



# **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.**

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## ***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.

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- 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.

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## *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.

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## *Denny's Restaurant*

Joliet Illinois

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

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## *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, a 'solid-state' semiconductor device)



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## *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

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## *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.**

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## *Denny's Restaurant*

Joliet Illinois

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

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## *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.**

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## *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**

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## *Denny's Restaurant*

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

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## *Denny's Restaurant*

Joliet Illinois

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

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## *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.**

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## *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.**

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## *Denny's "Green" Restaurant*

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**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%.**



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## *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**

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## *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.**



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## *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.

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## *Denny's "Green "Restaurant*

Joliet Illinois

Every day more & more Restaurant equipment is getting the Energy Star Seal, 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.

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## *Denny's "Green" Restaurant*

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**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.**

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## *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.**

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

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**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.**

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

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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.



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## *Denny's "Green "Restaurant*

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**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.**

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## *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.**

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## *Denny's "Green" Restaurant*

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**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.**

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## *Denny's "Green "Restaurant*

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**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.**

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## *Denny's "Green "Restaurant*

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**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  
year.**

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## *Denny's "Green "Restaurant*

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**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***

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**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,**

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## *Denny's "Green "Restaurant*

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**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**

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

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

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*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.

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## *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.*

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## *Denny's "Green "Restaurant*

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**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.**

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## *Denny's "Green "Restaurant*

Joliet Illinois

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

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ANY QUESTIONS?