reclaim an excessive topsoil crown or repair subsidence that has taken place over the trench line during the freeze/thaw cycle. The topsoil stockpile will remain temporarily stabilized<sup>5</sup> in accordance with Section 1.9 of the EPP throughout this period to prevent erosion and or sediment migration off the construction workspace. Temporary seeding of topsoil piles may be implemented, as appropriate, following the dormant/winter seeding procedures described in Section 7.3.1. Adequate breaks or gaps in the topsoil stockpiles will be installed for drainage so that spring runoff and snow melt will not impact the topsoil piles and adjacent areas.

## **1.16 CLEANUP AND ROUGH/FINAL GRADING**

In cases where topsoil has been segregated into a pile and becomes frozen into irregularly shaped chunks, Enbridge will add a crown of approximately 12 inches or more (depending on soil type and conditions) over the backfilled trench line. Periodic breaks or gaps in the crown will be installed (as necessary) to ensure water is able to move freely across the backfilled trench and not create nuisance conditions during a precipitation event or spring run-off conditions. Crowning will not extend beyond the previously excavated trench limits. In these cases where permanent seeding is not possible, Enbridge will temporarily stabilize all exposed areas, including spoil piles, as described in Section 1.9.

As the backfill material thaws in the spring and summer, there is potential that the original crown may not completely recede to pre-construction contours. If the crown does not full recede, additional grading will be performed once soils have thawed and conditions allow. Permanent seeding will proceed after final grading as described in Section 7.0 of the EPP. Temporary erosion

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<sup>5</sup> Stabilization means that the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, erosion control blanket, mats or other material that prevents erosion from occurring. Grass seeding, agricultural crop seeding or other seeding alone is not stabilization. Mulch materials must achieve approximately 90 percent ground coverage (Minnesota Rules 7090).

and sediment control BMPs will be maintained until permanent cover<sup>6</sup> has been established. Enbridge will monitor upland areas on public lands after restoration as outlined in its Post-Construction Vegetation Management Plan for Public Lands and Waters ("VMP").

## 2.0 STREAM AND RIVER CROSSING GENERAL REQUIREMENTS

The procedures in this section apply to public watercourses, streams, rivers, and other waterbodies such as jurisdictional ditches, ponds, basins, and lakes. These procedures require that judgment be applied in the field and will be implemented under the supervision of Enbridge.

Stream crossing requirements, including construction methods, timing, erosion and sediment control BMP usage, and restoration are described in this section and in the stream crossing permits, licenses, and certifications issued by state and federal agencies and by Tribal authorities (as applicable). Requests to change the proposed crossing method will follow the process outlined in Section 6.0 of the EMCP. Written approval from Enbridge and the applicable agency(ies) must be obtained prior to implementing an alternative crossing method.

### 2.1 TIME WINDOW FOR CONSTRUCTION

All in-stream work activities (installation of dams, sheet piling, etc.) will be minimized to the extent practicable on an area and time duration basis. In-stream trenching will be conducted during periods permitted by the appropriate regulatory agencies and applicable permits and certifications.

Enbridge will not conduct certain construction activities in known wild rice waters or in areas up to 25 miles upstream of wild rice waters from April 1 through July 15 as required by the Minnesota Pollution Control Agency ("MPCA") Section 401 Water Quality Certification ("WQC").

Enbridge will adhere to the following work-exclusion dates for Minnesota Public Water Inventory cool- and warm-water fisheries that require in-channel work,<sup>7</sup> or will seek a waiver with the MDNR:

- Region 1 (Northwest) Non-Trout Streams: March 15 – June 30;
- Region 1 Lakes: March 15 – June 30; and
- Region 2 (Northeast) Non-Trout Stream and Lakes: March 15 – June 30.

In addition, Enbridge will adhere to the following work-exclusion dates in designated Minnesota trout streams and their designated tributaries that require in-channel work to allow for spawning and migration, or will seek a waiver with the MDNR:

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<sup>6</sup> Permanent cover means surface types that will prevent soil failure under erosive conditions. Examples include: gravel, concrete, perennial cover, or other landscaped material that will permanently arrest soil erosion. Permittees must establish a uniform perennial vegetative cover (i.e., evenly distributed, without large bare areas) with a density of 70 percent of the native background vegetative cover on all areas not covered by permanent structures, or equivalent permanent stabilization measures. Permanent cover does not include temporary BMPs such as wood fiber blanket, mulch, and rolled erosion control products [Minn. R. 7090].

<sup>7</sup> In-channel work that results in the alteration of the course, current, or cross-section of the public water; this restriction does not apply to the trenchless crossing method or water appropriation activities (see Section 6.0), except where explicitly identified by the MDNR.

- Region 1 (Northwest): September 1 – June 30;
- Region 2 (Northeast): September 15 – June 30; and
- Region 2 within the Lake Superior watershed: September 15 – June 30.

In addition, Enbridge will not execute the HDD crossing method at waterbodies during frozen conditions (i.e., ice-covered waterbody), unless otherwise approved by the MPCA and MDNR on a case-by-case basis, as required by the MPCA Section 401 WQC.

## **2.4 BRIDGES**

Enbridge will utilize the clear span or non-clear span bridge types described in the Summary of Construction Methods and Procedures (Appendix A of the EPP) and in Section 2.4.1 of the EPP, and ice bridges as described in Section 1.4.

## **2.5 STREAM AND RIVER CROSSING CONSTRUCTION METHODS**

### **2.5.1 Open Cut (Non-Isolated) Trench Method**

If a waterbody that was permitted to cross using a dry crossing technique is dry or frozen at the time of construction, Enbridge will utilize the open cut (non-isolated) crossing method with required agency approval.

### **2.5.2 Isolated Trench: Dam and Pump Method**

Dry crossing techniques can be used in frozen conditions where there is water flow. The dam and pump method is preferred during winter construction and will proceed as outlined in Section 2.5.2 of the EPP with the following additional steps:

- Enbridge will remove ice downstream of the crossing location using hand and power tools to install in-water BMPs (e.g., turbidity curtains);
- Enbridge will mechanically remove ice at the crossing location and install the dam;
- Enbridge will proceed with the remaining procedures described in Section 2.5.2 of the EPP. Flowing water upstream of the dam will be pumped via a hose to the downstream location and discharged below the ice; and
- Measures will be taken to protect pumps from freezing to avoid disruption of water flow past the crossing location (e.g., place inside portable shelters with heaters). Backup pumps are required on site for each crossing.

#### **2.5.2.2 Isolated Trench: Modified Dam and Pump Method**

Enbridge may also utilize the modified dam and pump crossing method in frozen conditions. Enbridge will follow the same procedures for the ice removal to install the in-stream BMPs, dam installation, and hoses as described above for the standard dam and pump method (Section 2.5.2).

#### **2.5.4 Trenchless Methods: Horizontal Directional Drill Method (Pressurized)**

The procedures for the HDD method outlined in Section 2.5.4 of the EPP will be implemented. Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine if additional materials and equipment will be needed. Monitoring, containment, and response of inadvertent releases is described in Section 11.0.

### **2.6 RESTORATION AND STABILIZATION**

Restoration of the stream bank and bed contours will be initiated immediately after the installation of the crossing using the open cut trench method and prior to restoring flow using the standard or modified dam and pump or flume method, unless site and permit conditions delay permanent installation. Enbridge will restore the stream banks as near as practicable to pre-construction conditions unless that slope is determined to be unstable. If the slope is considered unstable, Enbridge will reshape the banks to prevent slumping. For public waters, Enbridge will return the bank to pre-construction contours, unless otherwise directed by the site-specific restoration plan. If Enbridge cannot restore to pre-construction contours at a public water, Enbridge will consult with the MDNR before proceeding further. Once the banks have been reshaped, Enbridge will commence soil stabilization activities as described in Section 1.9.1 of the EPP. Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements identified in Section 1.9.4 of the EPP and the outlet of the slope breaker will be directed away from the stream into a well-vegetated area.

#### **2.6.1 Revegetation of Banks**

If final grading can be completed during winter conditions, Enbridge will seed the banks using the seed mixes and following the dormant/winter seeding procedures described in Sections 7.8 and 7.3.1, respectively, of the EPP. If final grading and/or seeding is not feasible, Enbridge will temporarily stabilize all exposed areas, including spoil piles, as described in Section 1.9.1 of the EPP.

Additional final grading may be performed once soils have thawed and conditions allow. Permanent seeding will proceed after final grading as described in Section 7.0 of the EPP. Temporary erosion and sediment control BMPs will be maintained until permanent cover has been established.

#### **2.6.2 Supplemental Bank Stabilization**

Enbridge will prepare site-specific restoration plans in coordination with the applicable agencies to identify riparian areas that may require specialized seed mixes, plantings of woody vegetation, or other specialized restoration techniques. Depending on site conditions, some measures identified in the site-specific restoration plans may not be feasible to install during winter conditions. In these cases, Enbridge will temporarily stabilize all exposed areas, including spoil piles, as described in Section 1.9.1 of the EPP until site conditions are such that restoration measures can be fully implemented.

### **3.0 WETLAND CROSSING GENERAL REQUIREMENTS**

The various crossing techniques employed in different wetland types are described in more detail in Section 3.0 of the Summary of Construction Methods and Procedures (Appendix A of the EPP).

Note that the proposed crossing technique may change depending on seasonality and site-specific conditions at the time of crossing (e.g., saturation level).

Wetland crossing requirements, including construction methods, timing, erosion control, and restoration, are described in this section and in the wetland crossing permits issued by state, federal, and/or Tribal agencies as applicable.

Enbridge will not conduct certain construction activities in non-sensitive wetlands, as defined by the MPCA Section 401 WQC, between April 1 to June 1, and from April 1 to June 15 in sensitive wetlands, as defined by the MPCA Section 401 WQC, except for those wetlands that are permitted for permanent fill.

### **3.2 CLEARING**

Clearing in wetlands will proceed as described in Section 3.2 of the EPP. Removal of snow from the construction workspace may be necessary to provide safe and efficient working conditions and to expose soils for grading and excavation and will proceed as described in Section 1.8.

### **3.4 GRADING AND TOPSOIL SEGREGATION**

Grading and topsoil segregation activities will be confined to the area of the trench and will be minimized to the extent practicable. Grading outside the trench will only be allowed where required to install a level and stable travel lane for safe operation of equipment. Grading outside of the trench area in wetlands may only proceed with prior approval from Enbridge and in conformance with the required regulatory authorizations and applicable federal, Tribal, state and local regulations governing this activity. Topsoil segregation in wetlands in frozen conditions will proceed as described in Section 1.10.

### **3.5 RIGHT-OF-WAY STABILIZATION**

Construction of frost/ice roads to serve as travel lanes is typically required in winter conditions in wetlands within the construction workspace and will begin as soon as weather conditions allow following the process described in Section 1.4.

### **3.8 BACKFILLING**

The area of open excavation will be minimized during winter construction to reduce amount of frozen backfill and facilitate restoration to pre-construction contours. Unless otherwise specified by regulatory permits or certifications issued for this Project's construction, Enbridge will limit the cumulative amount of excavated open trench to a maximum of 3 days of anticipated welding production rate, or 14,000 linear feet per spread. Within each spread, site-specific activities, such as HDD, bores, open cut roads, other tie ins, valve work and pump station construction may be performed independent of open trench work. During backfilling, the excavated subsoil will be replaced first, and then the topsoil in cases where topsoil has been segregated.

### **3.9 CLEANUP, ROUGH/FINAL GRADING, AND TEMPORARY RESTORATION**

Enbridge will add a crown of approximately 12 inches or more (depending on soil type and conditions) over the backfilled trench line. Periodic breaks or gaps in the crown will be installed (as necessary) to ensure water is able to move freely across the backfilled trench and not create nuisance conditions during a precipitation event or spring run-off conditions. Crowning will not

extend beyond the previously excavated trench limits. The disturbed area will be temporarily stabilized in accordance with Section 1.9 of the EPP until final grading and/or permanent revegetation can proceed.

As the backfill material thaws in the spring and summer, the frozen soil clumps will begin to break apart and collapse into void spaces, resulting in subsidence of the material. There is potential that the original crown may not completely recede to pre-construction contours. However, this is preferred over not having enough material over the trench to restore original contours. If the crown does not fully recede, additional grading will be performed once soils have thawed and conditions allow using low ground pressure equipment or excavators working off timber mats so that damage to the resource will be prevented. Permanent revegetation will proceed after final grading as described in Section 7.7 of the EPP. Temporary erosion and sediment control BMPs will be maintained until permanent cover has been established. Enbridge will monitor wetland areas after restoration as outlined in its Post-Construction Wetland and Waterbody Monitoring Plan.

## **5.0 CONSTRUCTION DEWATERING**

### **5.1 TRENCH AND PIT DEWATERING**

If construction dewatering is required during winter conditions, the procedures in Section 5.1 of the EPP will be followed in accordance with the MPCA National Pollutant Discharge Elimination System/State Disposal System Construction Stormwater General Permit (MNR100001), and the MPCA Section 401 WQC, with the following additional considerations:

- Measures will be taken to protect pumps from freezing to avoid disruptions in dewatering and potential spills or leaks of lubricants or fuel (e.g., place pumps inside portable shelters with heaters);
- Dewatering structures may be installed early in the construction process before frozen ground conditions exist, where feasible;
- Locations of the filter bags placed off the ROW will be marked with lathe or a similar method to assist crews in relocating the filter bag for proper disposal; and
- Removal of dewatering structures will be conducted as soon as practicable after completion of dewatering in an attempt to remove the structure/filter bags before they are frozen.

### **5.2 HYDROSTATIC TEST DISCHARGES**

#### **5.2.4 Hydrostatic Testing Procedures**

##### **5.2.4.1 Mainline Hydrostatic Testing**

Mainline hydrostatic testing may be completed during winter conditions. The hydrostatic test water will be treated prior to discharge in accordance with Section 5.2 of the EPP, and in compliance with applicable permits. If the source waterbody is nearly or completely frozen to the bottom (minimal flow of water under ice) then the water will be discharged to the surface of the source waterbody on top of the ice to freeze. If there is minimal ice cover (sufficient base flow of water under ice) at the source waterbody, then ice augers will be used to drill several holes around a



splash pup mounted on a barrier (e.g., construction mats, plywood) to allow the discharged water to slowly enter the waterbody under the ice without causing scour or concentrated flow to the waterbody bed. Determination on which discharge method to use will be made by Enbridge Construction Management, in collaboration with Enbridge Environment.

As discussed in Section 6.0, Enbridge will not appropriate from approved-groundwater sources during frozen conditions if soil conditions do not allow for infiltration during discharge activities. Enbridge will utilize an alternative agency-approved surface water source with adequate water flow and will follow the discharge measures outlined above.

#### **5.2.4.2 HDD Hydrostatic Testing**

Hydrostatic testing may be completed at HDD sites during winter conditions. At these locations, the pipe will be hydrostatically tested on-site prior to installation. Enbridge will either infiltrate if ground conditions allow (i.e., not frozen), discharge water back to the source, or haul off-site. The HDD hydrostatic test water will be treated prior to discharge in accordance with the Section 5.2 of the EPP, and in compliance with applicable permits. If the source waterbody is nearly or completely frozen to the bottom (minimal flow of water under ice) then the water will be discharged to the surface of the source waterbody on top of the ice to freeze. If there is minimal ice cover (sufficient base flow of water under ice) at the source waterbody, then ice augers will be used to drill several holes around a splash pup mounted on a barrier (e.g., construction mats, plywood) to allow the discharged water to slowly enter the waterbody under the ice without causing scour or concentrated flow to the waterbody bed. Determination on which discharge method to use will be made by Enbridge Construction Management, in collaboration with Enbridge Environment.

Enbridge may appropriate from approved-groundwater sources during frozen conditions and haul water off-site if conditions do not allow for infiltration. Alternatively, Enbridge may utilize an alternative agency-approved surface water source with adequate water flow, or haul water on-site for smaller volumes. Discharge to surface water will proceed as outlined above, or if water hauled on-site, water will be hauled off-site for disposal.

To minimize the potential for introduction and/or spread of invasive and noxious species due to hydrostatic testing activities during frozen conditions, Enbridge will follow the procedures outlined in the INS Management Plan (Appendix B of the EPP).

## **6.0 WATER APPROPRIATION**

Water may be drawn from local sources, such as lakes, streams, and groundwater wells, for construction activities such as HDD drilling mud, buoyancy control, trench dewatering, and hydrostatic testing during frozen conditions. The Project will follow applicable permit conditions for the appropriation of water and will only utilize sources approved by the applicable agencies.

For appropriation from surface waters during frozen conditions, if the source waterbody is nearly or completely frozen to the bottom (minimal flow of water under ice) and does not have adequate water flow, an alternative agency-approved source will be used. If there is minimal ice cover (sufficient base flow of water under ice) at the source waterbody, then ice augers will be used to drill holes to allow the intake hose to enter the waterbody under the ice. The intake hose will be managed to minimize sediment intake from the waterbody bed. Enbridge will install a mesh

screen<sup>8</sup> as approved by the applicable agencies on the intake hose to prevent fish entrainment. During withdrawal, adequate waterbody flow rates and volumes will be maintained to protect aquatic life and allow for downstream uses. The volume and rate of withdrawal will be monitored to comply with applicable permit conditions. Measures will be taken to protect pumps from freezing and to avoid potential spills or leaks of lubricants or fuel (e.g., place pumps inside portable shelters with heaters).

For large volumes of water, Enbridge will likely not appropriate from approved-groundwater sources during frozen conditions if soil conditions do not allow for infiltration during discharge activities (see Section 5.2.4.1). For smaller volumes, Enbridge may appropriate from approved-groundwater sources and haul water off-site for disposal (see Section 5.2.4.2). Alternatively, Enbridge will utilize an alternative agency-approved surface water source with adequate water flow, or haul water on-site for smaller volumes.

To minimize the potential for introduction and/or spread of invasive and noxious species due to water appropriation activities during frozen conditions, Enbridge will follow the procedures outlined in the INS Management Plan (Appendix B of the EPP).

## **7.0 REVEGETATION**

### **7.1 SITE PREPARATION**

Site preparation involves the following steps:

- Seed bed preparation;
- Planting of temporary cover crops (if appropriate);
- Installation of permanent erosion and sediment control BMPs; and
- Mulching.

As described in Sections 1.6, 2.6, and 3.9, if final grading cannot occur due to frozen conditions, Enbridge will temporarily stabilize exposed soils, and install and maintain temporary erosion and sediment control BMPs until soils thaw and final grading and seed bed preparation, as outlined in Section 7.1.1 of the EPP, can proceed.

#### **7.1.2 Temporary Revegetation**

Enbridge's temporary seed mixes (refer to Appendix C of the EPP) were developed based on Minnesota Board of Water & Soil Resources ("BWSR") seed mixes. The use of short-lived temporary cover crops (refer to Table 7.1-1) helps stabilize project sites and minimize the need for additional mulch in preparation of planning native seed mixes. Unless specifically requested by landowners or land-managing agencies, Enbridge does not intend to establish temporary vegetation in actively cultivated land, standing water wetlands, and/or other standing water areas. Enbridge will only utilize MDNR-approved seed mixes on public lands. Enbridge will implement the Planting Plan included with the VMP. Enbridge may also utilize tillage radish as a temporary cover crop to assist with decompaction on public lands and MDNR-administered access roads.

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<sup>8</sup> Mesh screens will be sized to 3/16-inch in Minnesota, 0.25-inch in North Dakota, and 1-inch or less in Wisconsin.

**Table 7.1-1  
Temporary Cover Crops**

<b>Seed</b>	<b>Seeding Rate <sup>a</sup></b>
Oats	80-100 pounds/acre
Winter Wheat	75-100 pounds/acre
Soil Building Cover Crop (field pea/oats)	110 pounds/acre
Wetland Rehabilitation	5.3 pounds/acre
<sup>a</sup> Seed rates are based on drill seed application and will vary based on site-specific conditions. Source: BWSR, 2019.	

If temporary cover crops are being used to stabilize slopes between 5 to 10 percent, the seeding rate should be increased by 35 pounds/acre. If slopes are greater than 10 percent, the seeding rate should be increased by 56 pounds/acre.

#### **7.1.2.1 Timing for Temporary Vegetation**

Generally, oats will be used for spring or summer revegetation, and winter or spring wheat will be used in the fall. Temporary vegetation should be established at any time between **April 1 and October 15 or frozen soil**. Attempts at temporary revegetation after this date should be assessed on a site-specific basis and with approval from Enbridge in conformance with the required regulatory authorizations and all applicable federal, state and local regulations governing this activity (refer to Section 7.3.1). Refer to Section 1.9.1 of the EPP for temporary stabilization timing requirements.

### **7.3 SEEDING PERIODS**

Enbridge will typically conduct permanent seeding shortly after final grading/seed bed preparation. Enbridge will delay seeding during frozen ground conditions until the ground has thawed and final grading and seed bed preparation can be completed. If conditions allow, Enbridge will complete dormant seeding (refer to Section 7.3.1). Enbridge will temporarily stabilize exposed soils and will install and maintain temporary erosion and sediment control BMPs during frozen conditions.

#### **7.3.1 DORMANT/WINTER SEEDING**

Dormant seeding is a method used after soil temperatures have cooled to 40 degrees Fahrenheit or cooler to prevent seed germination of cool-season grasses and legumes, and 50 degrees Fahrenheit or below for native warm season grasses, forbs, and legumes (BWSR, 2019). Dormant seeding is only practicable if the soil is not frozen and is preferably done before the first snowfall as the snow cover will prevent loss of seeds from wind and birds (BWSR, 2014). Procedures for applying soil amendments, seedbed preparation, seeding, and mulching are the same as outlined for permanent revegetation in Sections 7.1 and 7.2 of the EPP.

Winter or snow seeding can be implemented during early or late winter when there is less than 1 foot of snow and on a sunny day when seed can move into the soil surface (BWSR, 2019). The freeze/thaw action helps to set the seed firmly in the soil to prepare for spring growth. The seed bed must have been previously prepared for winter seeding to be successful, and it is not recommended for areas prone to spring flooding or running water (BWSR, 2014).

Where dormant or winter seeding is conducted, one or more of the following temporary erosion and sediment control BMPs will be put in place over the freshly seeded area unless the local soil

conservation authority, landowner, or land managing agency specifies otherwise. The temporary measures will be in place after seeding, and are as follows:

- certified weed-free straw or hay mulch, at 90 percent cover, anchored;
- hydromulch, according to supplier specifications; and/or
- erosion control blanket.

Additional erosion and sediment control BMPs will be applied as requested by the EI.

If conditions do not allow for final grading and seed bed preparation, seeding will not occur until soils have thawed. Enbridge will temporarily stabilize the area and install and maintain erosion and sediment control BMPs until conditions allow for final grading and permanent seeding.

## **7.11 ENVIRONMENTAL INSPECTIONS**

As described in Enbridge's EMCP, Enbridge will maintain EIs and environmental labor crew(s) on-site or on-call to monitor erosion and sediment control BMPs and stabilization efforts and to make adjustments or repairs as needed in accordance with conditions identified in the applicable Project permits, certifications, and/or licenses. The EI will determine the most effective means of dealing with identified problems, taking into consideration the suitability of access to the ROW, potential equipment damage to the ROW, and the urgency of the issue to be addressed.

## **11.0 DRILLING FLUID RESPONSE, CONTAINMENT, AND NOTIFICATION PROCEDURES**

### **11.1 ON-SITE OBSERVATION DURING CONSTRUCTION**

Early detection is key to minimizing the area of potential impact from an inadvertent release. Enbridge will monitor the drill path by observing land surfaces and the waterbodies for surface migration during drilling, reaming, and pipe installation procedures. Enbridge will also walk the drill path to monitor for surface seepage, sinkholes, and settlement. Enbridge will clear snow from the HDD path where practical and as needed to facilitate visual identification of drilling fluid at the surface. In addition, a flowing stream will be monitored both upstream and downstream of the drill path. If an observer notices inadvertent release conditions or lowered pressure readings on the drilling equipment, shutdown will occur immediately. The on-site observation notification process during construction is further described in Section 11.1 of the EPP. Enbridge recognizes that the procedures identified in this section are a proposal only. It is likely additional information relating to the on-site measures, practices, and procedures will need to be proposed to MPCA and MDNR if Enbridge seeks authorization to conduct HDD construction activities during frozen conditions.

If drilling is performed during frozen conditions, holes shall be established in the frozen portion of a waterbody to monitor for fluid release. The following shall apply:

- Upstream of the drill path – holes (6-inch minimum diameter) will be drilled within the waterbody 10 feet upstream of the drill path at intervals starting 10 feet from the existing bank with a minimum of one hole (if the waterbody is less than 20 feet wide). These holes will be monitored throughout the duration of drilling operations.
- Downstream of the drill path – holes (6-inch minimum diameter) will be drilled within the waterbody 25 feet downstream of the drill path at intervals starting 10 feet from the existing

bank with a minimum of one hole (if the waterbody is less than 20 feet wide). In addition, a second set of holes will be located 75 feet downstream of the drill path at intervals starting 10 feet from the existing bank with a minimum of one hole (if the waterbody is less than 20 feet wide). All downstream holes will be monitored throughout the duration of drilling operations.

- Equipment such as portable shelters may be used as needed to increase underwater visibility.

Voice contact shall be maintained at all times between all drill personnel to ensure that any operational changes are communicated immediately and effectively between observation personnel and drilling rig operators. Enbridge shall provide handheld two-way radio communications for this purpose.

### **11.3 RESPONSE**

If an inadvertent release occurs in a waterbody with frozen ice, Enbridge will immediately notify the Minnesota Duty Officer (1-800-422-0798 or 651-649-5451) and the appropriate agencies of the release and will mechanically remove the ice downstream of the release as rapidly as possible, assuming ability to access the waterbody and ensuring the safety of all people and equipment, and will install in-water BMP(s) to contain any drilling mud that may migrate downstream. Enbridge will then remove ice at the location of the upstream inadvertent release in order to contain drilling mud at that location and prevent any further downstream migration. The in-water BMPs selected will correspond with the site-specific conditions as described in Table 11.3-1 of the EPP. These response materials will be on-site and available for rapid deployment in the event of an inadvertent release.

### **11.5 CLEAN-UP**

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment installation, drilling fluid that has settled from the water column typically collects in the acute upstream angle of the containment tool, and recovery efforts will be localized to that location.

## **12.0 REFERENCES**

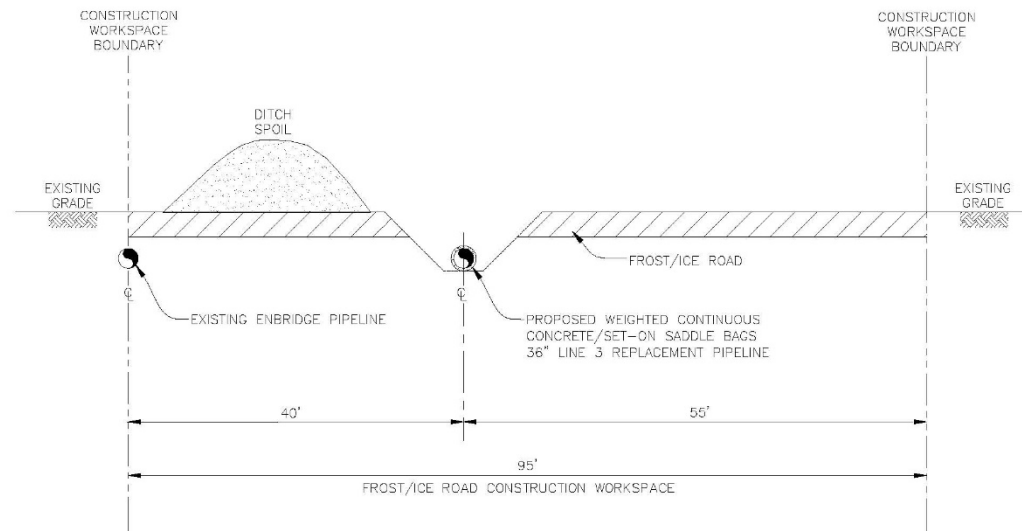
The INGAA Foundation, Inc. 2013. Planning Guidelines for Pipeline Construction during Frozen Conditions. Prepared for The INGAA Foundation, Inc. by Natural Resources Group, LLC. December 2013. INGAA Foundation Final Report No. 2013.04. Available on-line at: <https://www.ingaa.org/File.aspx?id=21144>.

Minnesota Board of Water & Soil Resources ("BWSR"). 2014. Minnesota Wetland Restoration Guide. 2<sup>nd</sup> Edition. Available online at: <https://bwsr.state.mn.us/mn-wetland-restoration-guide>. Accessed August 2019.

BWSR. 2019. Native Vegetation Establishment and Enhancement Guidelines. January 2019. Available online at: <https://bwsr.state.mn.us/sites/default/files/2019-07/Updated%20guidelines%20Final%2007-01-19.pdf>. Accessed August 2019.

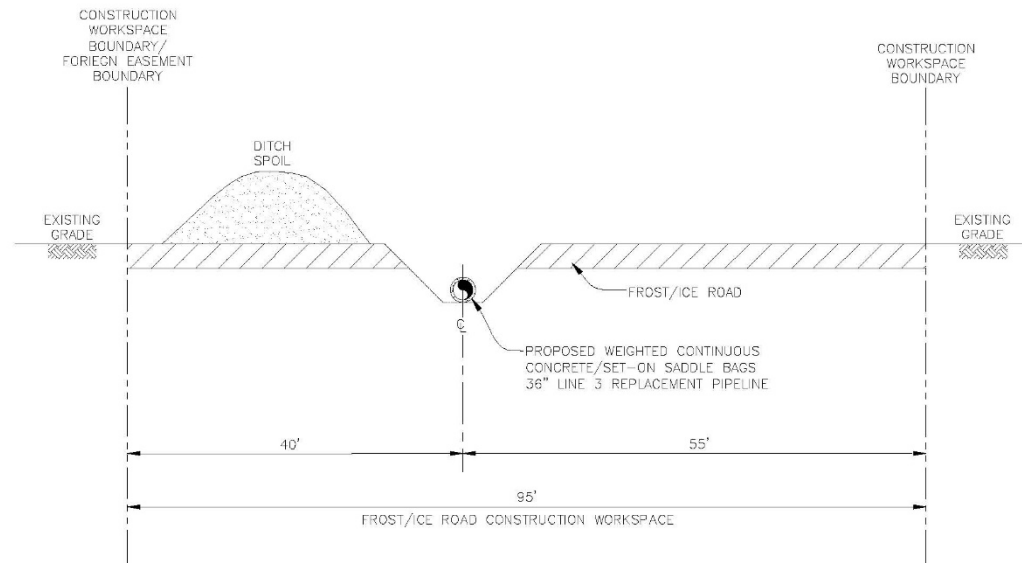
## **Appendix A**

### **Line 3 Replacement Project Typical Workspace Configurations**



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FOR  
PERMIT  
03/26/19

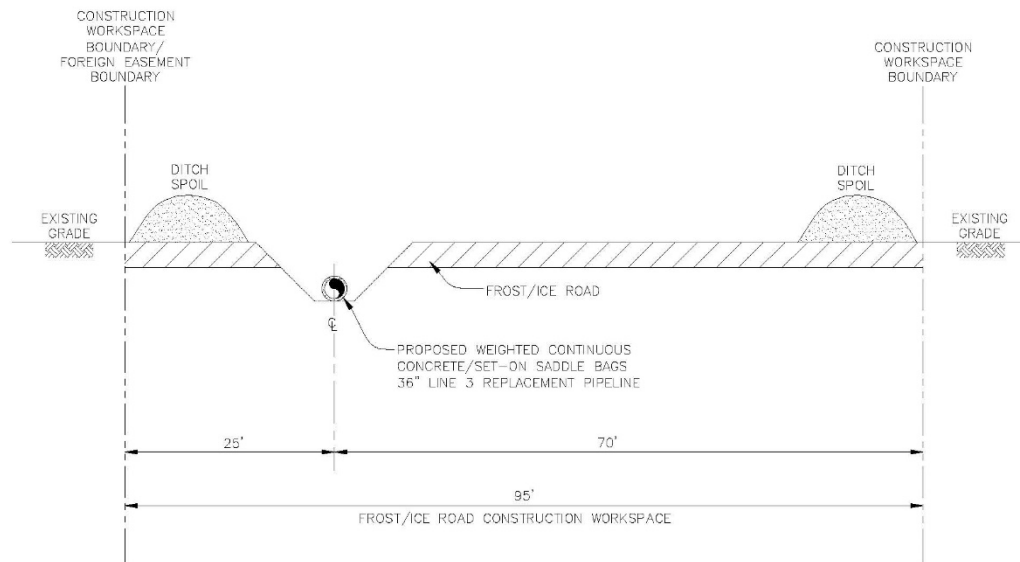
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						CHK: ND	03/26/19
						PROJ. ENGR.	
						PROJ. MGR.	
						CLIENT APP.	
A	ISSUED FOR PERMIT	J.D.W.	03/26/19	ND		LINE 3 REPLACEMENT TYPICAL WINTER FROST/ICE ROAD CONSTRUCTION WORKSPACE CO-LOCATED EXISTING ENBRIDGE PIPELINE	
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D	SCALE: NTS	DWG. NO.: L3R-B-TYP-WNT-CO-EN




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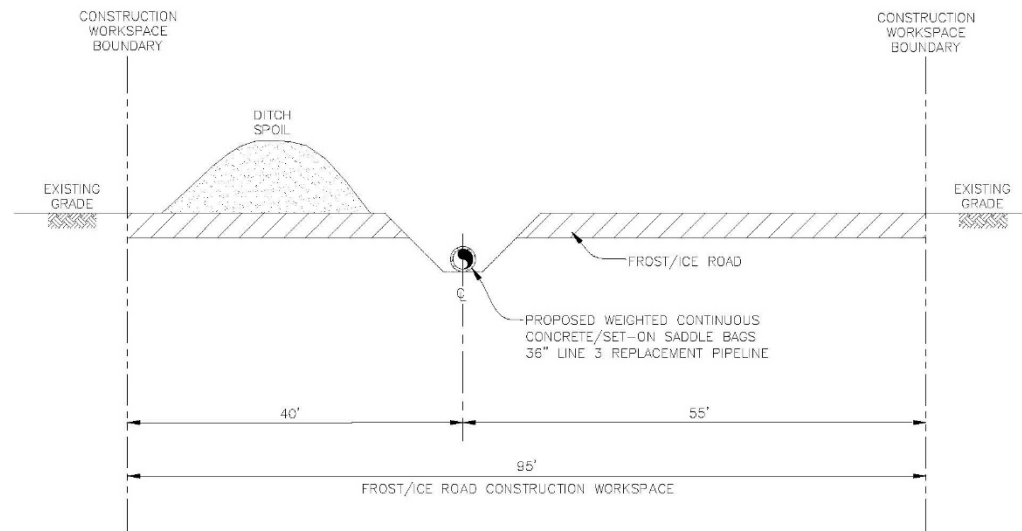
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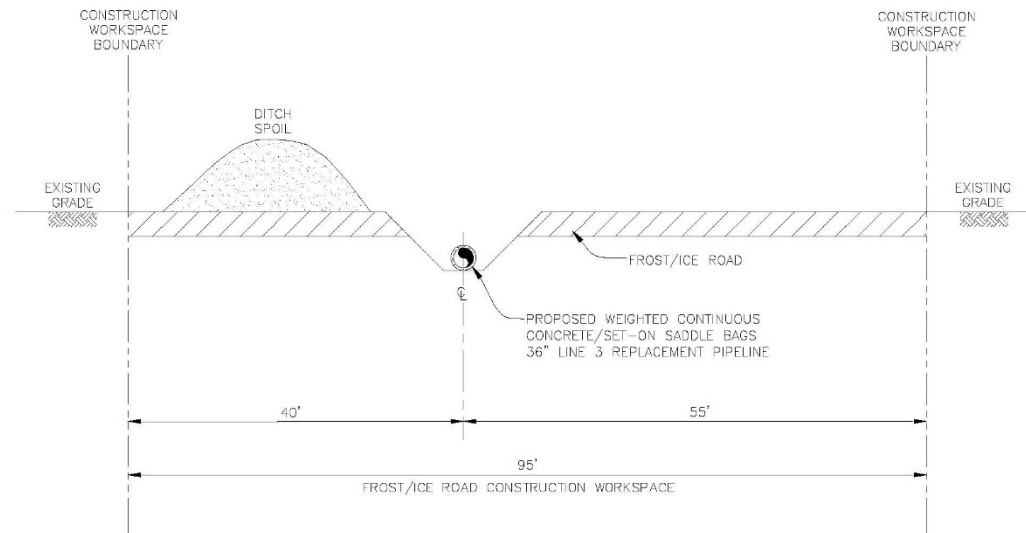
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							LINE 3 REPLACEMENT	
							TYPICAL WINTER FROST/ICE ROAD	
							CONSTRUCTION WORKSPACE	
							CO-LOCATED WITH FOREIGN UTILITY	
							WEST OF SWATARA	
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