



Facility pad, heavy duty support

Strike Group, Otter Lake Compressor Station and Camp Pad

Strike Group required an innovative and cost-effective solution to construct Otter Lake Compressor Station B2 Pad for TransCanada Pipeline in Northern Sunrise County, Alberta. At the time Paradox secured the project, the site was reported to have already been brought to rough grade and required a capable structure to support the pad at finished grade. The proposed structure would sit on top of the existing silty clay fill and geotextile, underlain by organic and soft soil having a bearing capacity of 15 kPa as estimated by Golder Associates.

The site had two separate working pads: Plant A and Plant B. The previously-constructed Plant A pad had encountered unforeseen subgrade conditions and was in poor repair. Plant B had been loaded with temporary camp buildings and a laydown yard supported by mats. When the loads and mats were removed, the pad was discovered to have settled below rough grade and the silty clay completely disturbed.

To avoid similar problems as Pad A, Paradox Access Solutions proposed designs for Pad B and an approach using Tough Cell Geocells. The Tough Cell solution would increase the load bearing capacity of the soft soil and provide adequate support for buildings and equipment, including a 50-ton crawler crane.

CASE STUDY



LOAD SUPPORT

PROJECT AT A GLANCE

APPLICATION:

Ground reinforcement, support pad

LOCATION

Alberta, Canada

DATE OF INSTALL:

January - March, 2017

CLIENT:

Strike Group



A leading Canadian-owned energy service and construction company based in Calgary, Alberta, focused on providing exceptional service to energy clients in the oil and gas industry throughout Western Canada.

CONSTRUCTION:

Paradox Access Solutions



Specializing in the supply and installation of high quality access solutions and soil reinforcement services to project owners in pipeline, oil & gas, mining, industry, utilities, general construction and sustainable public roadways. Paradox is the North American Master Distributor for Tough Cell®.

ENGINEERING DESIGN

Stratum Logics Inc.



Civil and Geotechnical Engineering Design Consultants specializing in the application of high-performance geosynthetics for civil engineering infrastructure across North America in all types of challenging soils and climates.

Project Highlights

Heavy duty support and ground reinforcement for facility pad and approach

THE CHALLENGE

Extreme soft soil conditions caused multiple failures within the previously constructed pad A on this site. The proposed structure to support Pad B involved two layers of Tough Cell® and geotextile, as well as a layer of biaxial geogrid resting atop the existing silty clay fill.

The expected maximum load on the pad and approach roads are 140,000kg in trailers, and 215,000kg in equipment. Two structures were proposed for the project: a 750mm thick section for the pad, designed to withstand loads of a Kobelco CKE2500 Hydraulic Crawler Crane, and a 600mm thick section for the road approach.

THE SOLUTION

Despite unfavourable winter conditions, the construction for Pad B proceeded in January of 2017. A double layer Tough Cell structure was installed atop initial barrier layer of non-woven geotextile over prepared subgrade.

Total area: 27,000m²

Product(s):

58,000m² 330-150 Type D Tough Cell Geocell;
37,000m² 200 ST Woven geotextile;
37,500m² Non-woven geotextile;
35,000m² BX2525 geogrid.

Infill: 300mm pitrun gravel on first layer geocells;
150mm of AT Des 2 Class 40 Gravel above geogrid layer; 150mm AT Des 2 Class 40 Gravel in second layer geocells.

Completion: 150mm of AT Des 2 Class 40 Gravel top.

THE BENEFITS

The solution performed beyond the project owner's expectations showing zero visible failure more than one year post installation. The owner benefited from cost savings, rapid installation and a structurally sound, maintenance-free pad with an expected design life of >75 years. The success of the project has provided the owner with new and reliable options for future planned projects.



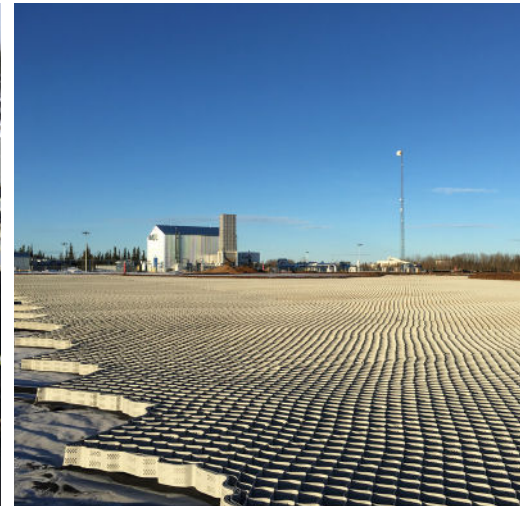
Installing geotextile in winter conditions



Installation, fill and compaction of geogrid layer



Tough Cell® installed



Scope of site



Infilling of Tough Cell® Geocells



Gravel course and compaction