Book review

DURABILITY OF LIGHT STEEL FRAMING IN RESIDENTIAL BUILDING.

Edited by S. O. Popo-Ola, A. R. Biddle and R. M. Lawson. The Steel Construction Institute, 2000, ISBN 1 85942 111 3

It has always been something of a mystery why steel framing is not more widely used in the UK for residential construction. One of the main reasons cited is concern regarding the long-term corrosion of steel. The aim of this publication is to address this issue in relation to modern forms of construction, by the publication of research data from a number of sources, although primarily from actual buildings in the UK.

However, the publication is more than a simple dry reporting of research data and is best seen as having three distinct sections: background information on galvanising, case study examples and finally design guidance.

The background information on the corrosion performance of galvanising is well-presented, concise and easily understood. In particular it makes and explains the difference between galvanizing processes, hot dipping and continuous dipping. This is a distinction that is not always appreciated by designers and specification writers. Where this section can be criticized is in the rather pessimistic comments on modern coating specifications and the fact that there is rather too much description relating to hot dipping, whereas the continuous dipping process is more relevant.

This first section also includes useful information on some other aspects of galvanised steel that are not always fully understood. There are brief, but useful, sections on surface treatments of continuously dipped strip and also on the issue of white-staining corrosion.

The section on case studies gives the key data on performance of zinc-coated steel in modern construction. The data reported concentrate mainly on research on test buildings in the UK but

also contain information from other parts of Europe and Japan. The actual data show the form one would expect for atmospherically exposed metals, the rate being non-linear, decreasing with time.

In the context of the design lives that the document quotes, the data reported have been obtained over relatively short periods of time (up to three years). As such it needs to be used with some caution, as there can be no guarantee that corrosion rates in the future will be the same; however, this may seem a niggling criticism. The publication also rightly reports the beneficial effects of the reduction in atmospheric pollutants on reducing corrosion rates over the last 30 years. Who is to say that other changes in environmental conditions will not have the reverse effect on corrosion rates in the future?

In fairness, the design guidance section of the report, although quoting very long lives in some instances, does recommend a responsible approach to estimating the performance of galvanised coatings. This approach is conservative in that it assumes a linear corrosion rate, which is unlikely to be the case as corrosion rates usually decrease with time.

The design guidance is also clear and unambiguous as to where standard continuously dipped galvanised steel should be used in modern construction and the different exposure conditions within a modern building.

Despite the criticisms, this publication is a welcome reference source, not only in relation to light steel framed residential buildings but also as a general reference source on galvanised steel and corrosion rates that has wider application. In its intended subject area, the publication more than addresses the main area of concern of corrosion and will hopefully promote greater consideration of the use of light steel framing in residential construction.

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