

# Collaborative Learning: Temple Tiny House



October 24, 2017



# Project Background, Goals & Financing

Kathleen Grady, AICP, LEED AP  
Director of Sustainability

# About the Project



The Temple Tiny House is a student designed and student constructed sustainable building located at Temple Community Garden on Main Campus. The 175 square foot net-zero energy structure officially opened in April 2017.

# Tiny House Planning Timeline

**June 2014**

Project idea conceived  
with an interdisciplinary  
faculty group

**January 2015**

Interdisciplinary student  
design charrette

**January 2016**

Interdisciplinary  
design-build course begins

LA site design charrette



# Goals

1. Interdisciplinary academic learning opportunities;
  2. Small-scale project;
  3. Systems demonstration;
  4. Pilot cutting edge sustainable technologies;
  5. Co-curricular and community engagement opportunities.
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# Financing

- Project funding;
- Material donations;
- Project partners;
- Course credit revenue.



# Project Implementation: Architecture

Robert Shuman, AIA, LEED AP  
Associate Professor, Department of Architecture

# Tiny House Design-Build Timeline

**Spring 2016**

Interdisciplinary design course through Architecture

**Summer 2016**

Interdisciplinary build course through Architecture

**Fall 2016 -**

**Winter 2017**

Volunteer work days

**April 2017**

Building officially opens





# Design Course

- Course structure;
- How students were engaged;
- Notable successes.



# Build Course

- Course structure;
- How students were engaged;
- Notable successes.



# Project Implementation: Engineering

Robert Ryan, PE, PhD  
Associate Professor, College of Engineering

# Senior Design Engineering Team

- Senior design framework;
- Design-build course consultants;
- Engineering project designers and managers;
- Notable successes.





# Engineering Systems

- Structural design;
- Off-grid solar;
- Thermal storage;
- Green roof and rainwater collection;
- Weatherstation.



# Project Implementation: Engineering Student Perspective

Blake Larson  
Mechanical Engineering

# Engineering Team

- Blake Larson
- Taha Mohamed
- Roy Andresen
- Alex Burchman





### 160511\_MeetingLog

tue91715@temple.edu

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#### Present:

- Taha Mohammed
- Blake Larson
- Alex Burchman
- Roy Andresen

#### 1. Permit Progress

- a. Structural
  - i. Shuman has 3 solutions
- b. Questions/Concerns

- 2. Test Methods progress
- 3. Next meeting

#### Assignments

- 1. Taha
  - a. Complete structural state permit requirements - due 5/13
  - b. Complete first draft of test methods - due 5/13
- 2. Blake
  - a. Make drawing of updated solar thermal sys, size vents, complet
  - b. Complete COMM checks - due 5/13



# Project Benefits

- Community Engagement
- Hands-on experience
- Communication skills
- Design/Build format
- Investigate green building techniques



# Lasting Legacy

- The Temple Tiny House as a place where conviction becomes action



# Project Implementation: Site Design-Build

Kate Benisek, MALD, MLA, ASLA  
Assistant Professor (Teaching/Instruction),  
Landscape Architecture



# Tiny House Site Design-Build Timeline

January 2016

LA-Hort site design charrette

Fall 2016

LA studio course developed conceptual site designs

Spring - Fall 2017

LA-Hort student team complete Tiny House planting design

October 2017

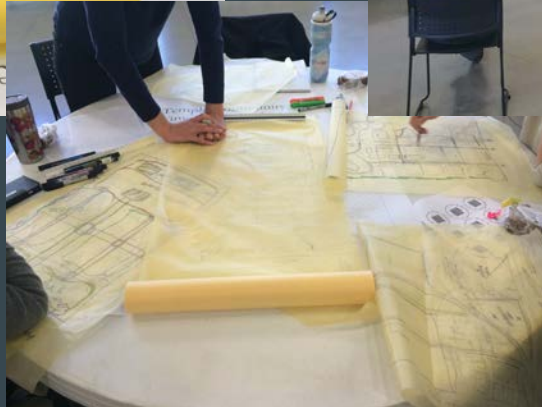
Site planted through student volunteer efforts





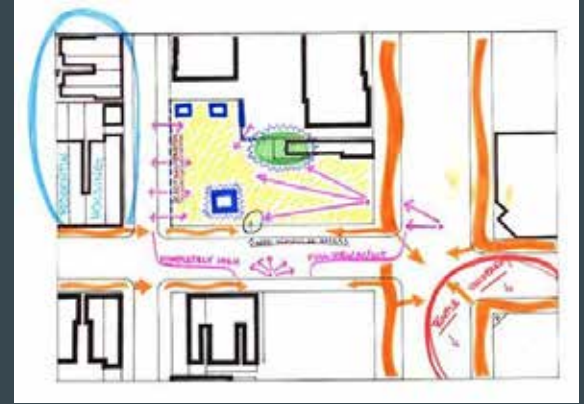
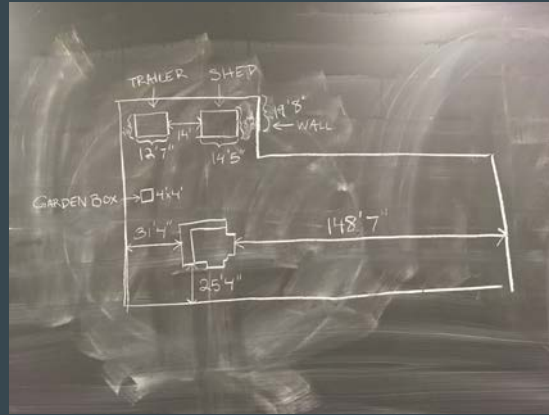
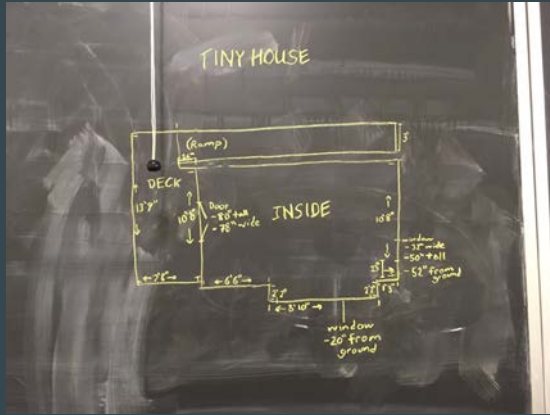
# Temple Community Garden Site Design Charette

Undergraduate and Graduate LA/Hort Students and TCG Members, January 2016

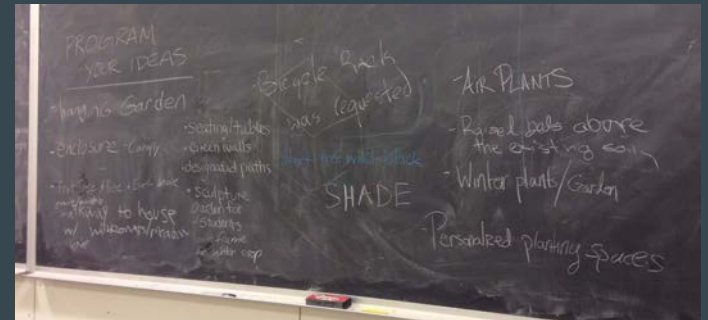
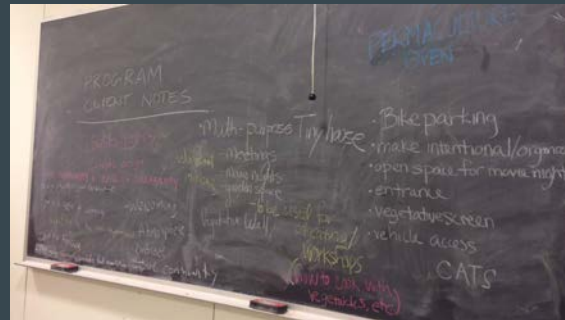


# “Design Communications” TCG Site Design Project

## Undergraduate LA/Hort Students, October-November 2016

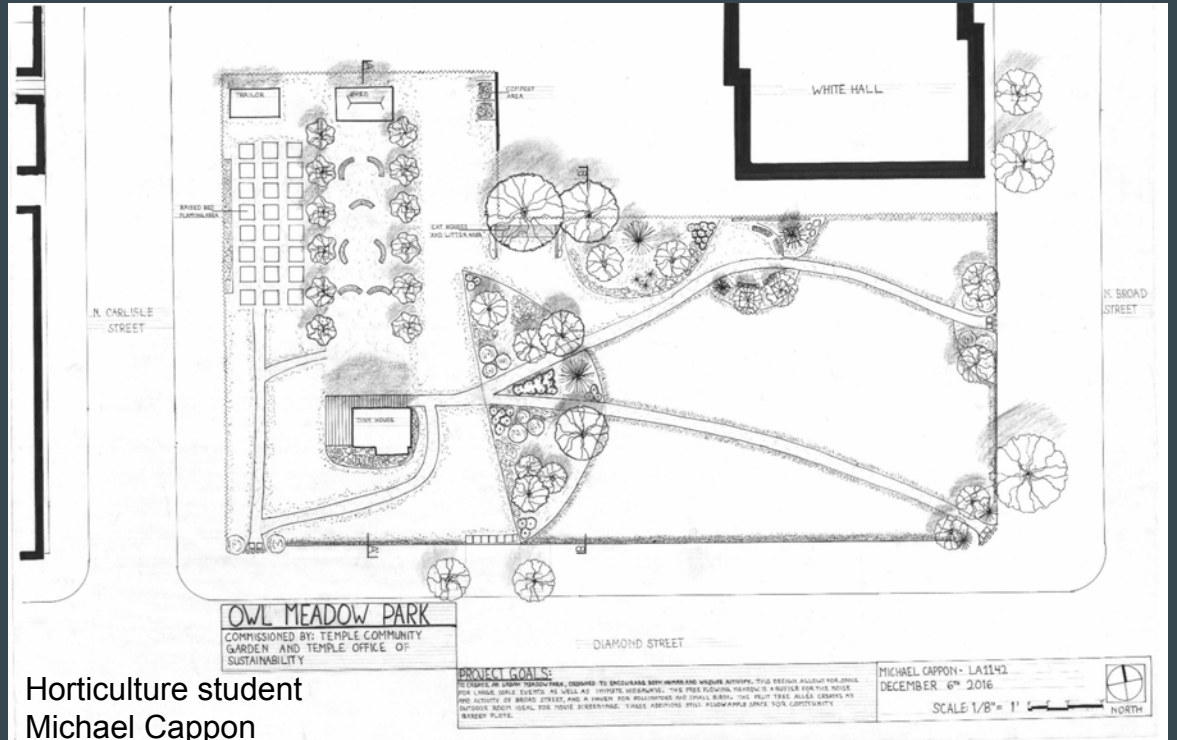
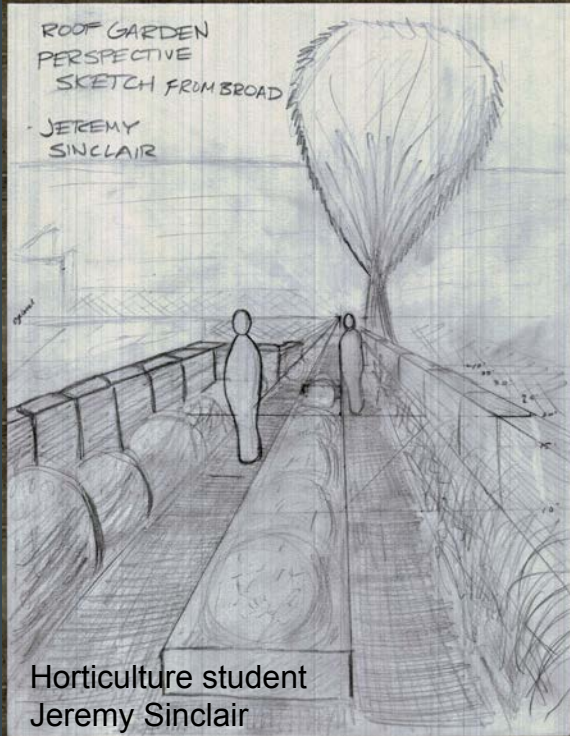


- Measurements
- Site Inventory and Analysis
- Program Development



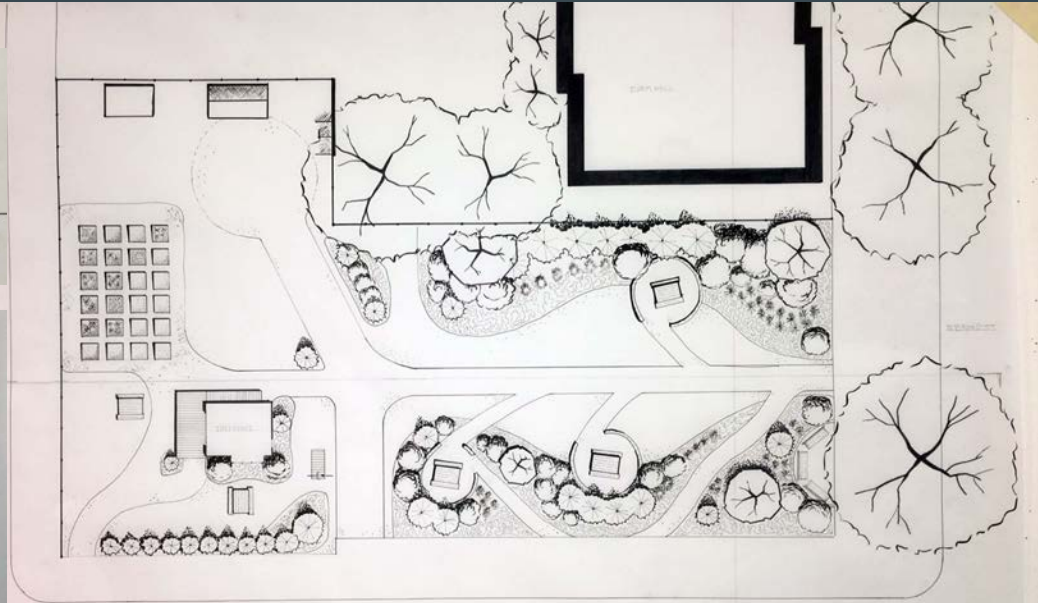
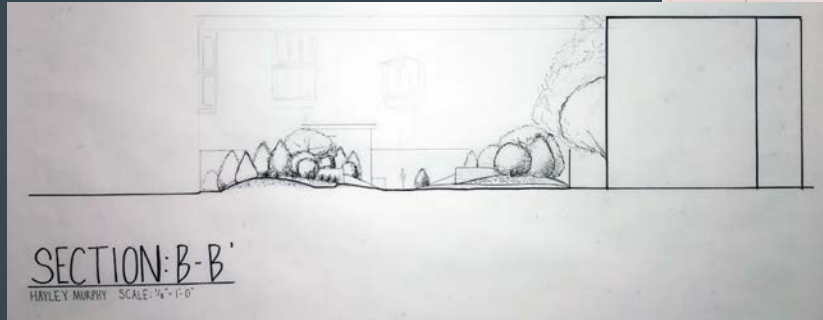
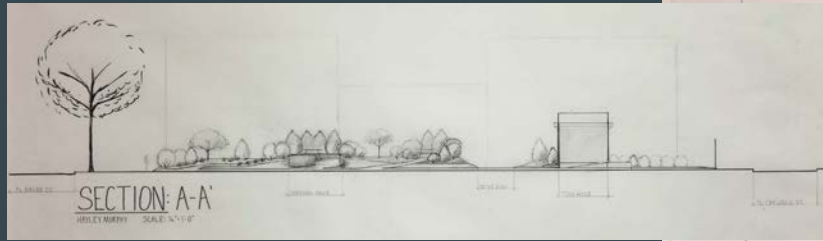
# “Design Communications” TCG Site Design Project

Undergraduate LA/Hort Students, October-November 2016



# “Design Communications” TCG Site Design Project

Undergraduate LA/Hort Students, October-November 2016



Landscape Architecture student  
Hayley Murphy

TEMPLE UNIVERSITY	PLAN: TEMPLE COMMUNITY GARDEN	GOAL: MAKE THE SPACE FEEL WELCOMING, AS WELL AS PERMANENT AND INTENTIONAL, WHILE LEAVING IT OPEN TO EVOLVE AS A PLACE OF COMMUNITY AND SUSTAINABLE INNOVATION.	LA 1412, DESIGN COMMUNICATIONS DECEMBER 2016 HAYLEY MURPHY SCALE: 1/4" = 1'-0" NORTH
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# Results & Lessons Learned

Katherine Switala Elmhurst, PhD, LEED AP  
Office of Sustainability

# Interdisciplinary Learning Opportunities



- Interdisciplinary faculty group collaboration;
  - Student design charrettes;
  - Interdisciplinary courses;
  - Hands-on learning;
  - Student media coverage;
  - Architecture and engineering student internships.
-

# Small Scale Project

*fosters learning opportunities*



## **Sustainable Site**

- 50sf green roof for stormwater management
- Rain barrels to collect stormwater runoff for garden use
- Cool roof to mitigate heat island effect



## **Water Efficiency**

- No utility connection to city water
- Under sink collection of water for garden use
- Composting toilet



## **Energy**

- Off-grid, 1.9kW solar array with salt water battery storage
- Passive solar closet for building heating and cooling
- High thermal performance building envelope



## **Materials & Resources**

- Exterior cork siding, a rapidly renewable resource
- Material reuse: slate tile floor, utility sink, furniture and roof
- 80% recycling rate of construction debris



## **Interior Environment**

- Finishes with 0% volatile organic compounds
- LED lighting fixtures
- Daylighting and natural ventilation

# Sustainable Systems Demonstration



# Pilot Sustainable Technologies



- Solar closet;
  - Photovoltaic system batteries.
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# Co-curricular & Community Engagement



The Tiny House will serve as programming space for the Temple Community Garden.

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# Lessons Learned

- Time allocation and two course structure;
- Living Building Challenge certification.



# TEMPLE TINY HOUSE



## Temple Affiliates

### Schools and Colleges:

- Tyler School of Art, Division of Architecture and Environmental Design
- College of Engineering
- School of Media and Communication

### Administration:

- Campus Safety
- Facilities Management
- Finance and Administration
- Office of the Fire Marshall
- Purchasing
- Risk Management
- Service Operations

### Temple Community Garden

### Interdisciplinary Sustainable Design Committee

### Design-Build Course Faculty:

Robert Shuman, Timothy McDonald and Robert Ryan

### Students:

Roy Andresen, Alex Beranek, Lena Bonds, Casey Buffaloe, Alex Burchman, Joseph Burda, Jason Buss, Ces Calvosa D'Almeida Couto, Cassandra Castillo, Michael Cinalli, Jonathan Crook, Mark Fedele, Zachary Hawk, Rhett Heuer-Rubalcava, Chang Hong, Isaac Howland, Julie Kress, Yau Wai Lam, Blake Larson, Natalie Lee, Mario Marques Margotto, Dominic Martino, Devon McLaughlin, Steffanie Minnema, Taha Mohamed, Collin Phillips, Yin Rattanak, Sarah Roebuck, Brianna Shillington, Alexander Spaseff, Pierre Tairouz, Kyle Taveira and Lena Vovevoda

## Companies



Thank you to our  
project partners!



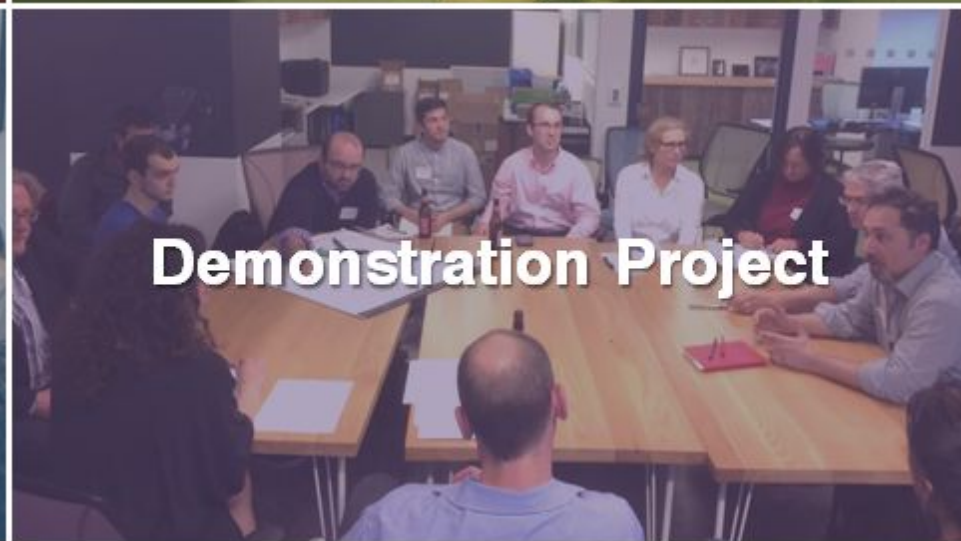
# Combining Efforts

Contact: [lbcphillycollab@gmail.com](mailto:lbcphillycollab@gmail.com)

Newsletter: <https://www.dvgbc.org/>

-Under the “Get Involved” Tab, “Join the E-List” Check LBC





# PANEL DISCUSSION

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**TEMPLE**  
UNIVERSITY



# BRAINSTORM

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# Tiny LBC Competition?







# Competition Format + Requirements





# Project Type + Site





# Competition Incentives







# Judging Format







# Community Partners







# Public Engagement





