

slag Successes

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Blast Furnace Slag Weighs In at Detroit Metro Airport's New Parking Garage



Construction of the parking garage progresses from August to October of 2000.

Precast Concrete Using Blast Furnace Slag Saves Months and Millions of Dollars

The world's largest single-phase constructed parking garage opened in February 2002 as part of the new state-of-art Northwest Airlines World Gateway McNamara Terminal at Detroit Metropolitan Airport. The 11,500-car, 10-level garage was assembled on-site with precast concrete components produced at seven plants throughout the Midwest.

Final design for the project was left to the winning contractor, who could choose between cast-in-place construction, post-tensioned precast concrete, and a composite structure of precast beams and columns topped with a cast-in-place floor system.

Ultimately, the precast concrete

system was selected. "Using precast will take approximately two months less than other methods and save over \$18 million," stated Tony Chrest, Project Manager for the joint venture construction team of J.S. Alberici Construction Co., Walsh Construction Co. and PBM Concrete, Inc.

Blast Furnace Slag Coarse Aggregate Utilized in over 48% of the precast components.

Of the total 10,813 precast components on the project, in excess of 5,000 pretopped double-tee girders were produced by Shelby Precast Concrete Co. in Shelby Township,

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Michigan. Habib El-Jizi, General Manager of Shelby Precast noted that, "Blast Furnace Slag coarse aggregate was the aggregate of choice in every component produced at the Shelby Township plant."

Production of the double-tees started in March of 2000, months prior to the start of construction at the airport site.

In total, 63,300 yd³ of concrete was necessary to produce the double-tee girders which were constructed year 'round using insulated, in-place steam-cured forms.

"The Blast Furnace Slag aggregate has proven to provide the required strength and durability for this project, while keeping the weight of each component to a minimum," explained Shelby's Habib El-Jizi.

"We can show that the 8 percent yield advantage from using the lower density Blast Furnace Slag Coarse



The completed parking garage structure at opening in February 2002.

Institute. Additionally, Shelby Precast had four PCI-Certified Civil Engineers on staff as Quality Control Inspectors.



Construction nears completion, November 2001.

Aggregates has saved us in every step of the project, from raw material costs, concrete production, and transportation."

Quality of the precast components was ensured by requiring that the plants be certified by the Precast/Prestressed

The concrete mix design for the double-tees was:

- 520 lbs. Type III Cement
- 130 lbs. Type C Flyash
- 1,450 lbs. Natural Sand
- 1,450 lbs. 17A (ASTM #67) Blast Furnace Slag
- Air Entraining Admixture
- Water Reducing Admixture
- Corrosion Inhibitor
- Retarder

Detroit's Metro Airport has a remarkable new parking garage giving airport visitors an easier time of it. Building it faster was due, in part, to Blast Furnace Slag and two of its important attributes – saving time and saving money.

This is another Slag Success Story brought to you by the National Slag Association.

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