CASE STUDY | Ground Reinforcement Agricultural Grain Silos

TE-BX20PP Biaxial Geogrid with TE-8 Non-woven Geotextile

WHAT:

Use of Titan TE-8oz non woven geotextile with TE-BX20PP biaxial geogrid for soil reinforcement under agricultural grain silos and adjacent site.

CHALLENGE:

Grain silos can weigh up to 193 tonnes requiring high weight bearing capacity underneath. The challenge here was the silos were tipping and settling into soft soil substrate, even with them sitting on concrete slabs. The customer was looking for a cost effective way to reinforce the ground under the silos yet still be able to install the material himself.

CONVENTIONAL SOLUTION:

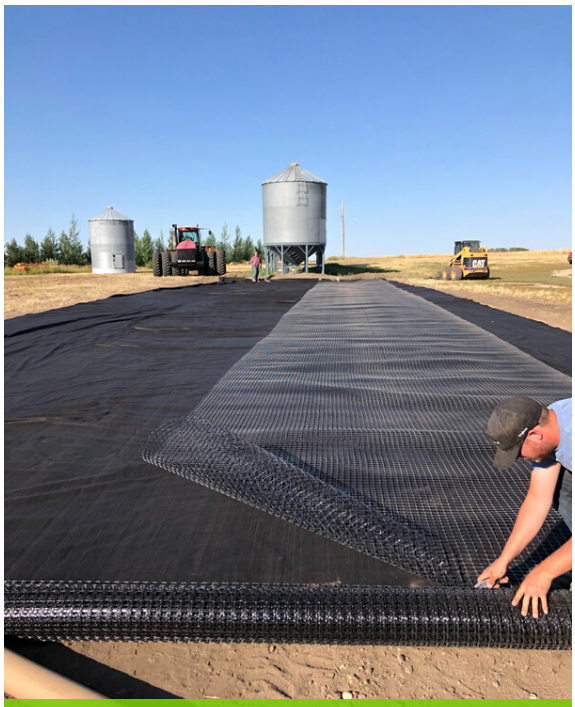
The conventional solution would be to pour concrete slabs. Concrete slabs 20' x 20' offer a great sturdy strong platform but are susceptible to settling or sinking as the slabs do not distribute the weight of the fully loaded bins with soft soil substrates underneath.

TITAN SOLUTION:

Titan provided a more cost effective solution for the owners that they could do themselves. This consisted of laying TE-8 non woven geotextile at the base with TE-BX20PP biaxial geogrid over top covered with compacted aggregate. This allows ground reinforcement for a much larger area for less money than pouring concrete slabs. Not only was our solution more cost effective, it was also faster as there was no curing wait time and the silos could be set in place immediately. Rural concrete price is $108/m2.

BENEFITS:

- More cost effective than conventional concrete. Approx. $2,000.00 in savings over concrete slabs.
- Excellent drainage with the use of compactable aggregates.
- Easy to maintain and add fill for extra strength if required.



TE-BX20PP geogrid being rolled out over top of TE-8oz non woven geotextile.

TE-BX20PP geogrid being deployed with proper overlap and tension resulting in no wrinkles.

PRODUCT DESCRIPTION:

TE-BXPP Geogrid

Effective in increasing the bearing capacity and stabilization of low load bearing soils, TE-BXPP biaxial geogrid is manufactured out of virgin polypropylene (PP) using a unique punching and drawing process. Monolithic, it features uniform square/rectangular apertures, thick integral nodes, as well as thick and wide ribs having a high degree of molecular orientation continuing in part through the mass of the integral node**.**

When granular material is compacted over these geogrids it partially penetrates and projects through the apertures creating an interlocking action between the particles and the grid. This positive mechanical interlock enables the grid to resist horizontal shear from the fill and thereby mobilize the maximum bearing capacity on the soft subsoil.

This geogrid is engineered to be mechanically and chemically stable in aggressive soil environments and is not attacked by aqueous solutions of salts, acids or alkali.

Non Woven Geotextile

Titan non woven geotextiles are the highest quality geotextiles available. These needle-punched geotextiles are made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. They resist ultraviolet deterioration, rotting, biological degradation, naturally encountered basics, and acids.

Non woven geotextiles are used in many applications such as drainage, filtration, separation, and soil reinforcement. They function by restricting soil particles but allowing liquid and gases to easily pass through them and are used to improve the performance of environmental, civil infrastructure, and construction projects.

PROJECT HIGHLIGHTS:

Project:
Agricultural Silo Ground Reinforcement

Location:
RM of Fillmore, SK

Installation:
Fall 2019

Owner:
Independent Grain Producer

Product Solution/System:
TE-8oz non woven geotextile, TE-BX20PP biaxial geogrid

Product Supplier:
Titan Environmental Containment Ltd. Manitoba, Canada
(Supplied the products, and offered design service and technical guidance)

Contact us for more information:

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