

Oregon State University

Magruder Hall

Large Animal Hospital Addition

Sustainability Self Assessment

July 11, 2008

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Executive Summary

Magruder Hall houses the College of Veterinary Medicine on the campus of Oregon State University in Corvallis, Oregon. Magruder Hall was erected in 1979. An addition and expansion of the Small Animal Hospital wing was completed in 2004. This report identifies the sustainability options that were incorporated into the building for the Large Animal Hospital Addition per the Oregon Department of Administrative Services Policy Manual Number 125-6-010. This report only covers the large animal hospital addition sustainability options.

The Large Animal Addition includes a 14,000 square foot 2-story expansion on the north side of the original building, and three, Isolation, Arena and Treadmill, stand alone buildings totaling 14,820 sf to the west of the north addition building. A 2,500 sf remodel in the original building interior created an intensive care unit and remodeled the large animal reception area.

The sustainability goal for the project was to meet the DAS Policy of 33 sustainability points. The project achieved a total of 35.50 points as summarized below.

State of Oregon Sustainable Design Scorecard Summary			
Target: 33 Point Minimum for New Building Projects (Silver Level)			
Categories	Possible Points	Mandatory	Points Achieved
Sustainable Sites Credits 1.A thru 1.I	14.00	2	8.00
Water Efficiency Credits 2.A thru 2.C	5.00	0	2.00
Energy & Atmosphere Credits 3.A thru 3.I	17.00	3	5.00
Materials & Resources Credits 4.A thru 4.H	9.00	1	5.50
Environmental Quality Credits 5.A thru 5.J	15.00	2	11.00
Innovation in Design Credits 6 and 7 5.00	5.00	0	4.00
Total Points Available	65.00		35.50

Building Statistics

The original Magruder Hall building was constructed in 1979 at 78,700 sf. The College of Veterinary Medicine and the Veterinary Diagnostic Laboratory occupy the building.

The Small Animal Hospital Addition, 28,060 sf, was completed in 2004 and added the two story small animal hospital wing and remodeled a portion of the original building interior.

The Large Animal Hospital Addition was completed in the spring of 2008 and consists of:

- The two story, 13,000 sf, North Addition to the original hospital building includes imaging (scintigraphy and CT scanning) plus clinical research and teaching areas on the first floor with offices and space for a future research lab on the second floor.
- A single story, 1,344 sf, Treadmill Building for exercising, research and performance testing of horses.
- A 9,726, open air Arena for lameness testing.
- A 3,723 sf single story Isolation Building for keeping infectious horses isolated from the rest of the patients.

Project Team

Owner – Oregon University System, Oregon State University

Architect – SRG Partnership

Structural Engineer – kpff Consulting Engineers

Civil Engineer – MHH Associates

Landscape Architect – Mayer/Reed

Mechanical Engineer – DuPont Engineering LLC

Electrical Engineer – Sparling, Inc.

Lab Planner – Research Facilities Design

Contractor – Lease Crutcher Lewis

SEED Model Results

The large animal hospital addition was required to participate in the Oregon Department of Energy State Energy Efficient Design (SEED) program. The result of the analysis showed that the building would use 25% less energy than the Code baseline building. Table 1-1 was taken from the final SEED report.

Table 1-1 – ECM Package Analysis Summary						
Recommended Package						
Incremental Investment Cost	Annual Dollar Savings	Annual MMBtr Savings	NPV Savings	NPC Savings	Benefit-To-Cost Ratio	% Energy Use Below Code Building
\$6,200	\$912	64.3	\$8,468	-	2.4	25.0%

Sustainable Systems Overview

DAS requires that new buildings have a minimum of 33.00 sustainability points based on the State of Oregon Sustainable Facility Self-Assessment document scoring system.

During the schematic design phase of the project the entire design team and the contractor attended a sustainability workshop with the Owner's Authorized Representative. The purpose of this meeting was to review the Self-Assessment document. The design team, contractor and Owner determined what sustainability points would be included in the project, which were possible and which were non-achievable. The point count from the initial meeting showed that 35.50 points were achievable, 4.00 were possible and 25.75 were not achievable.

As the project progressed we found that we were able to move one of the points, 4.C.6 Salvage/Recycle 75%, from the possible column to the achieved column. Unfortunately we lost an education point because we did not install an education display. Thus we lost one sustainability point but gained another to maintain our 35.50 point total.

Appendix A includes the complete Self-Assessment document.

Appendix A
OSU Sustainable Design Scorecard



**Oregon State University College of Veterinary Medicine (OSUCVM)
Large Animal Hospital Addition (LAHA)**

SRG PROJECT NO.: 2418

Date: 9/12/06

Update 7/3/08

Categories			State of Oregon Sustainable Design Scorecard				Notes
Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable			
Summary							
Sustainable Sites							
Credits 1.A thru 1.I	14.00	2	8.0	2.0	10.0		
Water Efficiency							
Credits 2.A thru 2.C	5.00	0	2.00	0.00	2.25		
Energy & Atmosphere							
Credits 3.A thru 3.I	17.00	3	5.00	1.00	5.00		
Materials & Resources							
Credits 4.A thru 4.H	9.00	1	5.50	0.00	4.50		
Environmental Quality							
Credits 5.A thru 5.J	15.00	2	11.00	0.00	4.00		
Innovation in Design							
Credits 6 and 7	5.00	0	4.00	0.00	1.00		
			35.50	3.00	26.75	Total Points by Category	
Total Points Available			65.00			Total Points	

Target: 33 Point Minimum for New Building Projects (Silver Level)

Legend

Less than 25% LEED achievement	--	No Impact	0
Between 25% and 75% LEED achievement	0	Low Cost	\$
Greater than 75% LEED achievement	+	Mid Cost	\$\$
		High Cost	\$\$\$

OSU LAHA Sustainable Design Scorecard

DR Categories	Categories		OSU Sustainable Design Scorecard													Notes	
	Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable	Budget Impact	Client - OSU	Architect - SRG	Landscape - M+R	Chairs - MGBH	M/P - DuPont	E - Spaffing	Com. Agent	Contractor - Lewis			
Sustainable Sites																	
1.A	Mandatory 1: Erosion & Sedimentation Control		R	Y	Y												
	Site Selection																
+ 1.B	<i>Restricted site development</i>		R	Y	Y												
	1.B	<i>Restricted site selection - no farm land</i>	0.25														
	1.B	<i>Restricted site selection - no farm land + elevati</i>	0.50														
	1.B	<i>Restricted site selection - all but parkland</i>	0.75														
	1.B	<i>Restricted site selection - all strategies</i>	1.00		1.00			-	+	+	+						
	Urban Redevelopment (AKA Develop. Density)																
	1.C	<i>Increase density 30-40K SF/ Acre</i>	0.25			1.00											
	1.C	<i>Increase density 40-50K SF/ Acre</i>	0.50			1.00											
	1.C	<i>Increase density 50-60K SF/ Acre</i>	0.75			1.00											
	1.C	<i>Increase density 60K SF/ Acre</i>	1.00			1.00											
	Brownfield Redevelopment																
- 1.D	1.D	<i>Brownfield Redevelopment (not to EPA stds.)</i>	0.50			1.00											
- 1.D	1.D	<i>Brownfield Redevelopment (to EPA stds.)</i>	1.00			1.00											
	Alternative Transportation																
0 1.E	1.E	<i>Public Transportation Access</i>	1.00		1.00			+									
	1.E	<i>Bicycle Storage et. al (1-4%)</i>	0.50														
0 1.E	1.E	<i>Bicycle Storage & Changing Rooms</i>	1.00		1.00			+	--	+					130 FTE as of 3/8/05		
	1.E	<i>Alternative Fuel et. al (1-2%)</i>	0.50												Campus provides on-site campus plan to increase alternative fuel stations- will need documentation from OSU		
0 1.E	1.E	<i>Alternative Fuel Refueling Stations</i>	1.00		1.00			+							Campus provides preference for on-site campus car-pool parking- will need documentation from OSU		
	1.E	<i>Parking Reductions (1-4%)</i>	0.50														
0 1.E	1.E	<i>Parking Reductions</i>	1.00		1.00			+		--					Per campus Master Plan for parking calculations		
	Reduced Site Disturbance																
	1.F	<i>Protect and Restore Open Space (reduced)</i>	0.50														
	1.F	<i>Protect and Restore Open (reduce AND restore)</i>	0.75														
0 1.F	1.F	<i>Protect and Restore Open Space</i>	1.00		1.00										Moved into acceptable column based on final site improvements		
	1.F	<i>Maximize Open Space (reduced)</i>	0.50														
0 1.F	1.F	<i>Maximize Open Space</i>	1.00		1.00			--	+	--	--						
	Stormwater Management																
	1.G	<i>Flow Reduction (minor increase allowed)</i>	0.25			1.00											
	1.G	<i>Flow Reduction (minor increase AND restore)</i>	0.50			1.00											
0 1.G	1.G	<i>Flow Reduction</i>	1.00			1.00											
	1.G	<i>Flow Treatment (reduce TSS)</i>	0.50														
	1.G	<i>Flow Treatment (reduce TSS)</i>	0.75														
LEE 75% 1.EE	1.G	<i>Flow Treatment</i>	1.00		1.00			--	--	--					Will require detailed design work to define		
	Landscape & Exterior Design																
% LE 1.H	1.H	<i>Non-Roof Surfaces (reduced)</i>	0.25														
	1.H	<i>Non-Roof Surfaces (reduced)</i>	0.50														
	1.H	<i>Non-Roof Surfaces (reduced)</i>	0.75														
0 1.H	1.H	<i>Non-Roof Surfaces</i>	1.00		1.00			--	+						Chris Ingalls to research alternatives		
	1.H	<i>Roof Surfaces (reduced)</i>	0.25														
	1.H	<i>Roof Surfaces (reduced)</i>	0.50														
0 1.H	1.H	<i>Roof Surfaces</i>	1.00		1.00			+	+						Requires coated EPDM or requires white TPO that is contrary to OSU preference		
	Light Pollution Reduction																
0 1.I	1.I	<i>Light Pollution (reduced)</i>	0.50														
0 1.I	1.I	<i>Light Pollution</i>	1.00		1.00			--	--				+				
	Total Maximum Points			14.00		8.00	2.00	10.00	Total Points by Category								
	Total Points Available			8.00													

Categories			OSU Sustainable Design Scorecard											Notes	
DR Categories	Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable	Budget Impact	Client - OSU	Architect - SRG	Landscaper - M+R	Civil - MGH	M/P - DuPont	E- Sparring	Com. Agent		Contractor - Lewis
Water Efficiency															
2.A	Water Efficient Landscaping														
2.A	10% Reduction	0.50													
2.A	20% Reduction	0.75													
2.A	30% + Reduction	1.50													
+	2.A	50% Reduction or high effec. technology	1.00	1.00				+	--						Use high efficiency technology
2.A	Potable Free System/No Irrigation														
2.A	ENERGY STAR roof	0.25			0.25		--	--							Synergy with roof points under site
2.A	ENERGY STAR roof and green roof	0.50													
+	2.A	Potable Free System/No Irrigation	1.00		1.00										
2.B	Innovative Wastewater Technologies														
--	2.B	Innovative Wastewater Technologies	1.00												
2.B	25% Reduction	0.50			0.50			+		--					Try re-using roof water & see if we can get credit for waste water treatment
2.B	50% Wastewater treatment	0.50			0.50										
2.C	Water Use Reduction														
2.C	10% Reduction water use	0.50													
0	2.C	20% Reduction	1.00												
2.C	25% Reduction	0.50													
0	2.C	30% Reduction	1.00	1.00			+	+		--					
Total Maximum Points			5.00	2.00	0.00	2.25	Total Points by Category								
				2.00			Total Points Available								

Categories			OSU Sustainable Design Scorecard											Notes			
OR Categories		Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable	Budget Impact	Client - OSU	Architect - SRG	Landscaper - M-R	Civil - MGH	M/P - DuPont	E- Sparring		Com. Agent	Contractor - Lewis	
Energy & Atmosphere																	
3.A	Mandatory 1: Fundamental Building System Comm.	R	Y	Y													
3.B	Mandatory 2: Minimum Energy Performance	R	Y	Y													
3.C	Mandatory 3: CFC Reduction in HVAC&R Equip.	R	Y	Y													
Optimize Energy Performance																	
3.D	10% New / 5% Existing			1.00													
0	3.D 20% New / 10% Existing			2.00													
	3.D 25% New / 15% Existing			3.00	3.00							+	--				
0	3.D 30% New / 20% Existing			4.00		1.00						+	--			(LAH animal stalls must be conditioned to 68-72 degree standards.)SAH got 23% SEED efficiency	
	3.D 35% New / 25% Existing			5.00													
--	3.D 40% New / 30% Existing			6.00													
	3.D 45% New / 35% Existing			7.00													
--	3.D - 1.8: 50% New/ 40% Existing			8.00													
	3.D 55% New/ 45% Existing			9.00													
--	3.D 60% New/ 50% Existing			10.00													
Renewable Energy																	
	3.E 1 - 4%			0.50													
--	3.E 5%			1.00													
	3.E 6 - 9%			1.50													
--	3.E 10%			2.00													
	3.E 11 - 19%			2.50													
--	3.E 20%			3.00		3.00											
Additional Commissioning																	
	3.F Implement 2 of the 5 items			0.25													
	3.F Implement 3 of the 5 items			0.50	0.50				+	--		--	--	+			
	3.F Implement 4 of the 5 items			0.75													
0	3.F Additional Commissioning (5 items)			1.00		0.50											
Ozone Depletion																	
	3.G Allows for fire suppression systems			0.50													
0	3.G HCFCs or halon			1.00	1.00							+					
Credit 5: Measurement & Verification																	
	3.H ----- Implement half of the 10 items			0.50	0.50				+			--	--	+		This is probably done as a OSU/SEED standard. Larrie Easterly to verify and document	
	3.H ----- Implement all of the 10 items			1.00		0.50			+			--	--	+			
Credit 6: Green Power																	
	3.I ----- Contract for 1 year			0.50													
0	3.I ----- Contract for 2 years			1.00	1.00				+				+			Sparring may need to dig into this a bit, OSU purchasing poilcy already in place? Need OSU to provide documentation	
Total Maximum Points				17.00													
					5.00	1.00	5.00	Total Points by Category									
					5.00			Total Points Available									

OSU LAHA Sustainable Design Scorecard

Categories		OSU Sustainable Design Scorecard												Notes			
OR Categories	Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable	Budget Impact	Client - OSU	Architect - SRG	Landscaper - M-R	Civil - MGH	IMP - DuPont	E- Sparring	Com. Agent		Contractor - Lewis		
Materials & Resources																	
4.A	Mandatory 1: Storage & Collection of Recyclables	R	Y	Y													
	Building Reuse																
--	Maintain 75% of Existing Shell			0.00												State left these LEED points off list, probably doesn't apply to our project	
--	Maintain 100% of Shell			0.00													
--	Maintain 100% Shell/ 50% non Shell			0.00													
	Construction Waste Management																
4.C	Salvage/Recycle 10%			0.25													
4.C	Salvage/Recycle 25%			0.50													
4.C	Salvage/Recycle 40%			0.75													
+	4.C Salvage/Recycle 50%			1.00	1.00			+	--						+		
4.C	Salvage/Recycle 60%			1.50													
0	4.C Salvage/Recycle 75%			2.00	1.00			+	--						+	Lewis to evaluate possibility	
	Resource Reuse																
4.D	Specify over 1%			0.50													
--	4.D Specify 5%			1.00													
4.D	Specify over 6%			1.50													
--	4.D Specify 10%			2.00		2.00											
	Recycled Content																
4.E	Specify 15% (lower recycle content)			0.50													
4.E	Specify 30-40% (lower recycle content)			1.00													
+	4.E Specify 25%			1.00	1.00			+	+	+	+						
0	4.E Specify 50% total			2.00		1.00		+	+	+	+						
	Local/Regional Materials																
4.F	10% Manufactured Locally			0.50													
+	4.F 20% Manufactured Locally			1.00	1.00										+		
4.F	10% Mfg./ 25% Harvested Locally			0.50	0.50										+		
0	4.F 20% Mfg./ 50% Harvested Locally			1.00		0.50											
	4.G Rapidly Renewable Materials																
4.G	Specify 1% Rapidly Renewable Materials			0.50													
--	4.G Specify 5% Rapidly Renewable Materials			1.00		1.00											
4.H	Certified Wood																
4.H	Use min 10% certified wood			0.25													
4.H	Use min 20% certified wood			0.50													
4.H	Use min 30% certified wood			0.75													
--	4.H Use min 50% certified wood			1.00	1.00			+							--	Look at glu-lam beams to gain all credits available. Is there potential for innovation credit if we exceed percentage greatly?	
					5.50	0.00	4.50	Total Points by Category									
	Total Maximum Points	10.00		5.50			Total Points Available										

Environmental Quality
OSU LAHA Sustainable Design Scorecard

Categories			OSU Sustainable Design Scorecard											Notes		
OR Categories	Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable	Budget Impact	Client - OSU	Architect - SRG	Landscape - M-R	Civil - MGH	IMP - DuPont	E- Spairling	Com. Agent		Contractor - Lewis	
Environmental Quality																
5.A	Mandatory 1: Design HVAC to ref. std. ID IAQ, intake	R	Y	Y												
5.B	Mandatory 2: Environmental Tobacco Smoke Cntrl.	R	Y	Y												
5.C Carbon Dioxide Monitoring																
5.C	Set points related to ext. not req'd			0.50												
0	Permanent Carbon Dioxide Monitoring			1.00								+	--	--		
5.D Increase Ventilation Effectiveness																
0	Increase Ventilation Effectiveness			1.00												
5.E Construction IAQ Management Plan																
5.E	Meet SMACNA			0.50												
0	Meet SMACNA & protect during construction			1.00				--					--	+		
5.E	Post construction - 1 week flush out			0.50												
0	Post construction - 2 week flush out			1.00				--					--	+	Strategize about OFOI furniture. Lewis concerned about schedule impacts, this item will be continually monitored for achievability	
5.F Low Emitting Materials																
+	Adhesives and Sealants			1.00					+	--	--	--				
+	Paints			1.00											SRG to review and try to identify ways to achieve low VOC materials for this use. Not likely that this is achievable.	
+	Carpet			1.00												
0	Composite Wood			1.00					+							
5.G Indoor Chemical and Pollutant Control																
5.G	Permanent entry ways and grilles only			0.25												
5.G	Partial controls			0.50												
0	Controls			1.00				--				+	--	--		
5.H Controllability of Systems																
5.H	Operable windows 500 SF			0.50												
0	Operable Windows - Perimeter			1.00												
5.H	Individual control 25%			0.50												
--	Individual Controls - Non-perimeter			1.00												
5.I Thermal Comfort																
0	Compliance with ASHRAE 55-1992			1.00				--				+	--	--	Team will meet ASHRAE 2004 standards and will clarify our method in the "application"	
0	Permanent Monitoring System			1.00				--				+	--	--	Our approach supposes that only areas getting cooled will or could get "controls"	
5.J Daylight and Views																
5.J	Distribution Quality - Daylight 35% of Spaces			0.50												
0	Distribution Quality - Daylight 75% of Spaces			1.00				--	+							
5.J	Access to Views - Views for 45% of spaces			1.50												
0	Access to Views - Views for 90% of spaces			2.00				--	+							
					11.00	0.00	4.00	Total Points by Category								
Total Maximum Points			15.00		15.00	Total Points Available										

Innovation in Design
OSU LAHA Sustainable Design Scorecard

Categories			OSU Sustainable Design Scorecard													
OR Categories		Possible Points	Mandatory	Achievable	Partly Achievable	Not Achievable	Budget Impact	Client - OSU	Architect - SRG	Landscape - M-R	Civil - MGH	M/P - DuPont	E - Spaffing	Comm. Agent	Contractor - Lewis	Notes
	Innovation in Design															
	Innovation in Design															
0	6	1.00		1.00									+			Evaporative Cooling used to eliminate mechanical cooling for Isolation & Treadmill buildings
--	6	1.00		1.00									+			Replacement of existing building controls for energy savings and operational efficiency
--	6	1.00		0.00		1.00		+								Permanent educational display
--	6	1.00		1.00				+								Carpool parking significantly greater than credit requirements per OSU Campus Parking Policy
+	7	1.00		1.00												LEED Accredited Professional
				4.00	0.00	1.00	Total Points by Category			Maximum of 4 innovation credits are possible						
		Available Points	5.00	5.00			Total Points Available									

Appendix B

Lease Crutcher Lewis - Credit Summary Recap

CREDIT SUMMARY RECAP

I, Grant Lappi, declare that credits listed below have been achieved as clarified in the LEED Silver Equivalent requirements.

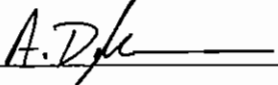
Points Documented:

- MR Cr 4.C: Construction Waste Management (**2 Points**).....Achieved
 - Salvage/Recycle 50% (1 point)
 - Salvage/Recycle 75% (1 point)
- MR Cr 4.F: Regional Materials (**1 + ½ Point**).....Achieved
 - Local/Regional Materials 20% Manufactured Locally (1 point)
 - 10% Manufactured/25% Harvested Locally (1/2 point)
- EQ Cr 5.E: Construction IAQ Management Plan (**2 Points**).....Achieved
 - Meet SMACNA and Protect During Construction (1 point)
 - Post Construction 2 Week Flush Out (1 point)

Name: Grant Lappi

Organization: Lease Crutcher Lewis

Role in project: Contractor

Signature: 

Date: 3/18/2008

MR Credit 4.C: Construction Waste Management

I, Grant Lappi, certify that this project has implemented a waste management plan and diverted the quantities of construction waste shown on the following sheets from the landfill. To meet the requirements of the Materials and Resources Credit 4.C more than 75% of total construction waste was diverted from the landfill.

Points Documented:

MR Credit 4.C: Construction Waste Management (2 Points)

- Salvage/Recycle 50% (1 Point)
- Salvage/Recycle 75% (1 Point)

Name: Grant Lappi

Organization: Lease Crutcher Lewis

Role in project: Contractor

Signature: 

Date: 3/20/2008

MR Credit 4.F: Regional Materials

I, Grant Lappi, declare that 22.84% of building materials and products used for this project were manufactured regionally within a 500 mile radius of the project location.

Locally harvested materials represented 41.18% of regional building materials from the percentage stated above.

A summary of the materials and regional manufacturing location is shown on the following pages.

Points Documented:

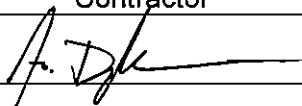
MR Credit 4.F: Regional Materials (1 + ½ Points)

- Local/Regional Materials 20% Manufactured Locally (1 Point)
- 10% Manufactured/25% Harvested Locally (1/2 Point)

Name: Grant Lappi

Organization: Lease Crutcher Lewis

Role in project: Contractor

Signature: 

Date: 3/21/2008

EQ Credit 5.E: Construction IAQ Management Plan

I, Grant Lappi, declare that during construction the implemented IAQ Management Plan met or exceeded the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for occupied buildings under construction. Also, protection of stored on-site or installed materials from moisture damage was done according to SMACNA requirements. Upon completion of construction, and immediately prior to occupancy, all filtration media was replaced with Minimum Efficiency Reporting Value (MERV) of 13 filtration media according to ASHRAE 52.2-1999.

To support the declaration, I have provided an attached description of the building flush out procedures and confirm that the minimum 2 week flush out was performed as outlined.


Points Documented:

- EQ Cr 5.E: Construction IAQ Management Plan (2 Points)
- Meet SMACNA & Protect During Construction (1 Point)
 - Post Construction 2 Week Minimum Flush Out (1 Point)

Name: Grant Lappi

Organization: Lease Crutcher Lewis

Role in project: Contractor

Signature: 

Date: 3/18/2008