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From: john@swankco.com [mailto:john@swankco.com]
Sent: Wednesday, November 12, 2003 9:12 PM
To: michael.Sprinkel@VirginiaDOT.org
Subject: Precast Segmental Bridges

Mike

I received your e-mails and will try to be a little more in-depth regarding grinding the segmental bridges.

We have ground several segmental bridges. Most recently, the cable-stayed span crossing the Charles River in Boston (the Big Dig) was 50% diamond ground for ride and 100% transverse grooved...this was a micro-silica overlay. Also, in 2002, we diamond ground all the deck surface on the Virginia Dare Memorial Bridge, connecting Roanoke Island with the Outer Banks in Eastern NC. This was a lightweight concrete deck placed on the precast elements and was ground for rideability. One that I'm certain did not have an overlay (which I assume means an integrated wearing surface) was a bridge over the Intracoastal Waterway in Daytona Beach FL. This bridge was ground in it's entirety, then grooved. (The segmental structure on I-895, PPTA in Richmond, should be diamond ground for ride).

We have ground one segmental bridge before the latex overlay was placed for pre-overlay smoothness and as an easy way to remove the beads of sealant protruding from the joints between the elements and to remove all the grease, oil, etc prior to overlaying. This was DelDot's C & D Canal bridge, a cable-stayed structure.

Typical amounts of removal in order to establish a pleasing ride quality will vary, obviously, depending on the quality of the in-place concrete. However, I usually see an average amount of .25 to .375" cut, with .75 being about the maximum. Isolated bumps in excess of this may require 'pre-cutting', or a second pass.

Cost also vary widely, usually depending on the aggregate, production time and haul distances for slurry or water. Another important factor is the desired ride i.e. the ride index. For large projects with minimal difficulties, prices as low as \$2 per SY can be expected, ranging upward to 3 and 4 times that for a project with all of the aforementioned difficulties.

The amount of time required to grind a bridge will vary widely...how many machines can the project accomodate?...how hard is the aggregate?...how far to travel for water and slurry disposal?...unlimited working hours?.....

Give me some parameters and I can give a reasonable estimate of time and cost.....However, a "big-scale grinding operation" might consist of 3 grinders, cutting 1 to 1.5 lanes-miles per day, with an avg cutting depth of .25 to .375" at a cost of around \$2.50/SY (\$2.90/SM).

We are seeing projects now that have a target ride spec for the finished product with diamond grinding specified as the finished surface texture...we look to the agencies to establish an interim ride spec so that the grinding contractor has a basis upon which to bid.

Any other questions, give me a shout

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