



1600 Jackson Street, Suite 310, Golden, CO 80401  
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***Stats:***

**Project Name: Total System Services, Inc.**

**Product: Slopetame<sup>2</sup>**

**State: Georgia**

**Application: Riverbank stabilization -  
Chattahoochee River**

**Install Size: 2750 m<sup>2</sup>, 29,602 sf**

**Install Date: July 1998**

**Client: Total System Services, Inc.**

**Address: 1601 First Avenue, Columbus, GA 31902**

**Designer: Change order by MCCA**

**Contractor: Beers Construction (Job 6022), 70 Ellis St. NE, Atlanta, GA 30303**

**Directions: 1601 First Avenue, corporate headquarters site for Total System Services, on riverbank of Chattahoochee River, east side, north part of Columbus**

**Location: Vertically from river walkway, past trees, down to large rock boarder, and lengthwise from the bridge on the south end of Total System Services to nearly the railroad bridge. You easily can see the line of with and without Slopetame<sup>2</sup>.**



***Proposed Plan:***

The proposed stabilization system was concrete blocks with cables to resist periodic flooding controlled by dams upstream. Slopetame<sup>2</sup> was substituted for its superior aesthetics, lower overall cost (1/3), and performance.



***Coverage Area:***

29,602 square feet  
(2750 square meters).  
Installed in July 1998.

Vegetated matrices, such as Slopetame<sup>2</sup>, are rated to handle 14-18 ft. per second water velocities



***Anchors:***

**Duckbill® anchors were attached to rebar and hammered into the soil. Additional sod staples and U-shaped hog-ring anchors were used on the seams.**



***Completed:***

**Walkway/bench level is 20 feet above normal water line. An additional embankment above walkway is designed to accommodate flood levels greater than 100 year frequency.**



***2001 Flooding :***

**Date: March 2001**

Data not available



***2003 Flooding :***

**Date: May 2003**

**Water Height: 19.75 feet\***

**Stream Flow: 60,300 cf/sec\***

**Stream Velocity: 5.01 ft/sec\***

**(1.85 m/s)**

(Image May 9, 2003)

\*Flow rates taken from the United States Geological Survey



Elevation Data

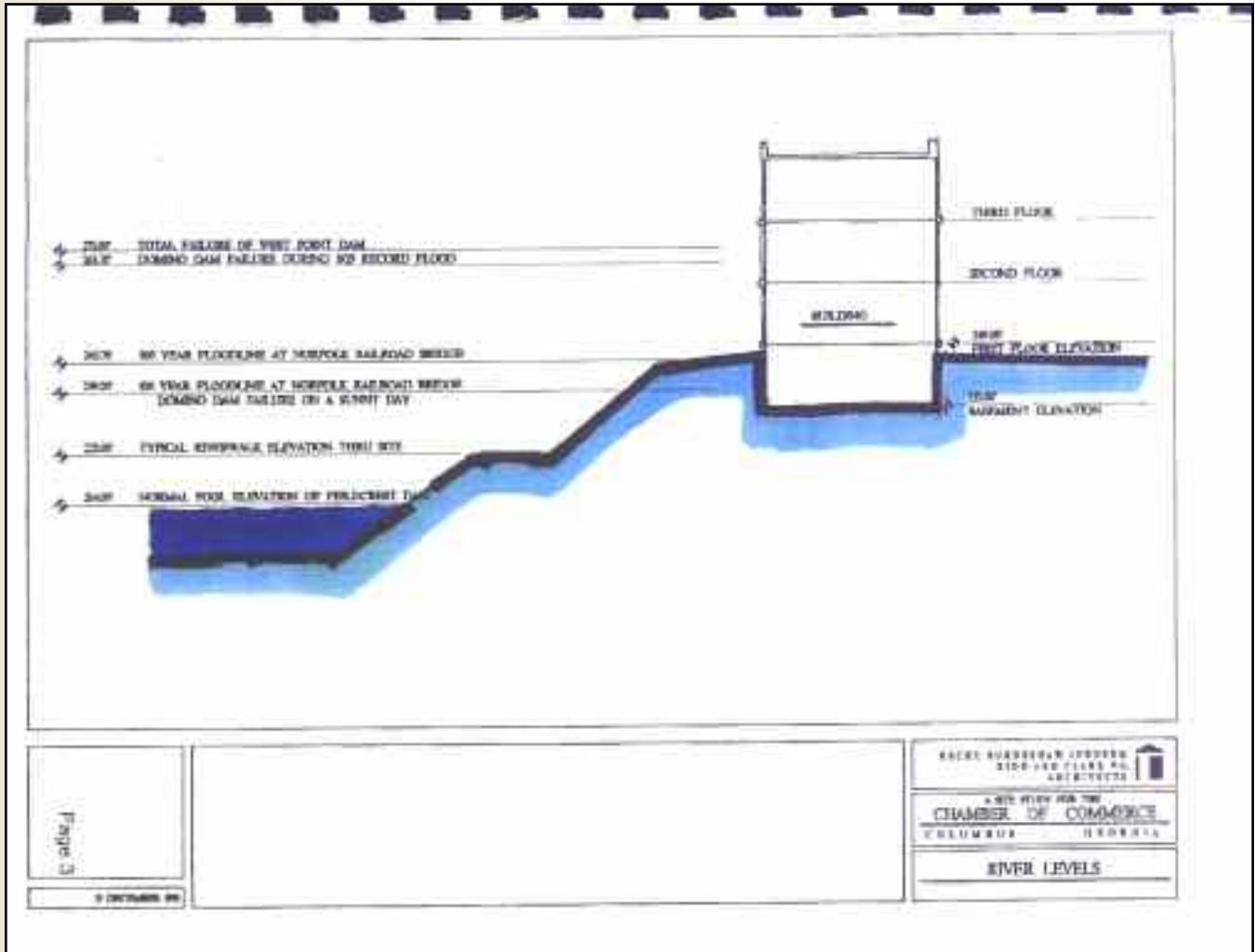
Bridges Across Chattahoochee River

Feet above Stewart County Chattahoochee County Line	Identification	Floor Elevation	Minimum Roadway Approach Elevation	Under Clearance Elevation (a)	Water Surface Elevation (b)	
					100 Year Flood	500 Year Flood
679+25	Dixie Road (Eddy Bridge)	237.6	228.8	230.0	218.4	224.8
1438+00	U.S. Highway 280	250.0	-	250.0	230.1	235.0
1470+00	Central of Georgia Railroad	247.1	-	238.5	230.0	237.6
1474+90	Dillingham Street	238.8	-	238.7	231.0	237.8
1808+50	State Highway 22	243.0	241.3	241.5	237.7	244.3
1828+85	Central of Georgia Railroad	257.3	-	249.3	238.0	245.7
3434+85	I-85 (East Bound)	583.5	581.4	578.6	570.3	573.5
3435+05	I-85 (West Bound)	583.5	581.4	578.6	576.4	573.5
3521+17	U.S. Highway 29	582.1	573.0	573.4	573.9	577.4
3543+05	Western Railway	578.1	-	574.7	574.8	578.2

(a) Minimum elevation across bridge span.

(b) Upstream of the bridge.

Data from U.S. Special Flood Hazard Information Report - Chattahoochee River West Point Dam to Walter F. George Dam by the U.S. Corps of Engineers, 1979.



**Maintenance:**

Slopetame2 required very little maintenance after each high water occurrence - only the removal of suspended solids and debris. No repairs were necessary.



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Structures, Inc.**

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*Slopetame<sup>2</sup> reinforcement matrix has small cellular three-dimensional containment for soils and plant material. Filter fabric backing provides excellent penetration for roots and allows mats to be pre-vegetated and pinned onto slopes.*

## Grasspave<sup>2</sup>

Grasspave<sup>2</sup> porous paving system, is a structure which provides incredible load bearing strength while protecting vegetation root systems from deadly compaction. High void spaces within the entire cross-section enable excellent root development, and storage capacity for rainfall from small storm events. Stormwater is slowed in movement through and across Grasspave<sup>2</sup> surfaces, which deposits suspended sediment and increases time to discharge.

## Draincore<sup>2</sup>

Draincore<sup>2</sup>, water/air conveyance system, is a high strength structure capable of withstanding heavy loads in direct contact, while maintaining large flow volumes in spaces between rings. This drainage core is usually wrapped in a geotextile fabric, which allows water to enter from any direction, with the core placed vertically or horizontally. Water can flow between rings in either vertical or lateral directions simultaneously.

## Rainstore<sup>3</sup>

Rainstore<sup>3</sup>, sub-surface water storage system, is a modular and stackable structure designed to support heavy loads, exceeding H-20. 94% void space creates an efficient storage Wet Vault below parking or landscaped surfaces with minimal excavation. Detention, retention, or water harvesting (for grey water re-use) can be accomplished. Rainstore<sup>3</sup> can be installed in layers from 4 inches to 8.2 feet accommodating high water table or shallow rock conditions.

## Gravelpave<sup>2</sup>

Gravelpave<sup>2</sup>, porous paving system, is a structure to provide heavy load bearing support and true containment of fine gravel to provide a porous pavement surface with unlimited traffic volume and/or duration time for parking. When used with a proper porous base course material, Gravelpave<sup>2</sup> can provide a void space of 35% for storage volume of rainfall during small rain events. Polluted runoff and vehicle drippings can be consumed prior to water reaching water table.

## Slopetame<sup>2</sup>

Slopetame<sup>2</sup>, erosion control system, is a permanent three-dimensional reinforcement and stabilization matrix for steep vegetated slopes and channel banks. The integral rings, bars, grid, and fabric act to contain upper root zone soils, allow vegetation roots to easily pass through, and minimize movement and loss by rain or flowing water. Slopetame<sup>2</sup> is shipped in roll form, with connections allowing rolls to be fastened together forming one large continuous mat.

## Beachrings<sup>2</sup>

Beachrings<sup>2</sup>, a portable and re-usable plastic board-walk system, provides an attractive, comfortable, and slip resistant surface for equal access to beaches. Sand provides support; a strong plastic surface, which conforms to the ground, provides durability and traction. Beachrings<sup>2</sup> is manufactured in lightweight rolls for easy handling and installation. The mats are also strong enough for temporary vehicular traffic or emergency access to beaches.

U.S. Patent Numbers 5,250,340; 5,848,856; 4,896,993; 6,095,718; International Patents Apply

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## Invisible Structures' Product Performance

Products	Environmental Benefits	Economic Benefits	Human Benefits
<b>Grasspave<sup>2</sup> and Gravelpave<sup>2</sup></b>	Filters Pollutants* Reduces Stormwater Run-off Air-Conditioning Effect (GP2 only) Reduces Non-Point Source Pollution Airborne Dust Capture & Retention (GP2) Heat Energy Reflection Reduction Tree Growth within Parking Lot Reduces Erosion and Soil Migration Recharges Groundwater Made from 100% Recycled Materials	Multiple-Use Surface Saves Maintenance Costs** Reduces Need for Detention Pond Lower Installation Costs***	ADA Accessible Cool Surface Firelanes Emergency Access Aesthetics
<b>Rainstore<sup>3</sup></b>	Recharges Groundwater Reduced Site Disturbance Capture Water For Reuse (Harvesting) Reduces Non-Point Source Pollution Made from 100% Recycled Materials	Reduced Insurance Cost Multiple-Use Surfaces Rapid Installation Real Estate Savings Re-Use Water (Gray)	Safety, Sub-Surface Detention Health, Reduced Pest Breeding Reduced Odor Problems Reduced Weed Problems Reduced Flooding
<b>Slopetame<sup>2</sup></b>	Reduced Erosion Reduced Soil Migration Native Vegetation Use Reduced Site Disturbance Tree Growth within Matrix Biofiltration Made from 100% Recycled Materials	Immediate Soil Containment Lower Installation Costs****	Native Plant Material Use ADA Accessible Cool Surface Flood Control
<b>Draincore<sup>2</sup></b>	Reduced Stormwater Runoff Conveys Water for Treatment Biofiltration Heat Island Mitigation (Roof Garden) Reduced Non-Point Source Pollution Made from 100% Recycled Materials	More Efficient Than Pipe/Gravel Rapid Installation (Drainage) Efficient Use of Water	Cool Surface (Roof Garden) Safety (Water Contamination)
<b>Beachrings<sup>2</sup></b>	Reduced Site Disturbance Made from 100% Recycled Materials	Portable and Reusable Rapid Installation	ADA Accessible Emergency Road/Cool Walking Surface

\*Hydrocarbons - up to 100%; suspended solids - 95%; phosphorous - 65%; nitrogen - 82%; heavy metals - 96 to 99%; 2000, R Winer, Center For Watershed Protection,

\*\*Compared to asphalt and concrete parking lot, over a 20 year period.

\*\*\*Compared to concrete and asphalt parking lots with drainage/retention systems, where Gravelpave<sup>2</sup> and Grasspave<sup>2</sup> support drainage/retention in the cross-section.

\*\*\*\*Compared to typical concrete block revetments



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