



STEEL SUSTAINABILITY IN THE CONSTRUCTION MARKET

The National Institute of Standards and Technology notes that “steel has become one of the most reliable, most used and most important materials of the age.” As an advanced engineered material, steel is the material of choice by engineers and architects because of its strong performance characteristics, durability, reliability, versatility in design and consistency as a product.



Structural steel produced in North America typically contains 90 percent or more recycled steel. Steel framing itself contains a minimum of 32 percent recycled steel and is continually and completely recyclable. While many other products can only be downcycled into a lower-quality product, steel can be recycled over and over again and remade without any loss of quality. While many construction sites may have large amounts of construction and demolition waste to dispose, using steel will minimize that problem as it can be easily recycled responsibly. When steel construction products have outlived their current intended use, they can be recycled into new steel to be used for any variety of new products. Today’s steel beam can become tomorrow’s refrigerator, soup can or car door. Structural steel mills also recycle nearly all of the water they use in a closed loop system. Less than 70 gallons of water is consumed in the production of one ton of structural steel.

Steel’s attributes, including its inherent durability and recyclability, make it vital to modern society. The North American steel industry is committed to manufacturing innovative products and implementing processes that achieve environmental, social and economic sustainability.

Life cycle assessments (LCAs) have been conducted comparing steel-framed buildings to wood-framed buildings in different parts of the country and have demonstrated that steel buildings can result in lower environmental impacts than functionally-equivalent wood buildings. In addition, a peer-reviewed study comparing hot-dip galvanized (HDG) steel coils produced in North America, primarily used in the construction and automotive sectors, to the same product produced in China and shipped to the North American market found that the coil sourced from China results in nearly 50 percent higher GHG emissions.



As a building material, steel can meet the sustainability requirements in standards such as the International Green Construction Code, and in green building rating systems like U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), where steel products can help earn points toward LEED v4 certification.



Steel has a vital role in infrastructure through replacement and new construction of bridges, roadways, guideways and utility structures. Infrastructure also includes the energy grid, energy development and transmission, water infrastructure and public safety — all of which uses steel. Steel for short span bridges is lighter than other materials and can provide a savings of up to 25 percent in total superstructure costs, partially due to the fact that heavier equipment may not be needed to set the girders.

Steel can also be reused after a long service life — one county in Ohio saved \$51,000 in superstructure costs by using repurposed beams that were removed from a previous steel bridge taken out of service. Steel utility poles are about 50 percent lighter than wood, reducing transportation costs and making them easier to handle on the job site. And EnergyStar-qualified metal roof products can lower roof temperature by up to 100 degrees, significantly reducing a building's peak cooling demand.

Steel Sustains. For more information on steel's sustainable properties and performance, please follow us on social media @AISSteel, @EnviroMetal, @BuildUsingSteel or contact Tyler Hengen, AISI Director of Sustainability (thengen@steel.org).

