

Comments on Effects of Aggregate Grading on Drying Shrinkage of Florida Concretes by W. C. McCall, M. E. King, and M. Whisonant in Concrete International, March 2005

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The authors should be commended on conducting the research study and publishing this article on this important subject. Does *uniform grading help reduce the water demand and thereby the paste content (i.e. lower cement will be required to achieve the same w/c and strength) and concrete shrinkage?* If the answer is **Yes** then the improved concrete performance may justify the potentially higher concrete costs resulting from the additional aggregate bins and handling equipment. However if the answer is **No** then the additional costs will have no benefit. In that case the restrictive uniform aggregate grading specifications are needlessly increasing the concrete costs.

At the National ready Mixed Concrete Association we are very interested in this subject. We have conducted a laboratory study and plan on publishing our findings. Our preliminary results match those found by the authors of this article namely that using a uniform aggregate gradation did not reduce the water demand, did not reduce shrinkage and did not increase the concrete strength. We are currently in the process of conducting a round robin test program using materials from different parts of the USA. We would like to reserve our final conclusions on this subject until that study is complete.

Strictly from a research stand point one may question the author's approach of using manufactured screenings to attain the uniform 8-18 aggregate grading. One may say that the manufactured screenings could have increased water demand thereby nullifying the reduction in water demand achieved due to the uniform aggregate grading. This may be possible, even the authors themselves concede that. In our study we used the coarse and intermediate size aggregates from the same quarry to achieve the uniform grading and yet did not see any decrease in water demand. We also used the same maximum coarse aggregate size ASTM No. 467 (maximum size of 1 1/2") for both the uniform grading and non-uniform grading mixtures. To the authors defense they have observed that with their local materials using the manufactured screenings was the only way they could achieve the uniform 8-18 aggregate grading. Regardless any one will have a hard time questioning their conclusion that "it is unwise to use a standardized grading rule such as 8-18 in an attempt to reduce water demand, drying shrinkage, and cracking for slabs on ground."

I would also like to suggest that the authors could have modified the title slightly to say "Effect of **Uniform** Aggregate Grading on Drying Shrinkage of Florida Concrete". The original title which did not include the word uniform was too broad and may include such wide extremes such as use of aggregate fines, use of mono size coarse aggregate particles, different fineness modulus of sand etc. Adding the word uniform in the title better describes the primary focus of this article.