

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

November 17, 1995

**MAINTENANCE MEMORANDUM NO 95 - 16**

**TO** District Engineers, Maintenance Superintendents, and  
Job Superintendents

**SUBJECT:** Rapid Set Cement

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This Maintenance Memorandum supersedes Maintenance Memorandum No. 95-9.

The latest supply contract for fast setting cement procured a product called RAPID SET. The material will be kept in stock at the Central Shop in 50-pound bags.

The mix proportions for bridge patching shall be 1:1:1 (equal parts of cement, sand, and coarse aggregate - by weight).

A chemical retarder for summer use and a chemical accelerator for winter use will be supplied with the material. Read the package instructions carefully for proper use. In cooler weather, it will be necessary to add 2 to 4 bags of accelerator in order to achieve a faster set time. The additives should be added to the mix water.

Prior to placement of concrete, the hole to be patched should be well wetted, then all standing water removed just before placement. Excessive working of the surface and adding additional water during finishing should be avoided.

Jim Barnett  
State Maintenance Engineer

cc: Director  
Deputy Director & Chief Engineer  
Assistant Chief Engineers

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

July 24, 1995

MAINTENANCE MEMORANDUM NO 95 - 9

TO District Engineers, Maintenance Superintendents, and Job Superintendents

SUBJECT: Rapid Set Cement

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This Maintenance Memorandum supersedes Maintenance Memorandum No. 93-12.

The latest supply contract for fast setting cement procured a product called "RAPID SET". The material will be kept in stock at the Central Shop in 50-pound bags.

The mix proportions for bridge patching shall be 1:2:2; 1 part cement, 2 parts sand, and 2 parts coarse aggregate by weight.

A chemical retarder for summer use and a chemical accelerator for winter use will be supplied with the material. Read the package instructions carefully for proper use.

Prior to placement of concrete, the hole to be patched should be thoroughly wetted, then all standing water removed. Excessive working of the surface and adding additional water during finishing should be avoided. The fresh patch should be cured using curing compound or a visqueen cover.

A technical data sheet is enclosed for your information.

Jim Barnett  
State Maintenance Engineer

JB:DAL:bjk

Enclosure

c: Director  
Deputy Director & Chief Engineer  
Assistant Chief Engineers  
Materials & Research  
Equipment and Procurement

## Rapid Set® Cement

### TECHNICAL DATA

<b>DESCRIPTION:</b>	<b>RAPID SET® CEMENT</b> is a unique dry hydraulic cement. <b>NO CHLORIDES ARE ADDED.</b> When used as a replacement for Portland Cement, and mixed with water and suitable aggregates, it produces a quality concrete which attains 2000+ psi compressive strength in one hour and is ready for use.
<b>APPLICATIONS:</b>	As a Portland Cement replacement, <b>RAPID SET CEMENT</b> is ideal for applications where quick concrete strength is required, including repairs of highways, runways, sidewalks, and floors.
<b>AVAILABILITY:</b>	Through distributors in 50 lb. and 88 lb. polyethylene lined bags. Also available in some locations in bulk.
<b>FEATURES AND BENEFITS:</b>	<p><b>RAPID SET CEMENT</b> sets and gains strength rapidly. Almost zero shrinkage results, even when placed at high slump.</p> <p>Additives available for use include <b>RAPID SET® SET CONTROL™</b> and <b>RAPID SET® ACCELERATOR™</b>. These are used to delay the set and to accelerate the set.</p> <p>As a binder for very low strength concrete, <b>RAPID SET CEMENT</b> is used at about 100 lbs./yd. with sand and water. The resulting mix is typically poured in a utility cut area. The slurry is firm enough to walk on in an hour. Contact <b>RAPID SET</b> for details.</p>
<b>DIRECTIONS FOR CONCRETE REPAIR:</b>	Remove all unsound concrete keeping edges and corners square. Adjacent concrete should be free of oil, grease, laitance and debris. Dampen area with water. Mix <b>RAPID SET CEMENT</b> with sand, aggregates, water and, if desired, an air entraining agent for freeze/thaw protection.
<b>DURABILITY:</b>	With 6% air entrainment, <b>RAPID SET CONCRETE</b> withstands 1,000 cycles of freeze/thaw when tested in accordance with ASTM C 666.
	A slump of about six inches is used for ease of placement and to assure a good bond. The working time for <b>RAPID SET CEMENT</b> concrete is about 20 minutes at 70 deg. F. (longer at lower temperatures, shorter at higher

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**DURABILITY  
(CONTINUED):**

temperatures). It is important that the placement operation be organized within this time limitation. After setting, the concrete will gain strength quickly, and finishing operations may be difficult. The working time may be extended by using cold materials and/or **RAPID SET® SET CONTROL™** in cold weather, warm materials and/or **RAPID SET® ACCELERATOR™** may be used to hasten the set and strength development.

**TYPICAL  
CONCRETE  
TEST DATA:**

Compressive strength, psi (ASTM C 192)

<u>1 Hour</u>	<u>3 Hours</u>	<u>24 Hours</u>	<u>7 Days</u>	<u>28 Days</u>
2650	3700	5400	6400	7350

Freeze/Thaw Durability (ASTM C 666)

<u>Number of Cycles</u>	<u>Relative Modulus</u>	<u>Remarks</u>
72	97.9	Slight scale
180	89.1	Loss of surface fines
252	84.1	Increased loss
300	82.4	Moderate scaling

Flexural Strength, psi (ASTM C 78)

<u>5 Hours</u>	<u>28 Days</u>
650	1250

Modulus of Elasticity, psi (ASTM C 469)

<u>28 Days</u>
4,220,000

Cement specific gravity, g/cu.cm, 2.98

**CAUTION:**

**RAPID SET CEMENT** contains cementitious materials. Freshly mixed materials may cause skin irritation. Avoid direct contact where possible and wash exposed skin areas promptly with water. If any cementitious material gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. **SEE MSDS SHEET.**

**WARRANTY:**

**RAPID SET PRODUCTS COMPANY** warrants its materials to be of good quality and, at its option, within one year from date of sale it will replace material proven defective or refund purchase price thereof, and such replacement or refund shall be the limit of **RAPID SET PRODUCTS COMPANY'S** responsibility. Except for the foregoing, all warranties, expressed or implied, including merchantability and fitness for a particular purpose, are excluded. **RAPID SET PRODUCTS COMPANY** shall not be liable for any consequential, incidental or special damages arising directly or indirectly from the use of its materials.

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