

## **Alternative Construction Access Method on Heavily Regulated Wetlands**

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### **Abstract**

American Transmission Company (ATC) faced a daunting environmental challenge in upgrading a high-voltage power line through a large wetland near Stevens Point. The traditional approach of using timber mats to support heavy machinery would have caused extensive damage and been prohibitively expensive. ATC partnered with New South Equipment Mats to develop a solution using a new form of engineered construction mats. Not only did the project minimize impacts to the wetland, it also saved about \$2 million.

### **Introduction**

ATC applied to the Public Service Commission of Wisconsin (PSC) for a Certificate of Authority in September 2008 to replace 112 electrical transmission line structures on the Arpin-Rocky Run transmission line located in Portage and Wood counties. The project need was driven by the importance of the transmission line that acts as a major carrier of power from the west into Wisconsin. The existing structures were approximately 45 years old and were significantly deteriorated. Minimal maintenance had been done on the line in recent years because it would have required the line to be taken out of service for repairs. The Arpin-Rocky Run line was critical to electrical operations in the area. ATC received PSCW approval to complete the project in March 2009. ATC also applied to the Wisconsin Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE) for authorization to place structures in wetlands and bridges across public waters. DNR and USACE approvals were received in April and May 2009, respectively. Construction began in July 2009.

### **Project Environmental Issues**

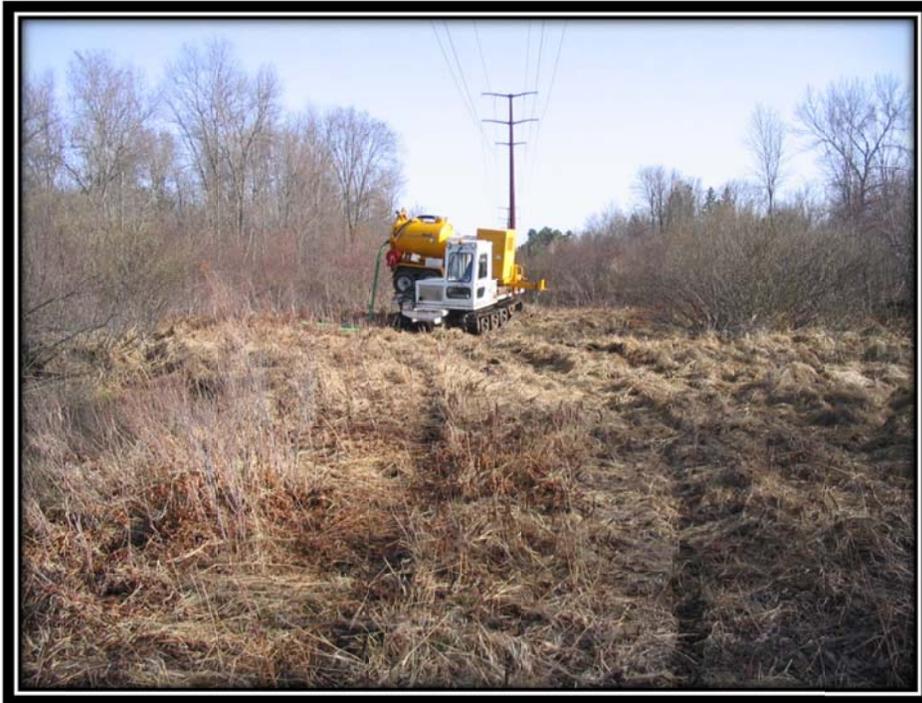
The Arpin-Rocky Run transmission line crosses approximately 1.6 miles of the Bear Creek Marsh near Stevens Point, WI. The Bear Creek Marsh is a shallow-water marsh with fluctuating water levels, dense vegetation and a perennial stream (Figure 1). This wetland is home to several sensitive protected species, including songbirds and waterfowl species. This unique wetland provides numerous environmental benefits in addition to wildlife habitat, such as retaining floodwater and filtering runoff.



**Figure 1-Bear Creek Marsh-2007**

The PSC Order and the DNR permits included restrictions to protect the sensitive species and unique habitat of the Bear Creek Marsh. For protection, construction activities were limited to a window of time after October 15 and before March 15. Protective permit conditions included no excessive soil compaction or rutting, and the use of matting if activities resulted in topsoil/subsoil mixing or rutting of six inches or more.

Heavy construction vehicles typically access wetlands using wide-tracked vehicles and conventional timber mats (Figure 2a and 2b) Though these methods would have complied with the permit conditions, ATC determined additional precautions and an alternate access method were necessary to protect the environmental sensitivity of the Bear Creek Marsh.



**Figure 2a-Wide-tracked vehicle working in wetland**



**Figure 2b-traditional wood timber mats**

### **Project Alternatives**

ATC, along with Kenny Construction Co., utilized the services of New South Equipment Mats to develop a solution for construction in the Bear Creek Marsh. New South proposed a mat system that has engineered, certified load ratings that would meet the

required 190,000-lb load-bearing capability to accommodate the heavy drill rigs, cranes and associated equipment. The mat system is called an “air bridge”

The system included the placement of support mats, which exert minimal downward pressure and allow the main road deck to essentially float on the vegetative layer, rising and falling with the water levels (Figure 3).



**Figure 3 -New South Mat air bridge system**

This was only the second time New South utilized the “air bridge” design and the first project in which the mats were to float on a vegetative layer. The project was able to stay on schedule due to the capability of the road to adjust to the changing environmental conditions, including freeze-and-thaw and fluctuating water levels (Figure 4).



**Figure 4-Bear Creek Marsh-February 2009**

### **Project Results**

When the “air bridge” system was removed from the Bear Creek Marsh, the impacts to the vegetation and soils were minimal. The soil surface was minimally disturbed in the areas where the support mats were placed, no rutting occurred, no excessive compaction was observed and the topsoil/subsoil layer had remained intact (Figure 5). The vegetation disturbance was limited, which will allow the existing vegetation to quickly rebound and will reduce the likelihood of invasive species establishment. The minimal disturbance will lower any future restoration costs and reduce the amount of time ATC will spend contacting post-construction monitoring.



**Figure 5-Bear Creek Marsh-May 2011**

### **Conclusions**

The Bear Creek Marsh mat road was a huge success for the Arpin-Rocky Run project. ATC estimates savings of about \$2 million as compared to the cost of conventional timber matting. The use of the “air bridge” mat road ensured that ATC was in compliance with the PSCW Order and the DNR permit conditions. ATC demonstrated ingenuity in their willingness to go beyond the regulatory requirements by seeking out and implementing a cost effective, environmentally conscientious method for protecting the Bear Creek Marsh from typical access related impacts.