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I-70 through Colorado's Glenwood Canyon: A Series of Bridges and a Series of Challenges Solved with Steel Slag



The cantilevered concrete bridges of I-70's western route rising above the scenic highway's eastern route

Colorado's Glenwood Canyon corridor, with I-70 snaking through it for 12.4 miles, is not only one of the most beautiful highways in the country, but a true marvel in engineering design. It has won numerous construction and design awards.

"The western route is a series of 40 concrete bridges that demands a non-permeable asphalt mix to prevent corrosion of the structures due to the high ice and salt mix in an area that only sees sun a few months a year," explained Bob Andrews, Western Sales Manager for

International Mill Service (IMS) of Pueblo, Colorado.

The Colorado Department of Transportation (CDOT) specified a Superpave mix when the roadway required a new pavement surface to protect the bridges and have the ability to weather the storms and freeze/thaw conditions in Glenwood Canyon.

A low-maintenance, long-life, highly safe roadway was the primary goal of all designers and suppliers. The reason? I-70 through Glenwood

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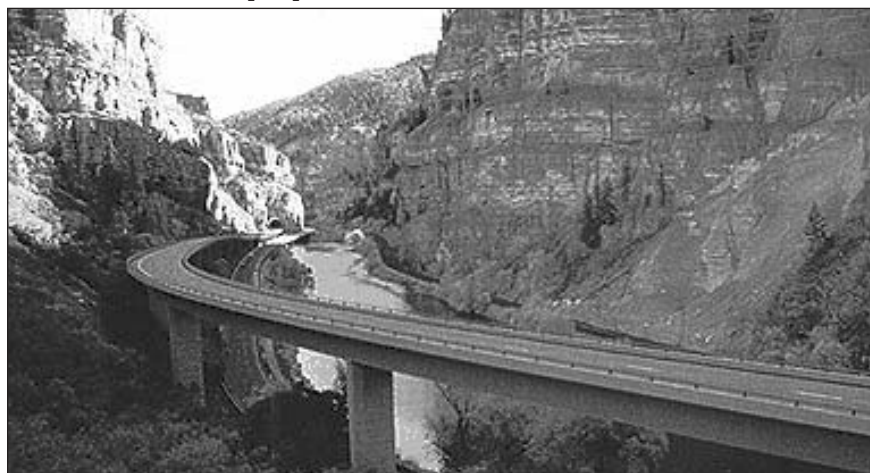
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Canyon gets pounded incessantly by high-volume traffic. The designers took that into consideration by designing the pavement to withstand 13 million EASLs (equivalent single-axle loads) for its lifetime.

Andrews went on, "Design engineer Scott Sounart of CTL/Thompson used steel furnace slag because it has two or more angular faces. The steel slag he selected showed properties conducive to the harsh conditions of Glenwood Canyon. The low abrasion value and good particle interlock enable the pavement to withstand heavy dynamic and static loads without deformation in extreme temperatures."



This view gives the majestic, scenic nature of the Canyon and a good idea of the difficulty in resurfacing a roadway made of 40 bridges.

"IMS,Pueblo, provided the steel slag. In addition to its frictional qualities, it's darker in color, so it absorbs the sun's heat, helping to increase the surface temperature of the road, aiding CDOT's effort to melt snow and keep the roadway clear," Andrews added.

Steel furnace slag was a core ingredient in the specification for this pavement mix design. Since it was specified, the long 5.5-hour haul distance was, in fact, the shortest route to deliver the slag to Granite Construction. Without a doubt, the trip was worth it. Now, the ride

through the canyon is smooth and rut-free. Steel slag is a big part of the rave reviews for this famous and scenic stretch of highway.

CDOT and CTL/Thompson performed exhaustive testing on the slag and the asphalt mixture prior to placement. An SMA mix using high-quality natural aggregates, while not exhibiting premature rutting or embrittlement, was not effective in the combined results of durability, rut-resistance or moisture resistance. Therefore, a pavement utilizing steel furnace slag was chosen for durability and impermeability.

Steel furnace slag is specified because of its high stability and superior skid-resistance properties. Steel slag provides improved durability, hardness and bonding characteristics. A 25% by weight slag addition to the mix increases stability by up to 20%.

In one of the most beautiful stretches of road in America, slag plays a big part in smoothness, safety and stability. Ride I-70 through Glenwood Canyon and see for yourself.

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

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