



ALLIANCE
GEOSYNTHETICS

**GEOGRID SOLUTIONS
IN FORESTRY APPLICATIONS**



Potential Geosynthetic Applications

GENERAL ROAD CONSTRUCTION

The construction and maintenance of access roads is an integral and costly part of forestry operations. The presence of soft soil conditions pose particular challenges which can lead to delays and the generation of unforeseen expenses; periods immediately following prolonged wet weather conditions are especially troublesome in this regard. AllianceGeo biaxial (BX) geogrids provide the most cost effective and reliable means by which to construct access roads.



LANDINGS AND WORKING PLATFORMS

Where larger areas require construction of a solid surface on which to haul logs and undertake similar activities, BX geogrids can be used to drastically reduce the amount of aggregate fill required. In some cases it is also possible to use inferior quality materials (e.g. sand, aggregates with high fines content, etc.) rather than well graded, high quality and expensive stone.



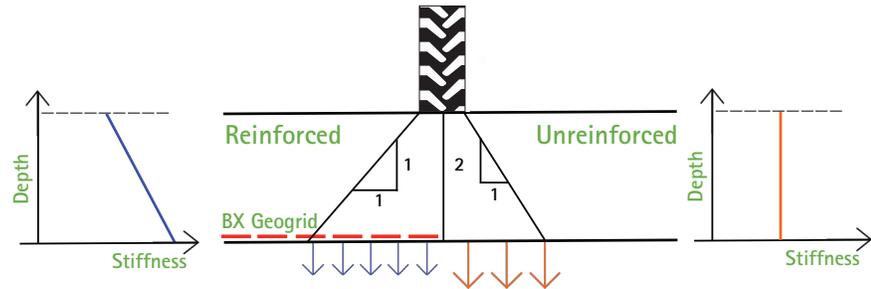
AllianceGeo Support Services

Our company's team of site solution experts is able to provide a full support service on forestry projects. *These include:*

- Site visits to accurately determine local soil conditions.
- Undertake full road and working platform designs on-site in order to help the client make informed decisions about the required aggregate thickness "there and then".
- Provide on-site support during installation to ensure the structure's performance requirements are met.

How do Geogrids work?

AllianceGeo BX geogrids are “rolled-goods” products comprising a set of stiff, intersecting plastic ribs which form a grid-like structure. As with geotextiles, geogrids are generally placed directly on the existing soil prior to covering with aggregate base or similar material. The coarser aggregate particles partially penetrate through the apertures of the geogrids thereby generating a high strength, mechanical connection between the two materials.



By introducing a geogrid, the aggregate base stiffness is increased significantly and maintained during the full service life of the road. This greatly aids construction of roads built on soft soils and for a given set of soil conditions, can normally result in a reduction in the amount of aggregate base required.



Interlocking granular particles are confined by the geogrid in a similar manner to how billiard balls are confined by a rack

Value Proposition

The table below highlights the typical savings that can be generated by incorporating an AllianceGeo BX geogrid during construction of forest roads:

Soil Type	Description	Aggregate Required (CY/station)		Aggregate Savings	
		Unreinforced	With Geogrid	\$/Station	\$/Mile
Soft	Man walking sinks > 3 in.	100	60	600	31,680
Medium	Man walking sinks < 1 in.	70	40	450	23,760
Stiff	Pickup truck sinks up to 1 in.	50	30	300	15,840

Note: installed cost of aggregate is \$15/CY, station dimensions are 14 ft. x 100 ft.

Customer Feedback

“The only road that held up without adding more rock was yours”

Kevin Black, Douglas County Forest Products

“Amazing. Not even a hint of a rut after one hundred fully loaded dump truck passes”

Ron Hesco, Hesco & Sons Contracting

“As long as I have a say, geogrid will be used every time maintenance is performed on any paved or unpaved surfaces in the export terminal”

Dan Raupp, Weyerhaeuser, Longview, WA Log Yard

Case Studies

HANCOCK MOUNTAIN ROAD, DOUGLAS COUNTY, OR

OWNER: Douglas County Forest Products

PRODUCT: AllianceGeo BX2020 Geogrid

DATE: March 2013

The existing access roads at this site were suffering from excessive rutting and required complete reconstruction. The initial proposal involved the use of 14 inches of coarse (6 inch-minus) aggregate overlain with a 3 inch thick capping layer. Instead, after placing a layer of AllianceGeo BX2020 on top of the existing subgrade, only 12 inches of aggregate was used to produce a stable road. This was the best performing road on the project despite up to 36 inches of aggregate being used in other parts of the site.



FITZPATRICK CREEK SLIDE, ELKTON, OR

OWNER: Roseburg Forest

PRODUCT: AllianceGeo BX3030L Geogrid

DATE: January 2016

AllianceGeo was invited to visit a site where a slope failure had resulted in the loss of half the existing logging road. As this was the only road leading into and out of the area, an expedient fix was required. A steady flow of water resulted in the formation of an extremely weak subgrade and based on previous experience, the contractor estimated that 24 inches of rip-rap would be required to stabilize it. Instead, a layer of AllianceGeo BX3030L geogrid was placed and then topped with only 10 inches of (3 inch-minus) aggregate. A further 3 inch thick capping layer was placed to produce the stable road structure.



LONGVIEW EXPORT YARD LOGGING FACILITY, LONGVIEW, WA

OWNER: Weyerhaeuser

PRODUCT: AllianceGeo BX3030L Geogrid

DATE: January 2014

This facility is subjected to particularly intense traffic loadings due to the number of trucks passing through each week. In addition, large front-end loaders impose extremely high pressures on the unpaved road surface. This along with the presence of an underlying soft, saturated subgrade results in deep rutting being commonplace on the existing roads which require regular resurfacing. A new construction method is now being employed whereby two layers of AllianceGeo BX3030L geogrid are incorporated into a 24 inch thick aggregate layer. Following more than two and a half years' service, little to no rutting has been observed in the log pad and transfer areas.

