

4.2.2 Clearing and Grading

Once the Right-of-Way is properly staked, clearing equipment is brought in to remove the existing vegetation. This specialized equipment is designed to remove vegetation quickly and efficiently. Absent agency regulations or landowner preference, Enbridge will remove or otherwise dispose of cut trees from the Right-of-Way prior to any soil disturbance activities to prevent soil mixing with cut timber. Landowners will be given the option to take custody of cut timber, in which case the trees will be stockpiled off the Right-of-Way for the landowner. Otherwise, equipment similar to that shown in Figure 4.2.2-1 will be used to efficiently mulch trees and shrubs without damaging the top soil.



Figure 4.2.2-1 Hydro-Axe

After clearing, temporary erosion control measures will be installed in accordance with Enbridge’s EPP (Appendix B), as shown in Figure 4.2.2-2 (see also Figure 19A and 19B in the EPP Appendix B).

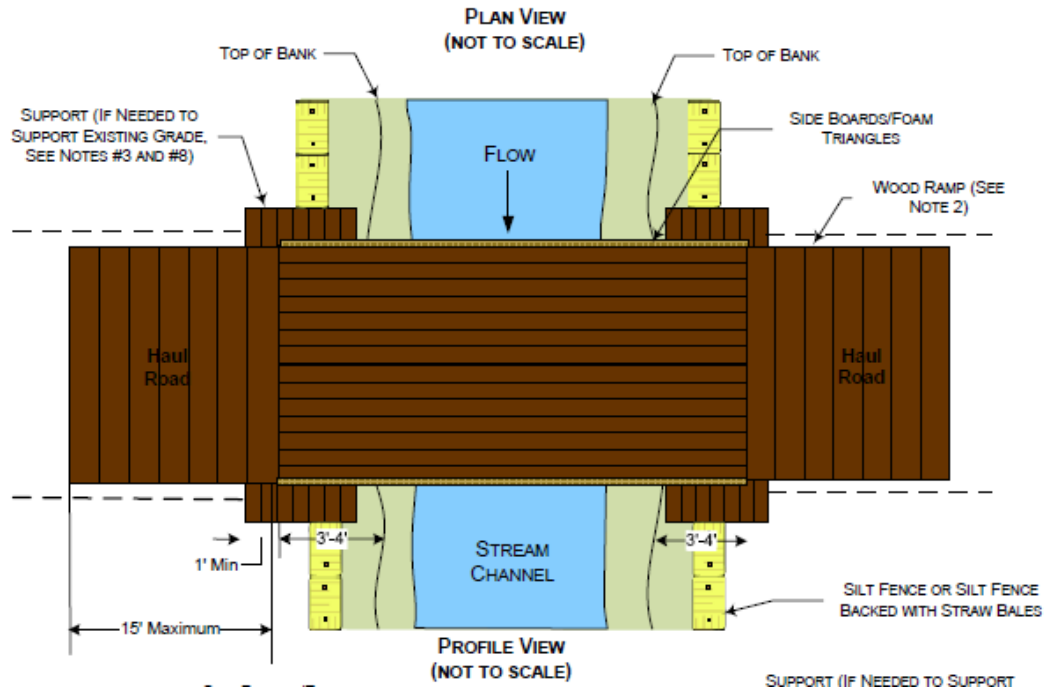


Figure 4.2.2-2 Typical Span Type Bridge With or Without Instream Support

Timber mats will be installed in wetlands where soil conditions cannot support construction equipment without causing rutting or significant soil disturbance (Figure 4.2.2-3). Additionally, mats will be placed at utility crossings where soil conditions are not adequate to support construction loads. Construction workspace will be reduced at wetland crossings as topsoil stripping for the entire footprint does not take place in wetland areas as it does in upland areas. In wetlands (unsaturated), topsoil will be stripped and segregated from the ditch line only. In saturated wetlands, no topsoil segregation will take place. Therefore, wetland areas require less workspace to place and store spoils and ultimately minimizes impacts as shown below in Figure 4.2.2-4 (see also Figure 24 in EPP Appendix B).



Figure 4.2.2-3 Timber Mats

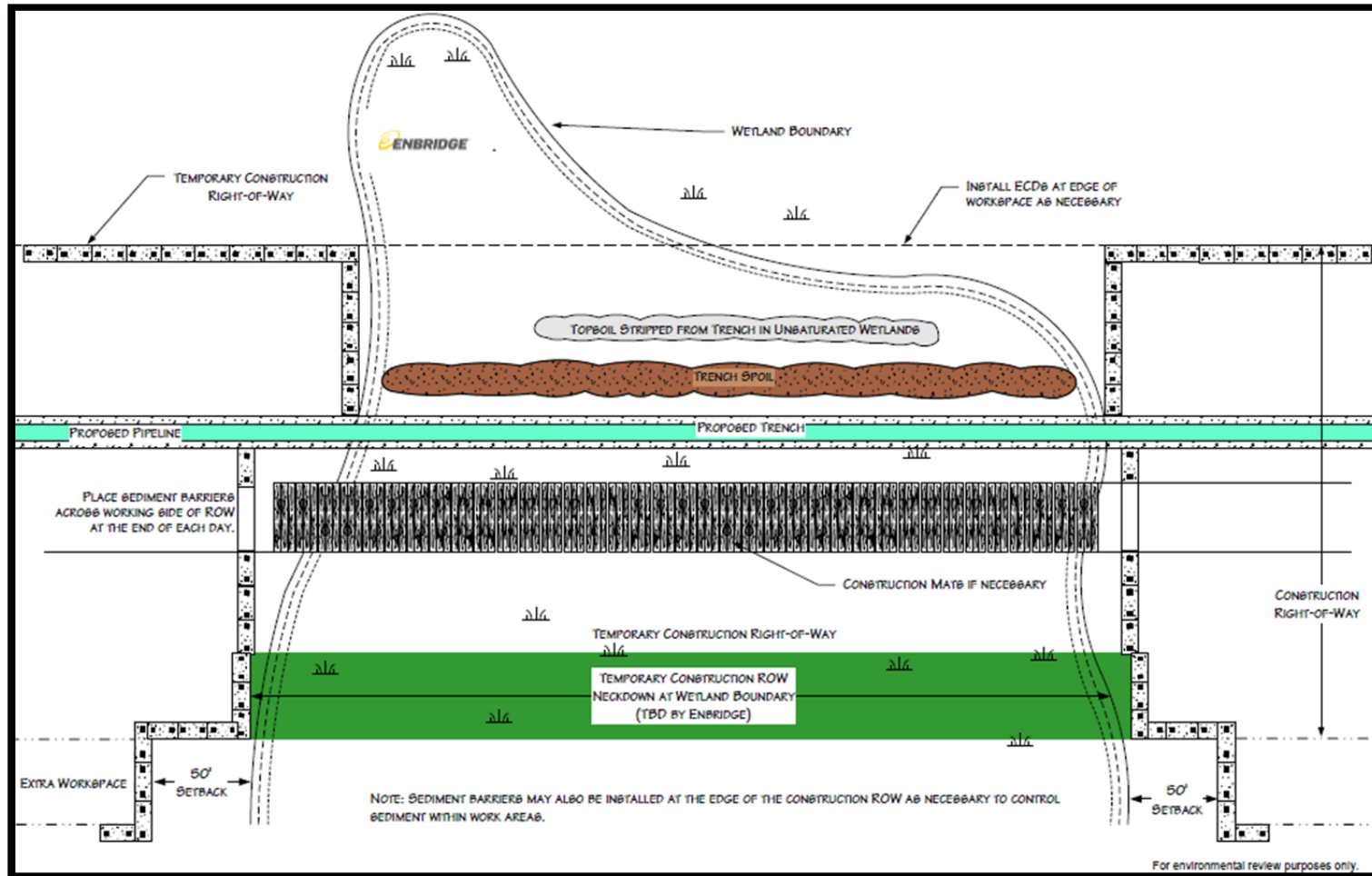


Figure 4.2.2-4 Typical Wetland Crossing Method



This page left blank intentionally.

4.2.3 Soil Separation

Topsoil will be stripped and segregated during construction in agricultural lands, residential areas, and other areas as requested by the Landowner or as specified in the Project plans, commitments, and/or permits. The topsoil is separated from the subsoil because it has the highest concentration of organic matter and will enhance the revegetation process. Topsoil segregation methods include “trench-line-only” and the “modified ditch-plus-spoil side” methods.

The “trench-line-only” topsoil segregation method may be used where Enbridge determines that the width of the construction Right-of-Way is insufficient for other methods to be used. Enbridge may also use the trench-line-only topsoil segregation method in areas where there is a thick sod layer such as in hay fields, pastures, golf courses, and residential areas, unless otherwise requested by the landowner. Alternative topsoil segregation methods, such as “modified ditch-plus-spoil side”, may be used on a site-specific basis or as requested by the landowner. Topsoil is not typically segregated in standing water wetlands unless specifically requested by the landowner and/or managing land agency in accordance with applicable permit conditions.

The “modified ditch-plus-spoil side” method is shown in Figure 4.2.3-2 (see also Figure 3 in the EPP Appendix B). For a complete description of topsoil segregation methods and applications, see Sections 1.10 (uplands) and 3.6.1 (wetlands) of the EPP (Appendix B).



Figure 4.2.3-1 Topsoil Segregation

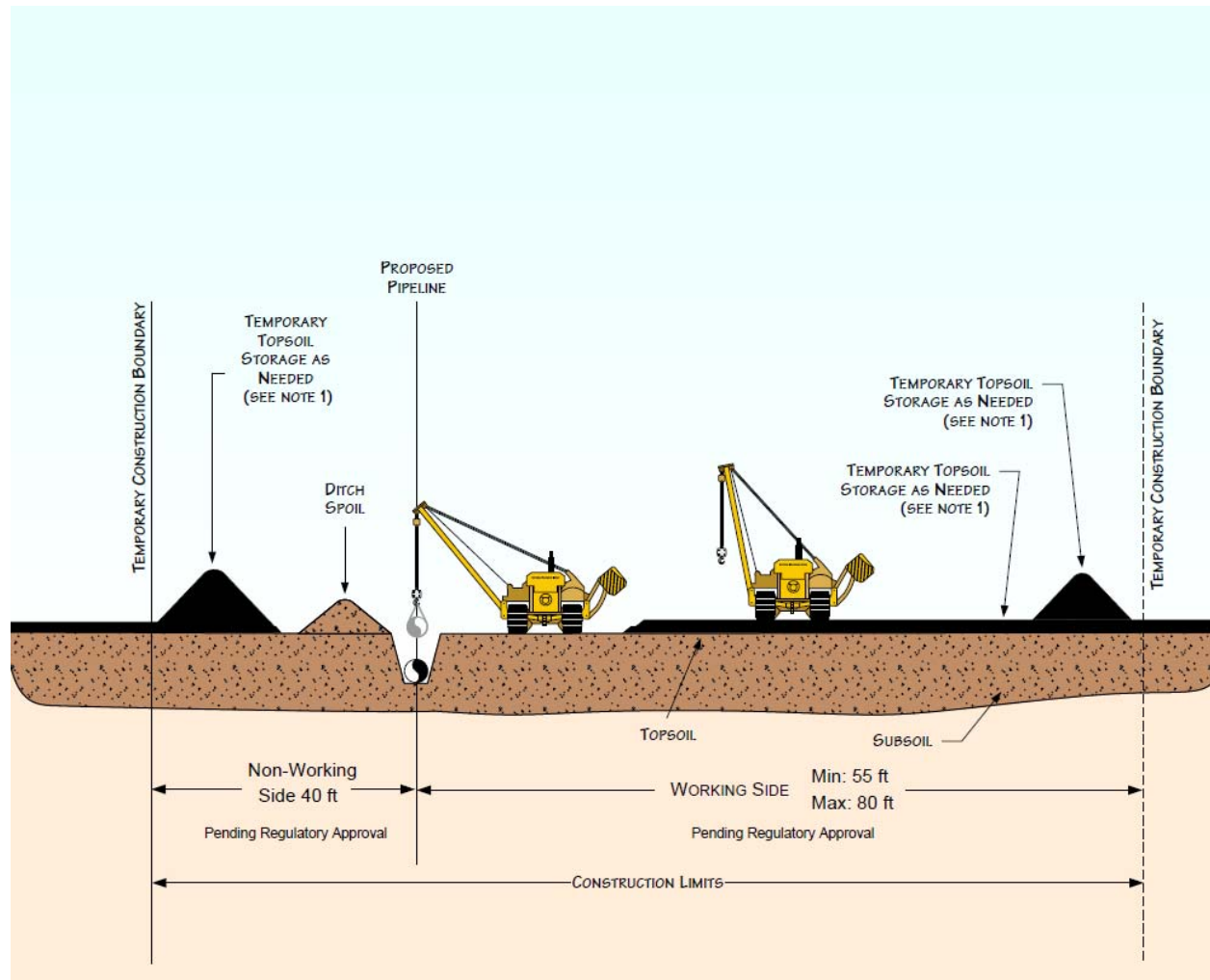


Figure 4.2.3-2 Typical Topsoil Segregation – Modified Ditch Plus Spoil Side

4.2.4 Stringing Pipe

Pipe, specifically fabricated for the Project, is loaded from the pipe yard located near the route in Carlton, Minnesota, onto specialized “stringing trucks” and transported to the construction Right-of-Way as shown in Figure 4.2.4-1.



Figure 4.2.4-1 Pipe Loading

Before excavating the pipeline trench, Enbridge will string individual joints of pipe along the construction Right-of-Way and arrange the pipe to be accessible to construction personnel as shown in Figure 4.2.4-2. Small portable cranes and/or side-boom tractors are used to unload the stringing trucks and place the pipe along the Right-of-Way.



Figure 4.2.4-2 Pipe Stringing