

## Pyramid Grid™

### WHAT:

Use of Pyramid Grid™ for rail and roadway abutment reinforcement.

### APPLICATION:

Reinforced Pyramid Grid™ layers used in conjunction with compacted granular fill.

### CHALLENGE:

The challenge was to get away from the traditional construction of reinforced concrete to speed up the project execution and rate of construction.

### CONVENTIONAL SOLUTION:

The client was considering an alternate system to the traditional reinforced concrete for quicker/easier construction while being environmentally friendly, and cost-saving. The traditional reinforced concrete wall would take much longer to complete and would be quite expensive to construct in this topography.

### TITAN SOLUTION:

Titan provided the design using Pyramid Grid™ for reinforcement behind the East and West abutments of the underpass to increase the factor of safety against global failure. Pyramid Grid™ was the superior solution as it provided significant savings in material cost, construction time, it's easier to install, aesthetically pleasing, and also provided more than 60% Embodied Carbon (EC) reduction.

Titan specifically designed the most optimal configuration for laying the geogrids near the MTS ducts.



Deployment of roll layout of Pyramid Grid™



First layer of Pyramid Grid™



First layer of Pyramid Grid™ with granular

## ▼ BENEFITS:

- Can be used with a wide range of facing options.
- Provides up to 60% in material and time savings compared to conventional reinforced concrete and gravity structures.
- High resistance to dynamic shock loading and seismic activity.
- Allows the use of on-site fill.
- Fast, easy, and economical construction.
- Withstand differential settlement.
- High connection capacity strength between facing and the grid.
- Aesthetically appealing structure.
- Reduces traffic disruption and lane closure.

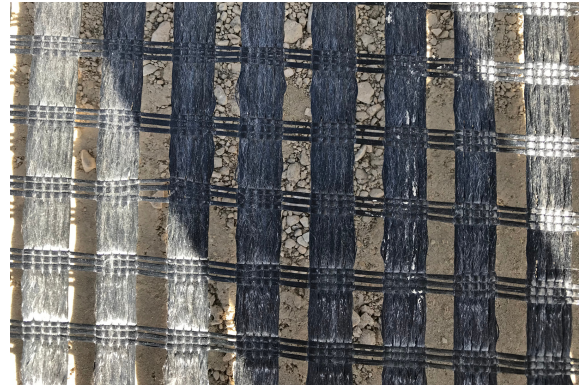


Pyramid Grid™ installation with granular compaction.

## ▼ PRODUCT:

### Pyramid Grid™

Pyramid Grid™ is a uniaxial polyester (PET), geogrid manufactured with high molecular weight, high tenacity polyester yarns using a precision knitting process. This geogrid is dimensionally stable with uniform apertures that provide significant tensile reinforcement capacity in one direction. It's engineered to withstand both harsh construction conditions and aggressive soil environments and is unaffected by soil micro-organisms. A black PVC saturation coating provides further chemical, mechanical and ultraviolet protection.



## ▼ PROJECT HIGHLIGHTS:

### Project:

Rapid Transit

### Location:

City of Winnipeg

### Installation:

Summer 2017

### Owner:

City of Winnipeg

### Consulting Engineer:

TREK Geotechnical

### General Contractor:

PCL

### Product Solution/System:

Pyramid Grid™

### 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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