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A Discussion of the paper "YOUNG'S MODULUS OF CONCRETE RECONSIDERED" by J.M. Torrenti, C. Boulay and C. Puch*

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I appreciate the paper and results, but cannot agree with the authors that the results are basically different than those which I obtained many years ago and which were published in references 5, 6, and 7. I have found that the values of strain in the central part of a compressed specimen were a bit higher than those close to the external surface. The same relation is visible in Fig. 4 of this paper and that observation is expressed in the last line of page 646.

The fact that the observed difference was small seems to be of secondary importance, but it was the same in all measurements. The small value of this difference is probably a correct justification proposed by the authors that the method used to determine the Young's modulus of concrete did not need to be modified. The concept of the Young's modulus for concrete as a constant magnitude characterizing the material is of rather practical importance and is not confirmed by measurements, as the stress-strain relation is, in fact, nonlinear.

A Reply to the Discussion by A.M. Brandt of the paper "YOUNG'S MODULUS OF CONCRETE RECONSIDERED"*

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The writers thank Professor Brandt for his interest in the paper and his comments.

The first comment concerns the strains. In our experiments we have found higher values in the central part of the concrete sample like Professor Brandt has. The difference between the strains at the center and on the surface is equal to 5% in our case and to 15% for Professor Brandt's experiment (ref. 5). So we agree with Professor Bandt: our raw results are close to those he had obtained and completely different from Klink's one. In our case, we have also taken into account the effect of the rigidity of the embedded gauges on the measurements. Eventially, after correction, we have a smaller difference between the strains at the center and on the surface: less than 2%. That is why we think that plane strains could be assumed. And, finally, we agree with Professor Brandt that there is no need to change the method of determining the Young's modulus.

* Cem. Concr. Res. 24(4) 641-649 (1994).