Influence Of Particle Size And Temperature On The

"This study was performed in order to identify a size correction that would allow aggregate of different sizes, other than the standard 1/2-3/4-inch fraction, to be used in the Iowa Pore Index (IPI) test. This size correction would allow for the IPI to be determined for aggregate gradations of material that have a nominal maximum size (NMS) smaller than 3/4-inch. The interest in a size correction for the IPI developed from its use in a Durability Factor (DF) estimation equation. The estimation equation was developed with the use of 19 different DF from Missouri aggregate sources, where eight aggregates had a NMS smaller than 3/4-inch. By using the same sized particles in the IPI test that was used to achieve the DF, a better relationship is thought to be attainable. In addition to the size correction, procedures and variables that influence the data acquired by the IPI test were observed and refined in order to standardize the IPI test procedure. A size correction was developed so that #4 sieve-3/8-inch and 3/4-1/2-inch aggregate fraction sizes can be corrected to the industry standard 1/2-3/4-inch. Also researched is the effect of drying on the IPI, effect of re-pressurization on the IPI, and material re-testability in the IPI test. In researching the IPI test procedure and variables, a new method of data collection from the IPI test was developed. This method allows for the measurement of water that is expelled from the aggregate after depressurization. This data has shown to have a better correlation with the DF than the IPI. The effect of oven drying the aggregate on the IPI and the effect of different operators was found to be negligible. It was found that a material can be re-tested and produce a similar IPI, and that the material re-testing is more favorable than re-pressurizing the aggregate"--Abstract, leaf iii.

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