



### About MnROAD

MnROAD is a road pavement test on I-94 made up of various research materials and pavements owned and operated by the Minnesota Department of Transportation (MnDOT), working with its partners. Located near Albertville, Minnesota, MnROAD works in conjunction with MnDOT's Materials & Road Research Lab. It finds ways to make roads last longer, perform better, cost less to build and maintain, be built faster, and have minimal impact on the environment.

In 2022, the National Road Research Alliance (NRRRA) placed 19 new concrete test sections at MnROAD.

**One test section in the project was made with OPUS SCM™. This required about 200 cubic yards of concrete.**

### Concrete performance

A performance specification was provided by MnDOT along with a control mix design. Prior to construction a mix design study was conducted to identify the maximum replacement level possible with OPUS SCM™ while meeting the performance target.

**A concrete mix with 35% OPUS SCM™ was identified to meet the required specification.** This was the highest replacement level of all participating products.

The mix used a type IL (10) cement and had a total cement content of 570 lb per cubic yard of concrete.

Below is a summary of the concrete performance from the pre-construction lab mix design test and from concrete sampled at the construction site. All concrete testing was conducted by Braun Intertec, an accredited concrete laboratory in Minnesota. The concrete with OPUS SCM™ set and finished similar to the control mix that had 30% fly ash. The performance target set for the project was met and the test site will continue to see regular traffic.

Test Parameter	Test Standard	Unit	Performance Target	Opus SCM™@35% (lab mix design test)	Opus SCM™@35% (field sample)
Unit Weight	ASTM C138	pcf	-	147.3	147.4
Slump	ASTM C143	inch	1-3	2.25	2.50
Air Content	ASTM C231	%	5-8	6.2	5.6
Compressive Strength @28 days	ASTM C39	psi	3000	3990	3190
Flexural Strength @28 days	AASHTO T97	psi	500	585	580



For additional information, please contact us:

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