

RASTRA is the ultimate building solution for economical and environmentally-friendly construction. RASTRA is the solution for this century to build environmentally conscious, energy efficient buildings that provide a safe and healthy living environment. **Over 9 million units sold worldwide.**

## RASTRA & LEED-NC

Several programs have been created over the past few years in an attempt to quantify the environmental footprint of a building, and identify a benchmark for green building. Insulating Concrete Form (ICF) construction is a consistently strong contributor to any of these green build measures.

Perhaps the most recognized is the US Green Building Council Leadership in Energy and Environmental Design (LEED) Green Building Rating System. LEED promotes a whole-building approach with performance criteria in five areas: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. RASTRA is a proud member of the US Green Building Council.



### Energy Performance

A quick review of the 69 possible points available in the LEED for New Construction (LEED NC) identifies energy savings as the most heavily weighed criteria, with up to 10 points achievable. This strong focus on energy savings is appropriate considering the bulk of a building's environmental footprint is caused by the energy consumed in the heating and cooling of a structure over the course of its lifetime.

The high performance thermal envelope of RASTRA offers a significant contribution towards achieving all 10 of the **Energy & Atmosphere Credit 1** Optimize Energy Performance points. The energy conservation effectiveness of RASTRA is due to the unique synergy of continuous insulation, virtually no air infiltration and the added thermal mass of the concrete wall.

### Reduced Footprint

**Sustainable Sites Credit 5.1** calls for reducing the development footprint and limiting site disturbance to conserve existing natural areas. Building with RASTRA reduces impact to a construction site, as limited bracing is typically erected on the inside of the wall, with limited construction activity around the perimeter.

### Durability

LEED Canada has introduced a Materials and Resources Credit 8, Durable Building with the intent of minimizing construction waste due to premature failure of the building from moisture and structural deterioration.

The Canadian Standards Association (CSA) *Guidelines on Durability in Buildings* identifies concrete as a durable material, with high resistance to mold and mildew. Indeed, the architecture of Ancient Rome is time tested evidence of the endurance of concrete.

Five ways RASTRA helps build green

1. Optimized Energy Performance
2. Recycled Material Content
3. Local Materials
4. Durability
5. Improved Indoor Air Quality

### Materials Credit

RASTRA contributes to the **Materials & Resource Credits** in three areas: construction waste reduction, recycled content and regional materials.

**MR Credit 2.1 and 2.2** seeks to reduce construction waste. RASTRA typically factors in 2 -5% waste, much lower than most other wall materials.

The **Recycled-Content Credit MR 4** is applicable for RASTRA built projects because the forms are manufactured with 85% recycled expanded polystyrene (EPS). The EPS is primarily post-industrial with some post-consumer waste utilized.

The concrete mix used for ICFs can incorporate fly-ash which is 100% post-consumer recycled. The reinforcing steel (rebar) is generally over 80% post-consumer recycled. LEED calculates recycled content by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value. The recycled values of all the building materials used in the building are added for a combined percentage of the total value. Because RASTRA is made of 85% recycled-content and typically constitutes a large portion of the total project, it is a large contributor to the MR 4 credit.

The **Regional Materials Credit MR 5** requires not only the manufacturing, but also the extraction of the material to be within a 500-mile radius (per LEED-NC Vrs 2.2 and LEED Canada-NC 1.0). The aggregate in the concrete mix would generally qualify. RASTRA operates plants in Arizona, New Mexico and Ohio to service a large percentage of the U.S. with additional plants in development.

## Indoor Air Quality

RASTRA structures can also achieve a high **Indoor Environmental Quality**. The airtight nature of the RASTRA wall allows for better control of air flow required by **Credit EQ2, Increased Ventilation Effectiveness**: additional outdoor air ventilation (v2.2) or effective delivery and mixing of supply air (Canada v1).

Using RASTRA for the building envelope can reduce temperature and humidity variables, and facilitate the maintenance of the comfort ranges specified for **Credit EQ7, Thermal Comfort** (Canada v.1, provide a thermally comfortable environment).

**The Environmental Quality Credits 3.2 and 4.1** are concerned with the reduction of pollutants. The EPS foam used to produce RASTRA emits no VOCs or formaldehyde, nor does it produce any CFCs or HCFCs during manufacturing. EPS will not generate any off-gassing, as the material is inorganic and inert. The adhesives and low expanding foams used in the ICF assembly are equally non-toxic, as is the concrete mass.

## Sustainable Construction

In addition to the points determined by the USGBC LEED system, RASTRA contributes to sustainable construction in many other ways. The sound dampening of the concrete and foam insulation is ideal for protection from urban noise. The solid monolithic concrete wall withstands the worst of rain storms, fires, tornados, hurricanes and even earthquakes. It is also impervious to insects, including termites and eliminates the need for pesticides which can leach into nearby soil. This is a product that will endure, as will its qualities and benefits. An extended service life also relieves landfill burdens.

No matter what the green point system, RASTRA offers the most straightforward solution for an environmentally preferred, energy efficient thermal envelope so vital to sustainable construction.



## LEED Contribution Point Opportunities for New Construction Projects using RASTRA: 22

Per the most recent LEED New Construction checklist v2.2, RASTRA can contribute up to 22 of the required 26 points for a LEED certified project.

## Innovative Design

The LEED system also offers the opportunity to be awarded points for exceptional or innovative performance. For example, LEED recognizes the Cradle-to-Cradle (C2C) Evaluation Protocol developed by the McDonough Braungart Design Chemistry (MBDC). MBDC sets the benchmark for independent evaluation of a project's impact on the environment and the waste stream.

## Environmentally Friendly

RASTRA is 85% recycled polystyrene, which otherwise would have ended up in landfills never to disintegrate

RASTRA buildings reduce energy consumption, and with energy savings comes environmental benefits. Specifically, the reduction of fossil fuels burned to create energy. By reducing our energy consumption, we reduce combustion by-products that lead to smog and contribute to global warming. Over the life of a 30-year mortgage, a home built with RASTRA saves our atmosphere 60-90 tons of carbon dioxide (CO<sub>2</sub>) emissions. Another measure of sustainability is increased service life. Products that last longer make a large impact on our solid landfills.

*RASTRA is an ecological sound building material, consuming recycled raw materials, taking them permanently out of the waste stream and producing a healthy living environment.*

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