



Greening Longwood: One Building at a Time

Bryna Cosgriff Dunn, LEED[®]ap

Moseley Architects

and

J.W. Wood

Longwood University

VSBN Greening Virginia's Universities & Colleges

Charlottesville, VA

October 26, 2007

Agenda

- **Our Commitment**
- **Health & Fitness Center**
- **Campus Master Plan**

LONGWOOD UNIVERSITY



- **Founded in 1839 in Prince Edward County, Farmville, Virginia**

- **State institution offering programs leading to bachelor's and master's degrees in a wide variety of subjects**

- **4,500 students in 2007- to grow to 5,500 by 2018**

- **Was cited recently in *America's 100 Best College Buys*, a national publication that profiles schools that are the highest rated academically but have the lowest annual costs**





In February 2006, the President of Longwood University, Dr. Patricia Cormier, established the Longwood University Committee for a Sustainable Environment.

"In a world of increasing demands and diminishing resources, it is imperative that we, the academic community, do our part to ensure that future generations have opportunities equal to those afforded us. Regardless of the positive strides already taken, it is time for Longwood University to develop its own guidelines for environmental sustainability. To this end, I am establishing a standing committee of the University, henceforth to be known as the Longwood University Committee for a Sustainable Environment. This committee will:

- 1. Promote environmental awareness among faculty, staff, and students.**
- 2. Make realistic and achievable program and policy recommendations to the President of the University designed to:**
 - a. Promote sound environmental stewardship practices;**
 - b. Promote throughout the university community the conservation of resources, energy efficiency, waste reduction and recycling, pollution prevention, increased reliance on renewable resources, and other measures consistent with sustainable living;**
 - c. Further long-range environmental planning by the University, as well as;**
 - d. Assist the University in carrying out its civic responsibilities in the area of the environment.**

As Citizen Leaders, it is imperative that we embrace our environment and walk boldly into a clean and green future."

--Patricia Cormier, PhD



Longwood University values:

- An aesthetically pleasing community
- The preservation of green spaces
- A minimization of waste and litter
- A campus environment respectful of local ecosystems and the watershed
- The quality of our air and water
- The conservation of resources
- The University's responsibility to educate people about environmental sustainability issues
- The University's responsibility to improve the quality of people's lives through heightened awareness and changed behaviors.

www.longwood.edu/greencampus

Green Capital Projects at Longwood University

- Green roof on **parking garage**
- **Dining hall** using 150 wells for geothermal heat pumps
- Steam and hot water **heating plant** that for 17 years has used biomass fuel- "sawdust"
- **New heating plant** to take place of existing plant. Will break ground next year and use three Hurst boilers fired with biomass fuel- "sawdust"
- Recently completed **Student Recreation and Fitness Center** that should soon achieve LEED rating
- Design phase of **Academic Visual Arts** project that will be designed for LEED rating

Why “green” in Farmville?

- Responsible action to take for our environment
- Saves energy costs and non-renewable resources
- Sets an example for the community and industry
- It is the right thing to do

•The governor has ordered us to comply with Executive Order 48. State agencies have to reduce non-renewable energy purchases by at least 20% of fiscal year 2006 expenditures, by fiscal year 2010

HIGH PERFORMANCE

MOSELEY ARCHITECTS

A PROFESSIONAL CORPORATION



Photo Credits: Steve Maylone

• Architects	82
• Mechanical Engineers	16
• Electrical Engineers	10
• Structural Engineers	10
• Interior Designers	13
• CADD Technicians + Interns	28
• Specification Writers	3
• Environmental Specialists	3
• Consultants	6
• Legal	1
• Construction Administrators	27
• <u>Administrative Personnel</u>	<u>38</u>
Total	237

Environmental Commitment

In our efforts to be responsible stewards of our Earth, Moseley Architects is committed to helping our clients make responsible decisions about the potential environmental impacts of design choices



HIGH PERFORMANCE



GIANTS 300

America's Foremost AEC Firms

BD+C's Top 50 Building Team LEED APs

Firm	LEED APs	# Staff	% LEED APs	Firm	LEED APs	# Staff	% LEED APs
1. Perkins+Will	753	1,236	60.9	26. Webcor Builders	87	—	—
2. Gensler	575	2,480	23.2	28. Zimmer Gunsul Frasca	85	439	19.4
3. HOK	456	2,153	21.2	29. Gould Evans Associates	83	205	40.5
4. Stantec	277	5,977	4.6	30. Perkins Eastman	80	722	11.1
5. The Turner Corp.	260	—	—	31. Hammel, Green and Abrahamson	79	508	15.6
6. SmithGroup	243	817	29.7	32. KlingStubbins	75	540	13.9
7. HDR Architecture	192	1,111	17.3	32. RTKL Associates	75	1,051	7.1
8. DPR Construction	185	676	27.4	34. M. A. Mortenson Co.	74	1,234	6.0
9. CUH2A	161	370	43.5	35. STV Group	70	1,455	4.8
10. HKS	155	1,148	13.5	35. Thompson, Ventulett, Stainback	70	300	23.3
11. Mithun	137	197	69.5	37. Flack + Kurtz	69	383	18.0
12. LPA	126	213	59.2	37. URS Corp.	69	29,308	0.2
13. Skanska USA Building	125	—	—	39. Jacobs Engineering Group	68	—	—
14. Leo A Daly	123	1,081	11.4	40. CH2M HILL	66	4,704	1.4
15. DLR Group	120	556	21.6	41. Affiliated Engineers	65	508	12.8
16. Gilbane Building Co.	118	1,800	6.6	42. Hayes, Seay, Mattern & Mattern	63	650	9.7
17. Cannon Design	115	749	15.4	43. RNL Design	62	185	33.5
18. JE Dunn Construction Group	110	3,369	3.3	44. Clark Group	61	2,945	2.1
18. Skidmore, Owings & Merrill	110	1,280	8.6	44. HMC Architects	61	432	14.1
25. Cannon	92	608	14.4			853	7.0
26. Moseley Architects	87	227	38.3			287	20.2
						322	17.4
						377	14.9
						300	18.0
						180	30.0

Source: 2007 Giants 300 survey. Note: This ranking is based on firms that made the Giants 300 list.

Greenin

Bloch Building
Nelson-Atkins Museum of Art
Kansas City, Mo.

PERIODICAL

MOSELEYARCHITECTS

HIGH PERFORMANCE

Moseley Architects' LEED Projects

- 1 - Engineering & Computational Sciences Building
Old Dominion University, Norfolk, VA - LEED Certified
- 2 - Kempsville Elementary School
Virginia Beach, VA - LEED Certified
- 3 - VC Williams High School
Alexandria, VA

- 4 - Community Development Customer Service Center
Charlottesville, VA
- 5 - Recreation Center Renovations/Additions
College of William & Mary, Williamsburg, VA - LEED Certified

- 6 - Alan S. Miller Hall - Mason School of Business
College of William & Mary, Williamsburg, VA
- 7 - Recreation Center
Longwood University, Farmville, VA

- 8 - College of Graduate & Professional Studies - Building 4C
University of Mary Washington, Fredericksburg, VA
- 9 - Robinson Technology Center
Norfolk State University, Norfolk, VA - LEED Certified

- 10 - Cary St. Recreation Center Expansion/Modernization
Virginia Commonwealth University, Richmond, VA
- 11 - Kasey Cress Elementary School
Essex County, VA - LEED Certified

- 12 - Engineering & Technology Building
Virginia State University, Petersburg, VA
- 13 - Moseley Architects Office Space
Richmond, VA

- 14 - Recreation Center Additions
VCU, Charlottesville, VA
- 15 - Henderson Hall, Visual & Music Arts Studio
Virginia Tech, Blacksburg, VA

- 16 - CSAT Dining Hall
James Madison University, Harrisonburg, VA
- 17 - Third Creek Elementary School
Rockwell, Pittsylvania, NC - LEED Certified

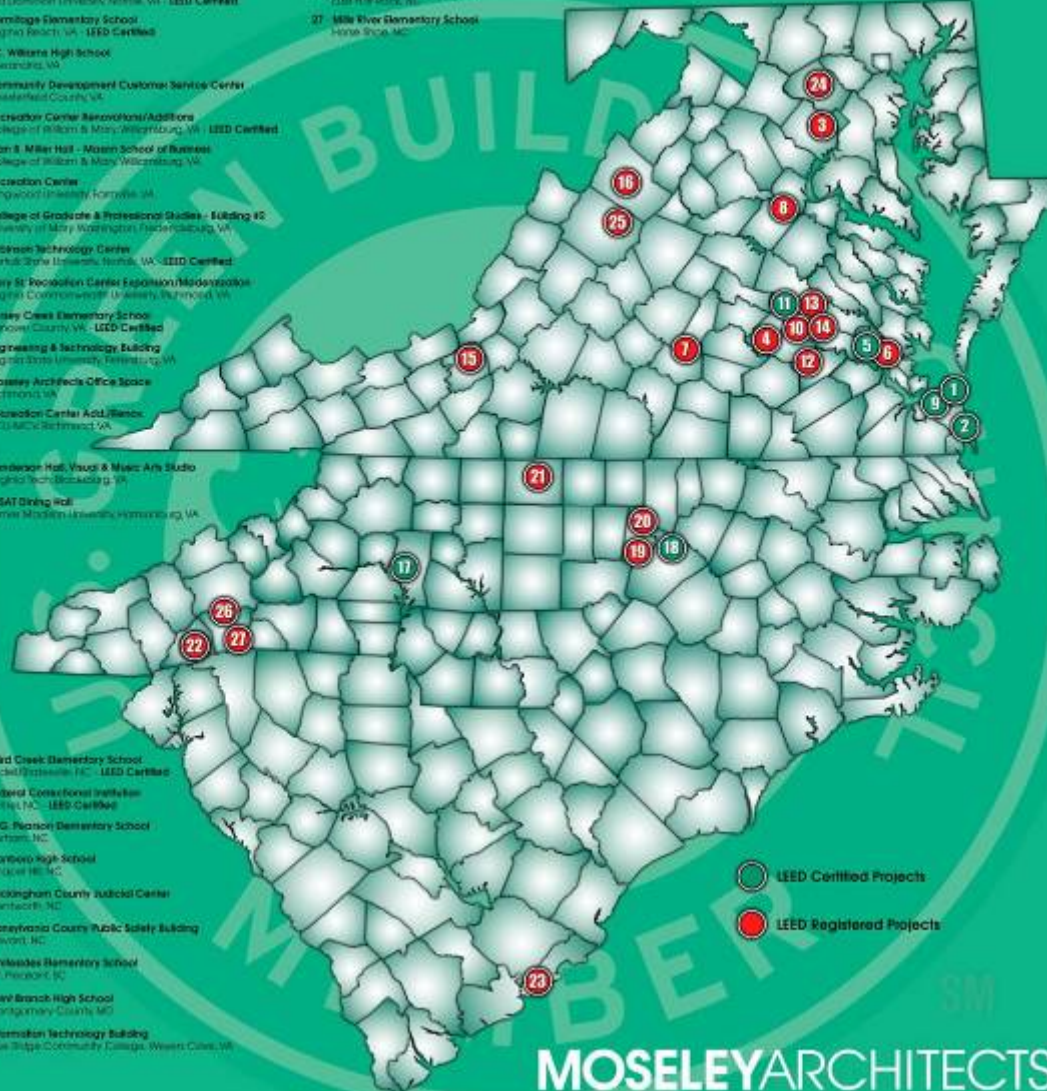
- 18 - Federal Correctional Institute
Sylva, NC - LEED Certified
- 19 - W.G. Pearson Elementary School
Durham, NC

- 20 - Carver's High School
Chapel Hill, NC
- 21 - Rockingham County Judicial Center
Wentworth, NC

- 22 - Transylvania County Public Safety Building
Seward, NC
- 23 - Whitesides Elementary School
Mt. Pleasant, SC

- 24 - Foxe Branch High School
Montgomery County, MD
- 25 - Information Technology Building
Blue Ridge Community College, Western Cove, VA

- 26 - Whitesides Elementary School
East Hill Park, NC
- 27 - Mile River Elementary School
Horse Shoe, NC

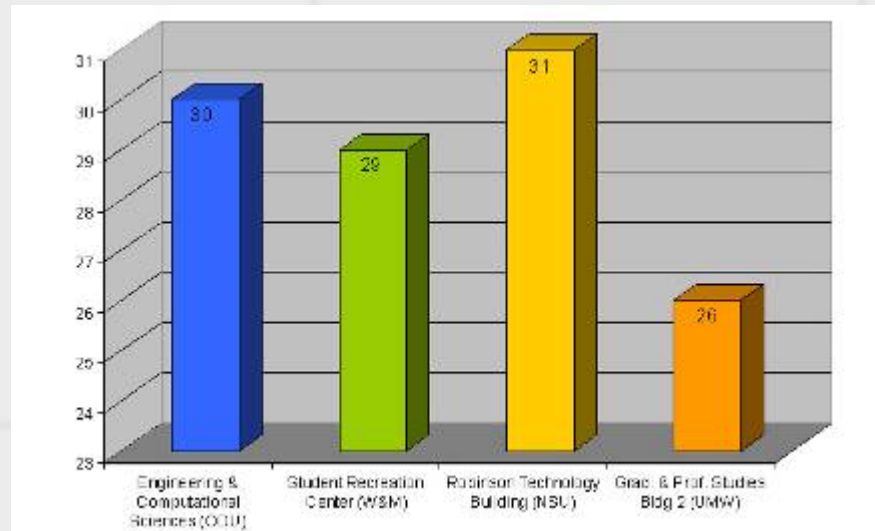


LEED Certified Projects
LEED Registered Projects

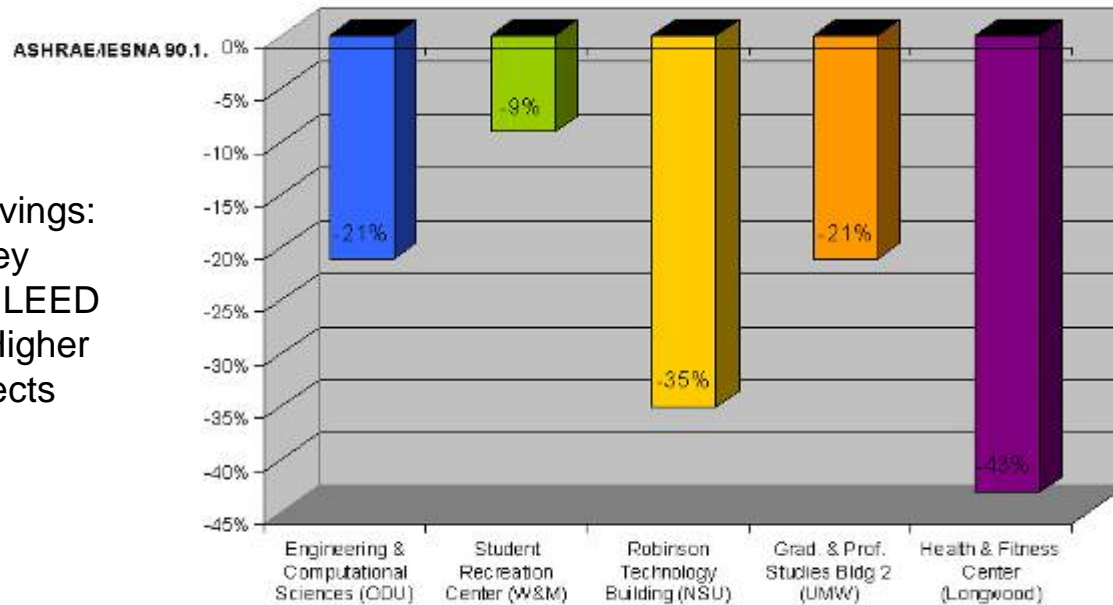
MOSELEYARCHITECTS

HIGH PERFORMANCE

Moseley
Architects' LEED
Certified Higher
Ed Projects



Energy Savings:
Moseley
Architects' LEED
Certified Higher
Ed Projects



Agenda

- Our Commitment
- **Health & Fitness Center**
- Campus Master Plan

HIGH PERFORMANCE



Longwood University Health & Fitness Center

HIGH PERFORMANCE Sustainable Sites

BEFORE



1. Public transportation access
2. Bike storage & changing
3. No new parking
4. Storm water rate & quantity reduced
5. Non-roof heat island reduction

AFTER



1. Not prime farmland
2. Elevation 5+ft over 100 year flood
3. No threatened or endangered species (Federal or State)
4. Not within 100 feet of any water
5. Not public parkland

HIGH PERFORMANCE Water Efficiency

LEED-NC 2.1 Letter Template
WE Credit 3: Water Use Reduction

Powered by Adobe LiveCycle

Baseline Case Table

Flush Fixture	Daily Uses	Flow Rate [GPF]	Duration [Flush]	Occupant Users	Sewage Generation [gal]
Conventional Water Closet					
Male	1	1.6	1	90	144
Female	3	1.6	1	91	436.6
Conventional Urinal					
Male	2	1	1	90	180
Female	0	1	1	91	0
Male		0	1		0
Female		0	1		0
Male		0	1		0
Female		0	1		0
Male		0	1		0
Female		0	1		0
Total uses by all occupants					1,177.5
Total Daily Volume [gal]					2,232.06
Annual Work Days					260
Total Annual Volume [gal]					580,335.6

Flow Fixture	Daily Uses	Flow Rate [GPM]	Duration [sec]	Occupant Users	Sewage Generation [gal]
Conventional Lavatory	3	2.5	15	181	339.38
Shower	0.5	2.5	300	181	1,131.25
Janitor Sink	1	2.5	15	1	0.63
					0
					0
					0
					0
					0
					0
					0
Total uses by all occupants					1,177.5
Total Daily Volume [gal]					1,328.06
Annual Work Days					260
Annual Volume [gal]					345,295.6
Graywater or Stormwater Reuse Volume [gal]					
Total Annual Volume [gal]					345,295.6

LEED-NC 2.1 Letter Template
WE Credit 3: Water Use Reduction

Powered by Adobe LiveCycle

Design Case Table

Flush Fixture	Daily Uses	Flow Rate [GPF]	Duration [Flush]	Occupant Users	Sewage Generation [gal]
Conventional Water Closet					
Male	1	1.6	1	90	144
Female	3	1.6	1	91	436.8
Waterless Urinal					
Male	2	0	1	90	0
Female	0	0	1	91	0
Male		0	1		0
Female		0	1		0
Male		0	1		0
Female		0	1		0
Male		0	1		0
Female		0	1		0
Male		0	1		0
Female		0	1		0
Total uses by all occupants					1,177.5
Total Daily Volume [gal]					1,328.06
Annual Work Days					260
Annual Volume [gal]					345,295.6
Graywater or Stormwater Reuse Volume [gal]					
Total Annual Volume [gal]					345,295.6

(Continued on page 4)

(Continued on page 3)

Fixture	Rate	Savings (gal/yr)
1. Waterless urinals	0 gpf	46,800
2. Low flow lavatories	0.5 gpm	70,590
3. Low flow showers	1.5 gpm	117,650

235,040 gpy savings

LEED-NC 2.1 Letter Template
WE Credit 3: Water Use Reduction

Wastewater Generation Reduction [%] 40.50070338611

WE Cr 3.1 (1 point):
Water Use Reduction, 20% Reduction
Points Documented: 1

WE Cr 3.2 (1 additional point):
Water Use Reduction, 30% Reduction
Points Documented: 1

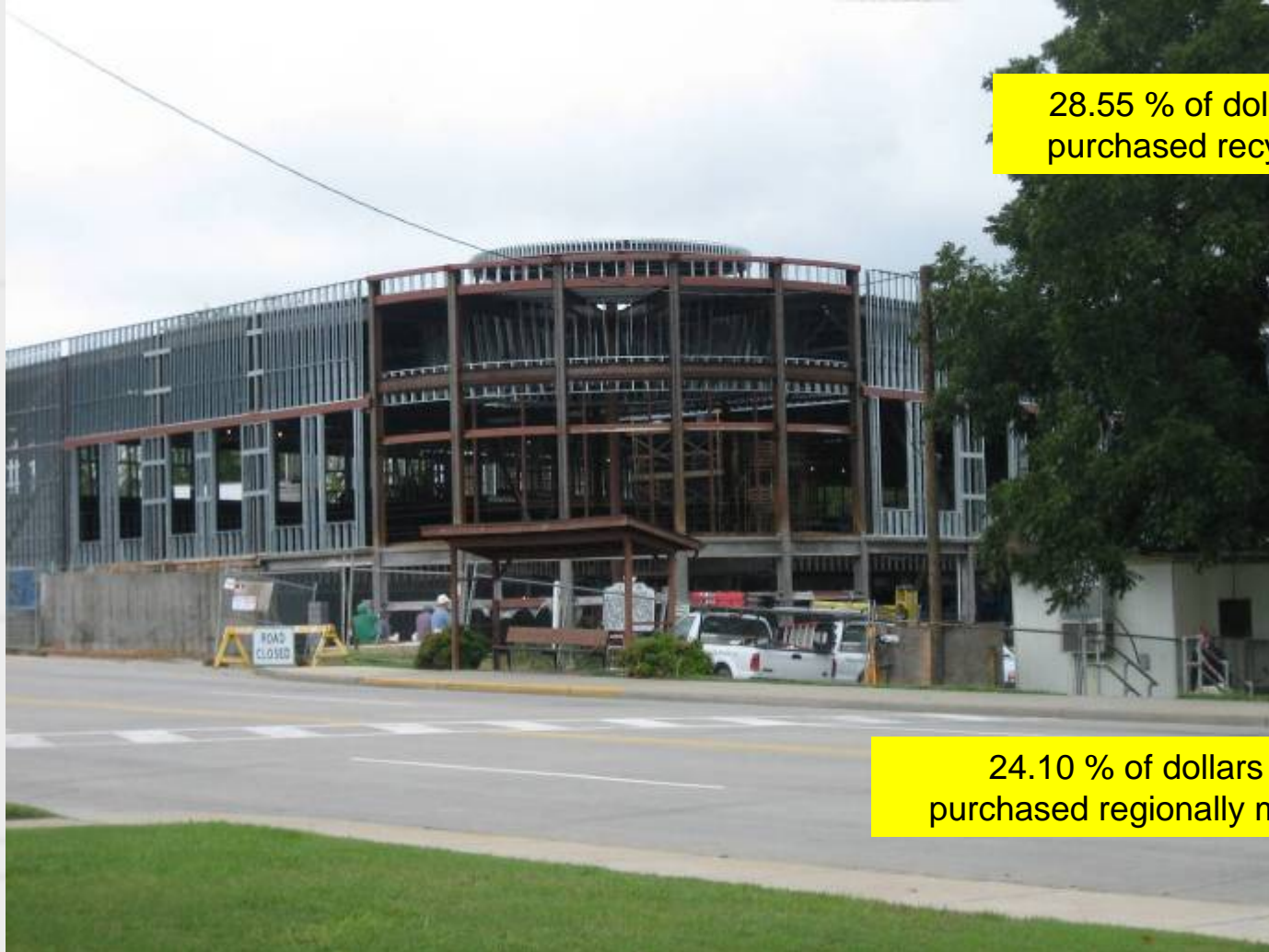
HIGH PERFORMANCE Energy & Atmosphere



Element	Code	Longwood
Roof Insulation	R-15	R-25
Wall Insulation	R-13	R-19
Mass Walls	R-5.7	R-12
Glazing	U-.57	U-.35
Energy Recovery	1 out of 5	5 out of 5
DCV/VAV	Not required	Present

% Savings = 43%
(>\$60,000/year)

HIGH PERFORMANCE Materials & Resources



28.55 % of dollars spent on materials
purchased recycled content materials

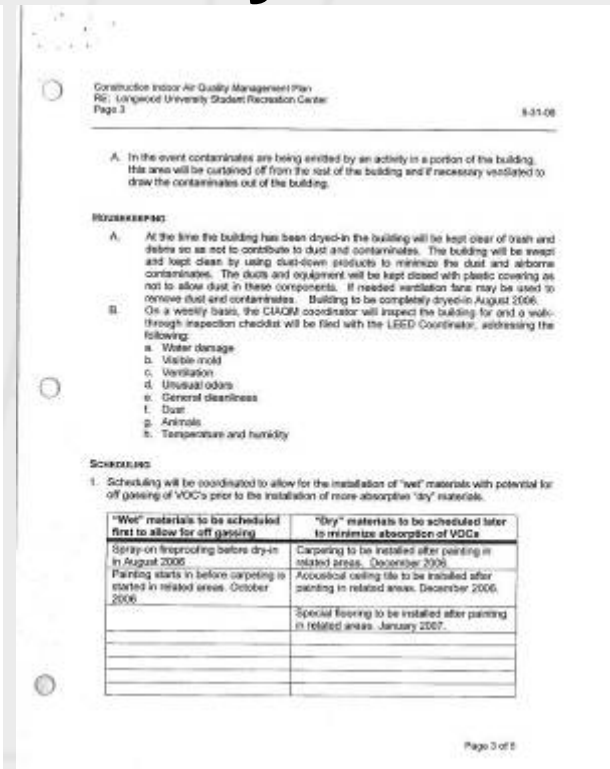
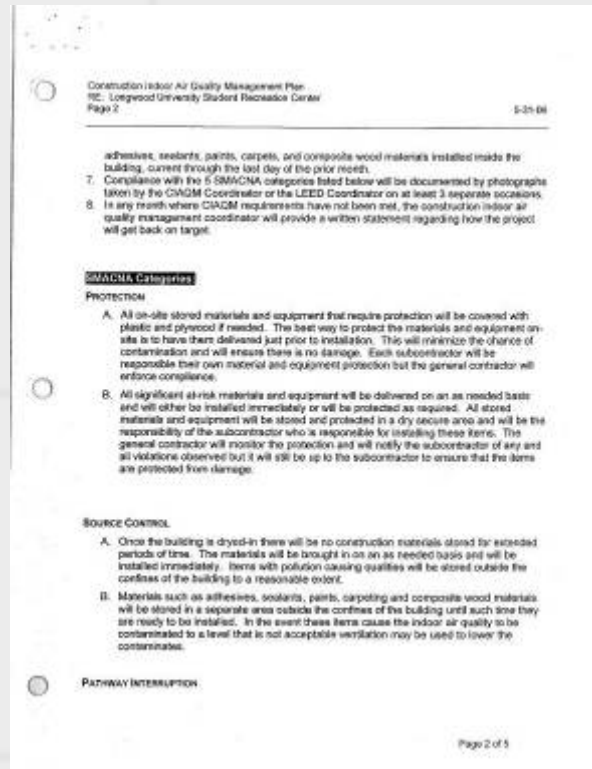
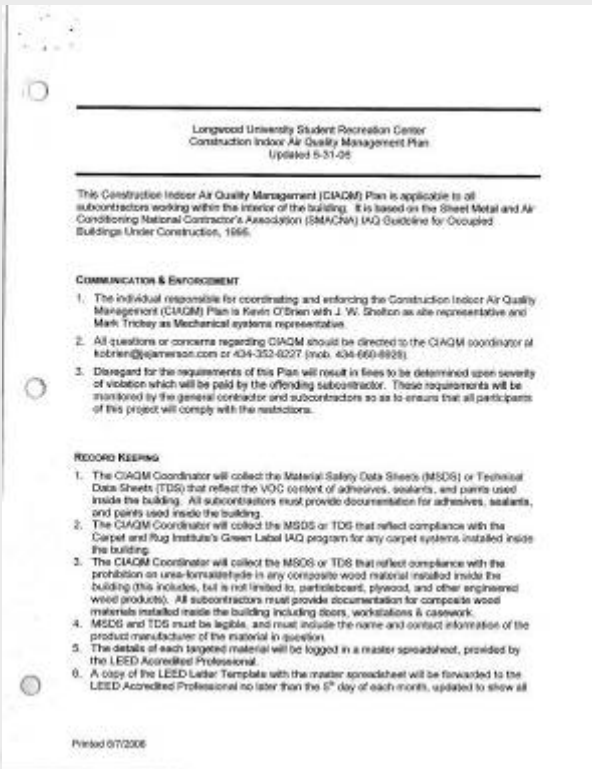
24.10 % of dollars spent on materials
purchased regionally manufactured materials

HIGH PERFORMANCE Materials & Resources



80.05 % of dollars spent on wood
purchased FSC-certified products

HIGH PERFORMANCE Indoor Environmental Quality



HIGH PERFORMANCE



Agenda

- Our Commitment
- Health & Fitness Center
- **Campus Master Plan**

Campus Sustainability Assessment

Step 1	What instruments and processes are already available to define data collection boundaries?	~ 1 week
Step 2	Define data to collect for Longwood University Sustainability Assessment	~2 weeks
Step 3	Collect data and identify any holes in data availability	~ 8 weeks
Step 4	Set short term and long term sustainability improvement goals for Longwood University	~ 1 week
Step 5	Define potential pathways to meet goals set in Step 4	~ 4 weeks
Step 6	Submit goals and pathways for reflection in the Master Plan	January 2008

Campus Sustainability Assessment

Water flows

Potable water coming into the campus from utility

Potable water leaving campus

Via irrigation (measured)

Down the drain (calculated)

Stormwater landing on the campus (volume measurement)

Stormwater leaving the site in pipes and via overland flow

(include the square footage of impervious surface, separated into roof and non-roof)

Campus Sustainability Assessment

Energy flows

kWh consumed by campus

BTUh consumed by campus

Vehicular fuel consumed by campus fleet vehicles

Convert these values into CO₂ emitted by campus (calculated)

Campus Sustainability Assessment

Material flows (non-organic)

Waste leaving campus (dining hall, book store, rest of campus)

Volume that is recycled

Volume that is not-recycled and must be landfilled

Estimate of volume that could be recycled

Campus Sustainability Assessment

Material flows (organic)

Volume of food purchased for campus purpose

Volume of food waste disposed of

Weight or volume of landscape debris removed from campus
(leaves, grass clippings, etc)

Weight or volume of landscape materials purchased
(fertilizer, mulch, top soil, etc)

Campus Sustainability Assessment

Transportation flows

Total number of cars arriving on campus

Number of cars students bring to campus

Number of cars faculty/staff bring to campus

Bicycle trips on campus

Bus trips on campus

Walking trips on campus

HIGH PERFORMANCE

An architectural rendering of the Longwood University campus, showing a large, modern building complex with a central courtyard and surrounding greenery. The rendering is in a light, semi-transparent style, allowing the text to be clearly visible over it.

**Longwood University Master Plan
under construction
until
2008**

HIGH PERFORMANCE

thank you!



questions?