



**Grand Trunk Railway  
(GTR) Shops**

# ENVIRONMENTAL FACTORS



“The greenest building is the one already built.”

**R. RITZ ARCHITECT INC.**

# ENVIRONMENTAL FACTORS: “THE GREENEST BUILDING IS THE ONE ALREADY BUILT.”

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## **Embodied Carbon in Construction Calculator (EC3)**

**Embodied carbon** refers to the total greenhouse gas emissions generated from the entire lifecycle of building materials, including extraction, manufacturing, transportation, construction, maintenance, and disposal. It accounts for 10%–11% of global emissions and represents the "upfront" carbon locked into a building before it is even occupied, primarily from carbon-intensive materials like concrete and steel.

The saying “the greenest building is the one already built,” coined by architect Carl Elefante, emphasizes **that reusing, retrofitting, and repurposing existing buildings is far more environmentally sustainable than demolishing them to build new, even energy-efficient, structures.**

This concept highlights the following key environmental and sustainability principles:

**Preservation of Embodied Carbon:** It highlights the immense amount of energy and carbon already "locked in" to the concrete, steel, and brick of existing structures. Demolishing a building wastes this energy, while reusing it avoids the high carbon emissions associated with manufacturing and transporting new materials.

**Carbon Payback Period:** Studies show that it can take 10 to 80 years for a new, "green" building to recoup the carbon debt incurred by demolishing an old building and constructing a new one.



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**Waste Reduction:** It emphasizes reducing the massive volume of construction and demolition debris that currently fills landfills.

**Adaptive Reuse over New Construction:** Rather than viewing old buildings as liabilities, this perspective promotes "adaptive reuse"—breathing new life into old warehouses, schools, or factories—which is almost always more sustainable than "starting from scratch".

**Conservation of Resources:** Reusing buildings saves natural resources (timber, minerals, water) that would otherwise be consumed in new construction.

In summary, the saying champions the idea that the most sustainable, resource-efficient option is to **renovate and upgrade** existing building stock rather than demolish it.