



CASE STUDY



LOAD SUPPORT

PROJECT AT A GLANCE

APPLICATION:

Paved road subbase and base rehabilitation

LOCATION

Alberta, Canada

DATE OF INSTALL:

July, 2016

CLIENT:

Village of Ryley



Ryley is a growing, vibrant, family oriented community of 497 residents located 50 minutes east of Edmonton on Highway 14 [the Poundmaker Trail] in the center of Beaver County.

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.

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Village of Ryley Main Street at 50 Ave. and 56 St.

The Village of Ryley, located in Beaver County in central Alberta, needed to reconstruct their 1.8km long 50 Avenue which is the Village's main street. Like many rural municipalities in Alberta, the Village struggled with budget limitations and suffered from continuous, recurring and costly road repairs. They sought a solution that would reduce the amount of capital required for repairs, increase the durability of their roads, reduce future maintenance costs and provide an environmentally responsible solution by lowering the CO₂ emissions of the project.

Paradox Access Solutions proposed an innovative construction method utilizing Tough Cell® NPA Geocell reinforcement that brought costs within reach and allowed the Village to move forward with a project that they could not otherwise have afforded. It also enabled designers to reduce the amount of required aggregate and asphalt, which meant less CO₂ emissions as a result of the construction activities.

FROM THE COUNTY ADMINISTRATION OFFICER:

The Village of Ryley required a design for 50th Avenue, the main access into the village from Highway 14. This road has always been problematic, and...Tough Cell® geocells [formerly PRS-Neoweb] were chosen to reinforce the road structure. Paradox Access Solutions was responsible for the construction of the project. The Village of Ryley was happy with the construction process, work performed and degree of professionalism of Paradox Access Solutions' construction crew."

- Janet Winsnes, CAO, Village of Ryley

Project Highlights

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THE CHALLENGE

The 50 Avenue reconstruction in the Village of Ryley was long overdue. The existing subgrade beneath the road was very old and found to consist of typical organic and other non-standard materials available in the region at that time. The Village needed a design that would modernize and strengthen this road, making it safer, more durable and bring the construction and maintenance costs within their budget. The design for the road was therefore done using high strength NPA Geocell reinforcement.

THE SOLUTION

The conventional option would have been to construct 100mm Asphalt Concrete pavement over a 300mm Granular Base Course (GBC). With the use of NPA Geocells the layers' thickness were reduced by 25% down to 75mm of AC and 225mm of GBC thereby lowering costs. It is of note that employing NPA Geocells does not adversely effect the project schedule as installation crew was always ahead of civil earthwork crew. In addition, a section of curb and gutter structure was removed and replaced, and the corresponding ditches re-shaped to direct drainage to two of three existing operational culverts. The third culvert was replaced by Paradox.

Total area: 1.8 km length, varying from 8m to 10m width

Product(s): 330-150 Type C Tough Cell® geocells; woven geotextile

Infill: 225mm gravel

Completion: capped with 75mm asphalt

THE BENEFITS

The innovative design saved the Village nearly 10% of the projected initial investment cost and reduced the quantity of construction material, which in turn contributed to a 20% reduction in CO₂ emissions compared to the conventional alternative. These are savings that can be redirected elsewhere for the benefit of the community, in providing more services, amenities and ultimately an enhanced quality of life for the residents of Ryley.



Prior condition of 50th Avenue



Close-up view of existing road surface



(top) Placement of geotextile



(bottom) Tough Cell® installed



Tough Cell® being filled



Asphalt pavement under construction



Completed pavement structure