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Early-age strain and temperature measurements in concrete tank walls

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Contribution by T. A. Harrison

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ITN5 only contains estimates of $T1$ for ordinary and rapid hardening Portland cement concretes. Where ground granulated blast furnace slag (ggbfs) or pulverized fuel ash (PFA) are included in the mix, I would recommend a combination of ITN5¹ and CIRIA Report 91² which gives methods for calculating $T1$ when ggbfs or PFA is used in the concrete. This would give the following results:

Wall	$T1$ observed: °C	$T1$ predicted by ITN5/CIRIA 91: °C
5	21.5	25
6	28	34
7	36	36
8	40	38
10	24.5	22 (extrapolated)

Reply by the authors

The method suggested by Dr Harrison, the author of both ITN5¹ and CIRIA Report 91,² for predicting $T1$ when ggbfs or PFA is included certainly gives values closer to the measured results than the solely ITN5-based predictions given in the Paper. We are grateful for that contribution.

The consolidated analysis of the strains and restraint factors for all twelve walls is proceeding and will be available for publication during 1990.

References

1. HARRISON T. A. *Early-age temperature rises in concrete sections with reference to BS 5337:1976*, Interim Technical Note 5. Cement and Concrete Association, Slough, 1978.
2. HARRISON T. A. *Early-age thermal crack control in concrete*, CIRIA Report 91. CIRIA, London, 1981.