Jamestown – Ellendale 345kV Transmission Line
Winter Construction Plan
Case No. PU-25-236

JETx
Jamestown to Ellendale

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INTRODUCTION

Otter Tail Power Company (OTP) and Montana-Dakota Utilities Co. (Montana-Dakota) (jointly, the Applicants) are proposing to jointly construct, own, and operate approximately 92 miles of new, double circuit capable, 345-kilovolt (kV) transmission line within a 150-foot-wide Corridor from OTP's existing Jamestown 345-kV Substation in Stutsman County to Montana-Dakota's existing Ellendale 345-kV Substation in Dickey County (Project). The transmission line is planned to initially be constructed with one circuit, one optical ground wire, and one overhead ground wire. A second, 345-kV circuit will be installed in the future, when the need arises. In addition to the new high-voltage transmission line, the Project includes a substation expansion at the Jamestown 345-kV Substation, and modifications within the Ellendale 345-kV Substation. The Project was identified and approved by the Midcontinent Independent System Operator, Inc. (MISO) as part of its Long-Range Transmission Planning Tranche 1 Portfolio through the 2021 MISO Transmission Expansion Plan. The Project schedule anticipates beginning construction in Q-3 of 2026 and energize the line in Q4 of 2028. The Project schedule will take place over two seasons of winter construction.

BACKGROUND

This document was created by data and references gathered from Best Management Practices from past projects, applicable guideline practices from the NDSU Successful Reclamation of Lands Disturbed by Oil and Gas Development and Infrastructure Construction and the INGAA Foundation, Inc. Planning Guidelines of Pipeline Construction During Frozen Conditions.

There will be activities within the Project's Corridor that will require access multiple times over the course of construction. These activities range from soil exploration, clearing and grubbing, temporary access road development, foundation installation, structure erection, conductor stringing, and restoration.

Equipment required to support construction activities may include track mounted lo-drills to excavate the foundations, skid steers to install matting and material management, frontend loaders for excavated spoils, trucks to haul away the excavated material and to deliver rebar and anchor bolts, concrete trucks to haul concrete to the site, cranes to erect structures and place rebar cages, heavy equipment and dozers to install the conductor, and pickup trucks for transporting craft workers and inspectors.

If not planned properly, impacts from construction may occur and could include compaction, rutting, and topsoil and subsoil mixing. The Applicants have developed this document to outline best practices that will be employed during construction of the Project in the winter season to minimize potential impacts.

ELECTRIC TRANSMISSION LINES VS. PIPELINE CONSTRUCTION

Once all the applicable permits are acquired, the Applicants will start construction, which is planning to be continuous year-round. This schedule will provide an opportunity for the Applicants to take advantage of areas where winter construction can minimize potential environmental impacts and result in lower construction costs.

Electric transmission lines and pipelines differ in many ways, not only in what they transport but also in their construction methods. Pipelines are contiguous with almost all the infrastructure placed underground. This requires excavators and other earth moving equipment to excavate, install the pipe, and backfill the trench all along the route. *See* Figure 1 below for an illustration of typical winter pipeline installation. Transmission lines are also contiguous, but almost all the infrastructure is located and constructed above ground. The only components of a transmission line that are permanently placed underground are the drilled pier foundations which consist of concrete to which the steel poles will be attached.

Earth and environmental disturbance with a pipeline project is much different to that of a transmission line project. For example, a 92-mile pipeline utilizing a 6-foot-wide trench would disturb approximately 67 acres during the installation process of the pipeline. In comparison, a 92-mile transmission line consisting of around 500 structures with an average foundation diameter of 10-feet would disturb less than 1 acre.

[1]*Figure 1Typical Winter Pipeline Installation.*

Figure 2 Typical Winter Drilled Pier Foundation Installation.

SOIL SEGREGATION

An approximate 150 ft x 200 ft temporary work area will be created at each structure. Interlocking composite mats will be used at each structure during the excavation process. These mats will provide an area to allow separation of the excavated soil from the existing undisturbed soil. The work pad will also be large enough to accommodate a drilling rig that is used to drill the foundation. The drilling rig will utilize specific auger sizes to drill each foundation to the designed diameter and depth. For each foundation, the topsoil will be removed and placed in the work area and segregated from the remainder of the excavated soil to ensure complete separation. The excavated soil will be hauled off site while the topsoil will be utilized to backfill around the foundation following drilling or during restoration. During the winter season, excavated soil will be loaded in trucks immediately after excavation and hauled offsite to keep the soil from freezing. The stockpiled topsoil will be backfilled around the drilled foundation before it freezes in order to mitigate any settling that may occur when the temperatures increase. Insulated blankets may be used on an as needed basis to prevent topsoil from freezing prior to backfilling.

[1] INGAA Planning Guidelines for Pipeline Construction During Frozen Conditions

DRILLED PIER CONCRETE FOUNDATION

Once the foundation is drilled, a form will be placed over the excavation to hold the rebar and anchor bolts in place while concrete is poured into the foundation. During cold weather conditions, the concrete mix may use heated aggregate and water that will allow the pouring of the foundations to continue through the winter season. Once the foundations are poured, insulated blankets will be placed over the concrete to prevent freezing during the curing process. Once the concrete has reached its desired strength determined through testing, the structures can then be placed on the foundation by using a crane.

Figure 3 Pouring Structures

ACCESS PLAN

The Project will create an Access Plan that will detail how and ideally when areas of the Project will be accessed. Maps will be available to personnel working on the Project by utilizing portable electronic devices. The Access Plan will take into consideration soil conditions, environmentally sensitive areas (ESA), permit requirements, landowner requests, time of year, terrain, and other factors.

The Access Plan will identify the proposed route to be taken to each structure and work area locations, identify areas where matting is recommended, time of year when construction activities should occur, estimated amount of matting required, and the recommended type of matting (composite or wood) that should be used at each site. The Access Plan will need to be flexible in order to accommodate unforeseen conditions during construction such as excessive precipitation, extreme temperature fluctuations, concrete availability, and other unforeseen factors.

County and Township roads that the Applicants will be utilizing for accessing the Right of Way may also be susceptible to damage, especially in late winter and spring during the freeze/thaw cycles. These roads will be identified, evaluated, and assessed prior to beginning construction and will continue to be monitored throughout construction in coordination with local road officials. Through this coordination, the Applicants will make the necessary improvements prior to, during and after construction of the Project to keep these roads in good condition.

As with all plans implemented, communication among Project representatives, contractors, agencies, landowners and stakeholders will be maintained to promote a safe and successful

project. Once construction begins, the Applicants will implement Plan of the Day (POD) meetings to be held each day prior to beginning daily tasks. Attendees will include representatives of the different active work groups. This will support clear and concise communication with all Project personnel on what is planned throughout the day and week ahead.

MATTING

Matting will be used as needed during winter conditions to prevent rutting and soil mixing and to provide additional equipment support to minimize impacts.

The winter season will dictate access methods that will be utilized for the Project. The temperatures and the amount of snow will be determining factors on the amount of matting that will be required. For example, if the winter construction season consists of lower temperatures and minimal snowfall, the Applicants will be able to utilize less matting because of the additional depth of the frost during these types of winter conditions.

Figure 4 Installation of Structure Work Pad

Figure 5 Matted Access

CONCLUSION

The winter season offers unique opportunities during the construction of a transmission line project. Understanding and identifying the potential challenges, planning for them, and coordinating with landowners, construction contractors, agencies, and other stakeholders can minimize the extent of restoration of the right-of-way after winter construction. Sites that require restoration that were disturbed during winter construction will be restored as soon as weather and conditions permit. These sites will be monitored throughout the construction of the Project to ensure the restoration process is successful. The sites will be inspected at the end of the Project to verify that all conditions have been met and that the sites have been satisfactorily restored prior to the Project being closed out.