


# ***Rapid Soil Stabilization Technologies***



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## Purpose

- To employ mats, soil stabilizers, fibers, geotextiles, etc... for rapidly constructing airfield facilities
  - ▶ *Low Logistical Effort*
  - ▶ *Low-Dosage Stabilization*
  - ▶ *Reduced Cure/Construction Times*
  - ▶ *Tailored to Mission Requirements*
  - ▶ *Weatherproofing/Dust Control*



## Progress:

- **Tested Commercial Mat Types Over Different Soil Strengths**
- **Developed Rapid Soil Stabilizers**
  - ▶ *Fibers and Fast-Setting Cements*
  - ▶ *Polymers and Fast-Setting Cements*
- **Improved Dust Abatement**
  - ▶ *Topical Applications Sharply Reduce Airborne Dust*
  - ▶ *HUMVEE Sprayer*
- **Developed Cold Weather Stabilizers**
  - ▶ *Admixtures in Cement For Curing under Freeze-Thaw Conditions*



## Mat Technologies

- Mats are Reusable, Readily Assembled and Replaceable
- Mats Reduce Soil Deformation Under Heavy Aircraft Loads



## **Liquid Polymer and Cement / Polymer Cap Combo**

- **3% Polymer + 3% Cement – Tested to 750 C-130 Passes**
- **Increased CBR from 10-15 to 100+**



**Cement Spotting and Spreading**



**MTVR/Terex**



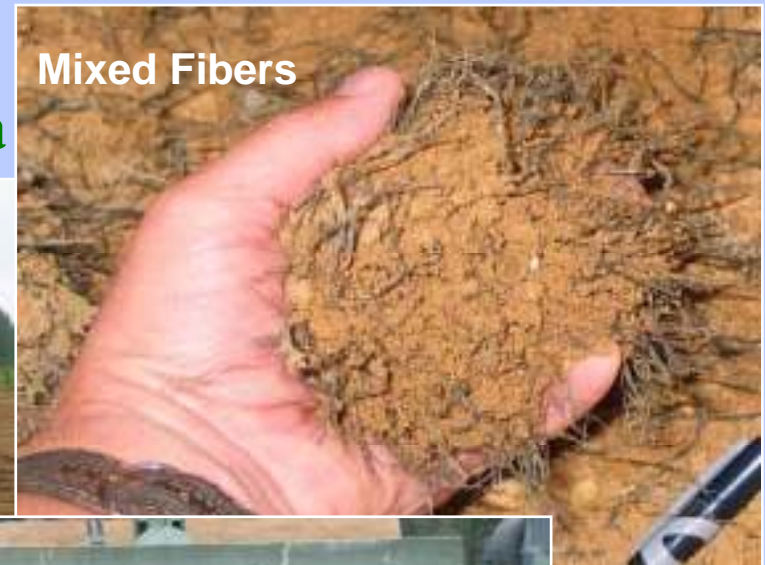
**Compaction**



**Polymer/Cement Mixing**

## Fiber and Cement / Polymer Cap Combo

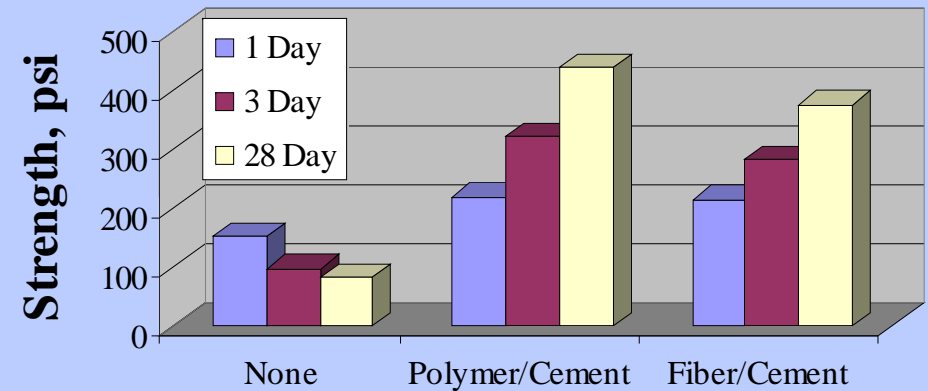
- **0.4% Fibers/4% Cement – Tested to 750 C-130 Passes**
- **Increased CBR from 10-15 to 80+**
- **Fibers distribute load over broad area**



## Why Polymers and Fibers?

- **Reduced Logistics**
  - ▶ *Polymers and Fibers Weigh 1/3 Less Than Cement*
- **Improved Performance**
  - ▶ *Less Cracking Means Less FOD*
- **Polymer and Cement Synergy**
  - ▶ *Polymer Helps Cement*
  - ▶ *Cement Helps Polymer*

### Ft. Bragg Soil Strengths



## Weatherproofing and Dust Control

### → Liquid Polymer Emulsions

- ▶ *Forms Tough Weatherproof Layer on Soil Surface That Locks Down Dust*

### → Synthetic Oils

- ▶ *Resists Water*
- ▶ *Glues Dust Particles Together Preventing them from Becoming Airborne*



## ● Products

### → C-130 Deliverable Soil Stabilization Equipment

- ▶ *Terex RS-325 Reclaimer/Stabilizer*
- ▶ *Liquid Mixing and Dispensing Capability*

### → Lower Logistics and Improved Performance for Mission-Specific Soil Stabilization

- ▶ *24-Hour Stabilization*
- ▶ *Reduced Cracking and FOD Potential*



## ● Products

- Improved Airfield Matting Systems
- Rapid Dust Control Equipment and Materials
- Freeze-Thaw Stabilization Technologies

