Book review

DESIGN FOR DECONSTRUCTION: PRINCIPLES OF DESIGN TO FACILITATE REUSE AND RECYCLING

B. Addis and J. Schouten CIRIA, 2004. ISBN 0 86017 607 X, £80 (CIRIA members, £40), 106 pp.

The guidance aims to maximise reuse of components and recycling of materials when buildings are wholly or partially deconstructed or demolished.

The principle of adopting the waste hierarchy—reduce, reuse, recycle, recover and dispose—makes good business sense for both the construction sector and its clients. This powerful case is mentioned as a driver in section 4 (p. 67) but with all the other design issues on the minds of clients and design teams this could have been made more immediately apparent. The guidance is, however, still rare in addressing options for deconstruction. There is a growing awareness that we need to shift from a waste management to a resource efficiency approach as advocated recently in an ICE report.¹

Although targeted at designers, the guidance is of value to other professions. Many of the options highlighted for different elements in section three directly relate to how the building is constructed and are of direct relevance to contractors. The closed loop model outlined requires consideration of how the value of recovered materials can be maximised. The construction sector already uses significant quantities of recycled materials in many construction products, such as 45mtpa recycled aggregates.² Specifiers are highly influential therefore in ensuring that, where fit for purpose, recycled content is specified to close the loop. Contractors and engineers are also key players in delivering resource efficient buildings. The guidance rightly points out that designing for deconstruction is one thing, but achieving it in the finished product can be quite another. There are numerous technical barriers to the recovery and reuse of materials and components that stem largely from the current unidirectional construction practices according to Steward and Kuska.³

The guidance includes a qualitative method for assessing the suitability of different elements for reuse and recycling. Other, more recent methods, such as the Demolition Protocol and its New Build Recovery Index, can also be used to help designers or at least challenge them (or their clients) to think about the onward use of materials at end-of-life of components and buildings. With adaptability and loose fit evident in many of the

case studies, prolonging the longevity and useful life, it would have been helpful if the guidance was more explicit on the opportunities in refurbishment and partial deconstruction.

Opportunities to ensure the design allows for upcycling are largely undersold—recycling is classed in the same bracket as energy recovery for example—but the authors should be commended for convincing the now defunct Partners in Innovation scheme and the other project sponsors that materials resource efficiency would eventually make it onto the agenda beyond regulatory compliance.

The section on plasterwork and rendering is already out of date in terms of the new 2005 regulations requiring separate classification and disposal of gypsum sulphate bearing materials. As well as being recyclable in their own right these materials now need to be separated out to maximise the reuse and recycling potential of other demolition materials. The direct benefit is reducing overall costs of disposal.

Like most guidance it was never intended to be read from cover to cover and this is acknowledged, albeit on p. 23. It would have benefited from some prioritisation, for example opportunities for 'quick wins' that provide significant benefit for least additional cost and highlighting the potential for a plan for deconstruction to be handed over with the building and maintenance files.

In summary, the guide usefully provokes thought for those with time to consider the issues. It covers assessment of potential, guidance by building elements and good practice case studies from UK and Europe—principally the Netherlands—as well as comparisons with the automotive sector.

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REFERENCES

1. OAKDENE HOLLINS. *The Case for a Resource Management Strategy*. Institution of Civil Engineers, London, 2006.
2. WASTE AND RESOURCES ACTION PROGRAMME. *Opportunities to Use Recycled Materials in Building: Reference Guide*, 2nd edn. WRAP, Banbury, 2005.
3. STEWARD C. and KUSKA S. Structuring research for 'Design for Deconstruction'. *Materials Reuse Conference*, Oakland, CA, 2004.