

# Komponent<sup>®</sup> System News

*For Non-Shrink and Low-Shrinkage Concrete*

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CTS Cement Manufacturing

## MDOT Completes M-6 Bridge Decks

*60 bridge decks completed with Type K cement and Komponent<sup>®</sup> on new Michigan beltway*

GRAND RAPIDS, MI – Michigan DOT has completed placement of all new bridge decks along the M-6/Paul B. Henry freeway which runs along the southern edge of Grand Rapids.

All 60 of the bridge decks along M-6 and many of the approach slabs contained CTS Type K cement or Komponent<sup>®</sup> to minimize shrinkage cracking.

Type K cement is not new to MDOT, as they have been using it in bridge deck mix designs for over a decade.

The first tests conducted with Type K cement were done just south of Lansing on I-69 at the M-100 overcrossing.

Two bridge decks were constructed at the junction in 1992: One with conventional portland cement, the other with Type K cement.

An inspection in 2003 showed significant transverse cracking in the portland cement concrete deck, while the adjacent deck constructed with Type K cement showed no visible signs of cracking.

The state of Michigan is very concerned about constructing durable bridge decks.

MDOT plans to improve the overall condition of the freeway bridge network so that 95% of MDOT structures are rated as “good,” according to a Bridge Management System brochure.

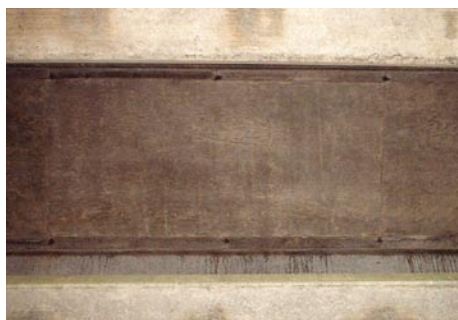
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**Top:** A finished bridge deck along M-6 in Grand Rapids, Michigan.



**Middle:** The underside of a bridge deck constructed with conventional portland cement concrete along I-69 south of Lansing, Mich. 11 years after construction, there was significant transverse cracking every few feet.



**Bottom:** The underside of a bridge deck constructed with Type K cement shrinkage-compensating concrete. No visible sign of cracking was found 11 years after construction.



Grand Rapids, MI

*Continued from page 1....*

Shrinkage cracks that occur in most conventional concrete bridge decks are often enlarged by water leaking in and freezing.

This provides a path for the deicing salts to leach through the deck and corrode the internal steel reinforcement.

By using shrinkage-compensating concrete, the shrinkage cracking is eliminated, helping to preserve the concrete and reinforcement.

Contracting was performed by Hardon Construction, Millbocker Construction, and C.A. Hull.

The concrete producers involved were Grand Rapids Gravel, Wolverine Ready Mix, and Consumers Concrete.

The eastern third of the freeway is now open, while the remaining areas will be open in 2005. ••



A shrinkage-compensating concrete floor performs beautifully after 10 years of use in an Albertsons distribution center near Phoenix, Arizona.



### Menards Rolls Out Six More 4" Floors

EAU CLAIRE, WI – Menards, Inc., a large Midwest retail hardware chain, has successfully constructed six more stores incorporating a 4" thick shrinkage-compensating concrete floor made with the CTS Komponent® System.

The latest floors were constructed in Lima, OH; Ottumwa, IA; Omaha, NE; Findlay, OH; Michigan City, IN; and Decatur, IL.

Ahren's Concrete of Iowa City, IA handled the construction on all of the floors.

There are now one dozen Menards stores incorporating this innovative floor design. ••

## REPAIRS TO FLOOR AFTER TEN YEARS OF HEAVY-DUTY ABUSE ... ZERO

By DAVID FLAX  
CTS Cement Manufacturing

PHOENIX, AZ — When Albertson's Inc. had A. Epstein and Sons International, Inc. of Chicago, Illinois build their new 672,000 square foot distribution center in Tolleson, Arizona in March of 1993, they wanted it to be as maintenance-free as possible.

Joints and cracks in warehouse slabs are a major cause of ongoing maintenance as they spall and become increasingly larger.

The solution was shrinkage-compensating concrete which enabled Albertsons to have as much as 162' between joints.

It was not a new solution. Shrinkage-compensating concrete has been used successfully in the United States for over forty years.

When I walked the entire slab in November of 2003 after more than ten years of high frequency, motorized

pallet jack traffic, it was apparent that the solution worked every bit as well as expected.

According to Greg Sharits, Facility Maintenance Manager, there have not been any repairs to the slab.

That is amazing in a high volume food distribution warehouse that uses pallet jacks.

Because pallet jacks carry high loads on very small, very hard wheels, they cause far more damage to slabs than forklifts.

The motorized pallet jacks run up and down the aisles smoothly even at the joints, because there is no noticeable curling.

Because shrinkage-compensating concrete doesn't curl, there is none of the four-corner cracking that is common in most warehouse slabs.

For more information, contact David Flax at (858) 405-0356. ••



# CTS CEMENT

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## Coopersville to enjoy new multiseason skate rink

COOPERSVILLE, MI – CTS Komponent® Concrete for a new municipal skating rink was placed at the Veterans Park in November.

The placement only contained one construction joint, resulting in two

86' x 76' x 6" slabs.

About 250 cubic yards of Komponent® concrete was used.

The rink will be used for ice skating in the winter, and roller skating during the rest of the year.

The rink was designed by Engineered Structures of Hudsonville.

Martin J. Concrete Construction of Allendale performed the flatwork for the rink.

Grand Rapids Gravel, who has worked extensively with Type K cement on the Michigan M-6 bridge decks, supplied the ready mixed Komponent® concrete. ••

## *Does ALL concrete REALLY crack?*

**With the CTS Komponent® System, this isn't necessarily true...**

Those who use concrete know that one of its biggest flaws is its susceptibility to shrinkage cracking.

As a slab of concrete cures and dries out, the slab tends to contract.

Friction with the subgrade and adjacent elements attempts to hold the slab in place.

The tensile stresses build up within the slab, and eventually something has to give.

This usually manifests itself as drying shrinkage cracking.

The conventional way to handle this is to cut control joints into the slab to confine the cracking to desirable linear regions, usually every 15 to 20

feet.

### *A Better Option...*

Shrinkage-compensating concrete made with the CTS Komponent® System expands slightly – about 0.05% – and pulls against the internal reinforcement, putting it into tension.

The reinforcement resists the expansion and pulls back on the concrete, effectively putting it into compression: a result similar to prestressing.

Any shrinkage that occurs relieves the compressive force instead of putting the concrete into tension.

Concrete slabs 20,000 square feet or larger are regularly constructed

without control joints using the CTS Komponent® System.

Experience has shown that these large slabs can remain crack-free for decades.

With fewer cracks, and fewer joints, maintenance costs are lower, resulting in a lower life-cycle cost for a project.

The CTS Komponent® System is ideal for commercial and industrial floors, bridge decks, airport paving, parking garages, waste water treatment plants, containment areas, and anywhere shrinkage cracking and joint construction needs to be minimized. ••

## RECENT PROJECTS

*Some notable projects which have used CTS Type K cement or Komponent® System in the past three months:*

<b>OWNER</b>	<b>LOCATION</b>	<b>PROJECT</b>
McMaster-Carr	Elmhurst, IL	Water Treatment Tank
Wisconsin DOT	Janesville, WI	Bridge Deck
Duke Energy Corp	Keowee, SC	Oconee Power Plant
Tenn. Valley Authority	Waverly, TN	Drainage Lines
Michigan DOT	Grand Rapids, MI	Bridge Deck
Michigan DOT	Detroit, MI	Bridge Deck
Menards, Inc.	Ottumwa, IA	Commercial Floor
Menards, Inc.	Omaha, NE	Commercial Floor
Menards, Inc.	Michigan City, IN	Commercial Floor
Menards, Inc.	Decatur, IL	Commercial Floor
Menards, Inc.	Findlay, OH	Commercial Floor
CNS Wholesale	Westfield, MA	Distribution Center
Hatfield Meats	Hatfield, PA	Dist./Loading Area
Reclamation Bureau	Spokane, WA	Reservoir Dam
City of Coopersville	Coopersville, MI	Ice/Roller Rink
Ohio Turnpike Auth.	Northern Ohio	Third Lanes
City of Marietta	Marietta, OH	Water Treatment Tank
Chrysler Corp.	Chelsea, MI	Containment Area



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