

## Technical Report Documentation Page

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Investigation Of Maximum Pavement Temperatures

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An investigation was conducted in order to determine maximum pavement temperatures for the hottest time of the year in the warmest geographical areas of each of the eleven highway districts. It was felt that if the pavement temperature was appreciably lower than 140\*, for any particular depth, a greater cohesion value and consequently a greater gravel equivalent could be used for design purposes.

The July-August period was determined to be generally the hottest time of the year. The warmest areas were selected by examining the last ten years of U.S. Weather Bureau records. (1) The individual locations in each district were selected not only for their consistently warmer temperatures but also because of the availability of accurate temperature records. Average daily temperatures as well as average daily temperature ranges were obtained for each location.

Maximum pavement temperatures were calculated in accordance with theory developed by Barber. (2) The calculation method is detailed in Appendix 1. The results of the calculations are shown in Table 1.

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M.H. Johnson 12/5/68

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# Memorandum

To : Mr. E. Zube

Date: December 5, 1968

File : 19107-641139-38586

Mr. M. H. Johnson

From : Department of Public Works—Division of Highways

Subject: Investigation of Maximum Pavement Temperatures

An investigation was conducted in order to determine maximum pavement temperatures for the hottest time of the year in the warmest geographical areas of each of the eleven highway districts. It was felt that if the pavement temperature was appreciably lower than 140°F, for any particular depth, a greater cohesion value and consequently a greater gravel equivalent could be used for design purposes.

The July-August period was determined to be generally the hottest time of the year. The warmest areas were selected by examining the last ten years of U.S. Weather Bureau records. (1) The individual locations in each district were selected not only for their consistently warmer temperatures but also because of the availability of accurate temperature records. Average daily temperatures as well as average daily temperature ranges were obtained for each location.

Maximum pavement temperatures were calculated in accordance with theory developed by Barber. (2) The calculation method is detailed in Appendix 1. The results of the calculations are shown in Table 1.

As can be seen in Table 1, for the time of year and the locations investigated, the pavement temperature does not decrease appreciably with depth. This finding is a substantiation of data reported by Kasianchuk. (3) Excerpts from his report are shown in Figures 1 and 2. The mean air temperature, temperature range and mean solar radiation of the location (College Park, Maryland) illustrated in Figures 1 and 2, by coincidence, correspond quite well to that data used for the District 07 calculations. The maximum pavement temperatures, for that location, also correlate with the maximum temperatures, calculated for District 07, at corresponding depths. This correlation of results is to be expected because the same theoretical basis was used for the calculations.

