New Solutions For An Age Old Problem

Erosion Control Technologies & Solutions

Our Focus Today

• What is Erosion?
• Why should we care?
  – Regulations controlling site development and water quality
• What can we do?
  – Conventional Erosion Control Solutions
  – Engineered Solutions for Erosion Control

Providing solutions for every site

Federal Regulations

• Environmental Protection Agency (EPA)
  – N P D E S (National Pollution Discharge Elimination System)
  – Permit Regulations have mandated improving...

WATER QUALITY

Pollution of waterways is the real issue

What is Soil Erosion

When the flow velocities and shear stresses exceed the limits of the natural CONDITION…the soil erosion process begins

Stress from the flow of water is the cause of soil erosion

Without Proper Erosion Control

Sediment migrates down waterways over time

Without Proper Erosion Control

Erosion carves away at the earth’s surface
Without Proper Erosion Control

Untreated, the results of erosion can be extensive!!!

With Proper Erosion Control

Water free of sediment

Traditional Erosion Control Solutions

- Rip-Rap
- Soil Cement & Concrete Slabs
- Concrete & Fabraform
- More Rip-Rap

Less Traditional E. C. Solutions

- Old Tires
- Cars???

The Performance Pyramid

Articulated Concrete Blocks
- Supports vegetative growth

Traditional (Hard Armor)
- Does Not support vegetation
- Permanent TRM’s
- Increase performance limits of vegetation
- Natural Vegetation

Erosion Control Product Hierarchy

Tier One of the Performance Pyramid

Temporary Erosion Control Products: The 1st line of defense

- Straw & Hydroturf
- Mulching Techniques
- Erosion Control Blankets
- Open weave Geo-textile
Hydroseeding

Temporary Erosion Control Measures

- Straw & coconut blankets, jute nets, etc.
- Only used during vegetation establishment

Tier Two of the Performance Pyramid

- Non-Degradable Erosion Control – extend the performance limits of natural vegetation

Turf Reinforcement Mats increase the level of protection

Turf Reinforcement Mats (TRM’s)

- TRM’s provide root and stem reinforcement

Tier Three of Performance Pyramid

- High Performance Non-Degradable Erosion Control

HP TRM’s will also perform (long term) without vegetation

The highest level of synthetic reinforcement available

Before Vegetation is Established

TRM's & HP TRM's provide a stabilization element

After Vegetation is Established

TRM's & HP TRM's reinforce the vegetation
Outperforms Non-Reinforced Turf

After a significant storm event

Water Quality is Still the Issue

Turf Reinforcement Mat (TRM) technology is recognized and accepted as a Best Management Practice (BMP) to improve water quality

TRM’s and HP TRM’s accepted by EPA

• What if the forces exceed the limits of an HP TRM?
  – Concrete
  – Soil Cement
  – Large Rip-Rap
  – Grouted Rip-Rap

• What if you want vegetation?
  – Articulated Concrete Blocks

The Top of the Performance Pyramid

The Highest Performance that will still support vegetation growth

Articulated Concrete Blocks…the highest level of protection

ACB’s – For the Most Critical Applications

Open Cell Block – 20%  Closed Cell Block – 10%

Choose the best block for any site

Cherry Valley, IL
Cherry Valley, IL. One (1) year following installation.

Channel Construction
Sims Bayou, Huston Texas

Sims Bayou, Huston Texas – 6 months after construction

Dam Overtopping
Brown County State Park – Strahl Lake Dam

Brown County State Park – Strahl Lake Dam
Can also be used in smaller applications

Another Hard Armor Solution

Gabion Systems

- BANK PROTECTION
- CHANNEL LININGS
- SLOPE PROTECTION
- RETAINING WALLS
- SHORELINE PROTECTION
- WIERS AND DROP STRUCTURES

Gabion Applications

Other Solutions

- What about:
  - Stream bank stabilization?
  - Bridge scour?
  - Grade control structures?

Providing solutions for every site

A-Jacks Armor Units

High performance energy dissipation…results in sediment deposition

Stream bed, bank, and toe stabilization
### A-Jacks Armor Units

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### Energy Dissipation

### Stream Bank Stabilization

### Breakwaters

### Pier Scour

### Kentucky D.O.T.

### Grade Control Structures
**Erosion Control Product Selection**

- **Important Factors:**
  - Type/amount of vegetation
  - Design life
  - Aesthetic requirements
  - Soil type
  - Budget

**Choosing the correct solutions for your site**

**Erosion Control Product Selection**

- Many BMP manuals available

**SUMMARY**

- Erosion Control Solutions Should:
  - Improve Water Quality
  - Provide great aesthetics
  - Meet government regulations
  - Be cost effective
  - Be easy to install

**CONTECH will help choose the best solution for every site**