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# UTAH DEPARTMENT OF TRANSPORTATION

TECHNICAL BULLETIN MT-04.05

April 14, 2004

## CONCRETE FAST REPAIR

A certain class of concrete pavement patching products can reach a compressive strength of more than 3300 in 1-4 hours, depending on need! These products are environmentally friendly and clean up with water. They are not epoxy and need no bonding agent. Advantages are obvious: Traffic restrictions and hazards to crew and travelers are minimized. These materials are easy to use and extend pavement life. This technology was developed for military airport application for ease of application as well as speed.



**Loaded truck on pavement only 4 hours after placement**

### PROPER APPLICATION

**Partial Depth Applications** For restoring localized areas of deterioration that do not extend through the slab. Areas are usually less than 10 square feet and normally only 2-3 inches deep. Remove surface deterioration preferably by sawing in order to make a neat vertical edge. Blow out debris with high-pressure air. (If water is used, be sure to dry surrounding surfaces.) Apply primer to contact surfaces. Let primer dry to tacky consistency (about 15 min). Mix and apply patching material. Recommended to repair cracks, spalls, failed joints and other concrete surface defects down to a depth of 8 inches. It is resistant to impact and climatic conditions once installed. Recommended temperature for application is 40 degrees-F and above.

**Full Depth Applications:** Several factors will help reduce installation time (Contact *ACPA* for details):

- ◆ Choice of repair size
- ◆ Method of old concrete removal
- ◆ Dowel installation equipment
- ◆ Patching material selection
- ◆ Placing and curing provisions
- ◆ Opening-to-traffic criteria

### SPECIFICATIONS/DETAIL

Some of these patching products are intended for partial depth and some for full depth pavement; therefore, the material must suit the project. These rapid repair products are not totally Portland Concrete Cement but made of a general composition of cement, aggregate, polymer, and resins. They come under various proprietary names such as PaveMend, TechCrete, Degussa's "4 X 4 Concrete," and CalTrans' "SSP 40-020." Special Provisions include strength-time requirements, rather than a particular class of PCC. Because the material sets so rapidly, dry-mix batch mixer trucks may be an option where travel time is a concern regarding concrete setting up in the drum. Exact quantities are placed with no residual concrete. Rapid repair concrete takes special training. A pre-operation conference is helpful. Special Provisions for partial or full-depth concrete pavement repair in general are available from the Concrete Materials Engineer. Detailed application requirements are available from the web or from contacting directly a supplier (See reverse side of this bulletin).

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## COSTS AND COST INFORMATION

Recent costs in the western states ranges from \$140 to \$170 per cubic ft, depending on the size of the project. Add approximately \$140 per cubic ft for installation costs. The extra cost of the material is offset by significantly reduced traffic management, reduced travel delays, and reduced accidents.

## FURTHER INFORMATION

### **Partial Depth Repair**

“TechCrete” by Crafcro Inc., *Preliminary Information for Product Evaluation*, UDOT Research and Development Division (8/20/03), Attn: Barry Sharp, 4501 South 2700 West – Box 148410, Salt Lake City, UT 84114-8410. (801) 965-4314 (Either partial or full-depth repair). <http://www.crafcro.com> (hot button #8)

“TechCrete - Old Problems Solved with New Repair Techniques: the Flexible Solution to Concrete Repair,” Crafcro Inc., 420 N. Roosevelt Ave., Chandler, Arizona 85226. (480) 961-0513

“PaveMend – Rapid Repair Material,” Hard Materials Company Inc. West Operations and Distribution, 101 Convention Center Drive, Suite 700, Las Vegas, NV 89109. (949) 388-2917

“Fundamentals Partial-Depth Repair,” *Pavement Technology*, American Concrete Pavement Association (ACPA), <http://www.pavement.com/PavTech/Tech/Fundamentals/fundpdr.html>

### **Full Depth Repair**

“Designer Guidelines for SSP 40-020, Replace Concrete Pavement (Rapid Strength Concrete),” *CalTrans Pavement Tech Notes: Concrete Pavement Preservation, Concrete Panel Replacement (Revised: Oct 24, 2002)*.

“Fast Full-Depth Pavement Repair,” Gerald F. Volgt (#AP334P), American Concrete Pavement Association (ACPA), 5420 Old Orchard Road, Suite A100, Skokie, IL 60077. (847) 966-2272

“4 X 4 Concrete Systems: Very High Early-Strength Concrete Mixtures,” Degussa Construction Chemicals, Master Builders Inc., 23700 Chagrin Blvd, Cleveland, OH 44122-5554. (216) 839-7500

## UDOT CONTACTS

**Tim Biel**, Engineer for Materials, (801) 965-4859, [tbiel@utah.gov](mailto:tbiel@utah.gov)

**Bill Lawrence**, Concrete Materials Engineer-Manager, (801) 965-4560, [Billlawrence@utah.gov](mailto:Billlawrence@utah.gov)

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