

WHAT ARE THE TECHNICAL CONSIDERATIONS WHEN USING RECLAIMED STEEL?

Reclaimed steel by its very nature will be different from virgin steel, although that is also dependent upon its source.

If sourced as new, i.e. from design changes and cancelled orders, then its properties, manufacturer/fabricator and certification should be known. However if it is sourced from an existing building, then it will need assessing for reuse.

This is relatively straightforward. The [SCI Protocol for reusing Structural Steel](#) defines a clear process with a data collection, inspection and testing regime to ensure that the steel can be reused with confidence and can be CE marked in accordance with EN 1090. Usually, sections are inspected to verify their dimensional properties, tested to determine their mechanical properties and then generally shot or sand-blasted to remove any coatings. They are then refabricated and primed to the requirements of the new project. Reclaimed steel stockholders, such as [Cleveland Steel and Tubes \(CST\)](#) and [EMR](#), can undertake or organise these services. The Protocol also describes whether steelwork is suitable, essentially it has to be no older than 1970s, although that said the Protocol is now being updated and a new standard should be ready shortly from the SCI which covers steelwork that is older than the 1970s.

There is not as such a visual grading system as yet, but Penny Gowler from Elliott Wood and Roy Fishwick from CST have proposed a [system](#) that provides a grade to steel from Prime (new), A to E depending on holes, fittings, connections and condition. This could also help in terms of the acceptability of the steelwork in the new structure from an aesthetic/cosmetic viewpoint, especially if it is to be exposed.

Other guidance is also available to make it easier to specify reclaimed steel – the British Construction Steel Association (BCSA) has a [model specification for the purchase of reclaimed steel sections](#); and [general requirements for sustainability](#) related to steel in construction. Guidance is also available from the [FCBRE project on steel beams](#).

From a design perspective, there are obvious considerations. Designers/engineers will have to design with the sizes of reclaimed steel in stock, albeit supplemented with virgin steel where required. Loadings will have to be adapted to the reclaimed steelwork available. If coming from an existing building and being used in a new building, then the designers/engineers may want to get involved in the identification and deconstruction process. A number of engineering companies are developing tools which allows them to optimise the use of reclaimed steel work in the design, ensuring that it is used in the most beneficial way. This also helps in ensuring that the overall tonnage is minimised.

The forthcoming [IStructE, Circular economy and reuse: guidance for designer](#) will be an excellent resource to enable the technical reuse of structural steel.