



Paved road rehabilitation, chipseal overlay

County of Leduc Mitchell Beach Road & Tp Rd 474

Mitchell Beach Road is an access road that connects Township Road 474 with upper-market residential cabins on the northern shore of Pigeon Lake in central Alberta. On both sides of Mitchell Beach Road, there are bodies of water which are home to various species of wildlife. There are two culverts across the road that allow for wildlife passage.

Residents were dissatisfied with the quality and condition of the road which had dust problems during dry periods and saturated clay soil during wet periods, in addition to Beaver activity that affected seasonal water levels.

Water levels typically rose and further moistened the road during periods of heavy rain, introducing more distresses to the road. As of spring 2013, the road was failing and in need of repair and upgrade. A 300m-long portion of the Mitchell Beach Road was identified as the project scope.

Tough Cell® (formerly PRS Neoweb) was the chosen solution to support this failing section of the road. Construction of the road was completed in only 3 days, and was followed with a final chip seal layer installed by other parties.

PERFORMANCE RESULTS:

After a site visit, Alberta Transportation representatives was very pleased with the project. Its success contributed to the Tough Cell® product receiving "Approved Product" status by Alberta Transportation, and led to the project's status as an Alberta Transportation demonstration site.

CASE STUDY



LOAD SUPPORT

PROJECT AT A GLANCE

APPLICATION:

Paved road frost-boil rehabilitation with chipseal overlay

LOCATION

Alberta, Canada

DATE OF INSTALL:

2013

CLIENT:

County of Leduc



Located at the heart of one of the strongest economies in the world, the Leduc County region is a dynamic municipality spanning 2,653 square kilometres, strategically located at the crossroads of major air, road and rail transportation routes.

CONSTRUCTION:

Paradox Access Solutions



The authorized Tough Cell® Master Distributor in North America, specializing in the supply and installation of high quality access solutions and services to customers in the pipeline, utility, municipal, general construction and oil & gas industries.

ENGINEERING DESIGN

Stratum Logics Inc.



Global geotechnical engineering design specialists exceptionally proficient in the deployment of cutting-edge geosynthetics for civil engineering across North America in all types of challenging soils and climates.

Project Highlights

Paved road frost-boil rehabilitation with chipseal overlay

THE CHALLENGE

To strengthen the existing but weak road, Tough Cell® NPA geocells were chosen as a stabilizing and reinforcement layer, together with a woven geotextile to create a separation layer between the old and new road beds. The design specified 100mm high x 6m wide NPA geocells, to be filled with gravel up to 150mm height.

THE SOLUTION

Construction began on June 26, 2013. Stratum Logics provided the bypass road design employed during construction. A woven geotextile was spread over the road length. After Tough Cell® NPA geocells were properly stretched over the geotextile along the entire road, gravel was infilled into the cells.

The design for Mitchell Beach Road is one layer of Type D perforated Tough Cell® Geocells of 100mm height, placed over a woven geotextile. The client opted to keep the existing culverts, therefore a single cross section was used over the entire 300m length.

Total area: 300m length x 7m width, single layer

Product(s): 330-100 Type D Tough Cell® Geocells; woven geotextile

Infill: 150mm gravel

Completion: A 25mm layer of gravel lock (chip seal) to be placed on top of the gravel as per Alberta Concrete product design post installation.

THE BENEFITS

This Tough Cell® reinforced access road performed well even prior to the application of the chip seal coat some months after construction. The Mitchell Beach community now enjoys reliable, year-round access and the road itself remains in immaculate condition after four years in service. The County benefited from initial construction cost savings and will enjoy reduced maintenance costs in future.



Extreme water levels in close proximity to road



Installation of geotextile layer



(top) Beaver activity affecting water levels



(bottom) Stretched Tough Cells®



Placement of gravel



Completed road, June 2013



(top) October 2014; (bottom) May 2015