

Cement Based Solutions for Green Building

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McGraw Hill 2006 SmartMarket Study

Green building market penetration

	2004	2010
% of new const*	2%	5%-10%
Commercial	\$10.2 to 20.5 billion	
Residential	\$19 to \$38 billion	

Why now?



- This is not a repeat of Earthday
- **Why? – recognition of environmental, *social and economic* balance - mass transit example.**
- **Without economic balance, the movement fails.**
- **Promotes long term value (sound familiar?)**
- **Natural market driver - Resource Limitations (clean air & water, land)**

The Rise of LEED

- **LEED = Leadership in Energy and Environmental Design**
- A simple measuring tool to rate environmental performance of a building
- With simplification, comes inaccuracy



LEED Rating System

Developed by United States
Green Build Council



Mission

to promote the design and construction of buildings that are environmentally responsible, profitable, and healthy places to live and work.

LEED's Impact

**LEED is in the right place, at the right time.
Created to cause market transformation.**

**Supported by awareness of global warming
rising energy and health care costs, and
resource limitations.**

**LEED is only a rating system – it is not
sustainability in itself.**

USGBC Growth

	2001	2006
Local chapters	0	63
Corp. Members	1,137	+5,500
LEED Professionals	527	+23,000
Registered Projects	217	3,034
Certified Projects	5	349

USGBC has 39 million s.f. of certified projects (completed) with another 380 million s.f. currently registered.

Now, . . .the Green Building Initiative

Media Darlings!

Technological Innovation

- Hybrid automobiles
 - Wind and solar power
 - Concrete?
-



Image Problem

**Ice Energy's
"Ice Bear"
provides
thermal mass!!!**

**2005
"Top Ten" Green
Building Product
by BuildingGreen.com**



Material's Role

“Despite conventional wisdom, people – not technology – play the biggest role in creating successful green buildings”

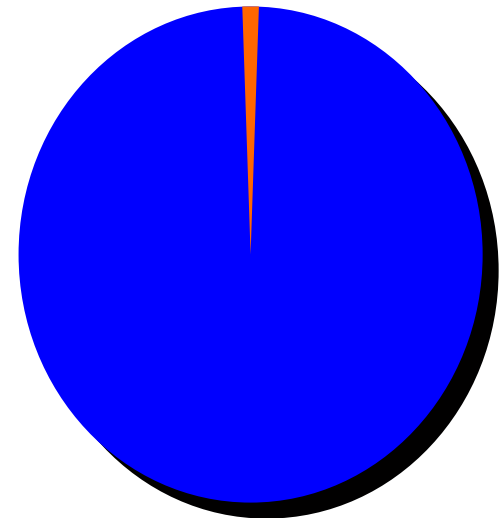
Tom Paladino, PE, AIA, LEED AP
USGBC, Board of Directors Vice Chairman

An assembly of “greener” products is a poor solution for sustainability

Material's Role

Impact of material acquisition, manufacturing and construction is 2% to 10% of the building's total impact.

Operations impact is 90% to 98% (life cycle assessment)



Keep it Simple

This

or

The Ice Bear?



Problem Or Solution?

Strong awareness of CO2

- Reduced energy consumption / unit of cement > 33% since '72
- Climate Vision - Voluntary reduction of CO2 of 10% by 2020
- Reduce waste by 60% by 2020

www.cement.org/smreport06



Concrete's Sustainable Benefits

- Urban heat island reduction
- Storm water quality and quantity
- Indoor air quality
- Thermal performance
- Recycled content (20+ mil tons in 2005)
- Recyclable (approx. 125 -140 mil tons)
- Site remediation
- Local availability
- Durability



**Concrete
Thinking**
for a sustainable world



Portland Cement Association

Search:

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- > RESOURCES
- > CASE STUDIES
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WELCOME TO CONCRETE THINKER

WE BUILT A CITY JUST FOR YOU...
TAKE THE TOUR! >

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BECOME A CONCRETE THINKER

Welcome to the Concrete Thinker web site, a resource to help architects make sustainable design a reality through the durability, versatility and energy efficiency of concrete.

Through **application overviews**, **case studies** and other **resources** and **tools** learn how forward-thinking architects rely on concrete to create healthy and vibrant places to work, live and play for years to come.

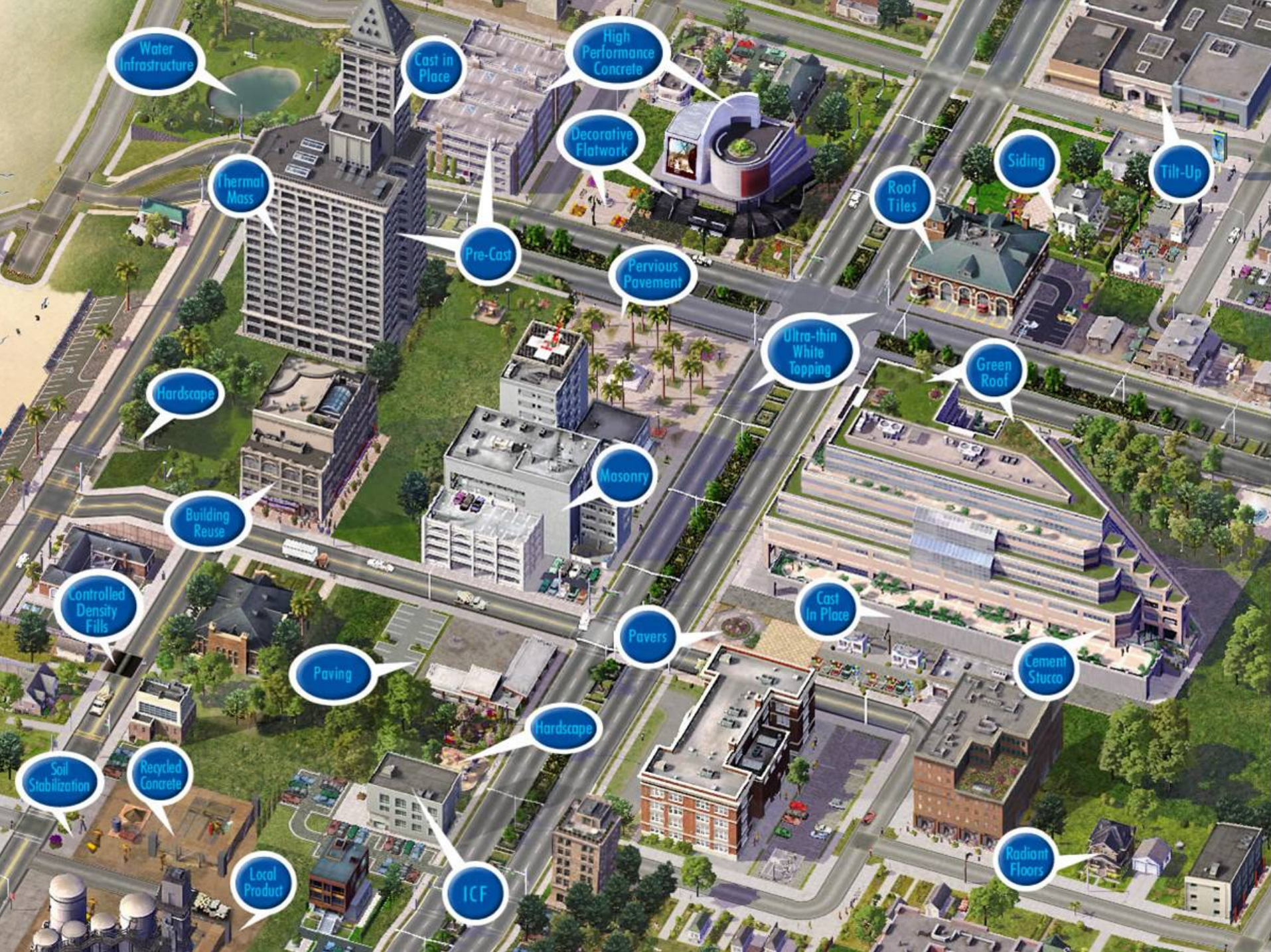
This site was developed by the Portland Cement Association to demonstrate how concrete can be used to achieve **green building objectives**.

Explore the site. Get inspired. **Share your ideas**. Be a Concrete Thinker.

BUILD YOUR LEGACY WITH CONCRETE

Meet architect Doug Farr, AIA, a champion of green building and urban planning who is creating his legacy by thinking concrete.

[Thinkers >](#)



Water Infrastructure

Thermal Mass

Cast in Place

High Performance Concrete

Decorative Flatwork

Pre-Cast

Pervious Pavement

Roof Tiles

Siding

Tilt-Up

Hardscape

Masonry

Ultra-thin White Topping

Green Roof

Building Reuse

Controlled Density Fills

Paving

Pavers

Cast in Place

Cement Stucco

Soil Stabilization

Recycled Concrete

Hardscape

ICF

Local Product

Radiant Floors

www.concretethinker.com

PCA's sustainable development website offers:

- **19 green building solutions using cement**
- **18 cement based applications**
- **38 Case studies**
- **8 Green building specifications**
- **Energy models**
- **Hundreds of links to publications, research, allied web sites**

What's Next

Current trend is to:

Do less harm.

(example – operation emits 30% less waste than before)

Visionaries are touting:

Do no harm

(example- operation emits no waste)

or

Restorative systems

(operation uses waste as raw feed or fuel for next round of production and generates only usable by-products)



Concrete Thinking

for a sustainable world

Thank you