GEOWEB DIAMOND INTERCHANGE LOAD SUPPORT SYSTEM

Genuine GEOWEB® Stabilization Solutions!

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for the Israel National Railway Company

ISRAEL RAILWAYS
ENJOY THE RIDE

GEOSYSTEMS

GEOWEB SYSTEM
General

- Geoweb Cellular Confinement prevents the horizontal/vertical movement of unstable soils in cellular structure
- Increases load bearing capacity of sub grade
- Allows lateral drainage of water to move water out of sub ballast layer
- Refer to AREMA Manual, Section 10.5 for Cellular Confinement Specification for ballast stabilization

GEOSYSTEMS

GEOWEB SYSTEM
Track Removal

GEOSYSTEMS

GEOWEB SYSTEM
Determine Sub Grade Strength

PRESTO GEOSYSTEMS

GENUINE GEOWEB®
CELLULAR CONFINEMENT

SOIL MECHANICS

Correlation of Subgrade Soil Strength Parameters for Cohesive Soils (Fine-Grained)

California Bearing Ratio *CBR (%)*	Undrained Shear Strength* *C_u (psi)*	Hand Penetrometer Readings *Pq (tsf)*	Standard Penetration Resistance *SPT (blows/ft)*	Field Identification / Visual
< 0.4	< 1.7	< 0.25	< 2	**Very Soft** (extruded between fingers when squeezed), Man standing sinks >3 inches
0.4 – 0.8	1.7 – 3.5	0.25 – 0.50	2 – 4	**Soft** (molded by light finger pressure) Man walking sinks 2-3 inches
0.8 – 1.6	3.5 – 6.9	0.50 – 1.0	4 – 8	**Medium** (molded by strong finger pressure) Man walking sinks 1 inch
1.6 – 3.2	6.9 – 13.9	1.0 – 2.0	8 – 15	**Stiff** (readily indented by thumb but not penetrated with great effort) Pick-up ruts ½-1 inch
3.2 – 6.4	13.9 – 27.7	2.0 – 4.0	15 – 30	**Very Stiff** (readily indented by thumb) Loaded dump truck ruts 1-3 inches
> 6.4	> 27.7	> 4.0	> 30	**Hard** (indented with difficulty by thumbnail) Loaded dump truck no ruts

FRICTION ANGLE FOR GRANULAR SOILS

Sand Density *(SW, SP)*	SPT *(blows/ft)*	Friction Angles *(degrees)*
Very Loose	< 4	< 30
Loose	4 - 10	30 - 35
Medium	10 - 30	35 - 40
Dense	30 - 50	40 - 45
Very Dense	> 50	> 45

Decrease 5° for non-plastic silts (ML, MH with PI < 6) and silty sands (SM)
Increase 5° for gravel or gravel sand mixtures (GW, GP, GM)

- If soils information is not available, determine sub grade strength from visual identification and experience
- Correlate visual identification to CBR value
- Soils information is recommended over visual determination.
- Submit Request for Project Evaluation under the Design Tab @ [Home - Presto Geosystems]

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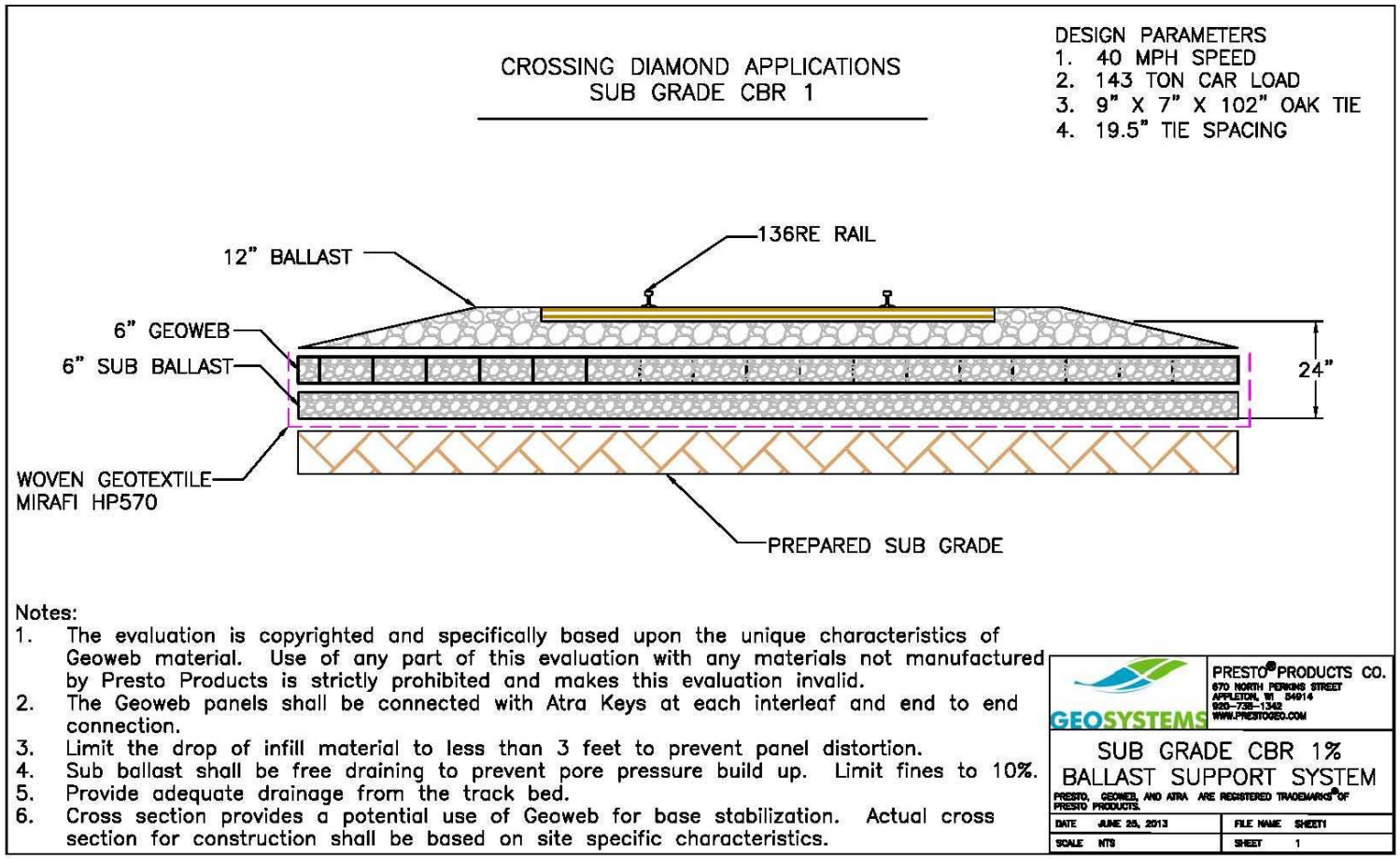
GEOWEB SYSTEM
CBR 1% Cross Section



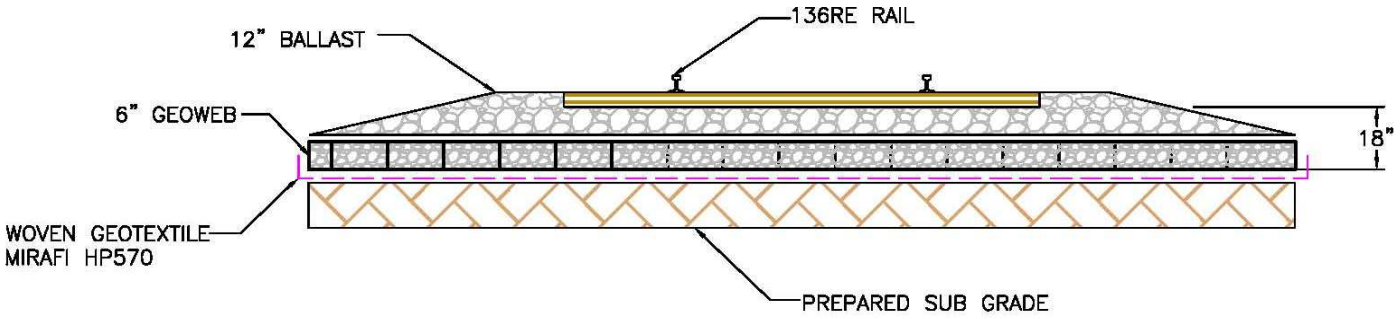
- Verify train speed, car weight, type of tie, tie spacing & sub grade CBR
  - Provided for potential use of Geoweb

GEOSYSTEMS

GEOWEB SYSTEM
CBR >2% Cross Section

CROSSING DIAMOND APPLICATIONS
SUB GRADE CBR 2

DESIGN PARAMETERS
1. 40 MPH SPEED
2. 143 TON CAR LOAD
3. 9" X 7" X 102" OAK TIE
4. 19.5" TIE SPACING



Notes:
1. The evaluation is copyrighted and specifically based upon the unique characteristics of Geoweb material. Use of any part of this evaluation with any materials not manufactured by Presto Products is strictly prohibited and makes this evaluation invalid.
2. The Geoweb panels shall be connected with Atra Keys at each interleaf and end to end connection.
3. Limit the drop of infill material to less than 3 feet to prevent panel distortion.
4. Sub ballast shall be free draining to prevent pore pressure build up. Limit fines to 10%.
5. Provide adequate drainage from the track bed.
6. Cross section provides a potential use of Geoweb for base stabilization. Actual cross section for construction shall be based on site specific characteristics.

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APPLETON, WI 54914
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SUB GRADE CBR 2%
BALLAST SUPPORT SYSTEM

PRESTO, GEOWEB, AND ATRA ARE REGISTERED TRADEMARKS® OF PRESTO PRODUCTS.

DATE	JUNE 25, 2013	FILE NAME	SHEET1
SCALE	NTS	SHEET	1

- Verify train speed, car weight, type of tie, tie spacing & sub grade CBR
  - Provided for potential use of Geoweb

GEOSYSTEMS

GEOWEB SYSTEM
Prepare Sub Grade

GEOSYSTEMS

GEOWEB SYSTEM
Compact Sub Grade

GEOSYSTEMS

GEOWEB SYSTEM
Install Woven Geotextile

- High strength woven geotextile provides separation, filtration and strength
- Install per Manufacturer's instructions
- Overlap min 2 ft side by side and 5 ft end to end

GEOSYSTEMS

GEOWEB SYSTEM
ATRA Key Connection

- Connects Geoweb Sections – end to end & side to side
- Quick Installation
- Permanent Connection
- Saves Time & Money

GEOSYSTEMS

GEOWEB SYSTEM
Expanded Geoweb Sections

- Provide stakes as needed to keep Geoweb sections expanded

GEOSYSTEMS

GEOWEB SYSTEM
Geoweb Infill

- Recommended Infill shall be crushed ¾” to 1-1/4” aggregate
- Limit fines to less than 10% if drainage is a concern

GEOSYSTEMS

GEOWEB SYSTEM
Compact Geoweb Infill

- Wetting infill may be req'd to achieve compaction

GEOSYSTEMS

GEOWEB SYSTEM
Final Compaction

GEOSYSTEMS

GEOWEB SYSTEM
Installation of Interlocker

GEOSYSTEMS

GEOWEB SYSTEM
Infill of Ballast

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GEOWEB SYSTEM
Installed Track

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GEOWEB SYSTEM
Installed Track

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GEOWEB SYSTEM
Completed Installation

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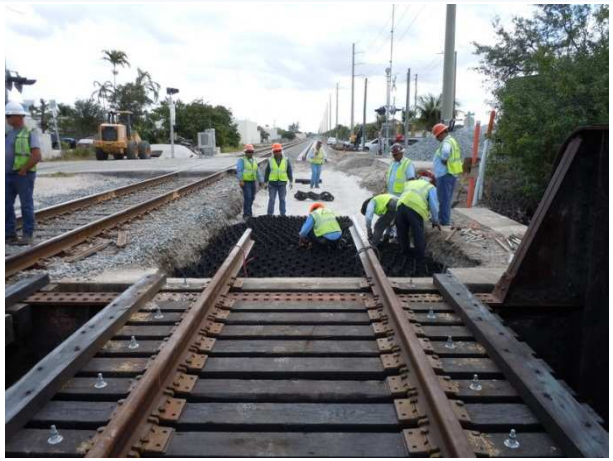
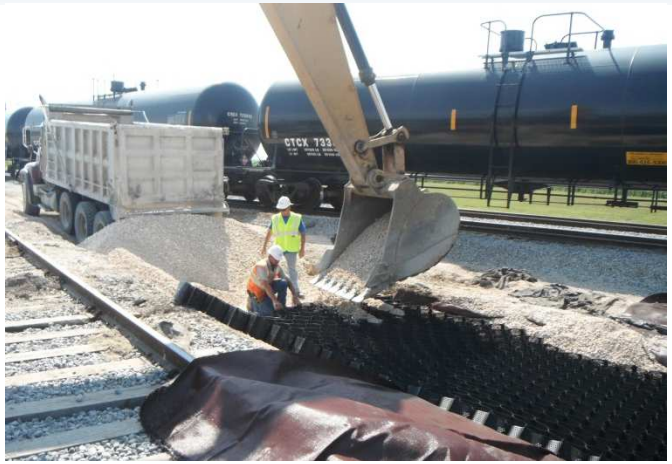
GEOWEB SYSTEM
Other Rail Applications



Bridge Approach



Ballast Stabilization

Slope Stabilization

ROW Earth Retention

GEOSYSTEMS

Creating Sustainable Environments

- Thank you for watching

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