

Heat Island Effect, Low-E Glazing and Sunshades

USF Initiative

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on micro climate and human, vegetative and wildlife habitat.

Design Approach

To reduce the heat island effect at ISA, the roof was designed to incorporate materials and techniques that prevent the accumulation of heat. The low sloping roof of the building uses roofing material with an SRI value of 91 for 97% of the total project roof area.

Did you know?

The heat island effect leads to impaired water quality. Hot pavement and rooftop surfaces transfer their excess heat to stormwater, which then drains into storm sewers and raises water temperatures as it is released into streams, rivers, ponds, and lakes. Rapid temperature changes can be stressful to aquatic ecosystems.

http://www.epa.gov/heat_island/about/index.htm



LEED certification provides independent, third-party verification that a building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988>

A Guide to Sustainable Design at the Interdisciplinary Science Teaching & Research Facility



USF UNIVERSITY OF
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Interdisciplinary Science
Teaching & Research Facility

University of South Florida
4202 East Fowler Avenue | ISA 2015 | Tampa | FL 33620

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Building Materials

Design Approach

ISA was constructed from a variety of sustainable resources in order to reduce its impact on the environment. Examples include the solid surface counter tops which are comprised of 34% post-industrial scrap and the acoustical ceiling tiles which contain 69% pre-consumer recycled content.



Alternative Transportation

Design Approach

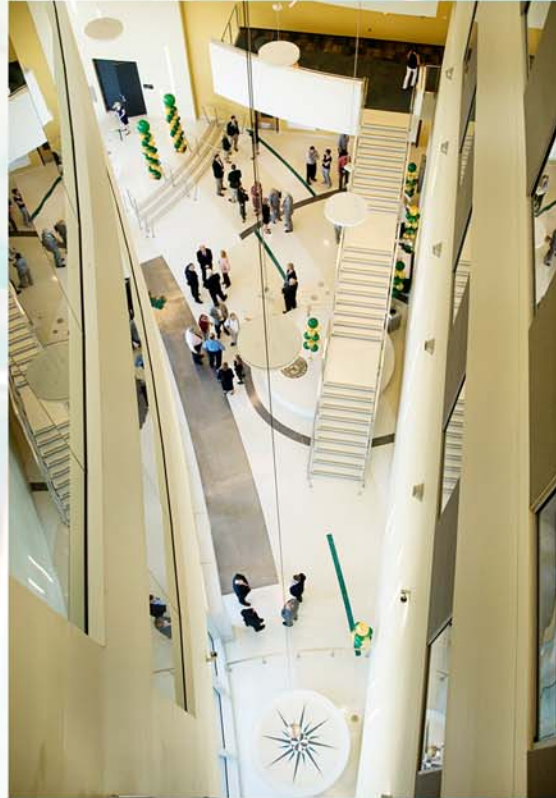
ISA employs several measures to encourage building users to utilize alternative transportation. These include locating the building within 1/4 of a mile to three bus lines, and providing twenty secure spaces for bicycle storage and one shower/changing room. The value of these measures is reduced on-site vehicular traffic, resulting in fewer CO2 emissions and a smaller carbon footprint left on the planet.



Quality of Space: Indoor Air Quality and Natural Light

Design Approach

The design of ISA took careful consideration of sustainable building practices that would ensure the highest standards of indoor air quality for the building occupants. The building contains a multitude of open plan areas that provide natural light and views of the outdoors, and uses a variety of low Volatile Organic Compounds (VOCs) emitting materials to minimize off-gassing.



Site, Landscaping and Construction Activity

Design Approach

The planting design for the project utilized a pallet of native and drought tolerant material comprised of native grasses, woody shrubs and ground cover. The landscape is being maintained to encourage the establishment of a native plant community indigenous to the area. Irrigation from wells is being used only until the landscape has become established.



Energy

Design Approach

Through the use of high-performance glazing constructions, reduced interior lighting, occupancy sensors, high efficiency VAV equipment, energy recovery units, such as the enthalpy wheels as shown above, ISA achieved it's efficient design.

Did you Know?

The combined number of commercial buildings (4.8 million) and industrial facilities (350,000) in the United States is over 5 million. The amount of money that would be saved if the energy efficiency of commercial and industrial buildings improved by 10 percent would be \$20 billion.

[http://www.energystar.gov/ia/business/challenge/learn more/FastFacts.pdf](http://www.energystar.gov/ia/business/challenge/learn%20more/FastFacts.pdf)

