ENGINEERING
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OMNNI ASSOCIATES

OMNNI ASSOCIATES, INC.
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July 20, 2004

Mr. Jason Burns-Hall
Minergy Neenah, LLC
231 Millview Drive
Neenah, WI 54956

RE: Glass Aggregate Asphalt Mix Field Testing and Evaluation

Dear Jason:

On July 19, 2004 OMNNI Associates performed testing and observations of the glass aggregate asphalt mix placed on September 11, 2003 at Johnson Trucking, Inc. in Neenah, WI. The purpose of our activities was to evaluate the asphalt pavement and to look for evidence of premature distress or failure. After consultation with the Wisconsin Department of Transportation Central Laboratory, a field and laboratory testing program was established. Field testing consisted of obtaining four 6-inch diameter core samples from the driveway area, performing nuclear density testing near locations tested during paving operations and observations of the pavement surface. Laboratory testing consisted of returning the cored samples to our testing laboratory where two of the cores were fractured in tension and visually examined for evidence of asphalt binder stripping from the aggregates.

No major areas of distress were observed on the surface of the asphalt pavement at the site. Two small areas of alligator cracking were observed in the heavily traveled areas. This type of distress usually indicates an inadequate pavement section thickness and a failure of subgrade support and is generally not a function of the mix quality. Some wearing of the asphalt binder coating from the surface of the aggregates was observed in heavily traveled areas. The glass aggregate is visible on the surface in these areas but does not appear to be exposed any more than the other aggregates in the mix, indicating that it is no more susceptible to surficial wearing than the other aggregates. Also, observations of the fractured faces of the cored samples fractured in tension in the laboratory did not reveal evidence of asphalt binder stripping from any of the aggregates in the mix at depth in the asphalt mat.

Nuclear density tests performed near previous test locations taken on September 11, 2003 indicate that the pavement, on average, has gained less than one percent compaction since it was paved indicating that the mix appears to be resistant to further densification under traffic and rutting. It should be noted that four of the initial compaction tests were obtained before the mat was cold rolled. Further densification of the mat likely occurred during cold rolling operations resulting in an average gain in compaction that is less than indicated by the test results. A report containing the results of the nuclear density testing has been attached.

Based on our observations and test results, it is our opinion that, since the time of placement, the glass aggregate asphalt mix placed at Johnson Trucking, Inc. in Neenah, WI is performing very well.

Please call us at 920/735-6900 if you have any questions.

Sincerely,
OMNNI Associates

Paul R. Eggen, PG, CET
Program Manager,
Geotechnical/Materials Testing

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REPORT OF: NUCLEAR DENSITY TESTING OF ASPHALTIC PAVEMENT

ASTM: D2950

Project: Glass Aggregate Asphalt Mix Field Testing and Evaluation **OMNNI Project No.** T0868A03

Report To: Minergy Neenah, LLC **Date:** 7/20/04

Tested By: Eugene Hietpas **Date:** 7/19/04

Course: • Binder Surface

Date Placed: 9/11/03
Maximum Laboratory Density (pcf): 159.6 MSG @ 2.564 Sp. Gr.
Mix Description: E-1, 19mm, Northeast Asphalt, Inc., Design #902503

Nominal Thickness: 2 ½"

Test No.	7	8	9	10	11	12
Location	20' E. of the NE Building corner	18' E. and 25' N. of the NE Building corner	105' S. of the NE Building corner	120' S. of the NW building corner	120' S. & 90' W. of the NW building corner	120' S. & 50' E. of the NW building corner
Density (pcf)	149.1 (148.4)	150.7 (149.1)	151.4 (146.1)	146.5 (149.1)	144.7 (145.4)	151.3 (148.3)
% Maximum Density	93.4 (93.0)	94.4 (93.4)	94.9 (91.5)	91.8 (93.4)	90.7 (91.1)	94.8 (92.9)
Average Density (pcf)						149.0 (147.7)
Average % of Maximum Density						93.3 (92.6)
Specified Minimum Compaction (%)						89.5

Remarks: The above tests were taken Eugene Hietpas of OMNNI Associates on 7/19/04 and were performed near the same locations as density tests taken during paving operations. Test results in parenthesis were obtained in September of 2003 during paving operations.

By *Paul R. Eggen*