

RESEARCH SUMMARY

Performance of Ultra-Thin Bonded Wearing Course (UTBWC) During Winter Snow Ice Events in Maryland

WHAT WAS THE NEED?

Ultra-Thin Bonded Wearing Course (UTBWC) pavement surfacing was developed as a preventative maintenance option to extend pavement life. Despite the successful applications of UTBWC in various states, feedback from winter maintenance crews indicates icing accumulation on some UTBWC surfaces in Maryland during winter storms, and thus current salting practices may need to be revisited. Similar concerns have been identified by other states, and thus safety benefits under snow and ice conditions recently have been in question.

WHAT WAS THE GOAL?

The goal of this study was to investigate how prevalent the problem is in Maryland, to assess the performance of UTBWC surfaces, and whether any issue is dependent on specific weather and/or winter treatment maintenance.

WHAT DID THE RESEARCH TEAM DO?

This study examined: how prevalent the problem is in Maryland; assessed the performance difference of UTBWC surfaces compared to non-UTBWC surfaces as reported by SHA districts; determine whether any issue is dependent on weather and examined if winter treatment influence performance in terms of geospatial and statistical analysis; and, provided potential recommendations for improving their performance.

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WHAT WAS THE OUTCOME?

The survey results show that more than half of the reported UTBWC sections experienced moderate to severe winter performance issues such as accumulation of snow and ice formation. Therefore, higher winter maintenance may be required in terms of materials and treatment frequency for UTBWC. Some district maintenance personnel reported addressing UTBWC snow and ice issues by increasing winter maintenance application rates. However, there are no in-place training and/or established guidelines for snow and ice control specifically for UTBWC sections. Beyond winter performance issues, these sections have performed well as reported regarding pavement conditions. The geospatial analysis indicated that the snow and ice issues may not be dependent only on temperature and/or snow accumulation. The statistical analysis indicated that mixture air voids have an important role on the winter performance of UTBWC among other variables. The study recommendations included potential improvements in winter maintenance practices and monitoring procedures for assessing the performance of UTBWC sections during winter events. It is expected that the findings and recommendations of this study will enhance winter maintenance of UTBWC sections in Maryland.

HOW WILL MDOT SHA USE THE RESULTS?

The results of the research study will be discussed with Office of Maintenance, District personnel, and Senior leadership to potentially evaluate and enhance the performance of winter operations on UTBWC surfaces, to maximize the life of the pavement preservation treatment.

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