



London Bridge Best Practice

Case Study Title: Sustainable reinforcement steel

Month/Year: December 2015

Key Benefits

- ✓ 98% recycled content
- ✓ 58% reduction in embodied carbon against industry standard
- ✓ Steel manufactured in line with the Eco-Reinforcement responsible sourcing standard
- ✓ Sourced from within the UK

Objectives and Targets

- ✓ Ensuring the project beats its target of 15% (stretch 25%) reused or recycled content by value of new construction material
- ✓ CEEQUAL – Embodied impacts, responsible sourcing, re-use and recycling of materials

Overview

The London Bridge Station Redevelopment Project so far has imported 10,314 tonnes of reinforcement steel (Rebar). Rebar, an important component of reinforced concrete, has been used across the project for structures such as the bridge decks and abutments. There are two common steel-making processes used for producing reinforced steels. These are Basic Oxygen Steelmaking (BOS) and Electric Arc Furnace (EAF) steel making. The BOS process, uses a combination of iron ore and small amounts of scrap steel whilst the EAF process uses just recycled steel.

Use of Electric Arc Furnace (EAF) Process

London Bridge imports their rebar from CELSA, a UK manufacturer that uses the EAF process to make steel. The beginning of the EAF process requires the importation of scrap metal from various UK based scrap contractors. Up to 98% of scrap metal is used as the raw material with the remaining 2% consisting of alloys such as carbon and manganese. The scrap is then charged in the furnace, melted and continuously cast into steel billet. The steel billet is then taken to the BRC facility across the road by train where the rolling process begins. The billet is rolled and processed into bar and coil products, ready for distribution.



Responsible Sourcing



The project is committed to ensuring we are implementing responsible sourcing requirements for the procurement of construction materials. The CELSA rebar is certified to the responsible sourcing standards for construction products BES 6001 and the Eco-Reinforcement responsible sourcing standard, which assesses and recognises responsibly sourced reinforcing steel products. We have also audited CELSA's Cardiff facility to confirm that the steel is 98% recycled and is produced from 100% UK sourced recycled metal.

Embodied Carbon

Steel has a high embodied carbon content, however through using recycled steel this reduces the embodied carbon of the material. CELSA steel have an embodied carbon factor of 0.59kgCO₂e whilst the industry standard carbon factor provided by the Inventory of Carbon & Energy has a carbon factor of 1.4 kgCO₂e. This is a reduction in CO₂e of 58% and on the quantities of rebar imported to London Bridge this equates to a total reduction in tonnes of CO₂e against industry standard of 8353.34 tonnes of CO₂e.

