Project Title: C-06-20: Performance of Aggregates Crushed to Meet 100/95 Angularity

PIN: R020.93.881

Responsible Unit: Engineering Division, Office of Technical Services

Project Manager: Zavery, Zoeb

Project Goal:
To determine if the gravel aggregates crushed to meet the 100/95 coarse aggregate angularity can be used for ≥ 30 million ESAL Superpave mixes.

Actions Proposed:
The Superpave specifications require coarse aggregate consensus property for mixes used on ≥30 million ESALs projects meet a 100/100 coarse aggregate angularity. Essentially, this requirement eliminates all gravel sources from being used. In 2003, National Center for Asphalt Technology (NCAT) performed a research on behalf of Lopke Products, Binghamton, NY, to test whether the gravel from Lopke source crushed to meet the 100/98 requirements would perform equal to those aggregate crushed to meet the 100/100 angularity requirements. Based on this research, the Materials Bureau revised the specification to allow the use of aggregates meeting the 100/98 coarse aggregate angularity for ≥30 million ESALs projects.

Since then, Lopke Products has once again requested the Department to lower the revised limit of 100/98 to 100/95. This request is based on the fact that NCAT performed research on aggregates meeting the 100/95, which had shown to perform in the laboratory testing.

Because this study by NCAT was performed on gravel aggregates from Lopke gravel source, additional research needs to be performed on gravel aggregates statewide before any decision is made. It is a known fact that not all gravel sources are the same. The research will include the following steps:

1. Contact potential gravel aggregate suppliers (at least five) and determine levels they crush their aggregates such that it meets 100/95 one and two crushed face respectively.
2. Contact two stone aggregate suppliers who may potentially supply HMA to the gravel belt area projects.
3. Request aggregates to be shipped to the research institution for testing using ≥30 million ESAL mixes.
4. Make two sets of 6 cylindrical (150 mm diameter) specimens for each gravel source and the stone source.
5. Determine the performance of the HMA mixes using the aggregates obtained from item 1 and 2 by measuring the rutting in laboratory testing using the Asphalt Pavement Analyzer. The testing protocol will be as recommended by NCHRP Project 9-17 (see Appendix B in NCHRP Report 508).
6. The final report will include the findings. Based on these findings, the specification will be either revised or left as is.

Anticipated Work Products and Accomplishments:
The final report will include the findings. Based on these findings, the specification will be either revised or left as is.

**Proposed Budget:** $157,226