THE FORD RIVER ROUGE PLANT

An icon of sustainable manufacturing?

HISTORY

-Dearborn, Michigan
-Historic symbol of Henry Ford's legacy
-Set stage for mass production of automobiles

-Industrial pollution
-Decline in production

-1960s: Remnants of an industrial artifact

Aerial View of the Ford Rouge Complex in Dearborn (1947)

Photo: Detroit News

REVITALIZATION PLAN

-William Clay Ford, Jr.
-$2 billion venture
-inspired by meeting with William McDonough
- “to become an icon of sustainable manufacturing for the 21st century”...
-completed in 2004
-LEED gold certified by USGBC

SUSTAINABLE SITES CRITERIA

BROWNFIELD REMEDIATION

-Phytoremediation test bed
-Constructed Wetland of native plants
-Cost-effective and have multiple benefits
-Release of honey bees

Ford Rouge center with native plants in the fore ground

Phytoremediation garden

Photo Sources:
http://www.aiami.com/green/projects/Ford_Rouge_Ctr/images/wt_400_intro.jpg
http://www.umd.umich.edu/casl/natsci/faculty/thomas/040924_phytoremediation2.jpg

SUSTAINABLE SITES

STORMWATER MANAGEMENT

-swales, wetlands, green roof
-porous pavements
-filtering rock bed
-retention ponds
-reuse, cleanse, discharge
-Emulates natural watershed services

10.4 Acres of green roof

Source: Ford Motor Company

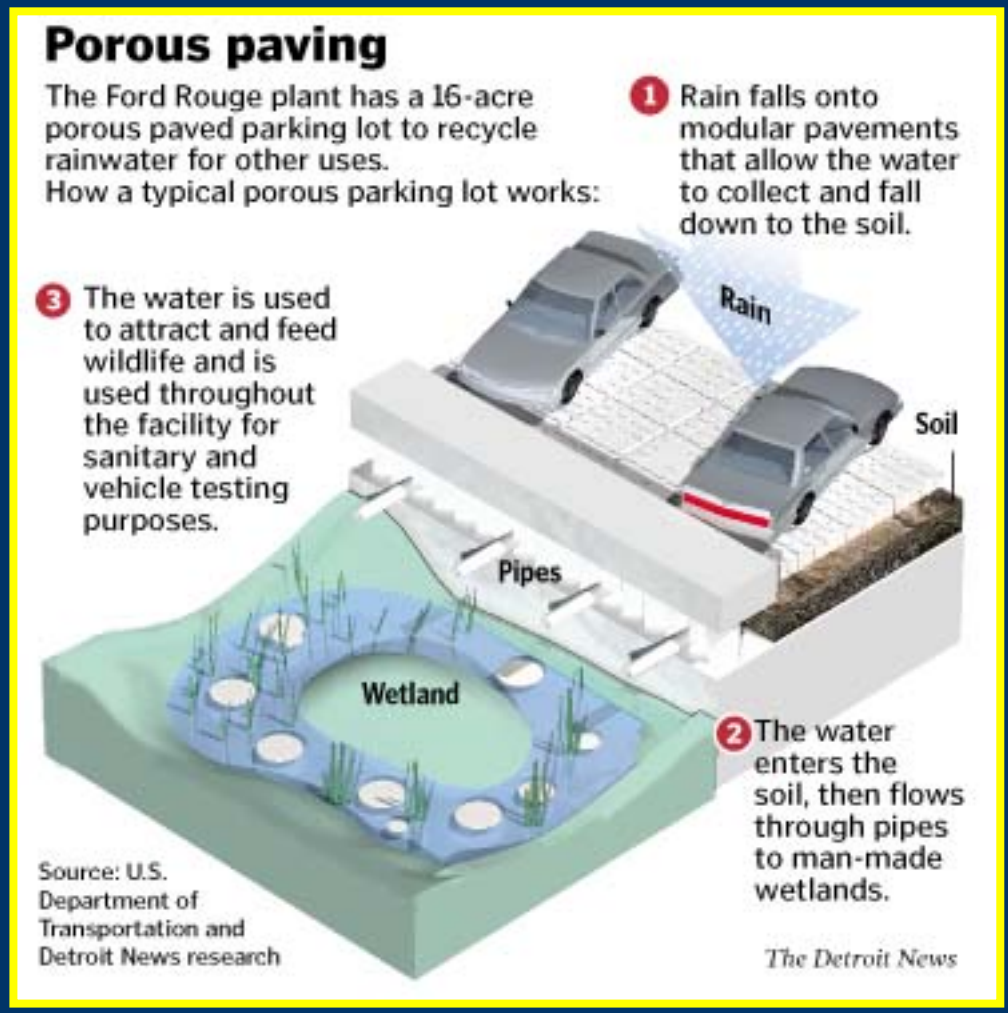
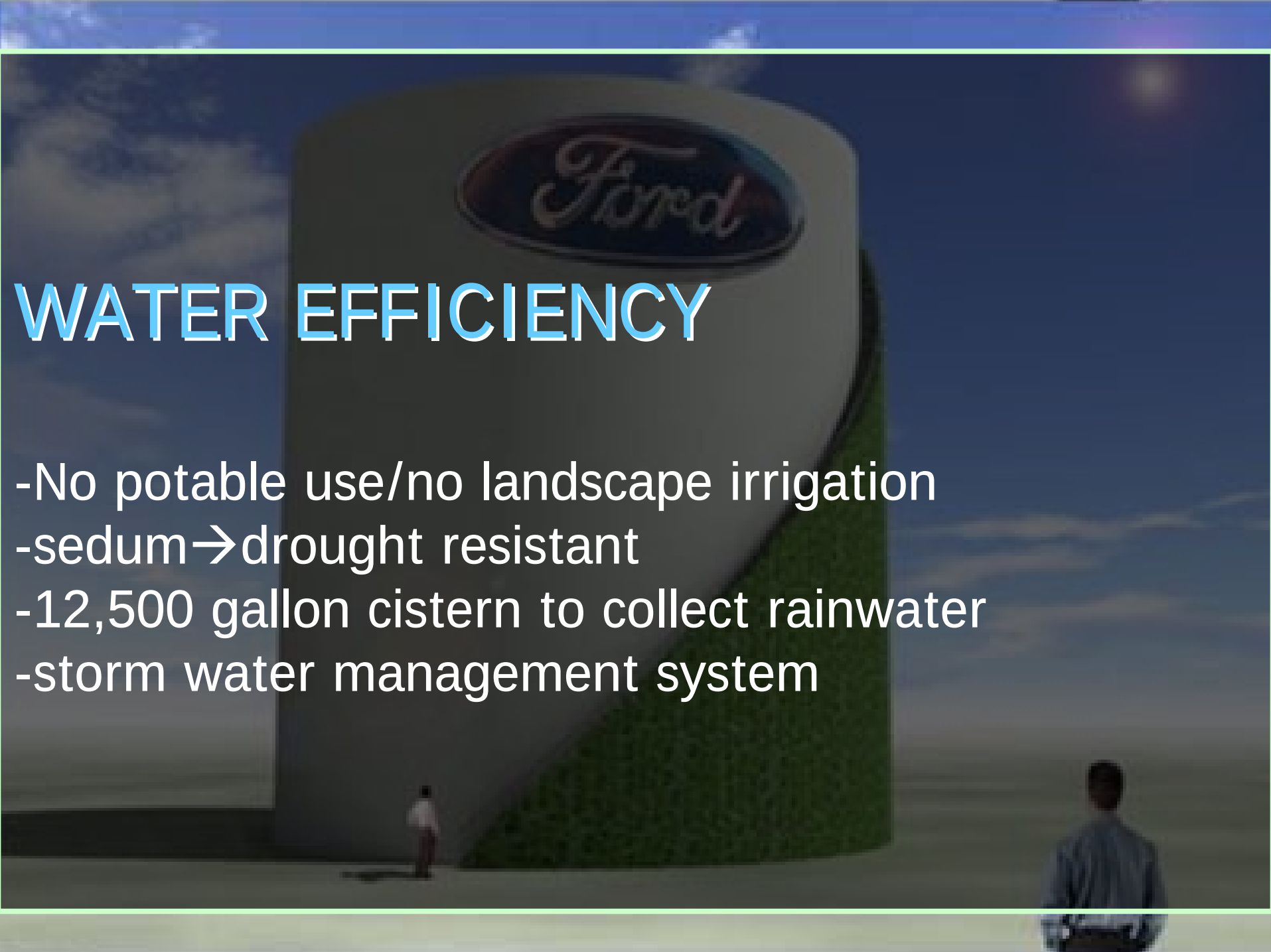


Illustration of integrated storm water management system using porous paving

Source: The Detroit News



WATER EFFICIENCY

-No potable use/no landscape irrigation
-sedum→drought resistant
-12,500 gallon cistern to collect rainwater
-storm water management system

ENERGY AND ATMOSPHERE

GREEN ROOF

-10.4 acres, world's largest
-Drought-resistant sedum
-10 degrees cooler in summer
-reduced weight and cost
-high durability

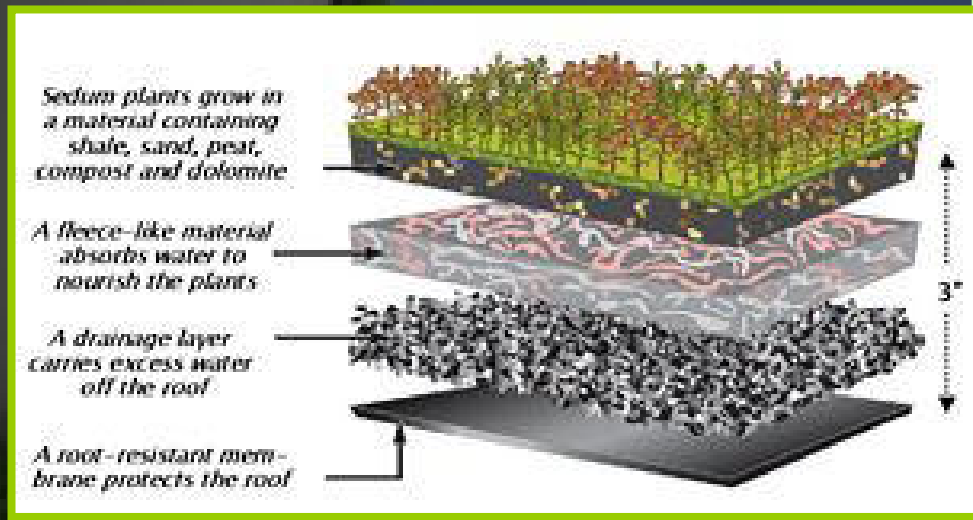


Diagram of green roof and its layers

Source: AIA Michigan

ENERGY AND ATMOSPHERE

ENERGY REDUCTION & ALTERNATIVE SOURCES

-combined chiller and chiller storage
-natural day-lighting
-HVAC units that cool/heat air efficiently
-photovoltaic array above main entrance of Visitor's Center
-alternative sources at a superficial level (no LEED points awarded)

Ford Rouge Plant’s day-lighting window boxes that look out to the green roof

Source: AIA Michigan

ENERGY AND ATMOSPHERE

FUMES TO FUEL SYSTEM

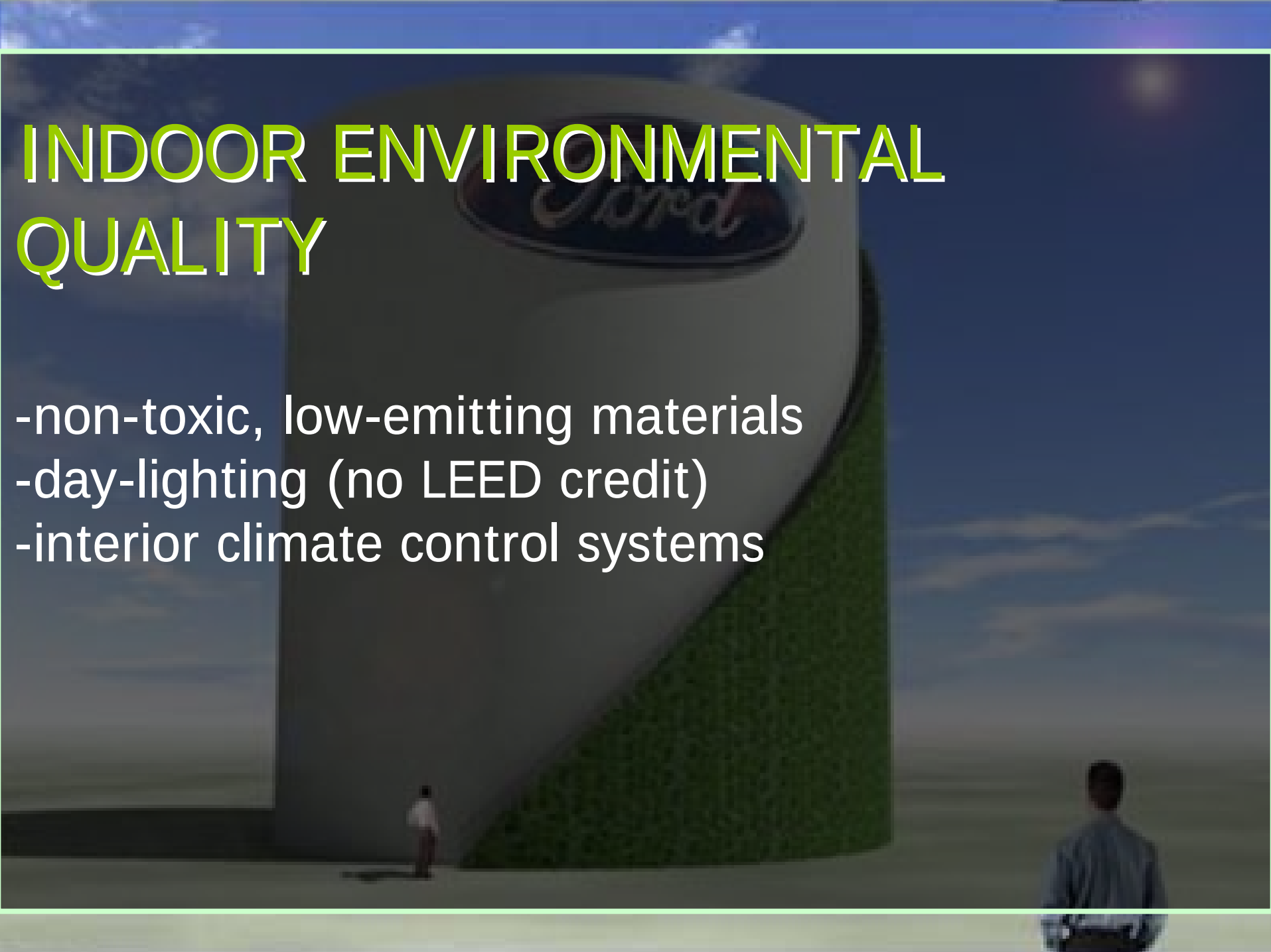
-innovative pilot test
-concentrate paint fumes
-VOCs converted to hydrogen fuel for fuel cells
-produce 5 KW of electricity
-2003 Clean Air Excellence Award (USEPA)

MATERIALS AND RESOURCES

-demolition debris recycled in crushing operation
-sub base under new plant floors

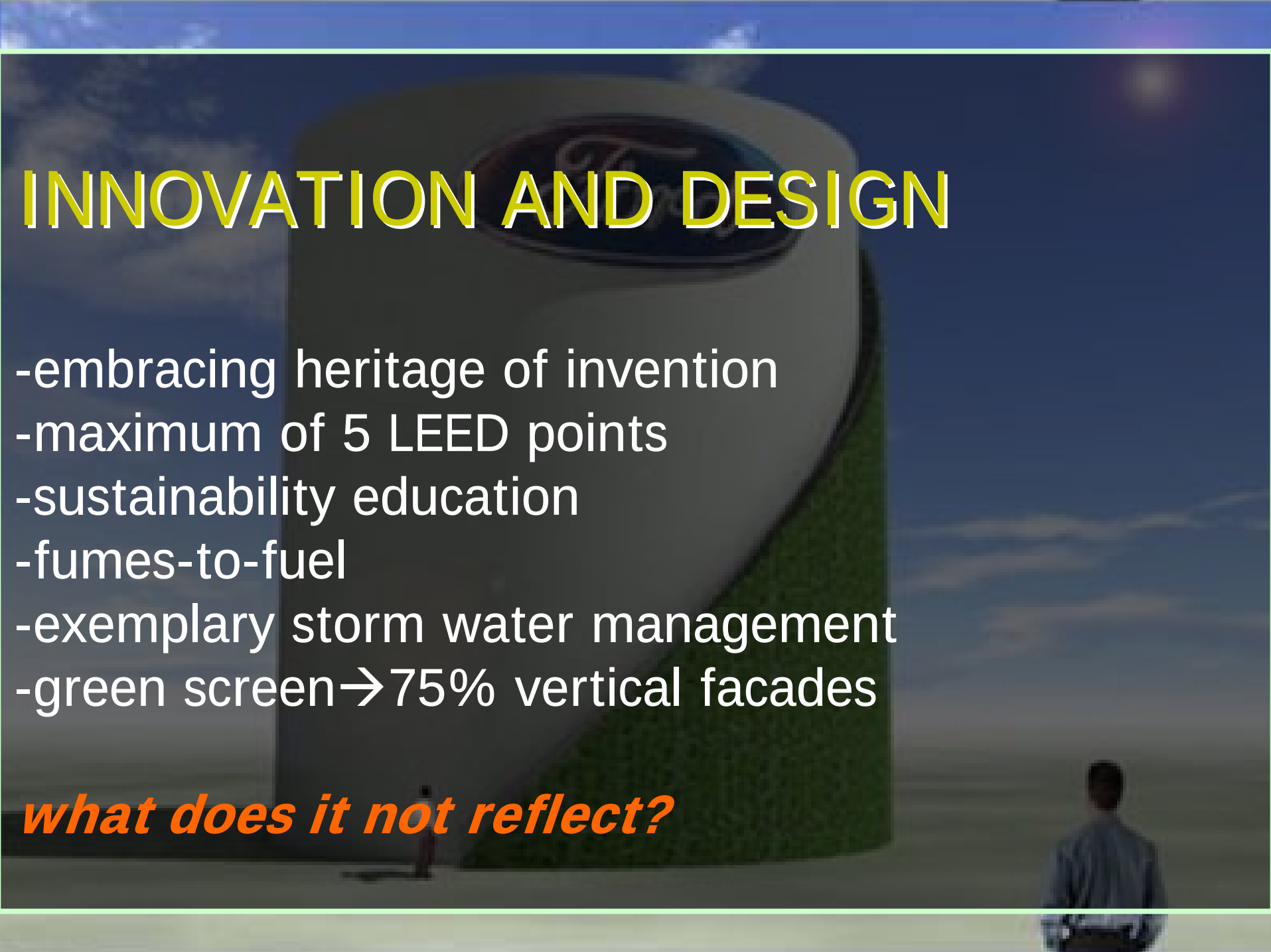
”all project stakeholders were assembled and given clear choices, with the aid of data and samples, regarding the use of sustainable vs conventional material selections...”

-recycled content of >50%
-Adaptive reuse



INDOOR ENVIRONMENTAL QUALITY

-non-toxic, low-emitting materials
-day-lighting (no LEED credit)
-interior climate control systems



INNOVATION AND DESIGN

-embracing heritage of invention
-maximum of 5 LEED points
-sustainability education
-fumes-to-fuel
-exemplary storm water management
-green screen→75% vertical facades

what does it not reflect?

THE LEED RATING SYSTEM

QUANTITATIVE, NOT QUALITATIVE

(+)

1. objectivity
2. filters insignificant, “aesthetic” features like solar photovoltaic array

(-)

understates experimental features (phytoremediation)

THE LEED RATING SYSTEM

BEYOND DESIGN

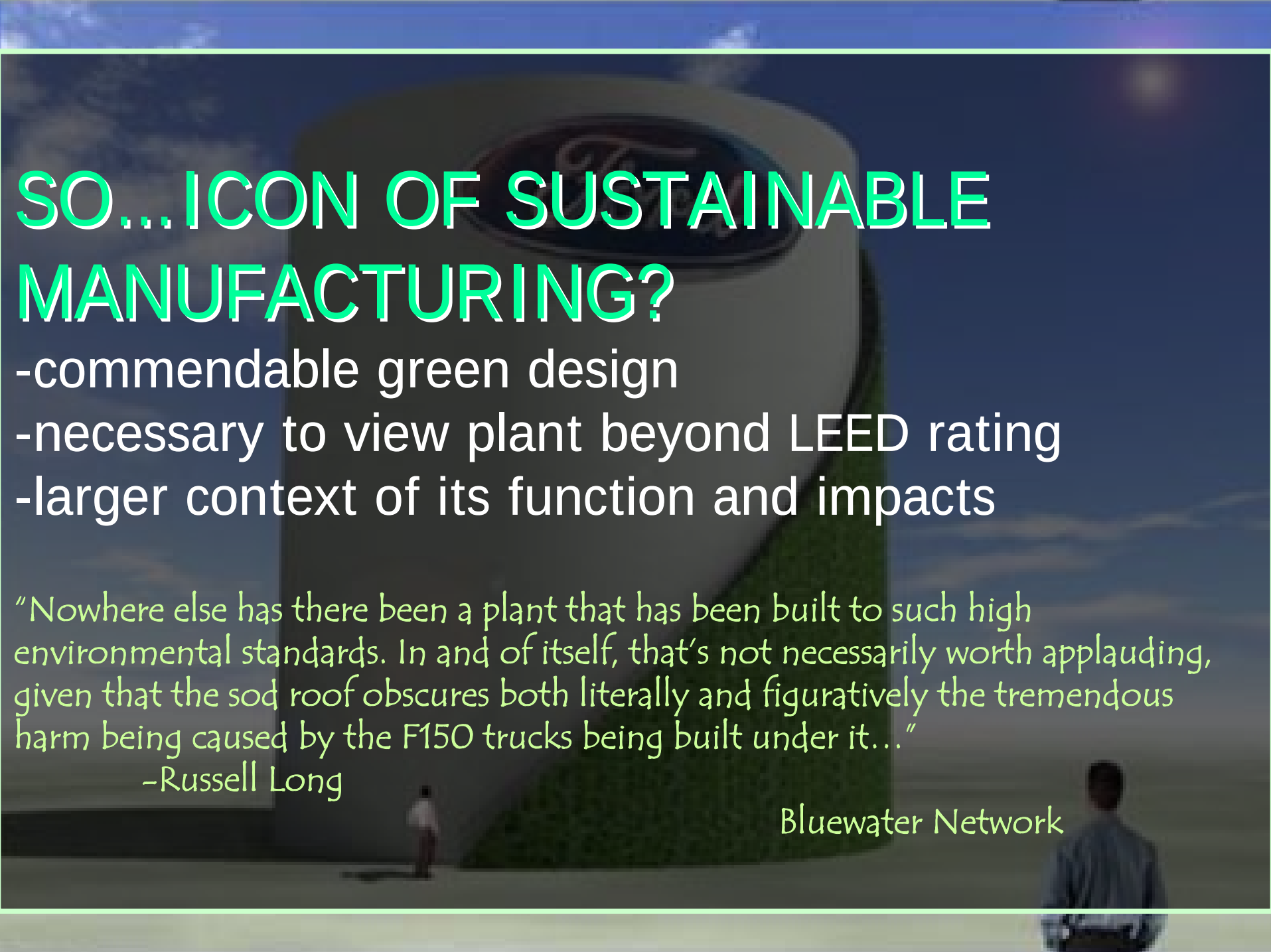
-does not assess performance

-disconnects point system from true environmental benefits

-not context-specific

Eg.

- financial feasibility of storm water system
- Rouge river ecosystem health



SO…ICON OF SUSTAINABLE MANUFACTURING?

-commendable green design

-necessary to view plant beyond LEED rating

-larger context of its function and impacts

"Nowhere else has there been a plant that has been built to such high environmental standards. In and of itself, that's not necessarily worth applauding, given that the sod roof obscures both literally and figuratively the tremendous harm being caused by the F150 trucks being built under it…"

-Russell Long

Bluewater Network

References

AIA Michigan website. Retrieved on Oct 12, 2006 from http://www.aiami.com/green/projects/Ford_Rouge_Ctr/rouge_intro.htm

Baulch, V. and Zacharias, P. *The Rouge Plant—the Art of Industry.*The Detroit News. Retrieved on Oct 12, 2006 from http://info.detnews.com/history/story/index.cfm?id=189&category=business

Ford Rouge Visitor Center, LEED Project #0424. June 2003. U.S. Green Building Council.

Ford Motor Company website. *Introducing our Greenest Automotive Factory*. Retrieved on Oct 11. 2006 from http://www.fordvehicles.com/environmental/greenerplant/

Hammonds, D. Nov 2004. *Greener, Literally: Ford's Better Ideas for Newest Plant include Grass-covered roof, pollution eating plants.* Pittsburg Post-Gazette. Retrieved on Oct 11, 2006 from http://www.post-gazette.com/pg/04317/410625.stm

Lydersen, K. July 2004. *Ford gets an 'F' for Fuel Efficiency.* AlterNet. Retrieved on Oct 11, 2006 from http://www.alternet.org/envirohealth/19148/

King, R.J. and Mayne, E. April 2004. *Ford's Rouge Reborn.* The Detroit News. Retrieved on Oct 11, 2006 from http://detnews.com/2004/project/0405/04/d01-137306.htm

Kirsner, S. Oct 2004. *Ford's Theme Park.* CMO Magazine. Retrieved on Oct 12, 2006 from http://www.cmoresource.com/read/100104/ford.html

McCosh, D. April 2004. *Driving; History Bows at a Ford Plant.* The New York Times. Retrieved on Oct 12, 2006 from http://query.nytimes.com/gst/fullpage.html?sec=travel&res=9A00E1DB153BF935A25757C0A9629C8B63

Sneary, D. Artist's depiction of the Ford Rouge Plant. Retrieved on Oct 15, 2006 from http://www.dicksneary.com/pages/watercolors.html

Sylvester, T. 2003. *The Greening of the Rouge: Ford project draws praise and skepticism.* From the Ground Up.

William McDonough and Partners. *Ford Rouge Center Landscape Master Plan. Dearborn, Michigan.* Retrieved on Oct 12, 2006 from http://www.mcdonoughpartners.com/projects/fordrouge/default.asp?projID=fordrouge