Ford Motor Company Engineering Design Center achieves "green" status

Photo by Neil Alexander/Neilphoto.com, courtesy of Davis Brody Bond.

THE NEW FORD MOTOR COMPANY ENGINEERING DESIGN CENTER recently received silver-level certification from the Leadership in Energy and Environmental Design (LEED) Green Building Rating System®. The building is the first at Northwestern specifically built to obtain certification in environmental sustainability, and Northwestern has adopted a policy targeting LEED certification for all future buildings.

Just south of the Technological Institute, the six-story, 84,000-square-foot building is the focal point for McCormick's initiatives in design education — including the Engineering Design and Communication (EDC) program for first-year undergraduates.

To keep energy costs down, the building's design provides natural daylight to more than 75 percent of the interior spaces, even though two of the six floors are below ground. In addition, an automated solar tracking system closes window shades in the face of direct sunlight and opens shades in areas facing away from the sun. An innovative raised-floor system provides more precise temperature control for the building's occupants, resulting in more efficient heating and cooling of interior spaces.

Many of the materials used to construct the building — such as steel, glass, concrete, carpeting, and ceiling-tile materials — have recycled content. Additionally, the building's design incorporates effective collection, storage, and management of recyclable materials.

The building's exterior features a number of measures that minimize its impact on the surrounding environment:

- A light-reflective roof reduces the "heat island" effect of the building on the site.
- Exterior lighting illuminates the ground but not the surrounding sky, reducing urban light pollution near the University's historic Dearborn Observatory.
- A specially integrated retention basin, located beneath the building, captures groundwater that is used to irrigate the surrounding landscape and the historic Shakespeare Garden to the east. Any excess is returned directly to groundwater rather than to the city sewer system.

The University engaged a team of experts in environmentally sustainable building design from the Rocky Mountain Institute in Snowmass, Colorado, to review design constraints and recommend ways to achieve certification from LEED, part of the U.S. Green Building Council. In addition, the building committee worked closely with the Garden Club of Evanston, whose members are the caretakers of the Shakespeare Garden.

In addition to EDC, the McCormick programs now housed in the center include the Institute for Design Engineering and Applications, the Walter P. Murphy Cooperative Engineering Education Program, a portion of the electrical engineering and computer science department, the civil and environmental engineering department's Infrastructure Technology Institute, and three professional master's degree programs: the Computational Biology and Bioinformatics Program, the Master of Product Development Program, and the Master of Management and Manufacturing Program. (The latter is run jointly by McCormick and the J. L. Kellogg School of Management.)

Ford Motor Company donated $10 million toward the new building. Other corporate donors include ITW, Deere & Company, 3M, and Steelcase. The building was designed by the architectural firm of Davis Brody Bond of New York, and Turner Construction Company was the general contractor.

LEED-NC Version 2.1 Registered Project Checklist

Northwestern University Ford Motor Company Engineering Design Center

Yes	?	No			
8		**6**	**Sustainable Sites**		**14** Points
Y			Prereq 1	**Erosion & Sedimentation Control**	Required
1			Credit 1	**Site Selection**	1
1			Credit 2	**Development Density**	1
		1	Credit 3	**Brownfield Redevelopment**	1
1			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
		1	Credit 4.3	**Alternative Transportation**, Alternative Fuel Vehicles	1
		1	Credit 4.4	**Alternative Transportation**, Parking Capacity and Carpooling	1
1			Credit 5.1	**Reduced Site Disturbance**, Protect or Restore Open Space	1
		1	Credit 5.2	**Reduced Site Disturbance**, Development Footprint	1
1			Credit 6.1	**Stormwater Management**, Rate and Quantity	1
1			Credit 6.2	**Stormwater Management**, Treatment	1
		1	Credit 7.1	**Landscape & Exterior Design to Reduce Heat Islands**, Non-Roof	1
1			Credit 7.2	**Landscape & Exterior Design to Reduce Heat Islands**, Roof	1
		1	Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
4		**1**	**Water Efficiency**		**5** Points
1			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
1			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
		1	Credit 2	**Innovative Wastewater Technologies**	1
1			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
1			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

Yes	?	No			
6		**11**	**Energy & Atmosphere**		**17** Points
Y			Prereq 1	**Fundamental Building Systems Commissioning**	Required
Y			Prereq 2	**Minimum Energy Performance**	Required
Y			Prereq 3	**CFC Reduction in HVAC&R Equipment**	Required
3		7	Credit 1	**Optimize Energy Performance**	1 to 10
		1	Credit 2.1	**Renewable Energy**, 5%	1
		1	Credit 2.2	**Renewable Energy**, 10%	1
		1	Credit 2.3	**Renewable Energy**, 20%	1
1			Credit 3	**Additional Commissioning**	1
1			Credit 4	**Ozone Depletion**	1
1			Credit 5	**Measurement & Verification**	1
		1	Credit 6	**Green Power**	1

continued…

Yes	?	No			
5		8	**Materials & Resources**		**13** Points
Y			Prereq 1	**Storage & Collection of Recyclables**	Required
		1	Credit 1.1	**Building Reuse**, Maintain 75% of Existing Shell	1
		1	Credit 1.2	**Building Reuse**, Maintain 100% of Shell	1
		1	Credit 1.3	**Building Reuse**, Maintain 100% Shell & 50% Non-Shell	1
1			Credit 2.1	**Construction Waste Management**, Divert 50%	1
1			Credit 2.2	**Construction Waste Management**, Divert 75%	1
		1	Credit 3.1	**Resource Reuse**, Specify 5%	1
		1	Credit 3.2	**Resource Reuse**, Specify 10%	1
1			Credit 4.1	**Recycled Content**, Specify 5% (post-consumer + ½ post-industrial)	1
		1	Credit 4.2	**Recycled Content**, Specify 10% (post-consumer + ½ post-industrial)	1
1			Credit 5.1	**Local/Regional Materials**, 20% Manufactured Locally	1
1			Credit 5.2	**Local/Regional Materials**, of 20% Above, 50% Harvested Locally	1
		1	Credit 6	**Rapidly Renewable Materials**	1
		1	Credit 7	**Certified Wood**	1

Yes	?	No			
8		7	**Indoor Environmental Quality**		**15** Points
Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
		1	Credit 1	**Carbon Dioxide** (CO_2) **Monitoring**	1
1			Credit 2	**Ventilation Effectiveness**	1
		1	Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
		1	Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
		1	Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
1			Credit 4.2	**Low-Emitting Materials**, Paints	1
1			Credit 4.3	**Low-Emitting Materials**, Carpet	1
		1	Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber	1
1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
		1	Credit 6.1	**Controllability of Systems**, Perimeter	1
1			Credit 6.2	**Controllability of Systems**, Non-Perimeter	1
1			Credit 7.1	**Thermal Comfort**, Comply with ASHRAE 55-1992	1
1			Credit 7.2	**Thermal Comfort**, Permanent Monitoring System	1
1			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
		1	Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1

Yes	?	No			
2		3	**Innovation & Design Process**		**5** Points
1			Credit 1.1	**Innovation in Design**: Education	1
		1	Credit 1.2	**Innovation in Design**:	1
		1	Credit 1.3	**Innovation in Design**:	1
		1	Credit 1.4	**Innovation in Design**:	1
1			Credit 2	**LEED™ Accredited Professional**	1

Yes	?	No		
33		36	**Project Totals** (pre-certification estimates)	**69** Points

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-69 points