

ANOTHER SLAG SUCCESSION STORY

THE ALL-PURPOSE CONSTRUCTION AGGREGATE

PUMPED BLAST-FURNACE SLAG CONCRETE USED IN INDIANA NINE-BRIDGE INTERSTATE REHABILITATION PROJECT

20,000 cubic yards of high-strength, high-durability concrete were produced by Prairie Material Sales, Inc., Chicago, Illinois, using **blast-furnace slag** coarse aggregate.

The **blast-furnace slag** concrete was placed on nine bridges on Interstates 80 and 94 handling annual average daily traffic (AADT) volumes ranging from 122,000 to 139,000 (one of the busiest highways in the world).

Much of the concrete was pumped, and in all cases was placed without a hitch. **Slag** was supplied in a saturated-surface dry (SSD) condition which maintained the consistency needed for reliable pumping.



Schwing pumps were provided by Cross Pumping Co. which used 92-ft (28 m) and 118-ft (36 m) vertical booms with 801 HD gate valves normally operating at 1500 psi pressure when material was properly presoaked.

MIX DESIGN

	<u>Class A</u>	<u>Class C</u>	<u>High Early Class A</u>
Cement	564 lbs	611 lbs	752 lbs
1-23 (sand)	1420 lbs	1396 lbs	1300 lbs
Ind. #57 (1½" × #4 slag)	1420 lbs	1396 lbs	1300 lbs
Water	300 lbs	297 lbs	350 lbs
Air Entrainment	6.5 + 1.5%	6.5 + 1.5%	6.5 + 1.5%
Water Reducer		6 fl oz/cwt	
or			
Retarder		3 fl oz/cwt	

Type I cement was used and flexural strength at seven days was specified at 550 psi with High Early Class A at 650 psi.

Class A concrete was used for the columns, barrier walls, railings and slope walls. Flexural strengths averaged 750 psi for seven days and 1000 psi for 28 days. Average compression strengths for seven days were 3800 psi and 5100 psi for 28 days.

Class C concrete was used for the bridge decks. Average flexural strengths for three days were 650 psi and 900 psi for seven days. Compression strengths averaged 3500 psi for three days and 4800 psi for seven days.



Easy access is provided by pumping concrete up to bridge deck without impeding flow of traffic in opposite direction.



Workers utilizing flexible hose on boom are able to place the concrete where it is needed.

Slag is truly the **all-purpose construction aggregate** and is versatile in its use. The combination of high strength, comparatively low unit weight, excellent durability and ability to be pumped for ease of placement made it the aggregate of choice for these bridges in Indiana.

For expert assistance in the selection of slag for other projects, contact the slag producer in your area. For referral to your nearby slag companies, please write or call the:

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