



SIKA AT WORK

MICHIGAN DOT I-96 RAPID PATCH PROJECT

Sika Rapid® - OUTPERFORMING CONVENTIONAL PATCHING MIXES WITH HIGH EARLY STRENGTHS

BUILDING TRUST



I-96 RAPID PATCH PROJECT OAKLAND COUNTY, MI



OWNER: Michigan DOT/Oakland County
CONCRETE PRODUCER: Superior Materials (Farmington Hills, MI)
GENERAL CONTRACTOR: Cipparrone Contracting, Inc.
YEAR: 2014

THE PROBLEM

Deteriorating conditions including multiple distress symptoms were observed on sections of the I-96/I-275 corridor between approximately Kensington Road (exit 151) & Novi Road (exit 162). This is a segment of a main route used for travel between the Detroit and Lansing areas, and is one of the heaviest traveled roadways in Michigan. MDOT decided to replace the highly distressed pavement sections with full depth concrete repairs.

During the repairs, any highway restrictions, including extended lane closures, would create potential for massive traffic congestion posing safety concerns for the driving public and also have a financial impact on the area. This project occurred concurrently with the I-96 fix, a separate nearby project in which a section of I-96 was completely closed, thus creating additional pressures for limiting lane closures.

To minimize the negative impact on traffic, all repairs were required to be completed during night hours and the road had to re-open to traffic within 5 hours of placement. Typical concrete roadway patching mixes have not performed well due to the severe Michigan winters.

SIKA SOLUTION

The concrete requirements included achieving high early strength to ensure the roadway could re-open on time. Michigan DOT and the University of Michigan conducted a study and concluded that concrete patching mixes using Sika® Rapid-1 outperformed other current conventional patching mixes. Typically, roadways repaired using this mix design with Sika® Rapid-1 can be opened to traffic within 5 hours versus 12 to 24 hours for other patching mixes. As a result, Sika® Rapid-1 is now specified by Michigan DOT.

Our most current General Sales Conditions shall apply.
 Please consult the most current local Product Data Sheet prior to any use.



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PROJECT DETAILS:

Yardage: Approximately 2000 cubic yards

CONCRETE SPECIFICATION:

	Specification Requirement	Average Results
Slump	7 +/- 1"	6"
Air Content	5.5 - 8%	6%
Flexural Strength, 5 hours	300 psi in 5 hours	300-400 psi in 5 hours

CONCRETE MIX DESIGN, LBS/CYD:

Cement, Type I	658
Coarse Aggregate	1770
Fine Aggregate	1380
Water	211
W/Cm	0.32
Sika® ViscoCrete® 2100	7 oz/cwt
Sika® Rapid-1	25 oz/cwt
SikaSet® NC	25 oz/cwt
Air Entrainment	0.6 oz/cwt

To date this was the largest project in which this mix design was utilized for MDOT but there are many more planned.

BENEFITS

Sika® Rapid-1 provides high early strength with minimal slump loss. This allowed for easy concrete placement and for minimal lane restrictions. The mix exhibited a high level of consistency with no rejected loads due to slump and/or air outside the specification. All lane re-openings occurred on time.

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