

CEEN 177 - Advanced Transportation Materials  
Reading Assignment 11 - Due Wednesday, Nov 30<sup>th</sup>

Read: 2appendices\_FF, pages FF.171 – FF.346 (pdf pages 173-348)

The portion of Appendix FF listed above contains numerous tables of material characterization data for JPCP pavements. The objective of this assignment is to use this data to test the validity of the prediction equations presented in the 2002 Design Guide, Part2\_Chapter2\_Materials.pdf and other references.

The particular data which may be used for comparisons is as follows:

Table FF.46–Unit Weight, Poisson’s Ratio, CTE

Table FF.47–Cement Type, Cement Content, w/c ratio, Coarse Agg Type

Table FF.49 -14 & 28-day Compressive, Flexural & Tensile Strengths & 28-day Elastic Modulus

This data has been extracted into a revised excel spreadsheet which is posted on the class website. Each student is assigned a subset of the data as indicated in the posted spreadsheet and should use this data to develop appropriate predictive equations of the following form:

$$\begin{aligned} E_c &= A \rho^{3/2} f_c^{1/2} && (A \sim 33) \\ MR &= B f_c^{1/2} && (B \sim 9.5) \\ MR &= C f_c^{2/3} && (C \sim 2.3) \\ f_t &= D f_c && (D \sim 0.10) \end{aligned}$$

Compare your regression values to the typical values shown in the parenthesis and comment on the differences.