# **USGBC Illinois Chapter Chicago South Suburban Branch**

**Trend Setting GREEN Denny's Restaurant** Joliet Illinois

USGBC is U.S. GREEN BUILDINGS COUNCIL LEED = Leadership in Energy and Environmental Design and is the USGBC Standard for Green Buildings in the United States

### USGBC Chicago South Suburban Branch Denny's "Green" Restaurant 2531 Plainfield Road (On historic US route 30) Joliet Illinois

We used LEED in every phase of construction including the use of recycled materials and recycling of all of our waste materials.

Design incorporated many water & energy conservation innovations including; energy efficient appliances and equipment that you can see here at the NAFEM Show.

### USGBC Chicago South Suburban Branch Denny's Restaurant Joliet Illinois

Building is 4071 sq ft end cap, uses energy efficient walls (R-30 insulation) and roofing (R-60) with a Super Reflective White Roofing & High Efficiency HVAC

#### Our goal is to obtain a Gold Rating from USGBC

Incorporated were many energy and water conservation appliances with an Energy Star Seal, look for them here at the show.

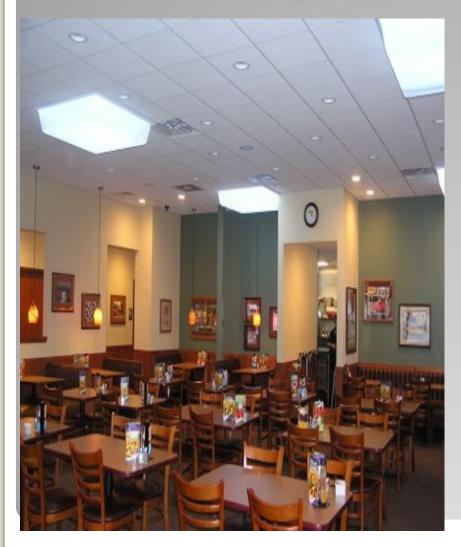
- Construction used 94% Recycled Steel, Drywall, Ceramic and Quarry Tile,
- Recycled wood paneling for wall area
- Glazing with Low E Glass,
- Skylights to enhance natural lighting
- In first 12 month alone Utility Expenses were \$20,000 less than a similar restaurant
- Water conservation and a rainwater retention pond qualified the project for a 'municipal grant' from City of Joliet, as water and sewer usage was reduced by 30% and reduced our Permits & Fees by \$40,000.
- Combined our (ROI) is less than 3 years.



## Denny's Restaurant

Joliet Illinois

Extensive use of natural daylight using Skylights and Low-E Glazing conserves energy. Notice, most of the LED's lights are off.



### Denny's Restaurant Joliet Illinois

Extensive use of natural daylight using Skylights manufactured by an Amish company located in Illinois.



## Denny's Restaurant

Joliet Illinois

Extensive use of high efficiency LED & CFL Fixtures & Daylight Harvesting System helps the LED lighting save 83% of the lighting costs. (LED = Light Emitting Diode,

LED = Light Emitting Diode, a 'solid-state' semiconductor device)



#### Denny's Restaurant Joliet Illinois

Implementation of highly efficiency "Instant-On" Water Heater replaces a conventional 100 gallon water heater as this system only heats 17 gallons of water on demand and not 100 gallons



### **Denny's Restaurant** Joliet Illinois

Design included storage devices (shown here) for dry goods and perishables. these shelves are movable with the touch of a finger and helped us save 400 square feet in building design.



## Denny's Restaurant Joliet Illinois

Implementation of 'super-insulated' R-60 roof with reflective white coating is a Great \$ saver!



Denny's Restaurant Joliet Illinois

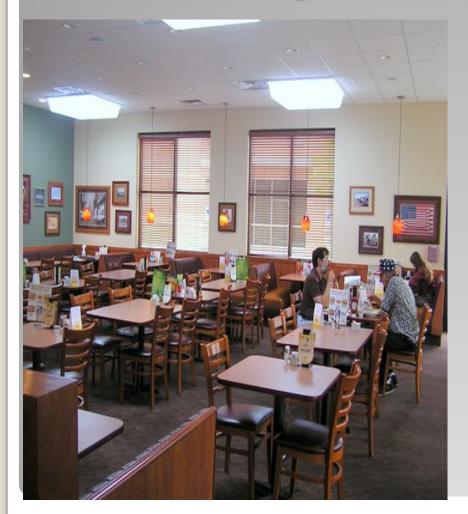
Extensive use of Skylights and high efficiency HVAC units and cooking hoods reduces use of AC. System also uses air to air ventilation economizer and 'Auto-setback' exhaust fans in grill area.



### **Denny's Restaurant** Joliet Illinois

A high efficiency air conditioner and ice-maker units and the Skylights are shown.

Note, the reflective white roof reduces the roof temperature by 63% as on an 80 degree day a black roof is 128 degrees a white roof is 80 degrees



Denny's Restaurant Joliet Illinois

Extensive use of natural daylight using skylights. Walls were painted with low VOC paints. Carpet is a rapidly renewable resource - Wool



#### Denny's Restaurant Joliet Illinois

High tech need not be sterile looking. LED lighting enhances the art work and the ambiance of the restaurant .



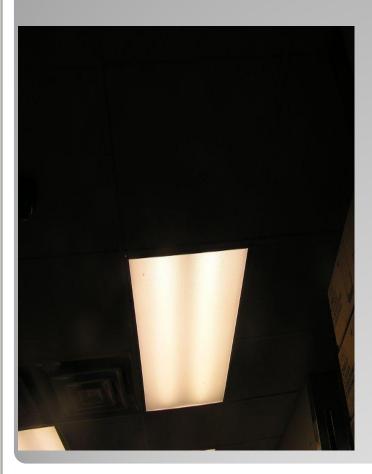
#### *Denny's Restaurant* Joliet Illinois

Site planning also included a storm water retention pond and xeroscape landscaping. We explored using solar panels and wind energy on the site.



Denny's "Green "Restaurant Joliet Illinois

The Skylights under Construction. Each skylight is 4X4x9 & has 4 mirrors that are 9 feet by 4 feet wide. Notice the ducts are sealed to keep dust from seeping into the vents and fouling the air during construction.



*Denny's "Green' Restaurant* 

Joliet Illinois

Part of Daylight Harvesting System for the back of house where outside light is at a minimum. Each light has a sensor that determines how bright the lights shine reducing light to 40% or increasing it to 100%.



Denny's "Green "Restaurant Joliet Illinois

Ice machine gets ice from the bottom making sure that the ice in the bin is always fresh. We have the compressor on the roof to keep the heat out of the kitchen and it is highly energy efficient



### **Denny's "Green "Restaurant**

Joliet Illinois

The Prerinse sprayer uses Pressure to remove food particles rather than more water to reduce the use of water. The dish room is the Restaurants best opportunity to conserve water.



**Denny's "Green" Restaurant** Joliet Illinois

This dishwasher uses the last rinse as the 1<sup>st</sup> wash conserving a great deal of water. Most Restaurants uses 1.3 million gallons of water a year. We reduced our water usage by 300,000 gal/year through smart planning and our conservation efforts.



## Denny's "Green "Restaurant

Joliet Illinois

Every day more & more Restaurant equipment is getting the <u>Energy Star Seal</u>, if you want to conserve look for the seal when you buy your equipment, this will be a good 1<sup>st</sup> step to building your Green Restaurant.



Denny's "Green" Restaurant Joliet Illinois

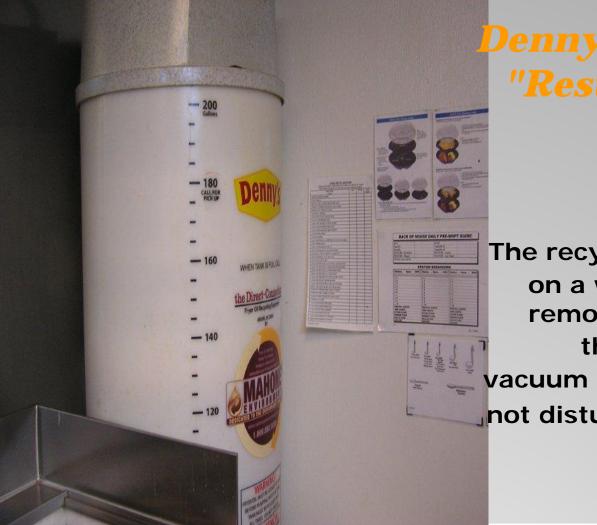
Our kitchen hood has a step back Hood; it reduces the output of air when the business slows down. In a Denny's you are not as busy at 2 AM Sunday as you are at 10AM, you don't work as hard and your equipment should not have to either. The system automatically steps it back and conserves energy.



### Denny's "Green "Restaurant

#### Joliet Illinois

When completing a busy shift our fryer system is hooked up directly to the recycle bin and the cooks pump the hot used oil into the bin and never have to touch hot oil. Saves cooks from getting injured with hot oil. And recycles our fryer oil as Bio-diesel fuel and animal feed, For which we get paid by the recycling vendor.



Denny's "Green "Restaurant Joliet Illinois

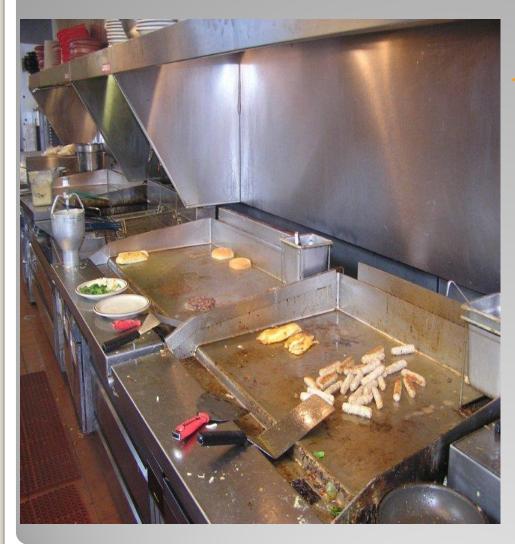
The recycling vendor comes on a weekly basis and removes the oil through the wall with a vacuum hose hookup at 3AM not disturbing our business.



## Denny's "Green "Restaurant

Joliet Illinois

There are alternatives to recycling such as using the used oil to generate electric using a diesel engine to power the system and the oil to fuel the engine. We checked into it but were not able to do it as we did not have space in our restaurant.



**Denny's "Green** "**Restaurant** Joliet Illinois

Even under the hood we installed 13 Watt CFL lights, replacing 100 watt bulbs and sharply reducing our energy consumption. We used CFL as the heat under the hood precluded LED's as we used throughout the restaurant.



Denny's "Green "Restaurant Joliet Illinois

We had our vendor install a Plate rack as part of our hood system, conserving valued space in the kitchen. It made the cooks job easier.



**Denny's "Green " Restaurant** Joliet Illinois

Water dripping a 8 ounces per minute will drip 4 gallons per hour, 100 gallons per day or 36500 gallons per year. In the Mid-west at \$7 per 1000 gallons that is \$256 per year per dripping faucet. Consider using tamper proof aerators to reduce the cost of dripping water.

USGBC Chicago South Suburban Branch



**Denny's "Green" Restaurant** Joliet Illinois

Tamper proof aerators cost a little more but during a six week period we installed regular aerators on all faucets and found that 1/3 of them were missing.



**Denny's "Green "Restaurant** Joliet Illinois

Still looking for a good idea to build a better mousetrap, most Restaurants have 5 or more dipper wells in the facility, each runs about 1 to 3 gallons of water per minute, in a large restaurant that can be .5 to 1.5 million gallons per year.



**Denny's "Green "Restaurant** Joliet Illinois

Looking for a challenge, replacing dipper wells be great invention? Millions of gallons of water go down the drain, in every restaurant, Dipper-wells are a needed and vital tool in the kitchen from a health and sanitation standpoint. In the Great Lakes area 1 million gallons of water is \$7000 per



**Denny's "Green "Restaurant** Joliet Illinois

Microwave are a blessing to a restaurant as they not only save time, but they conserve utilities. one or more in a kitchen improves everything.



### **Denny's "Green** "**Restaurant** Joliet Illinois

Compare the Skylights light to the Daylight Harvesting System next too it. Note the different Levels of light are are adjusted by the system. Also, note the LED lights are off they will come on after the sun goes down,



**Denny's "Green "Restaurant** Joliet Illinois

Skylight in dining room. Sensors control the LED and determine what lights are needed. Most of the LED's are off. The LED's use 13 watts compared to most dining room ceiling lights that use 70 to 150 Watts



Denny's "Green" Restaurant Joliet Illinois

Low E glass helps to keep the restaurant at a comfortable temp, while the Skylights and the high ceilings help to reduce utility costs.



*Denny's "Green" Restaurant* Joliet Illinois

Blinds also assist with the west facing building protecting it from the heat and glare of the midday sun.



### Denny's "Green" Restaurant

Joliet Illinois Typical of the midday sun with the Skylights. The lighting of CFL pendant lights are used for ambiance.

A lot of what we have done with our EQUIPMENT, lighting and our conservation efforts can be done in any building.



**Denny's "Green "Restaurant** Joliet Illinois

One very important part of the LEED Certification is teaching others to do what you have done. Teaching them how easy it is to conserve, which we do with signs, posters, articles and tours.

#### Daylight Harvesting

People benefit in many ways from natural sunlight. Our six skylights & south-facing windows were strategically placed in order to take advantage of light harvesting in effort to improve the well being of our guests & employees. The Amish community in Arthur, IL made our skylights using no electricity. Jenny's "Green "Restaurant Joliet Illinois

LEED = Leadership thru Energy and Environmental Design. Is part of the USGBC Standard for a Green Building.



### Denny's "Green" Restaurant Joliet Illinois

### ANY QUESTIONS?