

Engineering Field Notes

Engineering Technical Information System

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A Plastic Ford - You've Got to Be Kidding

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INTRODUCTION

No, we aren't kidding - Region 8 has installed a plastic ford. We have been searching for ways to cut costs on Traffic Service Level D roads, and there is a new product on the market called "GEOWEB[®]," manufactured by Presto Products Company. Figure 1 shows a diagram of GEOWEB[®] with its specifications, and figures 2 through 5 show the sequence of construction for Region 8's plastic ford.

1. Expanded Dimension	8 ft x 20 ft x 3, 4, 6 or 8 in
2. Collapsed Dimension	11 ft x 5 in x 3, 4, 6 or 8 in
3. Panel Thickness Nominal	0.050 in
4. Unit Weight	
(3, 4, 6 or 8 in depths)	2.3, 3.1, 4.6, or 6.2 lb/yd ²
5. Total Weight per section	
(3, 4, 6 or 8 in depths)	41.2, 55, 82.5 or 110 lb
6. Cell Area	38.4 in ²
7. Cell Seam Node Pitch	13 in
8. Seams Tensile Peel Strength	450 lb minimum
9. Installation Temperature Range	-25° F to 130° F

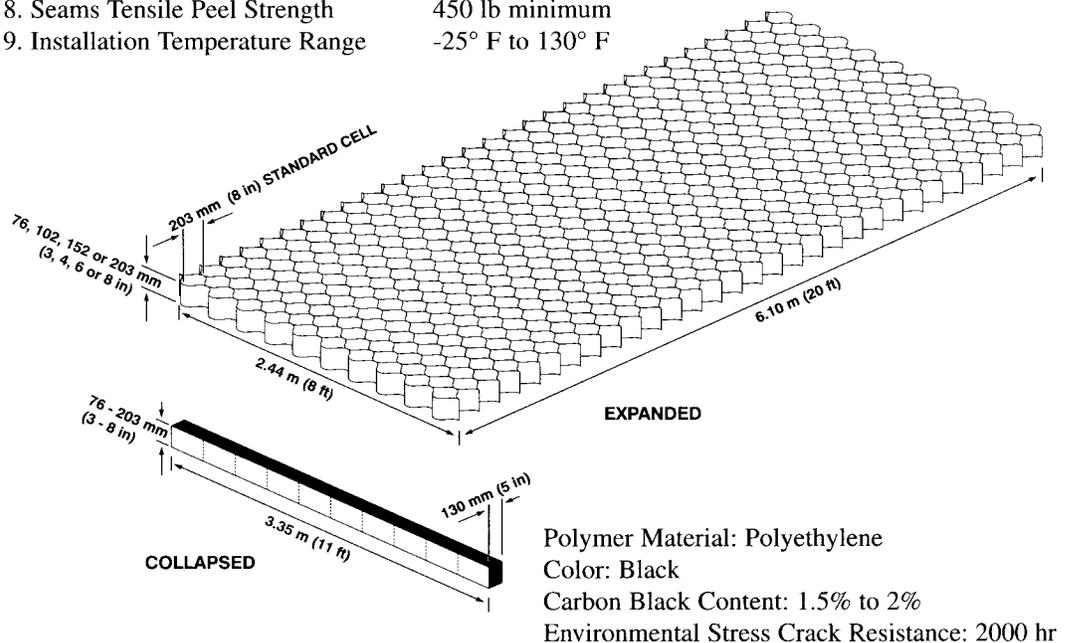


Figure 1. - Diagram of GEOWEB[®]. (Diagram courtesy Presto Products, Co., Appleton, WI.)



Figure 2. - The excavated site.



Figure 3. - Installing geotextile (Trivera 1127, nonwoven).

**PROPOSED
SYSTEM**

To install this type of proposed system, place an 8-inch thick polymer GEOWEB® grid confinement system on geotextile. Fill the grid with crushed aggregate, sand or creek gravel. Top with a 2-inch minimum depth of the same material to provide a protective coating; approximately 6 inches would provide additional protection for consolidation of aggregate under traffic.

**OTHER FORD
OPTIONS**

Normally, an 8-inch deep by 14-foot wide mesh reinforced concrete ford, possibly with an aggregate foundation, would be placed at this location. Depending on site conditions, the cost of a concrete ford in Region 8 ranges from \$6,000 to \$12,000.

SITE DATA

The ford is located on Road Number C0702 on the Chattahoochee-Oconee National Forests in north Georgia. It replaced a log stringer bridge. The GEOWEB® ford is 16 feet wide by 40 feet long. The GEOWEB® cells were filled and topped with a coarse aggregate.

GEOWEB® FORD COSTS

The GEOWEB® ford was installed by a force account for \$1,900. The GEOWEB® and underlying geotextile (nonwoven Trivera 1127) were donated by industry manufacturers. The geotextile was used to separate the GEOWEB® and aggregate from the underlying sandy clay soil. The estimated value of these materials is \$864 plus shipping, which would have made the total cost for the ford approximately \$2,800 had the Forest Service needed to purchase the GEOWEB® and geotextile as well - still a substantial savings over concrete construction costs.



Figure 4. - Installing GEOWEB®.



Figure 5. - Nearly completed ford.

The following were the actual costs for this ford:

Crawler loader, operator, and laborer	\$ 595
Crushed aggregate	675
Forest Service crawler tractor	60
Overhead	200
Forest Service labor	270
Seeding	<u>100</u>
Total	\$1,900*

** (Note: These costs represent actual cost in 1987. Current costs may vary.)*

The crawler loader, operator, and laborer charge included removing the existing log stringer bridge and masonry rock abutments, excavating the approaches and subgrade, and relocating a metal bar gate.

INSTALLATION

Since this was a test project, several Forest Service Engineers and Engineering Technicians were on hand to get their feet wet and learn how to install the ford. Normally, three laborers are required for expanding the GEOWEB®.

After the excavation was complete, it took 1 1/2 hours to install the geotextile, GEOWEB®, and aggregate. After installation, a loaded dump truck crossed without settlement of the ford.

ADVANTAGES

The following are some advantages that this type of ford material has over concrete:

- (1) Less costly.
- (2) Short installation time.
- (3) Ford may be used immediately.
- (4) No stream diversion required.
- (5) Less inspection time.
- (6) No skilled labor, such as concrete finishers, required.
- (7) Reusable materials. (If creek gravel was used, the GEOWEB® could be removed and used at another site. It might be undesirable to leave crushed aggregate in the stream.)

COMMENTS

Easy Transport

One interesting point is that GEOWEB® for an entire ford can be carried in the trunk of a car or in the back of a small pickup. Two persons can carry a 20- by 8-foot collapsed pane of GEOWEB®.

Durability

How long will GEOWEB® ford last? The Corps of Engineers conducted tests on a road constructed with GEOWEB® on loose sand. Heavy test vehicles made 1,200 passes and other vehicles also made numerous trips. The grids and surfacing sustained minor damage along the road shoulders, where vehicles had driven off and then returned to the road. The grid system should last for many years under normal timber sale, recreational, and administrative traffic.

OTHER USES

GEOWEB® can be used for other installations as well:

- (1) Boat ramps. (Lowering the lake not required.)
- (2) Erosion protection.
- (3) Repair of weak roadbed sections.
- (4) Ditch liners.
- (5) Retaining walls.

CONTRACT SPECIFICATION

On public works and timber sale road contracts, the ford specification would be Subsection 203.12 and Pay Item 203(16).



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