The hydraulic characteristics of plastic land drainage pipe

C. W. DENNIS

Mr M. G. Kay, Sir M. MacDonald & Partners

I should like to voice a word of caution regarding claims made of experimental accuracy which can have a marked effect on results in the low Reynolds' number range. While I agree that micrometer point gauges can be 'reliably read to ± 0.02 mm' I would not put equal reliance on the hydraulic measurements made using them, particularly when head losses are of the order of 1.0 mm. Errors of measurement in this region can be of the same order of magnitude as the measurements themselves. Because it is difficult to draw the line between acceptable and unacceptable results it would be useful in papers of this nature to include a graph based on an analysis of the likely experimental errors which would indicate the degree of accuracy that can be expected at various flow conditions.

29. Were tilting manometers considered for the measurements of small head differences and of what order was the 'appreciable zero drift' from day to day on the micrometer gauges?

Mr Dennis

Mr Kay comments on the accuracy of measurement and instrumentation used. The 'appreciable zero drift' was of the order of 0.08 mm overall, although the day to day value was about half this, leading to the value of ± 0.02 mm quoted. The significance of such errors can, perhaps, be put in perspective by considering the two lowest values of Reynolds' number given in Fig. 8, for which the head losses were 0.32 and 0.46 mm respectively.

31. Consideration was given to the whole range of manometers, including tilting. This led to selection of the micrometer point gauges, a decision which was backed up by recommendation from the Hydraulics Research Station.

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