DISCUSSION / DISCUSSION

Reply to the discussion by A.K. El-Sayed on "New *Canadian Highway Bridge Design Code* design provisions for fibre-reinforced structures"[1]

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The authors wish to thank Dr. A.K. El-Sayed for providing a discussion on our paper and acknowledge that studies by the discusser and others since the publication of the *Canadian Highway Bridge Design Code* (CHBDC) (CSA 2006) provisions referenced in the paper have added to our knowledge in this field.

The Canadian Highway Bridge Design Code Technical Subcommittee 16 on Fibre Reinforced Structures (subsequently referred to as the Technical Subcommittee) has been investigating, with the cooperation of Akhilesh C. Agarwal, the level of conservatism in the shear equation as part of its ongoing work in the calibration of the design provisions for fibre-reinforced polymer (FRP) structures. Internal committee documents have been produced dealing with (*i*) preliminary calibration of the CHBDC for reinforced concrete beams with FRP reinforcement, (*ii*) development of a reliability-based health monitoring system for FRP structures, and (*iii*) CHBDC review of material resistance factors for FRP structures.

Based on these yet unpublished documents, the Technical Subcommittee agrees that the use of the term $(E_{long}/E_s)^{1/2}$ in conjunction with the general method (Section 8 of the CHBDC) of calculating β is overly conservative. The committee is developing a proposal to revise this clause. However, it is important to note that if the simplified method of calculating β is used, then the term $(E_{long}/E_s)^{1/2}$ in eq. [4] must be used (Newhook et al. 2006).

The Technical Subcommittee is also in the process of redefining some of the definitions. The discusser's comments will be helpful in this endeavour.

With regard to eq. [7], there is a misprint in the text in the paragraph preceeding it. "When the transverse reinforcement is inclined at an angle θ to the longitudinal axis…" should read "When the transverse reinforcement is inclined at an angle α to the longitudinal axis…" Other changes proposed by the discusser require the approval of the Technical Subcommittee of the Canadian Standards Association.

References

CSA. 2006. Canadian highway bridge design code. Standard CAN/CSA-S6-06, Canadian Standards Association (CSA), Toronto, Ont.

Newhook, J., Benmokrane, B., and Tadros, G. 2006. Proposed shear provisions for FRP reinforced bridge beams and girders. *In* Proceedings of the 7th International Conference on Short and Medium Span Bridges, Montréal, Que. [CD-ROM].

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