



Your Pavement Preservation Resource

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FOR IMMEDIATE RELEASE

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New Test Sections Constructed at Virginia Smart Road

(West Coxsackie, NY – April 7, 2011) The International Grooving and Grinding Association (IGGA) recently announced construction of diamond grinding and grooving test sections at Virginia Tech Transportation Institute (VTTI) Smart Road research facility. These test sections were constructed to facilitate future road research by VTTI and others. In January 2011, Safety Grooving and Grinding constructed three test strips situated on two test areas. The three test strips included a conventionally diamond ground (CDG) section and an area that was both CDG followed by longitudinal grooving of each half of the lane using two different groove spacings; ½ inch and ¾ inch. Each of the two test areas were ground one lane wide and 528 feet long.

Smart Road Facility

The Virginia Smart Road is a 2.2 mile long, two lane closed roadway which is used for highway and bridge research as well as vehicle and Intelligent Transportation Systems (ITS) research. The research facility, completed in 2002, is located near Blacksburg, Virginia, the home of Virginia Tech Transportation Institute (VTTI). The research facility is a joint project between the

Virginia DOT, Virginia Tech Transportation Institute, and the Federal Highway Administration. The research facility currently has 14 different experimental pavement sections constructed on its test track and the IGGA has just constructed two more sections. Four hundred electronic sensors are buried in the road monitoring moisture, weight and speed of vehicles, and pavement stresses and strains.

The dedicated research facility has many unique features including weather making capability (rain, snow, fog), a variable lighting test bed, pavement markings, road weather information systems, and road access surveillance systems. The facility also includes a signalized intersection and an advanced communication system using both wireless LAN and fiber-optic based systems. The communications network is used to transfer data between pavements, vehicles, and the research facility.

Concrete Test Section Background

The Smart Road facility had only two concrete test sections; an approximately 3,000-foot-long continuously reinforced concrete pavement (CRCP) section and a 1,200-foot-long plain jointed section. Both sections are located on a 6 percent grade and were textured with uniform transverse tining.

The CRCP was constructed smooth while the plain jointed concrete section was constructed very rough (it was reported as having an IRI of 200 inches per mile when constructed) and subsequently had to be diamond ground. The CDG texture probably only represents 70 to 80 percent of the textured surface. The rest is still transverse tining.

The existing CDG grinding of the plain jointed concrete section was performed with a 3 foot grinding head and the matchline between passes is only about 4 to 5 inches offset from the track line of where the VTTI profile testing studies are conducted. The matchline (between adjacent passes) is almost 1/8 inch difference in elevation at some locations.

Diamond Grinding Construction

The original plan was to diamond grind two test areas. Both test areas were to be one lane wide and 528 feet in length. Test Area B was to be longitudinally grooved upon completion of the diamond grinding. The grooving consisted of one half lane of 1/2 inch c-c groove spacing and the other half with 3/4 inch groove spacing.

Just prior to construction, the decision was made to reverse the layouts in Sections A and B. Since Section A was located in an area that had permanently installed artificial rainfall devices, it would allow splash spray testing to be conducted on the grooved areas. The layout was subsequently changed so that the grooving was placed on the CRCP section.

The grinding and grooving was accomplished on January 10 and 11, 2011. Weather conditions were below freezing and it had recently snowed. Temperatures ranged between approximately 20 and 30 degrees F during construction. The diamond grinding of both test areas was accomplished using two units; a surface planer/diamond grinder with a 4 foot head and a surface planer/diamond grinder with a 3 foot head. The two machines were used to conduct the work to prevent any excessive overlap between passes which would occur as a result of the different lane widths that existed in the CRCP and JPCP sections.

The grinding heads were stacked with 0.125 (0.125 inch) blades and 0.127 spacers (0.127 inch). This typically results in 1/8 inch grooves with 1/10 inch land areas with some variability resulting from nominal differences in blades and spacers.

The CRCP section was constructed by using two passes with the 4 foot head and 2 passes the 3 foot head. The JPCP section was constructed using 3 passes with the 3 foot head and one pass with the 4 foot head.

Diamond Grooving Construction

The longitudinal grooving was accomplished using a groover operating longitudinally. Only one unit was used and was set up with 0.125 blades with spacers to create either the ½ inch or ¾ inch groove spacing.

Impact of Test Sections

The test section construction was donated by the IGGA and Safety Grooving and Grinding to take advantage of VTTI's surface characteristics leadership in the United States. Their dedicated research staff conducts annual profiler and skid trailer comparisons. This will allow them to study the impact of grinding and grooving on profiler measurements and on friction test results. In addition, the sections allow the future evaluation of splash and spray as the VTTI facility has this capability as well.

About IGGA

The International Grooving and Grinding Association (IGGA) is a non-profit trade association founded in 1972 by a group of dedicated industry professionals committed to the development of the diamond grinding and grooving process for surfaces constructed with Portland cement concrete and asphalt. In 1995, the IGGA joined in affiliation with the American Concrete Pavement Association (ACPA) to represent its newly formed Concrete Pavement Restoration Division. The IGGA/ACPA CPR Division now serves as the technical resource and industry representative in the marketing of optimized pavement surfaces, concrete pavement restoration and pavement preservation around the world. The mission of the International Grooving and Grinding Association (IGGA) is to serve as the leading promotional and technical resource for acceptance and proper use of diamond grinding and grooving as well as Concrete Pavement Preservation (CPP) and restoration. For more information, visit www.igga.net.

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