

ASSINIBOINE RIVER DIVERSION PORTAGE LA PRAIRIE, MB



Problem



Solution



25 YR Milestone

Result

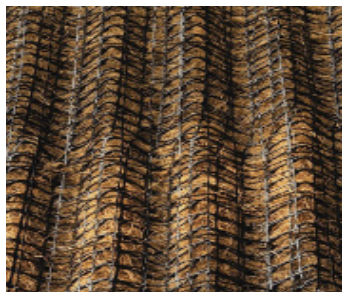
Application: Levee/Dam Stabilization
Product: C350 TRM

Site Issues: Long-term project • Flood control • Levee system • Ice and debris shearing • Cold climate • High shear stress

Problem: Flooding is perpetually a concern on the Assiniboine River just south of Lake Manitoba and so the Assiniboine River Diversion Structure Flood Control project was designed to divert flood waters away from Portage la Prairie and the nearby city of Winnipeg. The system worked well until severe flooding caused the western levee to overtop, erode, and fail in 1999. After the resulting flood, the west levee was redesigned to create an emergency spillway about 400 m (440 yds) in length, which would control flooding in the event of future breaching or overtopping.

Solution: North American Green's C350 turf reinforcement mat (TRM) was chosen as the reinforcement product for the project. Two years after installation floodwaters from the spring melt again breached the diversion structure. Water, ice and other debris flowed over the reinforced vegetation at a rate of approximately 6.0 m/s (20 ft/s) and nearly 46 cm (18 inches) in depth. This flow generated a shear stress of approximately 957 Pa (20 lbs/ft²), well above the original design values for the levee and the maximum vegetated permissible shear stress of 576 Pa (12 lbs/ft²) for the C350. The extreme force of the water and debris sheared the densely established mature grasses flush with the top of the matting but caused no significant loss of soil beneath the product itself. The project revegetated without the need for reseeding due to the grass species' root systems being protected beneath the C350. The diversion structure regenerated a dense stand of vegetation.

Result: The fact that the matting retained and reinforced vegetation, as well as resisted physical damage under such conditions is a testament to its extraordinary design and performance capabilities, but also to the correct installation by the contractor who installed it. The exceptional installation and quality of the product itself protected the levee from failing for a second time, and has held up successfully through the resulting decades. This project which is now been in situ for over 25 years, truly shows the permanent design and performance of the VMax line of TRMs.



PRODUCT HIGHLIGHTS

- The VMax C350 permanent TRM has a corrugated matting structure that offers true reinforcement to establishing vegetation, helping to protect vegetation roots and growth points from shearing effects created by ice and debris.
- The unique design creates a shear plane that deflects flowing water away from the soil surface while still allowing ground cover and moisture retention aspects from natural fiber mulch covers.