



STUDENT SUSTAINABILITY COMMITTEE

Semesterly Report

Thank you for your commitment to green initiatives at the University of Illinois. One of the ongoing requirements listed in the terms of the funding agreement for your project is the submission of semesterly reports with key information about your project. In addition to this form, please provide additional financial documentation and/or progress photos if available.

Please be as accurate as possible in describing the project (including possible setbacks or challenges in meeting the initial goals of the project). Not fully meeting your project's goals will not disqualify you from making future funding requests as long as your reports are as complete and accurate as possible. If you have any questions, please contact the Student Sustainability Committee, at sustainability-committee@illinois.edu.

Project Name: CornCrete

Date of Report Submission: 2/1/2022

Project Purpose:

The Project will divert an agricultural waste product and direct it into a higher value end product: An insulating monolithic wall material.

Detailed Accounting of Expenditures to Date:

See attached

Project Progress to Date:

The majority of the work to date can be broken down into the following categories:

Design Work: 100% Complete

Material Preparation: 100% Complete

Material Installation: 100% Complete

Video Documentation: 80% Complete

Data Monitoring Purchase and Installation + Informational Display and Signage: 0% Complete

Final Plaster Finish: 95% Complete

Student Involvement and Outreach to Date:

The initial work was carried out by one undergraduate and one graduate student. In spring 2019 a team of 4 graduate students built a mock-up wall using 3 different agricultural fibers within the setting of a seminar class. During the Summer of 2021 a team of 3 students (1 graduated student) worked on the installation of the different grasscrettes in the 2 demonstration walls. One graduated student worked on video documentation of the process to be used for outreach purposes. An early version of the video documenting the process has already been shown at a couple of outreach activities. Early in 2022 an

additional student (graduate hourly) joined the team to assist the Faculty Lead apply the final layer plaster to the two demonstration walls, that student will be retained to assist in the installation of sensors and build the informational display and signage.

Marketing and Promotion Efforts to Date:

The project was discussed in an interview conducted by Jenna Kurtzweil, iSEE Communications Intern and released via the iSEE website on February 14th 2019: <https://sustainability.illinois.edu/past-present-and-future-corncrete>. The videos documenting the process have slowly been progressing. Once the final few stages are complete a strong effort will be made to organize photos and the video to be distributed through various social media routes.

Additional Comments:

Now we are approaching the conclusion of this project we have a better understanding of the size of the budget surplus. This is in large part due to the Faculty Lead not being able to work with as many students and academic hourlies as originally intended due to COVID restrictions. Instead, the Faculty Lead worked many unpaid hours to bring this project to conclusion, saving funds in the process.

On the following page is an image of one of the two demonstration walls in the final stages of plastering and awaiting the installation of sensors for thermal and relative humidity monitoring.

Scope Change:

It is requested that the remaining balance in the account be put towards concluding another project that was originally designed and built by students and is in close proximity to the GrassCrete demonstration walls at the Energy Farm: The Gable Home. This request was initially made in last semester's report, however at this stage the Faculty Lead can now formally submit the Scope Change and new budget (see attached).

The Faculty Lead for this project would like to ask the committee if the remaining funds be used towards the reinstating of the deck surrounding the Gable Home (the 2009 Solar Decathlon House), also located at the Energy Farm. In the Fall of 2021 under the direction of the Faculty Lead 12 students in Arch 576 reused the original deck members, however additional material will be needed to complete the new installation.



Scope Change

From time to time unforeseen challenges or opportunities can affect the planned budget, timeline, or overall goals of a project funded by the Student Sustainability Committee. Past examples of these situations include projects coming in under budget but having additional opportunities available, or inclement weather delaying the planting of agriculture projects.

Below please include a brief project summary and your requested changes. Attach additional documents as needed. If you have any questions, please contact the Student Sustainability Committee at sustainability-committee@illinois.edu.

General Information

Project Name: CornCrete

Total Amount Requested from SSC: \$47,000

Contact Information

Applicant Name: Mark S Taylor
Unit/Department: School of Architecture
Email Address: mstaylor@illinois.edu

Project Information

Please provide a brief background of the project, the goals, and the desired outcomes:

The Project will divert an agricultural waste product and direct it into a higher value end product: An insulating monolithic wall material.

Please provide a brief summary of how students will be involved in the project's changes:

To date the student involvement has been a little limited due to COVID restrictions. By contrast the Scope Change will enable the Faculty Lead to work with more students. In fact, in the setting of the proposed scope change 12 students in Arch 576 have already been engaged in reestablishing the deck that was on the 2009 Solar Decathlon house: The Gable Home. The scope change will enable that work to be completed along with other aspects of the project that were overlooked in 2009 in the rush to get the house finished for competition on the Washington Mall

Please provide a brief summary of your requested scope change. How is your request different from your original plan?

This is the second Scope Change the project has encountered. Following the initial change the project has essentially come to a successful conclusion that is under budget and the request is to take the balance of the funds and direct them to another student designed and built project.

Initial Budget**Equipment & Construction Costs**

Lime Binder	\$25.00	100	\$2,500.00	
Base	\$3,500.00	1	\$3,500.00	
Framing and Sheathing for Wall	\$2,000.00	1	\$2,000.00	
Roof	\$2,000.00	1	\$2,000.00	
Testing Equipment	\$6,000.00	1	\$6,000.00	
				\$16,000.00

Personnel & Wages

Undergrad Hourly labor	\$12.00	1600	\$19,200.00	
Grad Hourly Labor	\$15.00	120	\$1,800.00	
				\$21,000.00

General Supplies & Others

Building Design Development	\$7,000.00	1	\$7,000.00	
3D Printing Test (Personnel shop fee)	\$3,000.00	1	\$3,000.00	
				\$10,000.00

\$47,000.00**Proposed Budget**

	17,207	Current Balance 1-26-2022
	-800	Academic Hourly Plastering (currently awaiting payment)
Scope Change	16,407	Current Balance 1-26-2022
Item A	-3,000	Geopolymer Barnboards
Item B	-300	Sensor for Exterior of Weigh room
Item C	-300	Display and Signage
Item D	-2,600	Videography 130hrs
Item 1	-400	Toe Kick for Deck and Ramp
Item 2	-200	Additional material for deck
Item 3	-300	Porch Lights
Item 4	-400	Reinstate Barnboard LEDs
Item 5	-4,000	CERV Modification
Item 6	-300	Flat Screen for Education
Item 7	-1,607	Trouble Shoot 1/4 of the PV Array
Item 8	-3,000	Ground Water Temp. and Height sensor
	0	Closing Balance

Proposed Justification:

Items A-D above represent work within the existing scope of the project.

Items 1-8 above represent items that would be part of a scope change to allow what the Gable Home to function at full capacity as an accessible Living Learning Laboratory for students from different disciplines to visit and experience.

- A. Geopolymer Barnboards: In the original budget there was \$3,000 for 3D printing (of geopolymers) that research area has taken a long time to progress but there is an opportunity to experiments with the creation of geopolymer board material to provide a long term, low carbon, maintenance free façade to the building.
 - B. Sensors for the CornCrete walls.
 - C. Informative display and signage for the CornCrete walls.
 - D. The remaining hours required to finish the videos that will be used for outreach purposes.
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- 1. Toe-kick: For code compliance for the ramp and deck.
 - 2. Material to complete the deck.
 - 3. Porch Lights: For Code Compliance.
 - 4. Reinstate LED Barnboard illumination (this was a neat feature of the house that will probably requiring an electrician to resolve the issue – the LED's are there, just not wired up).
 - 5. The house has always had an innovative AC system but following recent upgrades the Gable Home really needs some modification to the CERV including the installation of an easily accessible MERV 13 filter to maintain very good indoor air quality.
 - 6. Flat Screen for Educational purposes in the house.
 - 7. Trouble Shooting PV Array: Currently it is assumed $\frac{1}{4}$ of the PV array is not drawing power an electrician is probably needed to work out where the problem is, and resolve it.
 - 8. Ground Water Temp and Height Sensor: If there are sufficient funds left after the critical items above have been addressed it would be useful to measure the height and temperature near the Gable Home as it is thought this may affect the performance of the recently installed geothermal system.

As the lead faculty I urge the Student Sustainability Committee to approve the scope change described above so students and visitors to the University of Illinois will get to see and experience an exemplary example of a student design and built energy efficient building.

Sustain Award - Corconcrete

1-304458-767000-767201

Mark Taylor

Expense Period:

TOTAL EXPENSES:	\$ 29,793.25			
TOTAL AWARD:	\$47,000.00			
REMAINING AWARD:	\$ 17,206.75	Note:	\$16,407	Current Balance 1-26-2022

Vendor	Document #	Date	Amount	Pending	Description
Menards	PCA2ZoLo	5/25/18	\$ 36.38		
Omega Engineering	PCA2Z5PP	6/5/18	\$ 275.00		
Blue Truck Fuel	J2634201	5/24/18	\$ 44.64		
WorldmessLT	PCA2YZQ1	5/24/18	\$ 514.14		Conference Registration
JPMorgan Chase	PCA2YZQ2	5/25/18	\$ 7.71		Bank Fee
Menards	PCA305GX	8/1/18	\$ 13.67		
RP Lumber Co Inc	PCA33FL7	2/25/19	\$ 170.25		
Taylor, Mark Supplies	ER01694226	8/6/18	\$ 18.01		
Farm Garden & Greenhouse	J2667697	8/3/18	\$ 45.00		1 bale of Corn Stover
Mark Taylor	ER01694226	8/6/18	\$ 52.81		ice
Blue Truck Fuel	J2668246	8/6/18	\$ (44.64)		
WorldmessLT	J2668248	8/6/18	\$ (514.14)		moving expense
JPMorgan Chase	J2668262	8/6/18	\$ (7.71)		moving expense
RP Lumber Co Inc	PCA3637W	7/29/19	\$ 933.15		
RP Lumber Co Inc	PCA364ZS	7/30/19	\$ 26.12		
CU Hardware Company	PCA37Q70	10/25/19	\$ 18.33		
RP Lumber Co Inc	PCA3A4BJ	3/25/20	\$ 168.89		
Facilities & Services	AM005679	10/31/19	\$ 57.31		
Amazon	PCA3B8WJ	7/8/20	\$ 50.97		LumberTite Star Screws
US Heritage Group, Inc.	PCA3BDFS	7/20/20	\$ 3,396.70		Hemcrete Shiv, Binder, Sand, plaster, pallet and wrapping (JV'd to 767000 ORG 8/17/2020)
The Bike Shop	PCA3BEHX	7/22/20	\$ 322.00		2 bikes and bike locks
Hempville	PCA3BAWU	7/14/20	\$ 41.58		
Facilities & Services	AM005DC4	8/31/20	\$ 121.50		
CA Tools	PCA3CJH	10/8/20	\$ 1,224.99		
Facilities & Services	AM005F63	10/31/20	\$ 32.86		
Home Depot	PCA3CUNF	10/28/20	\$ 191.92		
Home Depot	PCA3CVZ6	10/29/20	\$ 599.00		
Home Depot	PCA3CUNE	11/1/20	\$ 24.98		
Home Depot	PCA3CVZ7	11/1/20	\$ 94.23		
Home Depot	PCA3CVZ8	11/1/20	\$ 31.56		
Home Depot	PCA3CWQL	11/3/20	\$ 806.00		
Home Depot	PCA3CZPF	11/9/20	\$ (599.00)		
F&S	AM0060D7	12/31/20	\$ 65.72		
RP Lumber Co Inc	PCA3GDVL	7/19/21	\$ 325.39		
RP Lumber Co Inc	PCA3GGT6	8/26/21	\$ 42.97		
Home Depot	PCA3GZBD	9/2/21	\$ 39.00		
Home Depot	PCA3GZBC	9/2/21	\$ 49.00		
Menards	PCA3HWEV	12/1/21	\$ 516.61		
TOTAL:			\$ 9,192.90		

Wages + Fringe Name	Document #	BW/MN	Amount
Grad Hourly Wage FY18			\$ -
TOTAL FRINGE FY18			\$ -
Grad Hourly Wage FY19			\$ 2,185.91
TOTAL FRINGE FY19			\$ 22.44
Grad Hourly Wage FY20			\$ 3,583.75
TOTAL FRINGE FY20			\$ 74.94
Grad Hourly Wage FY21		26	\$ 12,708.78
TOTAL FRINGE FY21			\$ 1,052.26
Grad Hourly Wage FY22			\$ 900.00
TOTAL FRINGE FY22			\$ 72.27
TOTAL:			\$ 20,600.35