

DCVL

DESIGN

Proud to be MBE Certified

Crafting a Regenerative Approach

DCVL for Boston Society of Architects (BSA) Sustainability Education Committee (SEC); Tuesday, May 21, 2024

THANK YOU!



This, and all subsequent slides:

© DCVL Design 5.21.2024

DCVL

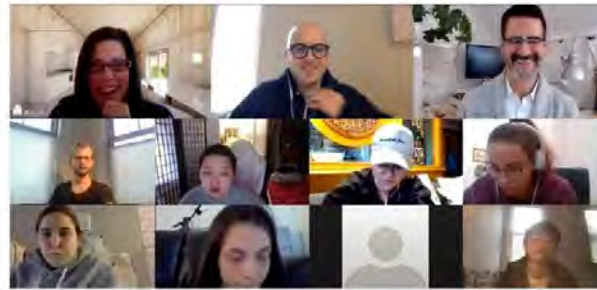
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THANK YOU!



DCVL Partners, Amy Van Lauwe (Top Left) & David De Celis (Top Right), meet w/ the BAC's Mark Rokamathu (Top Center) and his students.



Happy to Mentor: a Comprehensive Approach to Design Practice



David De Celis

AIA, NCARB, LEED Green Associate, Principal at DCVL Design

3 articles

May 10, 2020

DCVL

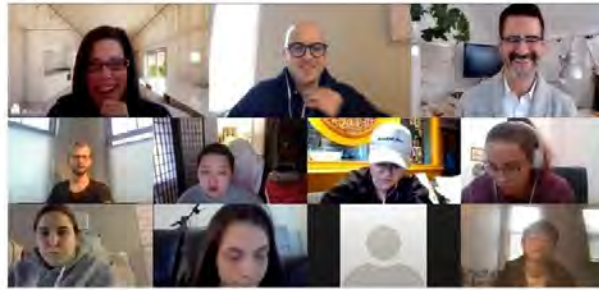
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Wôpanâak



Massa-adchu-es-et (Massachusetts)

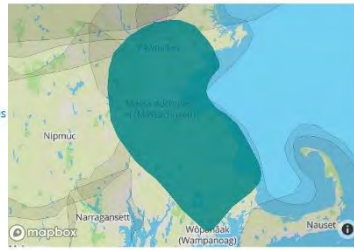
Last updated on Tuesday, June 5th, 2018

Websites

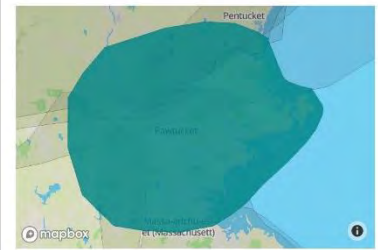
- Massachusetts Tribe Website
- Mattakeeset Tribe of the Massachusetts Indian Peoples
- Praying Indians of Natick and Ponkapoag
- Passanageset Project Website

Related maps

- Massachuset (Languages)



Pawtucket



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Crafting a Regenerative Approach

DCVL for Boston Society of Architects (BSA) Sustainability Education Committee (SEC); Tuesday, May 21, 2024

Learning Objectives:

- Discuss how a regenerative design approach bolsters sustainability goals.
- Identify available resources and software for analyses of carbon footprints.
- Discuss how academic and advocacy work provide teaching and learning opportunities for ongoing professional development and community engagement.
- Explain how incorporating Passive House, zero energy, and universal design strategies help projects reach their sustainability goals while simultaneously promoting occupants' wellbeing.

Crafting a **Regenerative** Approach

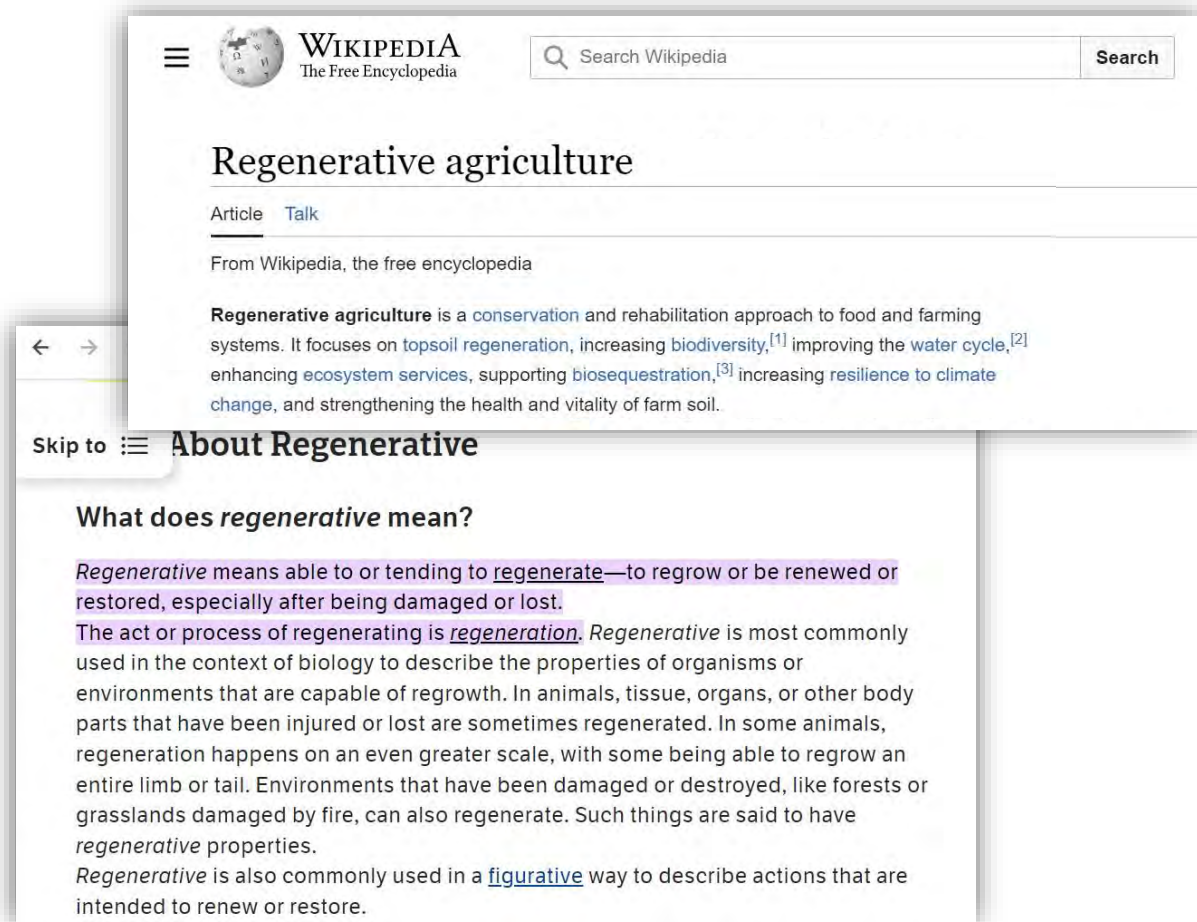
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Crafting a **Regenerative** Approach



Crafting a **Regenerative** Approach

Mayo Clinic logo, English language selector, menu, search icons.

CENTERS AND PROGRAMS
CENTER FOR REGENERATIVE BIOTHERAPEUTICS

SECTIONS

ABOUT REGENERATIVE MEDICINE

New approaches to healing

Regenerative medicine is focused on developing and applying new treatments to heal tissues and organs and restore function lost due to aging, disease, damage or defects.

The human body has the natural ability to heal itself in many ways. A cut to the skin repairs itself, broken bones mend and a living-donor's liver regenerates in a few weeks. Imagine if scientists could capture this naturally occurring ability to heal and apply it to a wide range of conditions.

Heart disease, stroke, diabetes and osteoarthritis are examples of chronic conditions that are long lasting and do not resolve on their own. In many cases, symptoms can be managed with medication or medical devices.

Regenerative medicine goes beyond disease management to search for and discover therapies that support the body in repairing, regenerating and restoring itself to a state of well-being.

Wikipedia logo, search bar, "Search Wikipedia" button.

Regenerative agriculture

Article Talk

From Wikipedia, the free encyclopedia

Regenerative agriculture is a [conservation](#) and rehabilitation approach to food and farming systems. It focuses on [topsoil regeneration](#), increasing [biodiversity](#),^[1] improving the [water cycle](#),^[2] enhancing [ecosystem services](#), supporting [biosequestration](#),^[3] increasing [resilience to climate change](#), and strengthening the health and vitality of farm soil.

Tip to **About Regenerative**

What does *regenerative* mean?

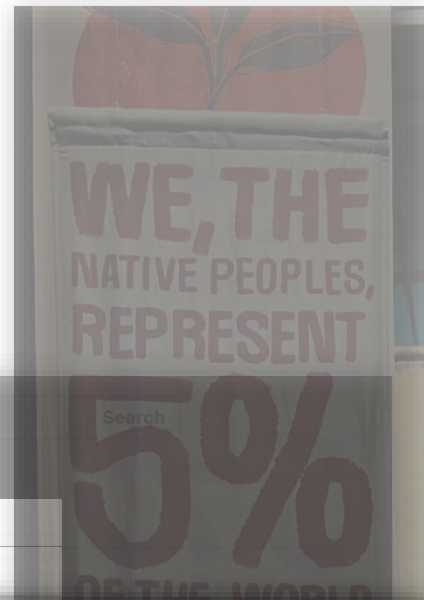
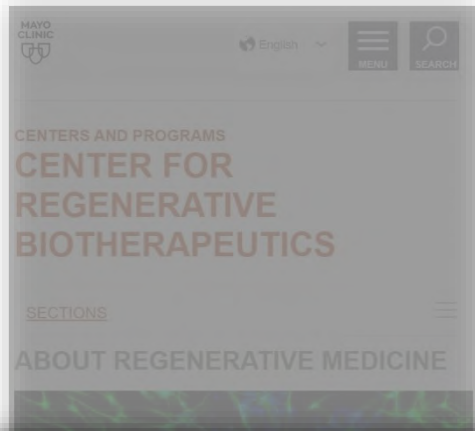
Regenerative means able to or tending to **regenerate**—to regrow or be renewed or restored, especially after being damaged or lost. The act or process of regenerating is *regeneration*. *Regenerative* is most commonly used in the context of biology to describe the properties of organisms or environments that are capable of regrowth. In animals, tissue, organs, or other body parts that have been injured or lost are sometimes regenerated. In some animals, regeneration happens on an even greater scale, with some being able to regrow an entire limb or tail. Environments that have been damaged or destroyed, like forests or grasslands damaged by fire, can also regenerate. Such things are said to have *regenerative* properties. *Regenerative* is also commonly used in a [figurative](#) way to describe actions that are intended to renew or restore.

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Crafting a **Regenerative** Approach



Responsibility

Resilience

Regenerative

NEGATIVE
IMPACT

POSITIVE
IMPACT

TYPICAL → "GREEN" → SUSTAINABLE → RESTORATIVE → REGENERATIVE



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Founding Partners / Role(s):

David De Celis, AIA

Principal / Project Architect

(He / Him / His / Latin-X)

- M-Arch, Harvard, GSD
- Over 35 yrs. Experience
- Specializes in: Ed/Institutional, Collaborative work-spaces, Theater/Assembly
- Academics: RISD, BAC, UM SoA

Amy Van Lauwe, AIA

Principal / Project Architect

(She / Her / Hers)

- M-Arch, Boston Architectural College
- Over 25 yrs. Experience
- Specializes in: Ed/Institutional, Food-service spaces, Passive Zero-Energy Construction
- Academics: BAC + Suffolk University

David typically handles projects with an emphasis on space planning, accessibility and FF&E; Amy focuses on zero-energy/passive projects, food service and new construction. Both Principals handle renovations, interiors, and LEED-certified projects. Because of our size and our experience with tight project schedules, we are both directly involved in each project from inception to close-out without hand-offs to other personnel. This ensure that project goals remain focused and streamlines communications.



**DCVL Team/
Recent Graduates:**
Kaylee and Joshua



ARTS-EDUCATION-INSTITUTIONAL



COMMERCIAL



RESIDENTIAL



PLANNING-FEASIBILITY STUDIES



GARDENS



MILLWORK-Graphics-FF&E



ARTS-EDUCATION-INSTITUTIONAL
Multi-Unit Dorm./Higher Ed.



COMMERCIAL



RESIDENTIAL
P.H./Renovations/Hybrid...



PLANNING-FEASIBILITY STUDIES



GARDENS



MILLWORK-GRAPHICS-FF&E



Crafting a Regenerative Approach

EXAMPLES: our Office/DCVL Design
+ RESIDENTIAL (x4) :

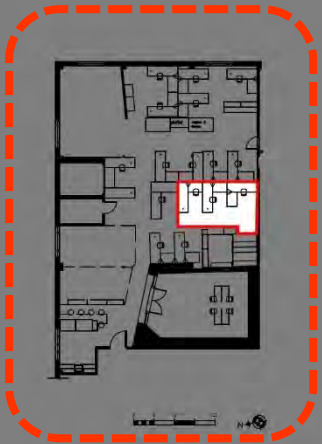


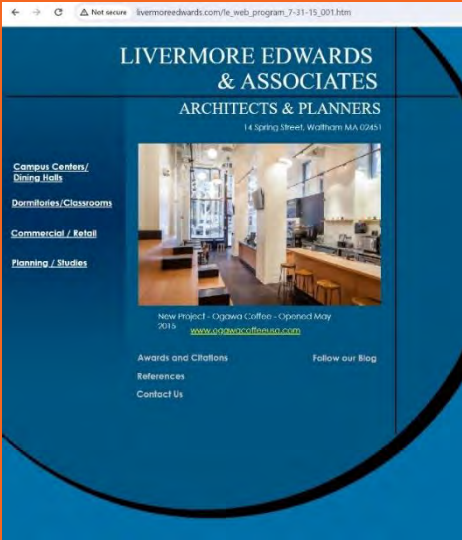
Crafting a **Regenerative** Approach

EXAMPLES: our Office/DCVL Design

About Us – HIS/HERstory

561 Windsor:
WFH Alternative!





Where were WE 2008...?

... the state of *Practice* and *Us* ?



DCVL Design, for BSA SEC: FIT-OUT for ARUP, 2008. 11,200 SF / \$1.3M

2007-'08



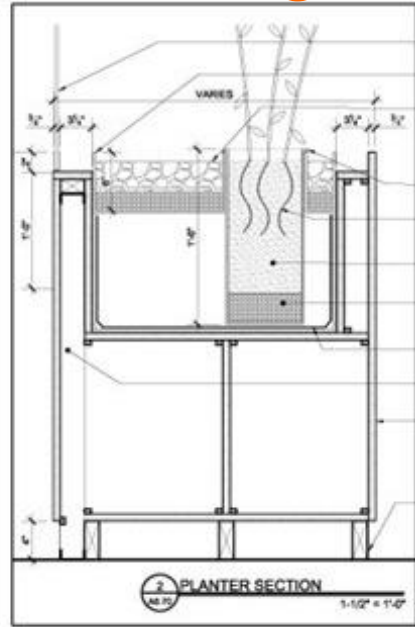
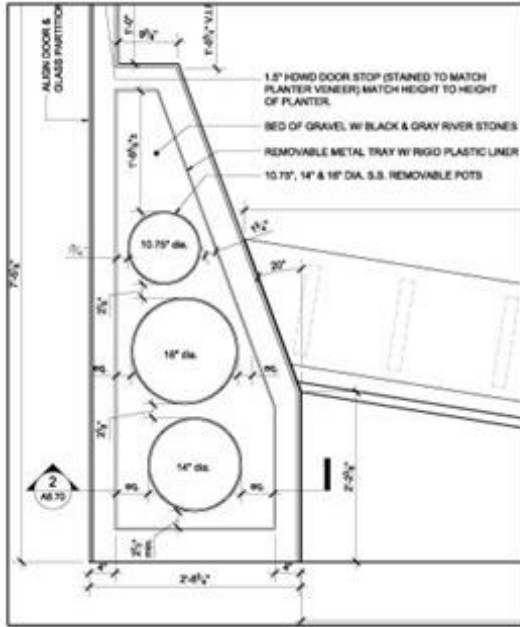




2007-'08...

...Terrapin Pub's

"14 Patt..." 9.14.2014





DCVL PHILOSOPHY & BUSINESS MODEL

VISIONING
SWOT ANALYSIS
\$\$\$

PARTNERSHIP AGREEMENT



DCVL PHILOSOPHY & BUSINESS MODEL

DESIGN ACADEMICS VOLUNTEERISM



“creating innovative, flexible spaces for the ways we live, work and learn”

DCVL PHILOSOPHY & BUSINESS MODEL

DESIGN

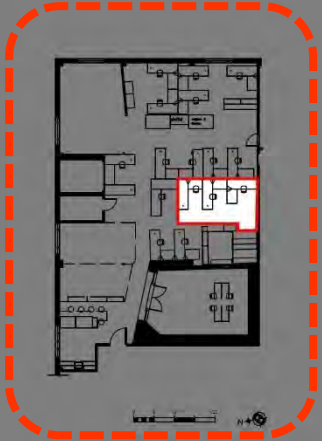
ACADEMICS

VOLUNTEERISM

Crafting a **Regenerative** Approach

EXAMPLES: our Office/DCVL Design

561 Windsor:
WFH Alternative! ...our Bldg./Space



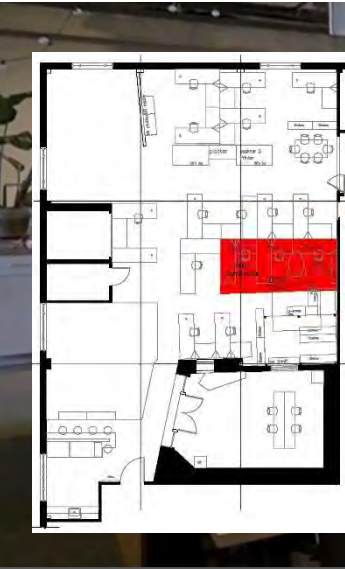


Hive Outside...



... & Inside

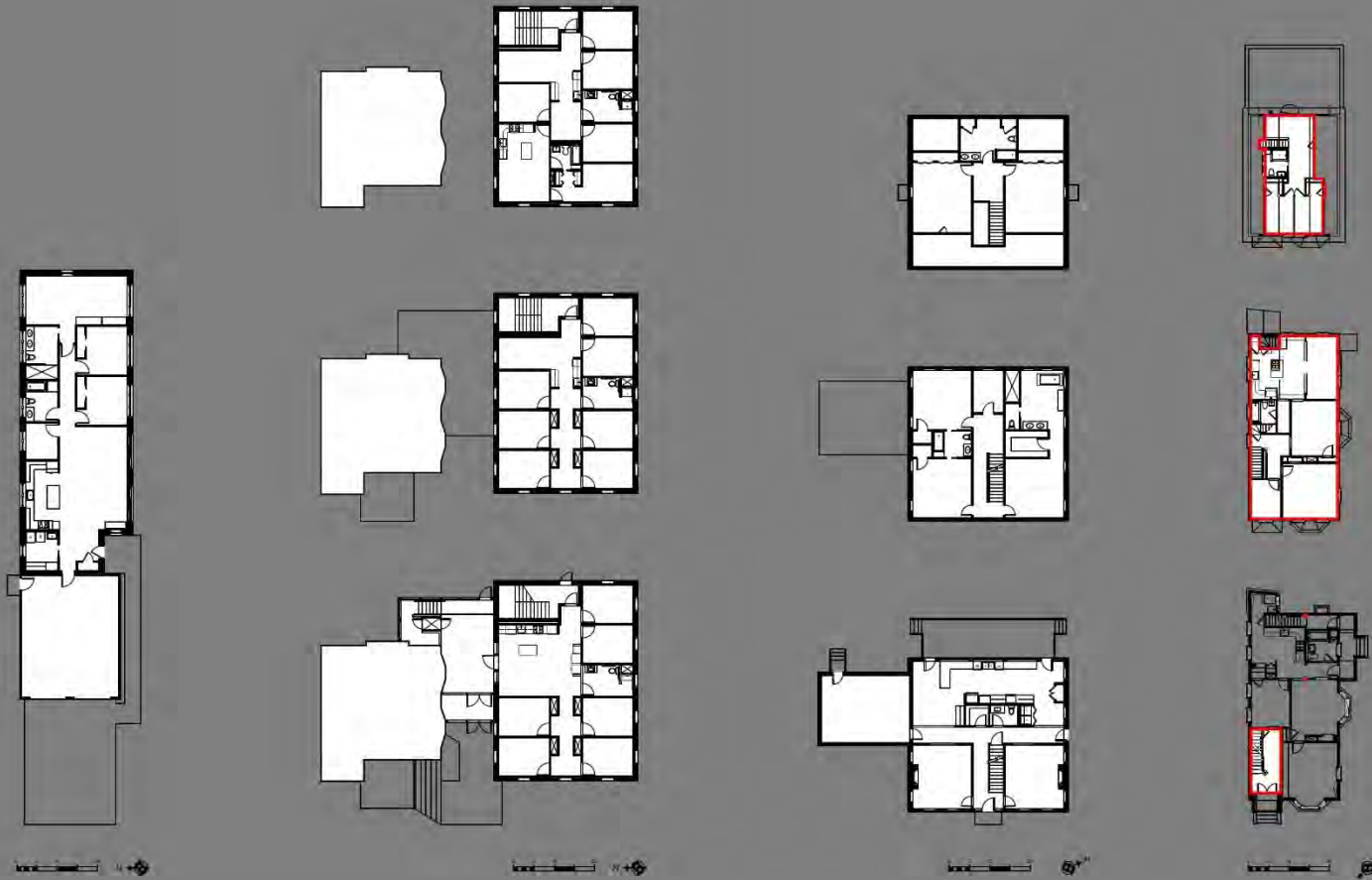
DCVL Design, for BSA SEC: CHOOSING A REGENERATIVE OFFICE SPACE



Crafting a **Regenerative** Approach

RESIDENTIAL:

New Construction / Hybrid (x2) / Renovation



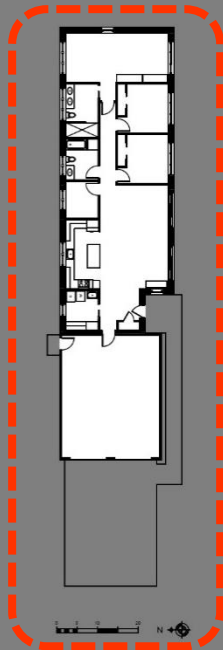
Crafting a **Regenerative** Approach

RESIDENTIAL:

New Construction / Hybrid (x2) / Renovation

Wilton:

Small, but BIG Impact





DCVL Design

Wilton Zero-Energy Residence

PROJECT DATA

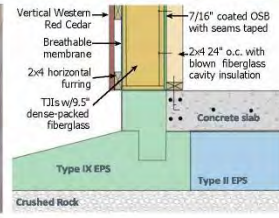
- **Layout:** 3 bdrm, 1 fl, 2,001 ft²
- **Climate:** IECC 5A, cold
- **Completed:** January 2021
- **Category:** Custom for Buyer <3,000 ft²

MODELED PERFORMANCE DATA

- **HERS Index:** without PV 30; with PV -25
- **Annual Energy Costs:** without PV \$1,450; with PV \$200
- **Annual Energy Cost Savings:** (vs typical new homes) without PV \$3,900; with PV \$5,100
- **Annual Energy Savings:** without PV 14,100 kWh; with PV 8,400 kWh
- **Savings in the First 30 Years:** without PV \$157,900; with PV \$207,300

KEY FEATURES

- **Walls:** 2x4, 24" o.c. + Larsen truss, R-48 total: advanced framed walls with 3.5" blown fiberglass, 7/16" coated OSB taped, TJIs with 9.5" dense-packed fiberglass held by breathable membrane, 2x4 horizontal furring behind vertical Western Red Cedar.
- **Roof:** Vaulted ceilings with scissor truss, 5/8" coated OSB sheathing with taped seams, high-temperature underlayment, standing-seam metal roof, Cool Roof-certified.
- **Attic:** Vented R-76 total: two layers R-38 fiberglass batt in bottom cord of scissor truss.
- **Foundation:** Slab on grade: 12" R-48 EPS under slab, 9.5" R-38 EPS at slab edge. 10-mil poly vapor air barrier.
- **Windows:** Triple-pane, argon, low-e, aluminum-clad wood, awnings, U=0.147, SHGC=0.33.
- **Air Sealing:** 1.49 ACH50, continuous air barrier from below slab to peak of roof: under-slab barrier connected to wall and ceiling membrane with tapes and sealants, all holes sealed.
- **Ventilation:** ERV, MERV 8 filter, 131 CFM, 157 Watts, 78% SRE.
- **HVAC:** Ducted mini-split heat pump, 2.9 COP, 17 SEER. Passive solar design.
- **Hot Water:** Heat pump water heater, 66-gal, 3.35 COP. All hot water lines insulated to R-4.
- **Lighting:** 100% LED, large floor-to-ceiling windows for daylight.
- **Appliances:** ENERGY STAR refrigerator, dishwasher, 4 ceiling fans, exhaust fan, water heater.
- **Solar:** 11.5 kW, rooftop panels.
- **Water Conservation:** Low-flow fixtures, compact plumbing design, PEX piping.
- **Energy Management System:** N/A
- **Other:** EV charging; accessible shower, doors, and floorplan.



Home Energy Rating Certificate
Final Report

Rating Date: 2020-06-19
Registry ID: 259476935
Ekotrope ID: yvPWPkZd



HERS® Index Score:
-25
Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings
\$5,110
*Relative to an average U.S. home

Home:
42 Robbins Rd
Wilton, NH 03086

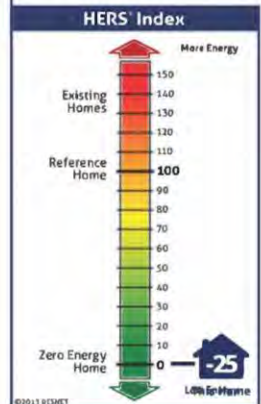
Builder:
Energy Vision Homes

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	4.3	\$204
Cooling	1.2	\$58
Hot Water	2.2	\$102
Lights/Appliances	18.1	\$855
Service Charges		\$222
Generation (e.g. Solar)	48.7	-\$1,218
Total:	25.8	\$222

This home meets or exceeds the criteria of the following:

- ENERGY STAR v3
- ENERGY STAR v3.1
- 2015 International Energy Conservation Code
- 2012 International Energy Conservation Code
- 2009 International Energy Conservation Code
- 2006 International Energy Conservation Code



Home Feature Summary:

- Home Type: Single family detached
- Model: Residence
- Community: N/A
- Conditioned Floor Area: 2,001 ft²
- Number of Bedrooms: 3
- Primary Heating System: Air Source Heat Pump • Electric • 2.96014068 COP
- Primary Cooling System: Air Source Heat Pump • Electric • 17 SEER
- Primary Water Heating: Water Heater • Electric • 3.35 Energy Factor
- House Tightness: 683 CFMS0 (1.49 ACH50)
- Ventilation: 131 CFM • 157 Watts
- Duct Leakage to Outside: 10 CFM @ 25Pa (0.83 / 100 s.f.)
- Above Grade Walls: R-48
- Ceiling: Attic, R-67
- Window Type: U-Value: 0.146, SHGC: 0.34
- Foundation Walls: N/A

Rating Completed by:

Energy Rater: Michael A Browne
RESNET ID: 3992602

Rating Company: Advanced Building Analysis, LLC
2 Woodlawn St, Amesbury, MA 01913
(978) 270-3911

Rating Provider: Energy Raters of Massachusetts
2 Woodlawn Street Amesbury, MA 01913
978-270-3911

Michael A Browne

Michael A Browne, Certified Energy Rater
Digitally signed: 8/4/20 at 1:55 PM



ENERGY STAR CERTIFIED NEW HOME

Address:
42 Robbins Rd
Wilton, NH 03086

Built by:
Energy Vision Homes

Verified by:
Advanced Building Analysis, LLC

Date:
Aug 4, 2020

ENERGY STAR® for Homes Version Number:
3.1

Optional information:
Verified using Ekotrope (Version 3.2.3.2496)

This home has been independently verified to meet EPA's strict guidelines for energy efficiency.
Learn more at energystar.gov

EPA Indoor airPLUS QUALIFIED HOME

Built by:
Energy Vision Homes

Verified by:
Advanced Building Analysis, LLC

Date:
2020-06-19

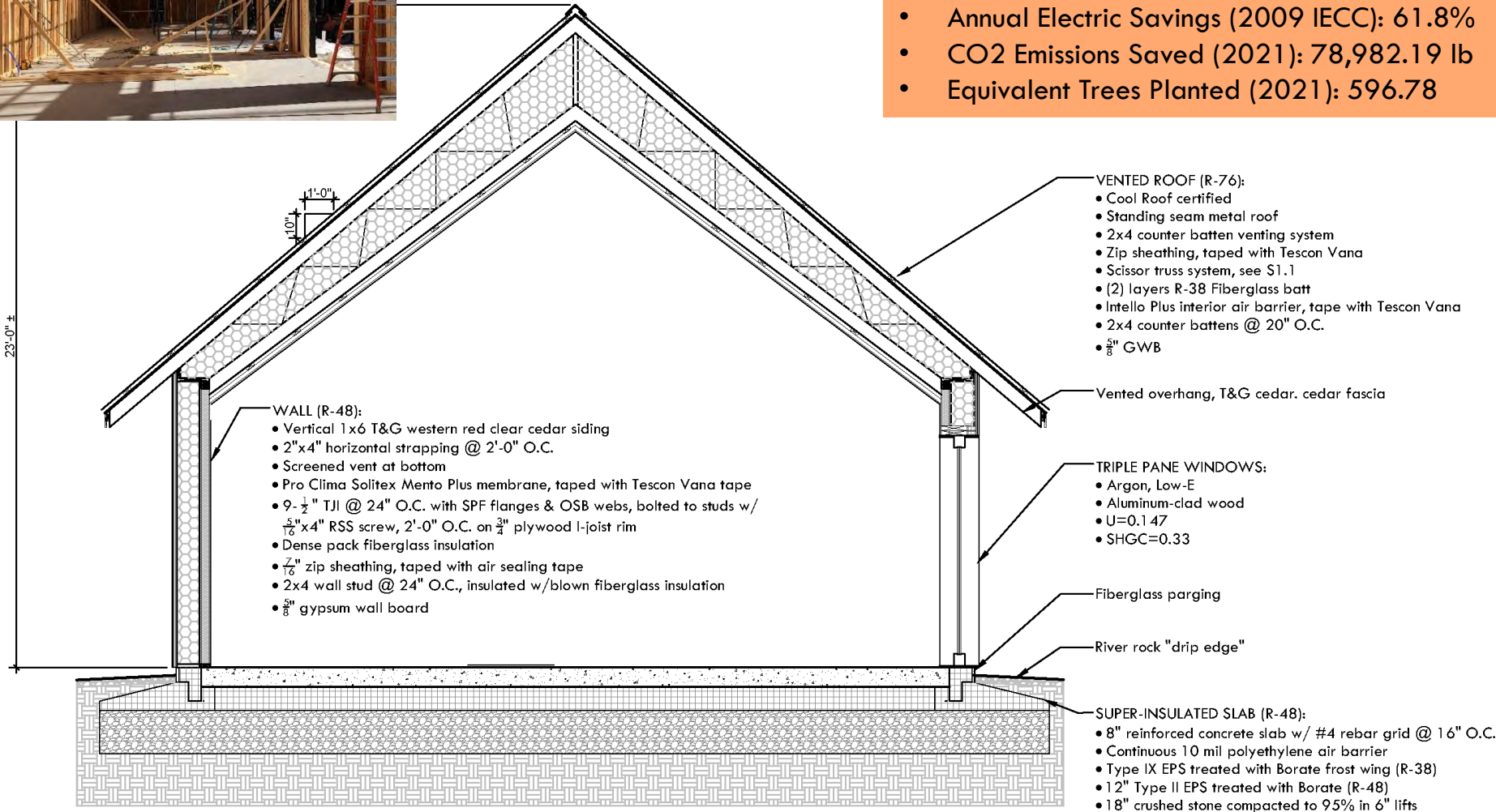
New homes that are Indoor airPLUS qualified meet U.S. Environmental Protection Agency guidelines for improved indoor air quality.
www.epa.gov/indoorairplus

ekotrope Ekotrope RATER - Version:3.2.3.2496
The Energy Rating Disclosure for this home is available from the Approved Rating Provider.
This report does not constitute any warranty or guarantee.



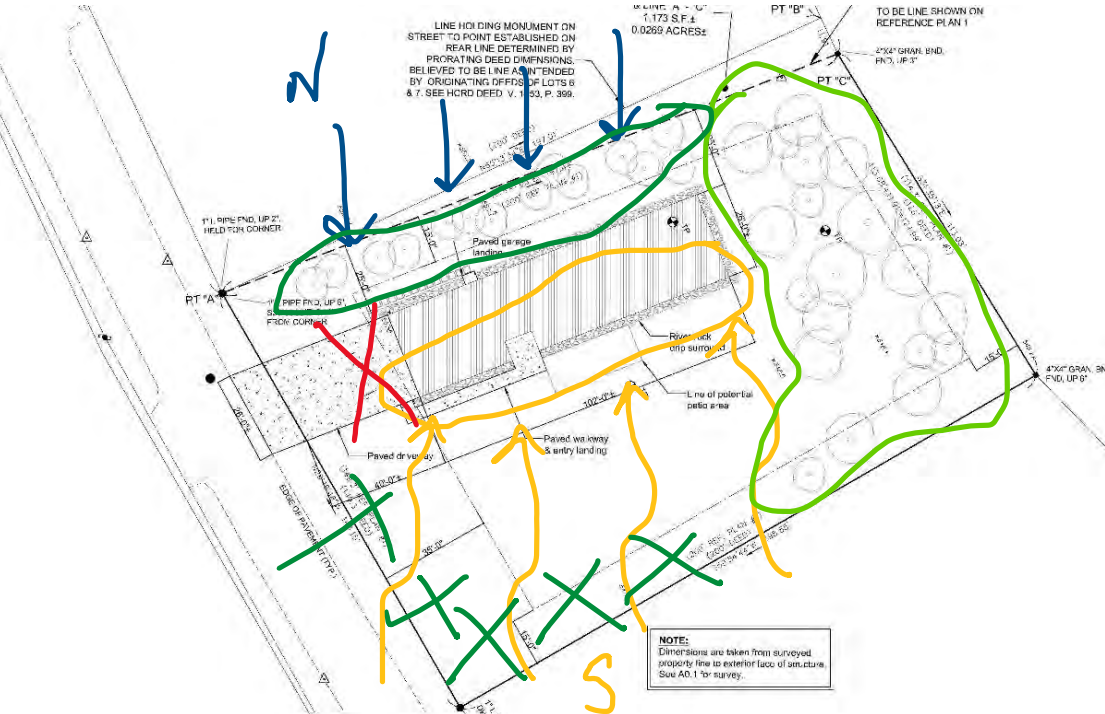
CURRENT METRICS

- March 2024 Energy Generated: 470.24 kWh
- March Electric Bill: -\$1,192.13
- Lifetime energy (2021): 51.01 MWh
- Annual Electric Savings (2009 IECC): 61.8%
- CO2 Emissions Saved (2021): 78,982.19 lb
- Equivalent Trees Planted (2021): 596.78



SITE CONSIDERATIONS

- Connection to existing utilities
- Least invasive clearing
- Minimal impervious covering
- Improved site drainage



ONSITE CONSTRUCTION

- Modular too expensive
- Local manufacturers
- Local crews, small size



ONSITE CONSTRUCTION

- Congruent with stick framing experience
- Close coordination with CPHC G.C.
- Flat framing
- Crane lifting



HEALTHY SYSTEMS

- ERV for fresh air MERV 8 filter, 131 CFM, 157 Watts, 78% SRE
- Mitsubishi Ducted mini-split heat pump, 2.9 COP, 17 SEER.
- PV for electricity & EV charging
- Thermal mass concrete floor
- Radiant heat bathroom floors



AGING IN PLACE

- Zero Thresholds
- 3' Doors
- Wide Corridor
- Low Ramped Entry
- Direct Garage Access
- Light Levels/Options



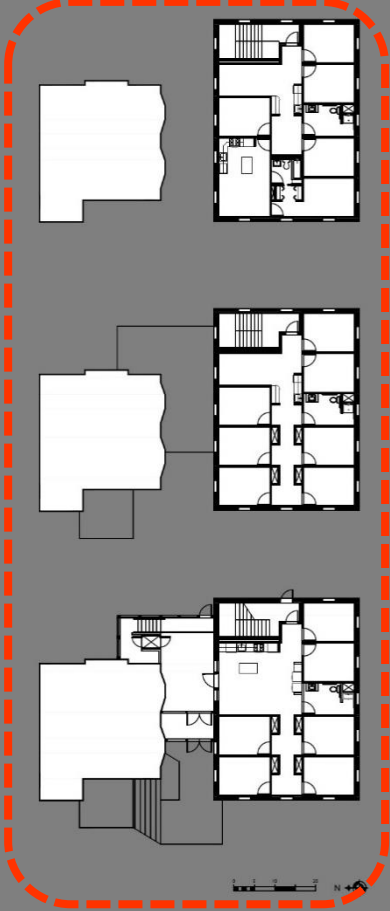
Crafting a Regenerative Approach

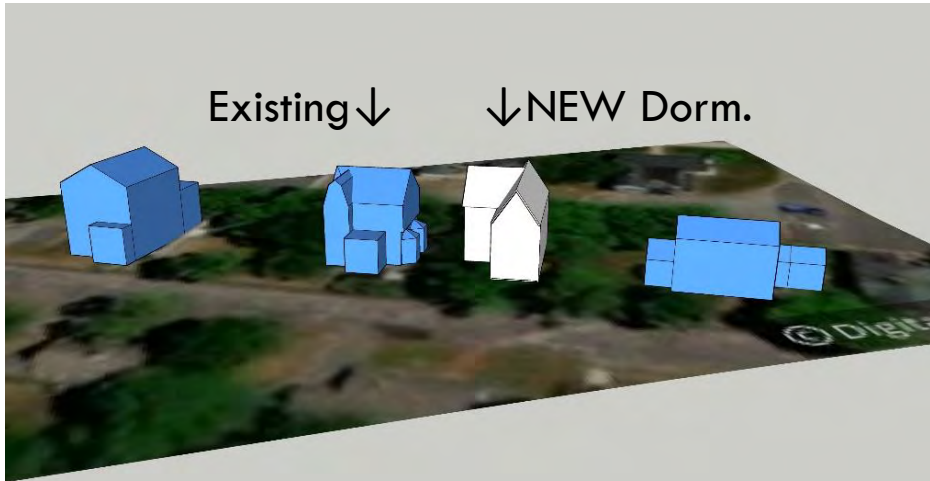
RESIDENTIAL:

New Construction / Hybrid (x2) / Renovation

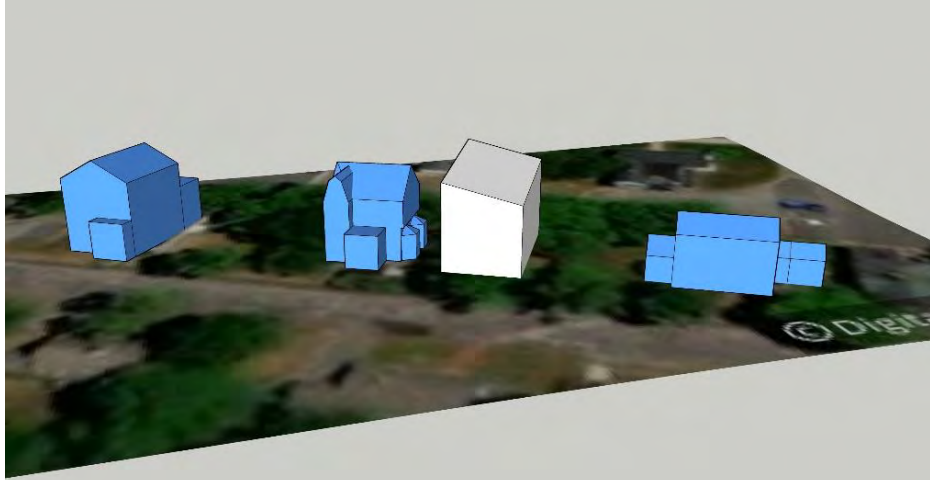
A "Buddy-Building" approach where the NEW works with the OLD and a "connector" unites OLD/NEW and addresses accessibility.

Hybrid-1:
Tufts
Multi-Unit





Articulated Volumes

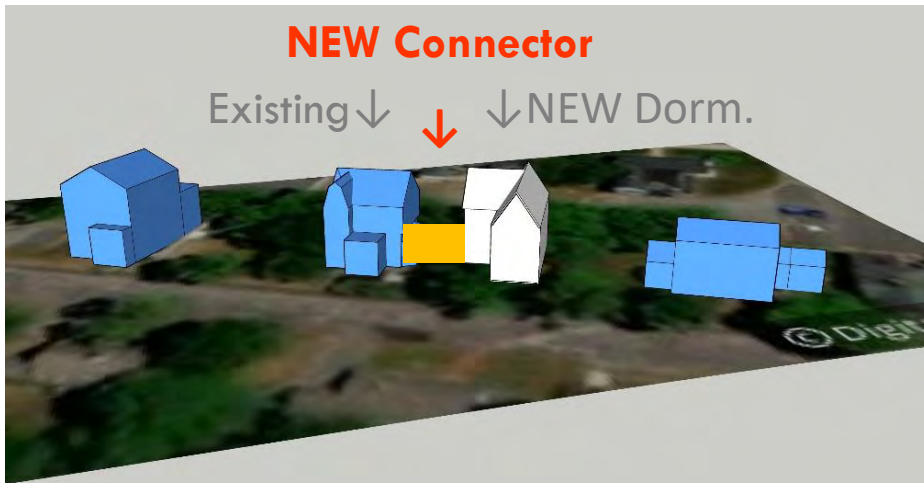


Solar Facet

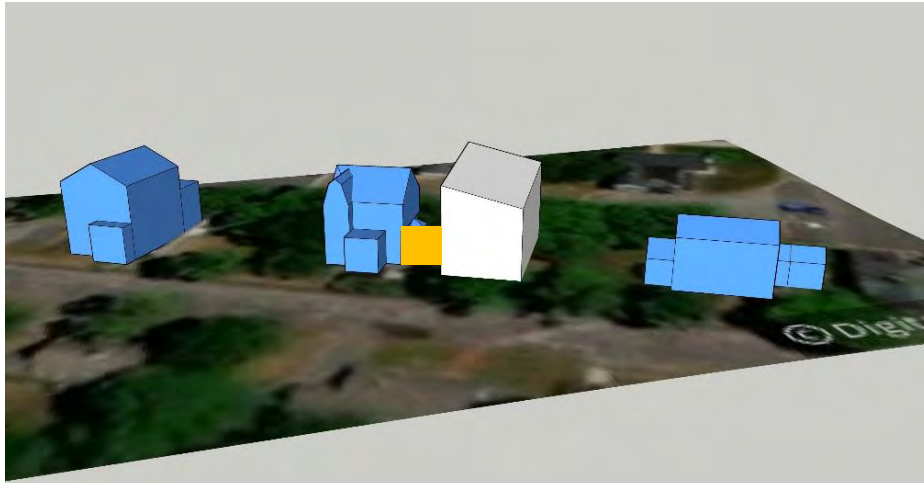


NEW Connector

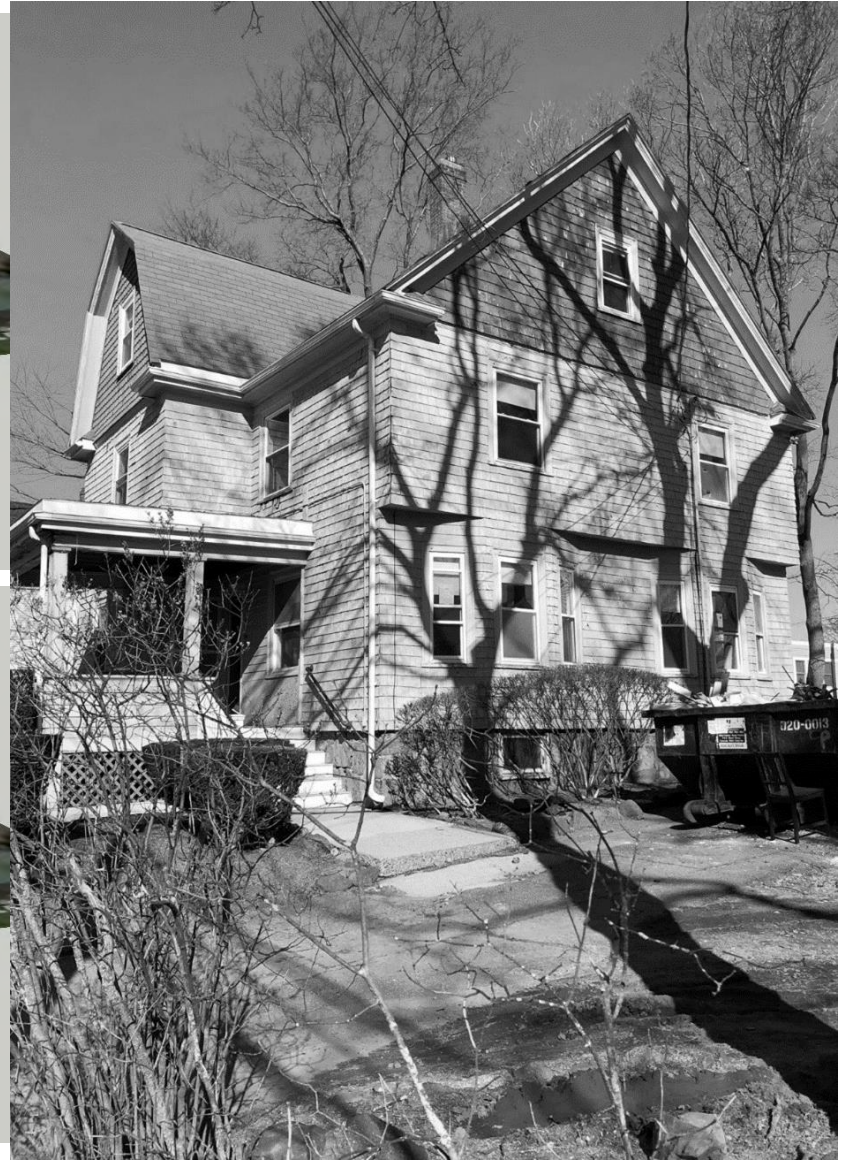
Existing ↓ ↓ NEW Dorm.

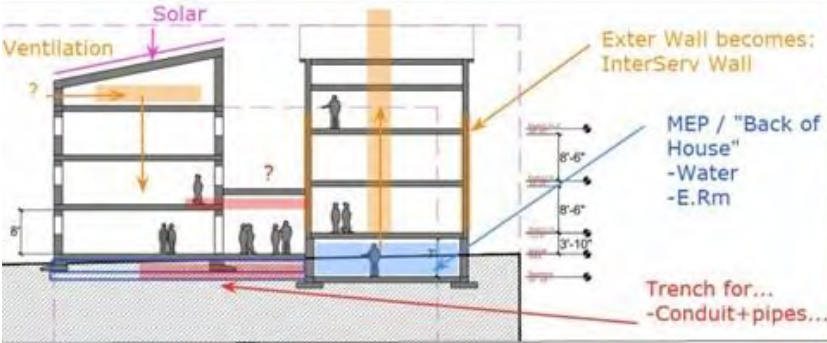
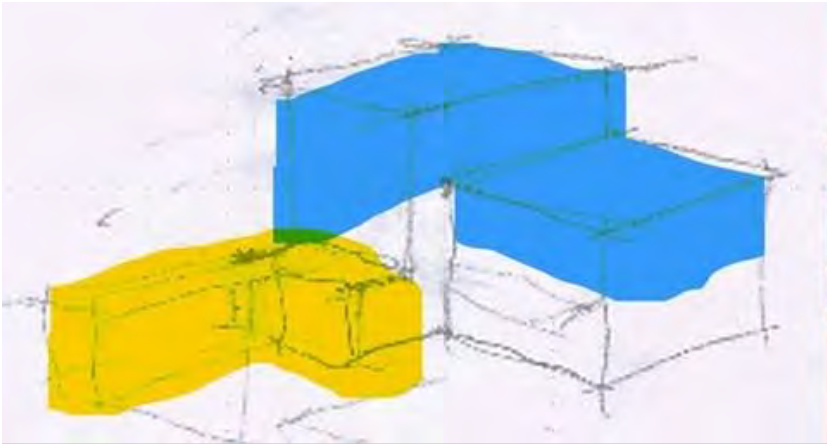


Articulated Volumes



Solar Facet



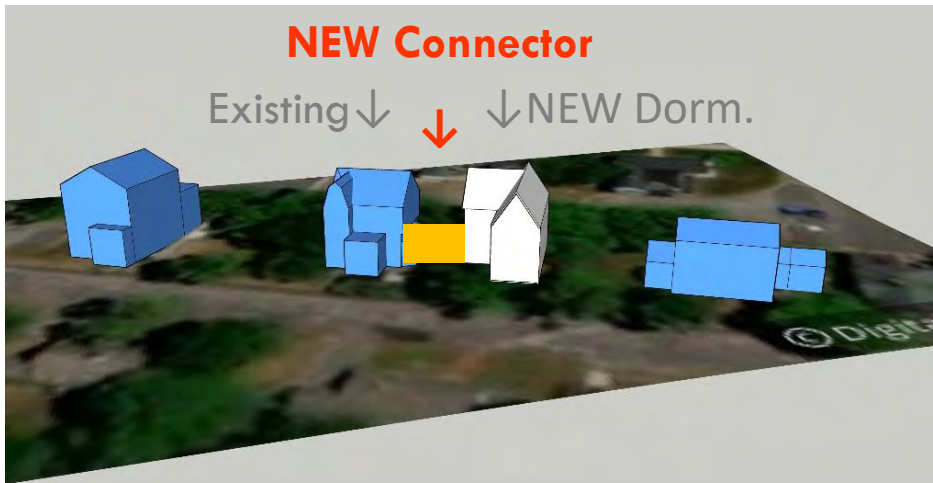


CAMPUS HOUSING

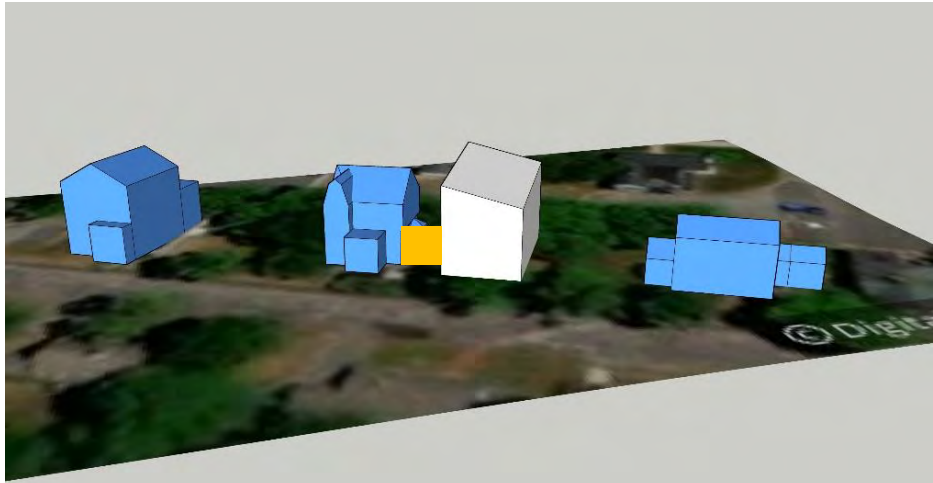


NEW Connector

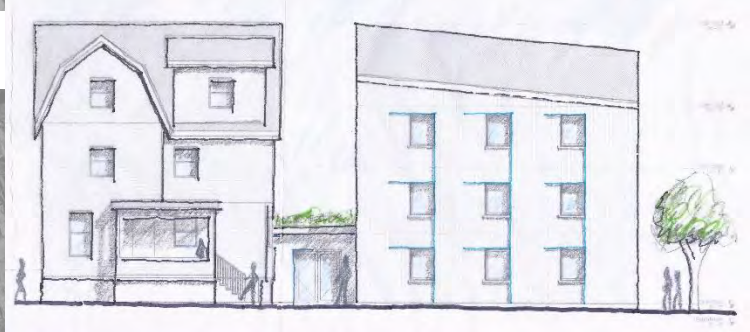
Existing ↓ ↓ NEW Dorm.



Articulated Volumes



Solar Facet

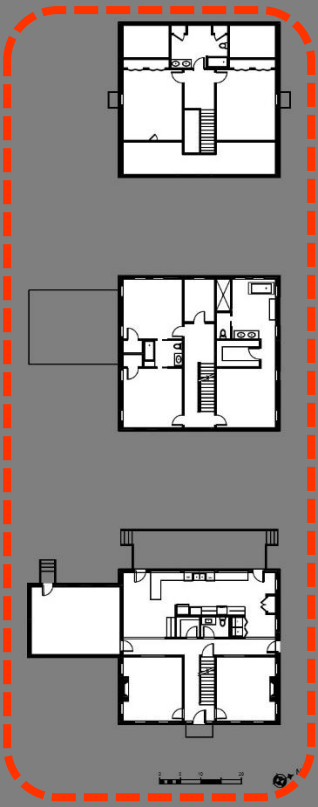


Crafting a **Regenerative** Approach RESIDENTIAL:

New Construction / **Hybrid** (x2) / Renovation

“Generative Diagram” records & acknowledges the History of the Place + includes a strategy of *deconstruction* & refurbish for Re-Use.*

Hybrid-2: Hollis
c. 1821

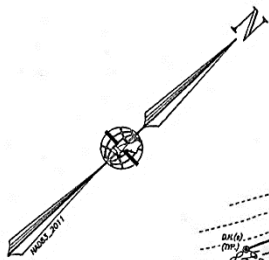
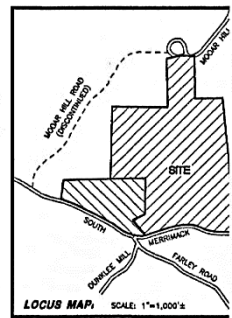


RESULTING
36-17
89+/- ACRES
4,294,000± S.F.

PARCEL-B
82+/- ACRES
3,556,800 S.F.

PARCEL-A
2.202 ACRES
95,925 S.F.

RESULTING
36-18
8.00 ACRES
217,817 S.F.



U.S. INFORMATION:

- C = CANTON FINE SANDY LOAM
- 15% SLOPES - WELL DRAINED
- G = CHATFIELD HOLLIS CANTON COMPLEX
- 15% SLOPES - WELL DRAINED

- ND:
- RIGHT-OF-WAY SIDELINE
 - PROPERTY LINE
 - ABUTTING LOT LINE
 - BUILDING SETBACK LINE
 - EDGE OF PAVEMENT
 - EXISTING GRAVEL ROAD
 - EDGE OF WETLANDS
 - STONE WALL
 - 10' CONTOUR INTERVAL
 - 2' CONTOUR INTERVAL
 - EXISTING TAX MAP & LOT NUMBER

- EXISTING BUILDING
- TEST PIT WITH DATA
- EXISTING MAPLE TREE
- EXISTING OAK TREE
- EXISTING TREE LINE
- EXIST. GRANITE BOUND FOUND
- EXIST. DRILL HOLE FOUND/SET
- EXIST. IRON PIPE FOUND
- GRANITE BOUND TO BE SET
- IRON PIN TO BE SET

GRAPHIC SCALE

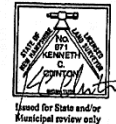
0	40'	80'	120'
0	100'	200'	300'
DESCRIPTION	C/O	DR	CK

APPROVED BY THE HOLLIS PLANNING BOARD

ON _____ CERTIFIED BY _____
CHAIRMAN _____ AND
SECRETARY _____

CERTIFICATION

"I CERTIFY THAT THIS PLAN SHOWS AN ACTUAL SURVEY MADE ON THE GROUND WHOSE PRECISION AND ACCURACY CONFORMS TO THE LAND SUBDIVISION REGULATIONS OF THE TOWN OF HOLLIS, NEW HAMPSHIRE. ALL MONUMENTS WERE FOUND OR SET AS SHOWN", AND
 "I CERTIFY THAT LOT 36/18 IS THE RESULT OF AN ON-SITE INSTRUMENT SURVEY PERFORMED BY THIS OFFICE WHICH MEETS THE URBAN CLASSIFICATION PRECISION REQUIREMENT OF ONE PART IN TEN THOUSAND (1:10,000)".



REFERENCE PLANS:

- "OVENS SUBDIVISION II - PLAN OF LAND - HOLLIS, N.H. - L. A. OVENS" SCALE: 1"=50', DATED 8/3/83, PREPARED BY AI ASSOCIATES, INC. AND RECORDED AT THE H.C.R.D. AS PLAN NO. 32496.
- "BOUNDARY PLAN OF LAND - MAP 42 LOT 73 - HERBERT G. SOUTH MERRIMACK ROAD - HOLLIS, NEW HAMPSHIRE" SCALE: 10/3/2002, PREPARED BY GRANITE STATE SURVEYING, INC. & THE H.C.R.D. AS PLAN NO. 32496.
- "PHEASANT VIEW ESTATES - SUBDIVISION PLAN - PHEASANT IN - HOLLIS, NEW HAMPSHIRE - ESSEX LAND CORPORATION" DATED 10/17/88, PREPARED BY COSTELLO, LOWMEYER & DE AND RECORDED AT THE H.C.R.D. AS PLAN NO. 21509.
- "SURVEYED FOR - LOUIS A. OVENS - AND - HENRY HILDBRE MOGAR HILL - HOLLIS, N.H." SCALE: 1"=80', DATED 10/78, FORACE LUND AND RECORDED AT THE H.C.R.D. AS PLAN NO. 32496.
- "MILLICENT SCOTT GARNER MEMORIAL FOREST - SOCIETY FOR - OF NEW HAMPSHIRE FORESTS - HOLLIS, NEW HAMPSHIRE" DATED JUNE 1989, PREPARED BY S.P. PERROW, PROVIDED BY THE SOCIETY FOR NEW HAMPSHIRE FORESTS.
- "PLAN B-3 - REVISED - OF - FARLEY AND NEVINS RD. - PROJECT" SCALE: 1"=80', DATED 5/81, PREPARED BY R. FO FOUND ON FILE AT THE HOLLIS TOWN OFFICES.
- "SOUTH MERRIMACK ROAD RETERRMENT PROJECT - HOLLIS PL. DEPT" SCALE: 1"=50', DATED 12/82, FOUND ON FILE AT THE TOWN OFFICES.

LOT LINE RELOCATION PLAN
LAND OF,
THE SOCIETY FOR THE
PROTECTION OF
NEW HAMPSHIRE FORESTS

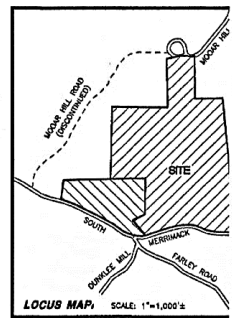
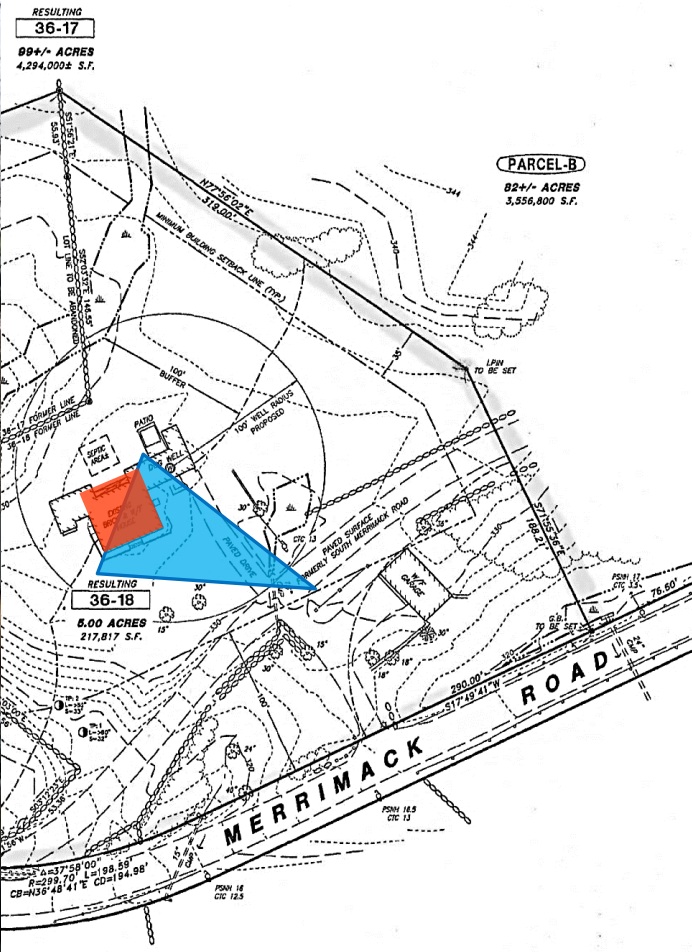


TAX MAP 36 LOTS 17 & 18
HOLLIS, NEW HAMPSHIRE
SCALE: 1" = 40' APRIL 29



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FILE:10923000.dwg PROJECT NO. 10923.00 SHEET



REFERENCE PLANS:

1. "OVENS SUBDIVISION II - PLAN OF LAND - HOLLIS, N.H. - C. A. OVENS" SCALE: 1"=50', DATED 8/3/83, PREPARED BY AN ASSOCIATES, INC. AND RECORDED AT THE H.C.R.D. AS PLAN NO. 32496.
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4. "SURVEYED FOR - LOUIS A. OVENS - AND - HENRY HILDE MOGAR HILL - HOLLIS, N.H." SCALE: 1"=80', DATED 10/7/78, FORACE LUND AND RECORDED AT THE H.C.R.D. AS PLAN NO.
5. "MILLICENT SCOTT GARNER MEMORIAL FOREST - SOCIETY FOR - OF NEW HAMPSHIRE FORESTS - HOLLIS, NEW HAMPSHIRE" DATED JUNE 1998, PREPARED BY S.P. FERRO, PROVIDED BY
6. "PLAN B-3 - REVISED - OF - FARLEY AND HEVINS RD. - PROJECT" SCALE: 1"=50', DATED 5/31, PREPARED BY R. FG FOUND ON FILE AT THE HOLLIS TOWN OFFICES.
7. "SOUTH MERRIMACK ROAD BETTERMENT PROJECT - HOLLIS PL. DEPT" SCALE: 1"=50', DATED 12/85, FOUND ON FILE AT THE OFFICES.

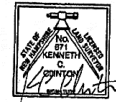
**LOT LINE RELOCATION PLAN
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NEW HAMPSHIRE FORESTS**



**TAX MAP 38 LOTS 17 & 18
HOLLIS, NEW HAMPSHIRE**
SCALE: 1" = 40' APRIL 29

CERTIFICATION

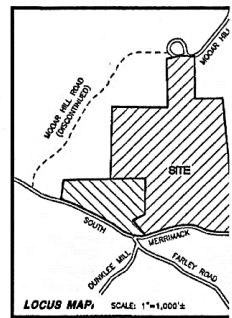
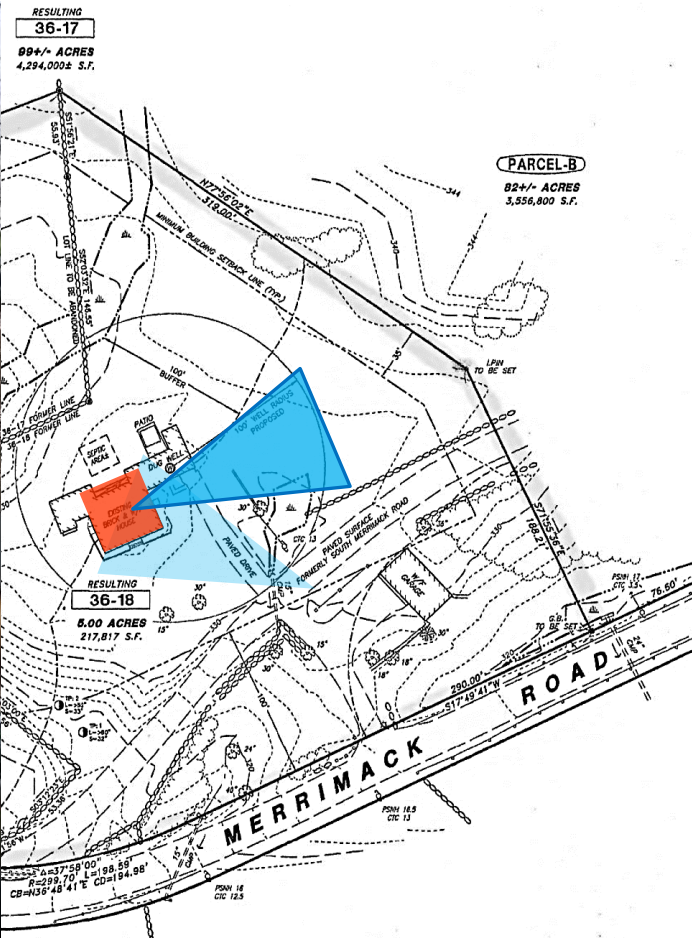
"I CERTIFY THAT THIS PLAN SHOWS AN ACTUAL SURVEY MADE ON THE GROUND WHOSE PRECISION AND ACCURACY CONFORMS TO THE LAND SUBDIVISION REGULATIONS OF THE TOWN OF HOLLIS, NEW HAMPSHIRE. ALL MONUMENTS WERE FOUND OR SET AS SHOWN", AND
 "I CERTIFY THAT LOT 36/18 IS THE RESULT OF AN ON-SITE INSTRUMENT SURVEY PERFORMED BY THIS OFFICE WHICH MEETS THE URBAN CLASSIFICATION PRECISION REQUIREMENT OF ONE PART IN TEN THOUSAND (1:10,000)".



Used for State and/or Municipal review only
4/22/19



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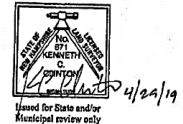


**TAX MAP 38 LOTS 17 & 18
HOLLIS, NEW HAMPSHIRE**
SCALE: 1" = 40' APRIL 29

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REUSED:

- Interior Doors
- Mantels
- Wainscot
- Wood Floors
- Hardware
- Plumbing Fixtures
- Exterior Friezes
- Exterior Trims



REUSED:

- Exterior Trims
- Exterior Pilasters
- Brick
- Granite
- Wood Beams
- Original Window

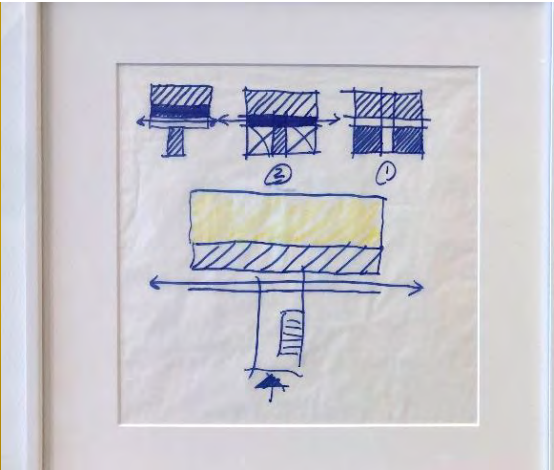


Before...

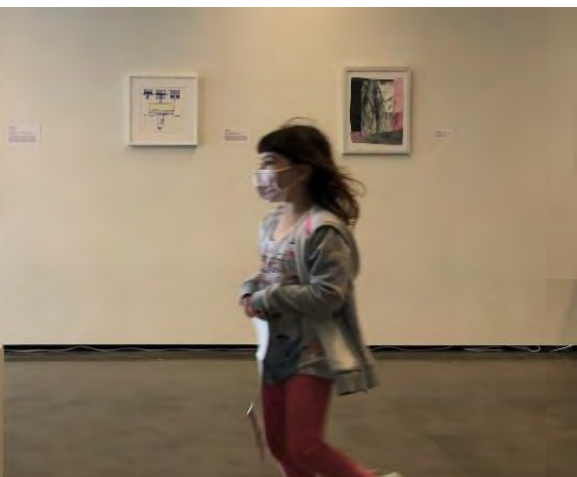
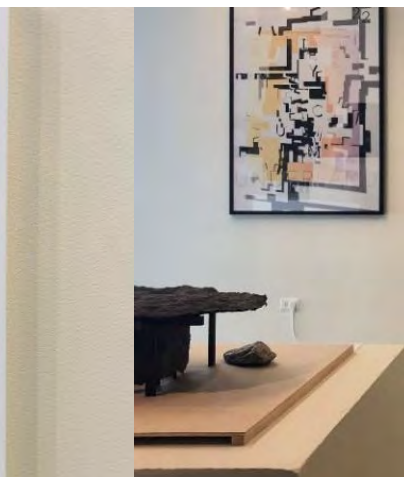
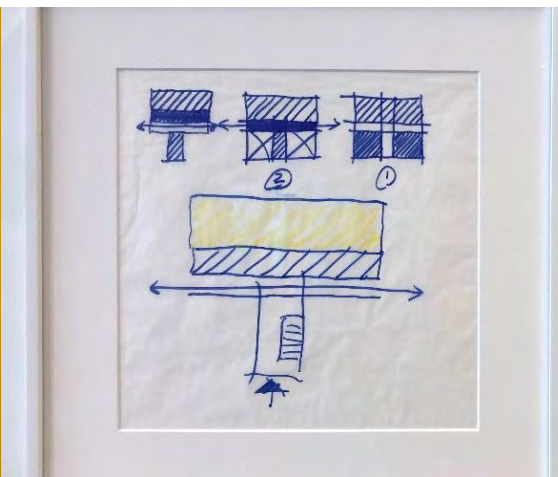




DCVL Design, for BSA SEC: HOLLIS, NH ZERO ENERGY, HISTORY & REUSE



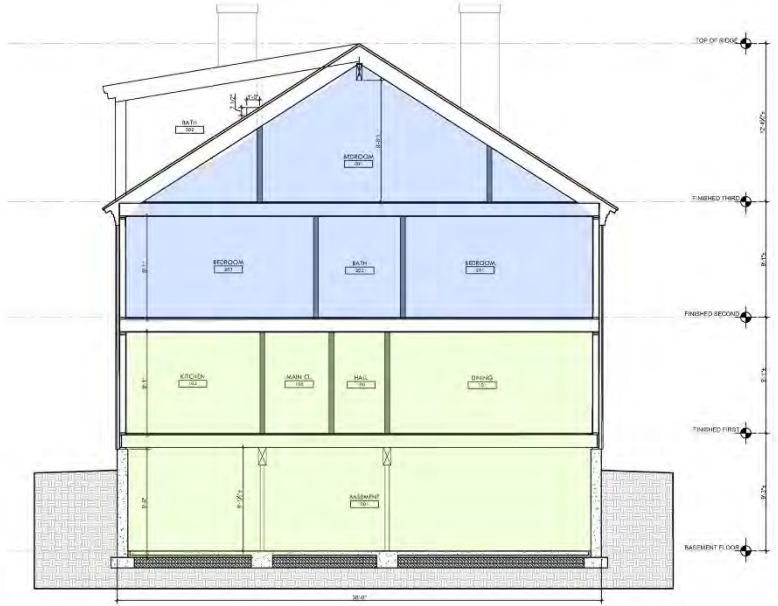
"Generative Diagram" sketch by David T. De Celis, RISD Faculty Exhibition '21 graphics by Ramon Tejada.



"Generative Diagram" sketch by David T. De Celis, RISD Faculty Exhibition '21 graphics by Ramon Tejada.

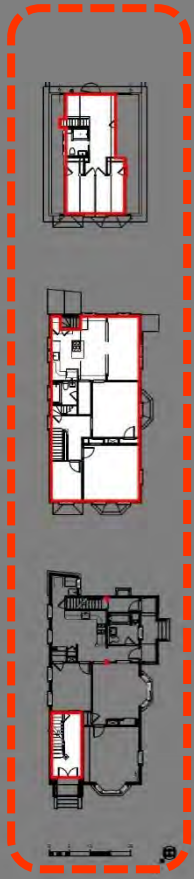
HEALTHY SYSTEMS/ENVELOPE

- Multi-unit ERV for fresh air
- Multi-unit Mitsubishi air heat pump for heating/cooling to accommodate SF and structure efficiently
- Triple pane casement windows for increased natural ventilation
- "6/6" historic style AND technology



Crafting a **Regenerative** Approach
RESIDENTIAL:
New Construction / Hybrid (x2) / **Renovation**

Windsor Residence:
a Strategic
Renovation /
Work-in-progress



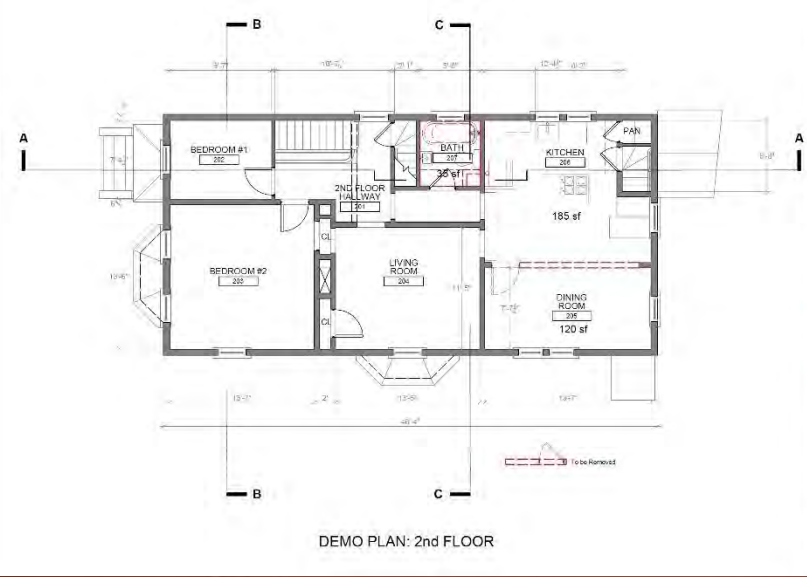
RISD Dept. of Interior Architecture
INTAR-2315-01 Building Materials

Precedents / Practice:

...Material / History/
Research / Structure...

RISD Dept. of Interior Architecture
INTAR-2315-01 Building Materials

Precedents / Practice:



DCVL
DESIGN

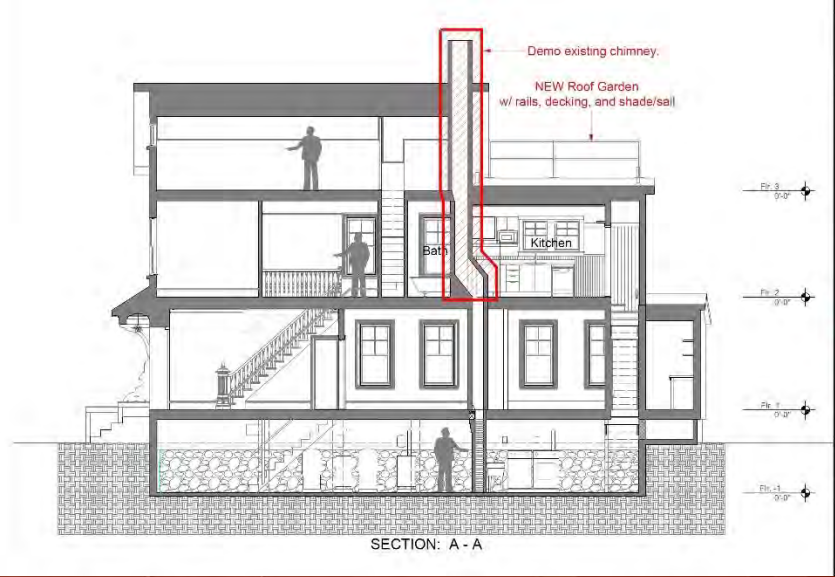
2023.12.26
Architect
200 Memorial Street
Cambridge MA 02139
617.452.1200
www.dcvl.com

*Confidential! for
ref. Discussion ONLY*

Owner's Use: Initial
Description & Revision

REV: 01
DATE: 12/26/23
SCALE: As Shown

SK.0.10



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Fall term 2023 – David T. De Celis



DCVL Design Principal/CFO David Tomás De Celis on site of a current renovation project in Cambridge, MA. © D.T. De Celis

What to Keep... What to Demo... How to Adapt?

David De Celis
AIA, NCARB, LEED Green Associate, Principal at DCVL Design

3 articles

May 11, 2023

Open Immersive Reader

What to Keep... What to Demo... How to Adapt? In architectural renovation and adaptive reuse work at DCVL Design we often hear these questions. It's something that our founding partners, Amy Van Lauwe and David De Celis, constantly think about—not only in the office, but with their design students as well (Amy teaches at the Boston Architectural College + Suffolk University, and David teaches in RISD's INTAR department which specializes in adaptive reuse).

How we stay true to an existing structure—respecting its role in architectural history—while also engaging a future-forward mindset, is a question we're constantly designing around. The answer usually comes in the form of a multi-pronged approach; for instance, expressing architectural-form and character of space, while also improving practical and performative aspects, namely

Excerpt for BSA Webinar 5.21.24

RISD Dept. of Interior Architecture INTAR-2315-01 Building Materials

The Charms of an American Queen Anne: Rediscovered *a-lá* COVID-19

David T. De Celis

Boston Architectural College/
Rhode Island School of Design
USA



Precedents / Practice:

...Material / History/
Research / Structure...

Abstract

This moment, the 2020 COVID-19 pandemic, has provided an opportunity—sometimes forced, via crisis, or via moments of quiet reflection—to consider outside, interior time and space, in new ways. From traditional colonial styles, architectural styles have come to us from foreign lands. Numerous domestic structures were influenced by British events from the 1700s–1800s. These styles—these architectures—were transformed by local/regional/national influences and events—events like this current international pandemic—that push the proverbial pause button, and cause us to re-think design. The author, who now resides and works (along with his family) in an 1886 Queen Anne style home, contemplates the various attributes and transformations of domestic architectures and the influences that shape them over time, asking: Why Queen Anne in America? How was it Victorian? And why is it relevant today? Empirical methods include observations and precedents-analysis, design work, the study of technological advances and interior-architecture history of the Victorian era. Emphasis on domesticity acknowledges both past and present by recognizing the importance of domestic architecture from the late 1700s through the 1800s, and into the present. Thus, we better understand how/why the Queen Anne style became ubiquitous in New England, and how its attributes of innate flexibility may help us today.

Keywords: architecture, domestic, Queen Anne, flexibility, COVID-19

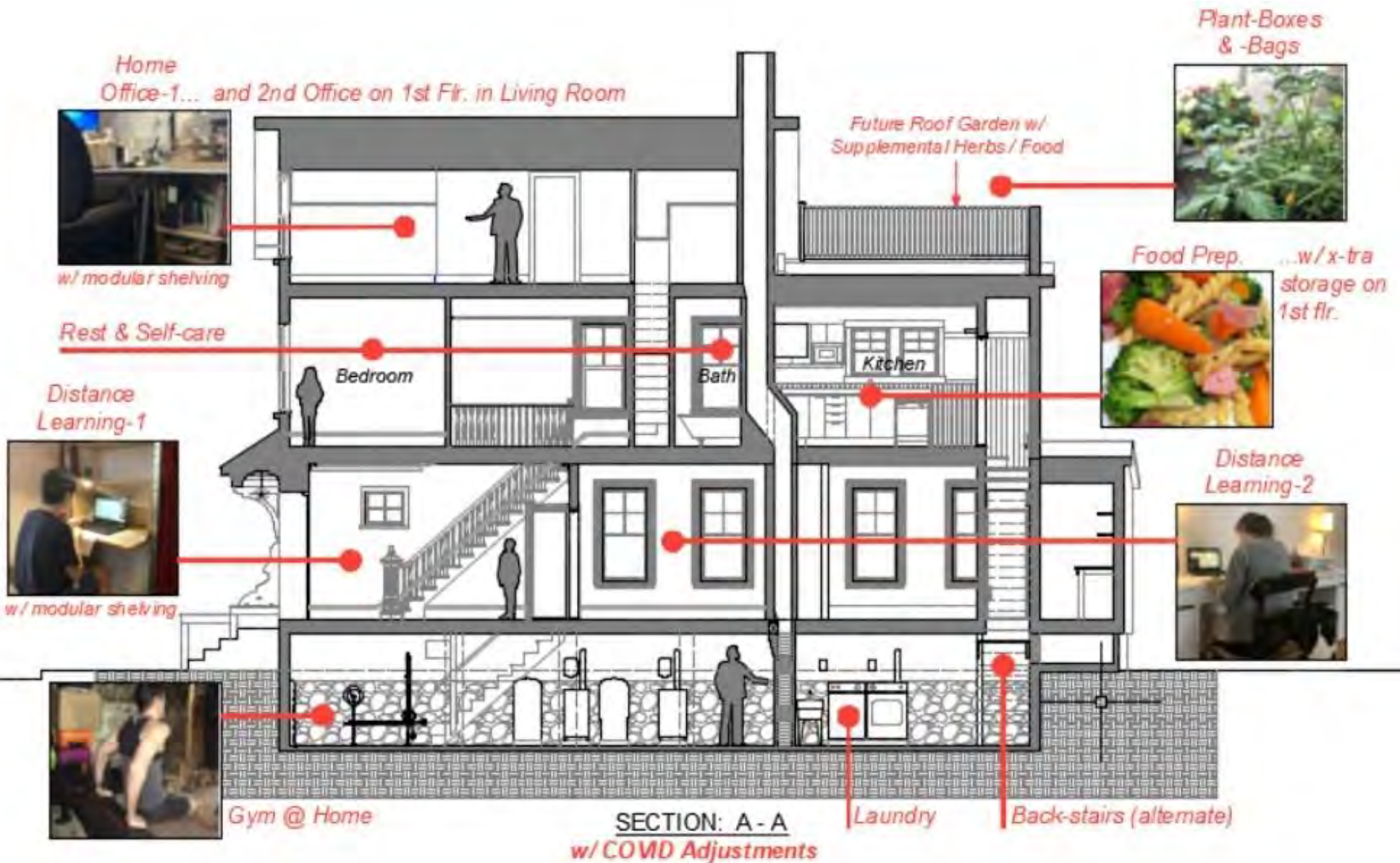
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Precedents / Practice:

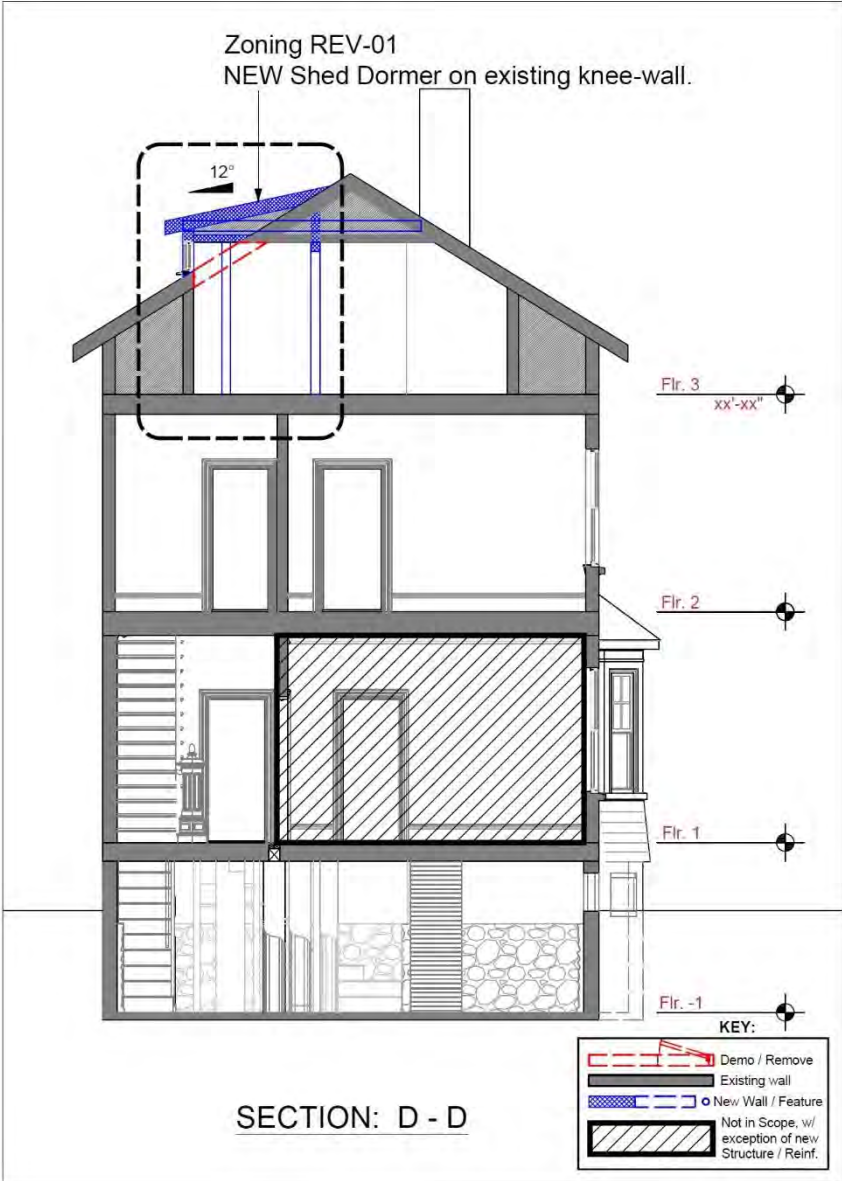
...Material / History/
Research / Structure...





Fall term 2023 – David T. De Celis

DCVL – current work, Windsor Street; composite section by DDC ©, for Interiority



ENERGY \$\$\$ / METRICS:

Before	After	Delta
\$384/mnth	\$256/mnth	\$128
Gas/Elect: \$232/\$152	Gas/Elect: \$145/\$111	
kWh		
12.84	5.89	Half!

DCVL PHILOSOPHY & BUSINESS MODEL



SUFFOLK
UNIVERSITY
BOSTON



DESIGN
ACADEMICS
VOLUNTEERISM





R.I.S.D. Department of Interior Architecture
 INTAR-2315-01 Building Materials
 Building Materials in the Technical and Tectonic Arts — History, Theory and Practice:
 INSTRUCTOR: David T. De Celis, AIA
 Fall 2023

LAB-Wood Carbon Footprint

	1	2	3	4	5	6	7	8	9	10	11	12
	Oliver Chai (Intern)	Kunal Dasgupta (No. 1st)	Siva Gadhira (No. 2nd)	Abby Hays	Kyle Honig	Kaitlyn Liu (No. 3rd)	Phil Rivera	Rip Smith (No. 4th)	Conrad Uthoff	Benjamin Yama	John Zhou	
I. Proposed Project Site/Location	Dorm Fir PVD	Platform PVD/Varied	Coffeatable PVD	Bookshelf PVD	Seatable PVD	wall Shelf	Box PVD	1800H Hrg VT	301 shelf PVD	Chess Bnd-table PVD	Wd Chair PVD	
II. Vol/Quantity	2.000 m ³	0.019 m ³	0.731 m ³	2.8 ft ³ * 0.074 m ³	10ft ³ * 0.283 m ³	1.287 m ³	0.0004 m ³	45.307 m ³	0.0045 m ³	0.0459 m ³	0.058 m ³	
III. 1 Species	Wh Oak Proj. Quantity: 2.000 m ³ CO2e to Gate: 25,080 CO2e to Site: 4,080 TOTAL: 1 29,170 CO2/Unit: 14,585	White Birch Proj. Quantity: 0.019 m ³ CO2e to Gate: 3,689 CO2e to Site: 2,705 TOTAL: 1 6,393 CO2/Unit: 339,840	Camellia Proj. Quantity: 0.731 m ³ CO2e to Gate: 130,800 CO2e to Site: 11,020 TOTAL: 1 141,830 CO2/Unit: 193,995	Fir Proj. Quantity: 2.8 ft ³ * 0.074 m ³ CO2e to Gate: 419,300 CO2e to Site: 3,130 TOTAL: 1 422,630 CO2/Unit: 5,711,216	Maple Proj. Quantity: 10ft ³ * 0.283 m ³ CO2e to Gate: 110,520 CO2e to Site: 0,160 TOTAL: 1 110,480 CO2/Unit: 1,149	Elymus Proj. Quantity: 1.287 m ³ CO2e to Gate: 20,030 CO2e to Site: 7,660 TOTAL: 1 27,690 CO2/Unit: 21,515	Cherry Proj. Quantity: 0.0004 m ³ CO2e to Gate: 0.943 CO2e to Site: 0.090 TOTAL: 1 0.933 CO2/Unit: 2,587,500	Distressed Oak Proj. Quantity: 45.307 m ³ CO2e to Gate: 88,802 CO2e to Site: 201,670 TOTAL: 1 290,472 CO2/Unit: 6,411	Flybo Proj. Quantity: 0.0045 m ³ CO2e to Gate: 10,780 CO2e to Site: 0,280 TOTAL: 1 20,040 CO2/Unit: 3,637,887	BloodWd Proj. Quantity: 0.0459 m ³ CO2e to Gate: 126,920 CO2e to Site: 40,000 TOTAL: 1 166,920 CO2/Unit: 1,761,207	Black Molokuni Proj. Quantity: 0.058 m ³ CO2e to Gate: 100,110 CO2e to Site: 2,040 TOTAL: 1 102,150 CO2/Unit: 1,761,207	Averages AS OF 21-Sep 111,086
2 Species	Bamboo Proj. Quantity: 2.000 m ³ CO2e to Gate: 78,620 CO2e to Site: 75,620 TOTAL: 2 154,240 CO2/Unit: 77,120	MDF Proj. Quantity: 0.019 m ³ CO2e to Gate: 14,283 CO2e to Site: 4,120 TOTAL: 2 18,403 CO2/Unit: 978,883	E. Wh. Pine Proj. Quantity: 0.731 m ³ CO2e to Gate: 85,600 CO2e to Site: 1,740 TOTAL: 2 87,340 CO2/Unit: 119,464	Cherry Ply Proj. Quantity: 2.8 ft ³ * 0.074 m ³ CO2e to Gate: 10,390 CO2e to Site: 7,220 TOTAL: 2 17,640 CO2/Unit: 238,378	Bubinga Proj. Quantity: 10ft ³ * 0.283 m ³ CO2e to Gate: 416,640 CO2e to Site: 1,440 TOTAL: 2 418,080 CO2/Unit: 1477,314	Bamboo Proj. Quantity: 1.287 m ³ CO2e to Gate: 5,179 CO2e to Site: 0,930 TOTAL: 2 14,349 CO2/Unit: 11,149	E Red Cedar Proj. Quantity: 0.0004 m ³ CO2e to Gate: 0.943 CO2e to Site: 0.090 TOTAL: 2 0.975 CO2/Unit: 2,437,500	Kebony Proj. Quantity: 45.307 m ³ CO2e to Gate: 10400,940 CO2e to Site: 153,600 TOTAL: 2 12,968,330 CO2/Unit: 277,298	HrdWd Ply Proj. Quantity: 0.0045 m ³ CO2e to Gate: 0,185 CO2e to Site: 0,070 TOTAL: 2 0,256 CO2/Unit: 56,889	TulipWd Proj. Quantity: 0.0459 m ³ CO2e to Gate: 25,600 CO2e to Site: 7,500 TOTAL: 2 33,100 CO2/Unit: 721,388	Aromatic Cedar Proj. Quantity: 0.058 m ³ CO2e to Gate: 8,750 CO2e to Site: 10,820 TOTAL: 2 19,670 CO2/Unit: 339,138	Averages OK 908,2681



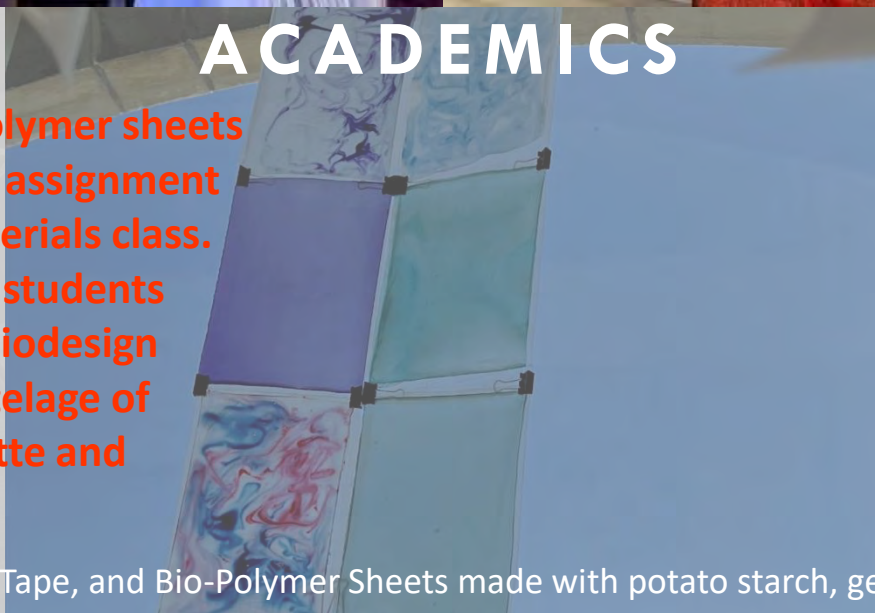
ACADEMICS





ACADEMICS

This matrix (mid) of Bio-polymer sheets is the product of a Bio-Lab assignment in David's RISD/INTAR Materials class. It was produced by course students & TA in RISD's NatureLab Biodesign Makerspace, under the tutelage of Director Jennifer Bissonnette and her staff (Fall '23).



Media: Binder clips, Wax paper, Tape, and Bio-Polymer Sheets made with potato starch, gelatin, and glycerin.



DCVL Design, for BSA SEC: ACADEMICS & REGENERATIVE THINKING

Site characteristics:

merge **integrate**

Plan Diagrams:

merge **integrate**

Iteration I:

Study model 1 for column placement

Iteration II:

Study model 2 for column placement

Iteration III - Program:

In this iteration, explore programmatic nuancing and the core equity between different programs. Using a study model to establish bar allors between programs helped to maintain the flow of achieving smooth floor and explore with the positioning of emergency exits and the nature second cells in the building.

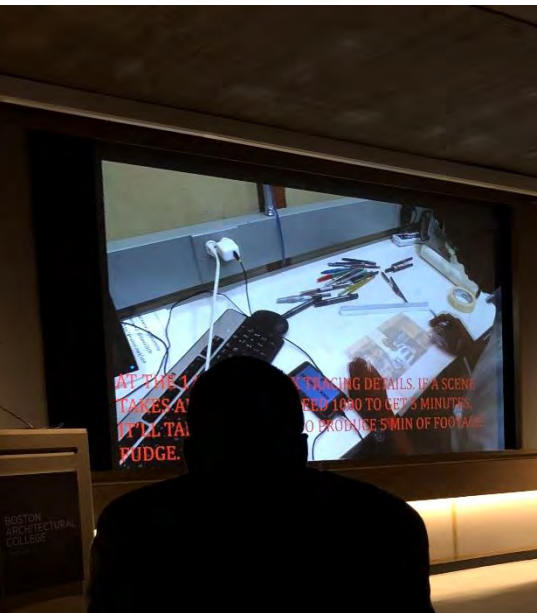
Iteration IV:

In this iteration, explore the overall form of the building and programmatic nuancing. Using a study model to establish bar allors between programs helped to maintain the flow of achieving smooth floor and explore with the positioning of emergency exits and the nature second cells in the building.

Iteration V:

Iteration VI:

CONCLUSION





AIA Framework for Design Excellence

The world today is facing broad and complex challenges that threaten every aspect of our lives. The architect's call to protect the health, safety, and welfare of the public has a new and broader meaning amid challenges such as increasing climate extremes and social inequity. Architects everywhere must recognize that our profession can harness the power of design to contribute to solutions addressing the most significant needs of our time. Every project can be used as a platform for addressing big problems and providing creative solutions. Every line drawn should be a source of good in the world.

The Framework for Design Excellence represents the defining principles of good design in the 21st century. Comprised of 30 principles and accompanied by research questions, the Framework seeks to inform progress toward a zero-carbon, equitable, resilient, and healthy built environment. These are to be thoughtfully considered by designer and client at the initiation of every project and incorporated into the work as appropriate to the project scope. The Framework is intended to be accessible and relevant for every architect, every client, and every project, regardless of size, typology, or aspiration.

The Framework for Design Excellence challenges architects with a vision the profession strives to achieve.



<p>Design for INTEGRATION</p> <p>Good design achieves its goals, no matter how small, with thoughtful consideration for all stakeholders and facilities involved. It is the seamless flow of all things needed to gather with a building.</p> <ul style="list-style-type: none"> • How can the concept or purpose behind the project, and how well the project will be used, be integrated into the entire project from the start to the end? • How will the project integrate the needs and interests of all stakeholders and communities that will be affected by the project? • How can the project be designed to be resilient to future changes? 	<p>Design for WATER</p> <p>Good design conserves and improves the quality of water as a precious resource.</p> <ul style="list-style-type: none"> • How can the project conserve water, including reducing and capturing rain water for reuse? • How can the project's water systems maintain quality during emergencies or disruptions? • How can the project handle dry and stormwater responsibly? • How can the project contribute to a healthy regional watershed? 	<p>Design for RESOURCES</p> <p>Good design depends on the most viable or efficient, for every condition, to achieve its goals, and having strategies to manage, substitute, supply, or recover resources when they are not available.</p> <ul style="list-style-type: none"> • What factors (climate, site, or local conditions) will be most critical to the project's success? • How are materials, energy, and other resources used and managed to reduce embodied carbon and environmental impacts while ensuring the project's performance? • How can material selection reduce impacts and support equitable labor practices in the supply chain? • How can the project provide access through the life cycle? • How can the project use local, natural, and recycled materials and products? • How can the project be designed to be resilient to future changes?
<p>Design for EQUITABLE COMMUNITIES</p> <p>Design solutions affect more than the client and users; they also affect the community. Good design addresses the needs of all people and provides a platform for addressing big problems and providing creative solutions. Every line drawn should be a source of good in the world.</p> <ul style="list-style-type: none"> • What is the project's greatest need? • How can the project contribute to solving a diverse, diverse, and equitable community? • Who might be impacted by the project? • How can the design process and delivery model address and promote inclusion and social equity, particularly with respect to vulnerable communities? • What opportunities exist in this project to create equity and promote human connection? • How can the design support health and wellness for the community and the building's users? 	<p>Design for ENERGY</p> <p>Good design reduces energy use and minimizes greenhouse gas emissions, carbon footprint, and its impact on the environment.</p> <ul style="list-style-type: none"> • How can the project reduce energy use and minimize greenhouse gas emissions, carbon footprint, and its impact on the environment? • How can the project support building energy efficiency, including energy conservation, energy storage, and energy recovery? • Can the project be covered by clean energy or renewable energy sources? • How can the project provide for sustainable performance, especially with respect to energy use? 	<p>Design for CHANGE</p> <p>Adaptability, resilience, and future readiness are essential to good design, which seeks to enhance usability, functionality, and value over time.</p> <ul style="list-style-type: none"> • How does the project address future risks and vulnerabilities from social, economic, and environmental change? • How is the project designed for adaptation to program future uses or changing markets? • How does the project address positive sustainability and/or livability?
<p>Design for ECOSYSTEMS</p> <p>Good design naturally benefits humans and nonhuman environments. When we design, we should also design for the ecosystems and the life cycles of the building and its users.</p> <ul style="list-style-type: none"> • How can the design support the preservation of the project's natural resources? • How can the design support the use of sustainable materials and products? • How can the project support the use of sustainable materials and products? • How can the project support the use of sustainable materials and products? 	<p>Design for WELL-BEING</p> <p>Good design supports health and well-being for all people, including physical, mental, and emotional health, including the building's users and the community.</p> <ul style="list-style-type: none"> • How can the design address the building's users' health and well-being? • How can the design address the building's users' health and well-being? • How can the design address the building's users' health and well-being? • How can the design address the building's users' health and well-being? 	<p>Design for DISCOVERY</p> <p>Every project presents a unique opportunity to explore new ideas, technologies, and materials, and to learn from the building's users and the community.</p> <ul style="list-style-type: none"> • How can the design provide a platform for exploring new ideas, technologies, and materials, and to learn from the building's users and the community? • How can the design provide a platform for exploring new ideas, technologies, and materials, and to learn from the building's users and the community? • How can the design provide a platform for exploring new ideas, technologies, and materials, and to learn from the building's users and the community?

Living Building Challenge® 4.1

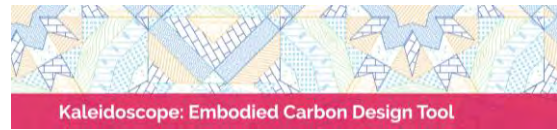
Program Manual

A Visionary Path to a Regenerative Future

APRIL 2024

INTERNATIONAL LIVING FUTURE INSTITUTE

CARBON CONSCIENCE



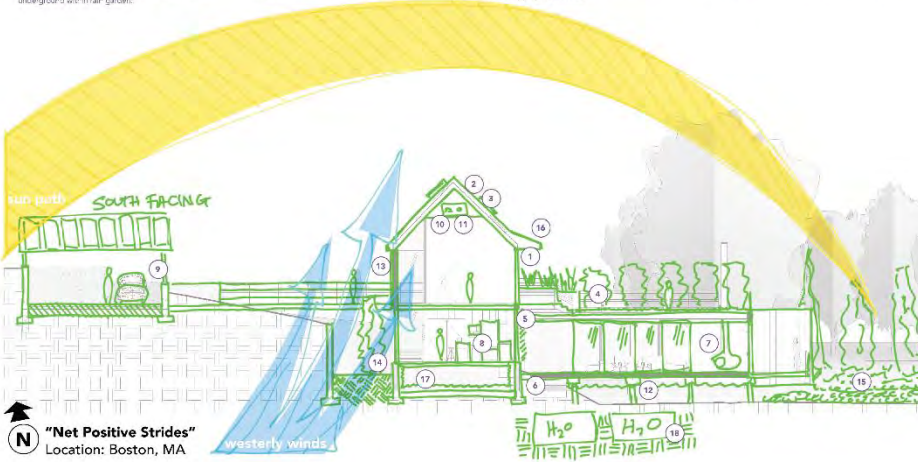
2030 PALETTE

REGION CITY/TOWN DISTRICT SITE BUILDING MATERIAL

BUILDING

BUILDING FACADES	CLUSTERING AND SKYLIGHTS	COOL ROOF	CROSS VENTILATION	DAYLIGHTING FROM MULTIPLE SIDES
DIRECT SUN GLAZING	DIRECT SUN HEAT STORAGE	DOUBLE ROOF	EARTH SHELTERING	EAST-WEST SHADING

1. Replace all windows and skylights with 1/2" x 1/2" high performance triple pane glass (acknowledged common, low E).
2. Remove existing cooling material, and appropriate level of insulation to achieve R-value of 20, finish with new E+ standing seam metal roof (better heat management).
3. Remove existing ground solar array and reinstall on southern roof 'hood'.
4. Re-design roof deck to be green, integrate kitchen garden and sunroom (season system) for watering live gardens. Provide water pump system for nearby water storage. Remove existing water collection tanks, coated waterproof with new membrane.
5. Add retractable roof overhang to south-facing walls (especially 1st floor) for summer sun-shading - design retractable deck system for watered sun paths/extended light throughout year.
6. Install river rock around perimeter of foundation for better drainage.
7. Replace/retract existing fireplace with electric insert or remove entirely.
8. Remove existing kitchen sink - induction range and high efficiency appliances/units. Replace existing bath-room fixtures with efficient models.
9. Install charging ports for electric cars. Add carpet with green roof ambient solar panels and replace existing parking with permeable material.
10. Replace existing water landscaping system (if any) with new H-RO system - install new static space if needed for location.
11. Provide acoustic ventilation system to optimize performance of passive air flow through house (operate windows change based on weather).
12. Insulate location of exterior floor deck of living room.
13. Provide overboard insulation at all exterior walls to achieve appropriate R-value.
14. Plant deciduous foliage around 1st floor exterior to provide better views in summer and shading in winter.
15. Replace existing grass lawncover with cover, microclimate and wildflowers. For all other landscaping, utilize native plants. Cover requires less maintenance, local plants are better for overall environment.
16. Add roof overhang to south-facing wall.
17. Insulate existing crawl space to provide proper R-value.
18. Relocate water tanks - underground - install rain garden nearby for added "small" protection from flooding.



"Net Positive Strides"
Location: Boston, MA



ASSIGNMENT 7: Biophilia : Natural Analogues Patterns

"Natural Analogues addresses organic, non-living and indirect evocations of nature. Objects, materials, colors, shapes, sequences and patterns found in nature, manifest as artwork, signage, graphics, furniture, decor, and textiles in the built environment."

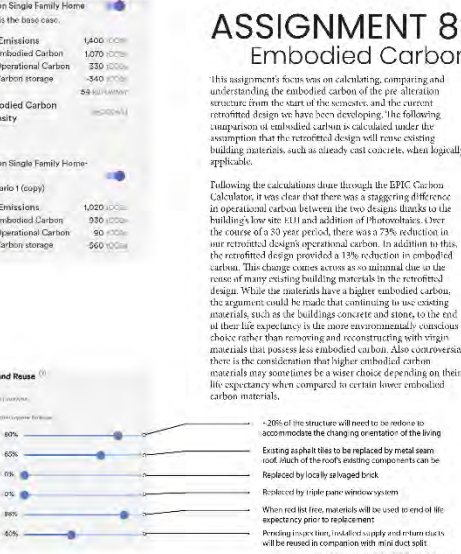
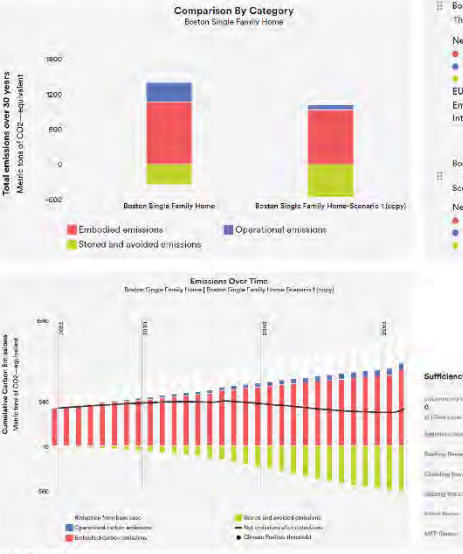
- Terrapin Bright Green LLC



JOSHUA ZIEHWEIN

SUSTAINABLE SYSTEMS: FINAL JOSHUA ZIEHWEIN

Payette



ASSIGNMENT 8: Embodied Carbon

This assignment focuses on calculating, comparing and understanding the embodied carbon of the pre-alteration structure from the start of the semester, and the current retrofitted design we have been developing. The following comparisons of embodied carbon is calculated under the assumption that the retrofitted design will reuse existing building materials, such as already cast concrete, when logically applicable.

Following the calculations done through the EPIC Carbon Calculator, it was clear that there was a staggering difference in operational carbon between the two design blanks to the building's low rise (L1) and addition of Photovoltaics. Over the course of a 20 year period, there was a 73% reduction in our retrofitted design's operational carbon. In addition to this, the retrofitted design provided a 13% reduction in embodied carbon. This change comes across as so minimal due to the reuse of many existing building materials in the retrofitted design. While the materials have a higher embodied carbon, the arguments could be made that continuing to use existing materials, such as the buildings concrete and stone, to the end of their life expectancy is the more environmentally conscious choice rather than removing and reconstructing with virgin materials that possess less embodied carbon. Also considered, there is the consideration that higher embodied carbon materials may sometimes be a wiser choice depending on their life expectancy when compared to certain lower embodied carbon materials.

- 20% of the structure will need to be replaced to accommodate the changing orientation of the living
- Existing asphalt tiles to be replaced by metal studs
- Roof deck of the roof's existing components can be Replaced by locally salvaged brick
- Replaced by high-pare window system
- When not in use, materials will be used to end of life expectancy prior to replacement
- Pending issues (e.g., load) of supply and materials will be needed in comparison with retrofitted design

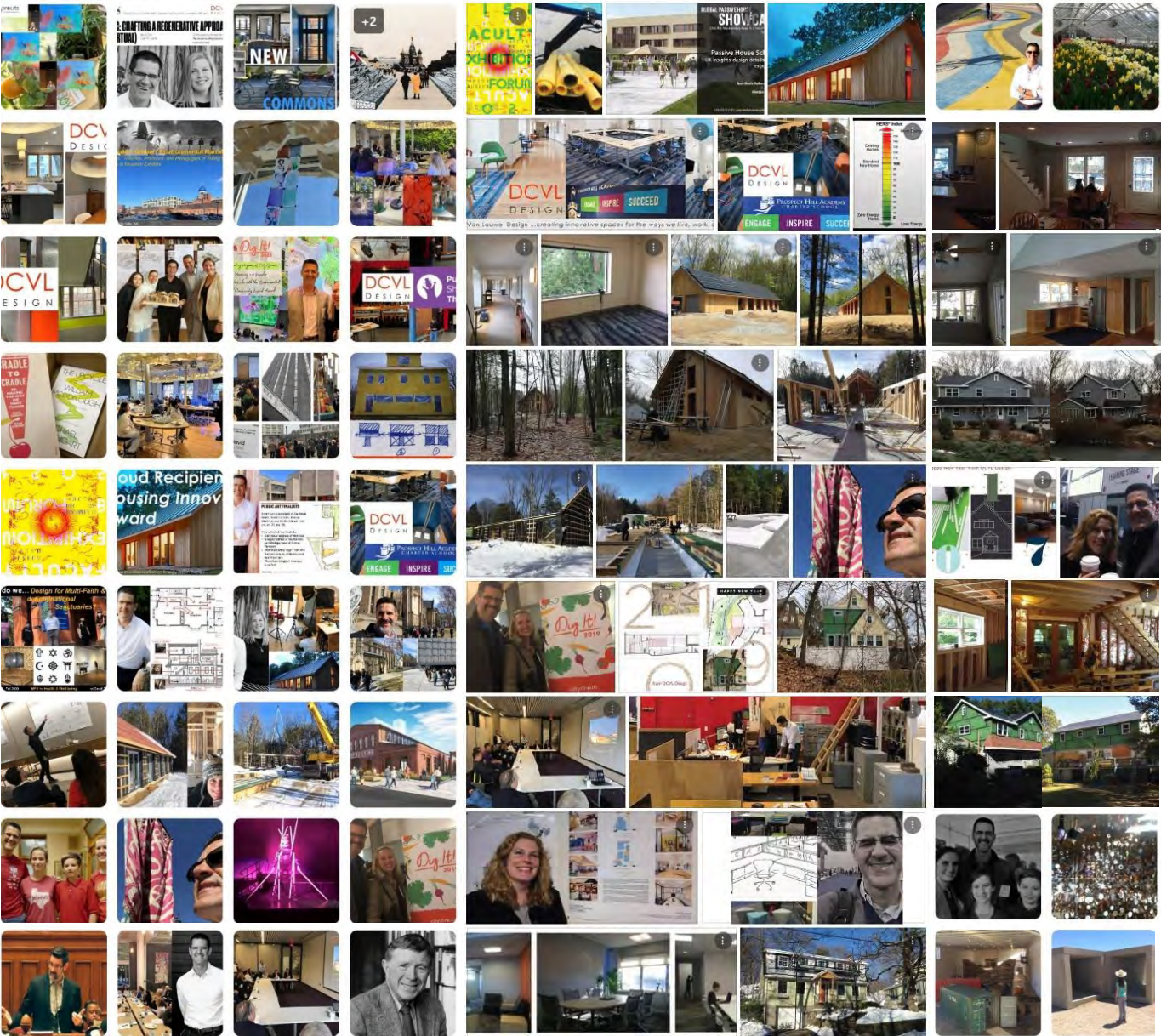
SUSTAINABLE SYSTEMS: FINAL - 4

DCVL PHILOSOPHY & BUSINESS MODEL

DESIGN
ACADEMICS
VOLUNTEERISM



DCVL Design, for BSA SEC: our MANIFESTO, a Tripartite Vision: VOLUNTEERISM & ADVOCACY...





- NON-PROFITS:**
- ...like BSA
 - Outdoor Teach'g Org's



**VOLUNTEERISM
&/or ADVOCACY**



NON-PROFITS:

- ...like BSA
- Outdoor Teach'g Org's

MENTORING:

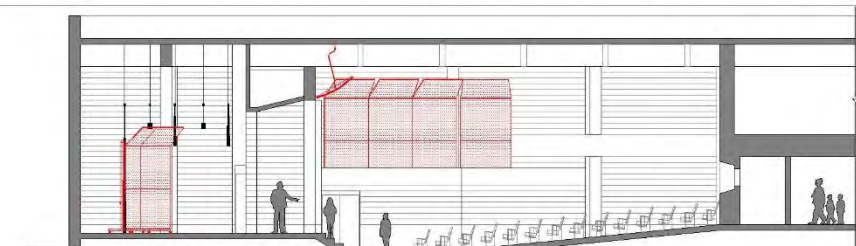
- ACE &/or Shadowing



DCVL Design, for BSA SEC: our MANIFESTO, a Tripartite Vision: VOLUNTEERISM & ADVOCACY...



Perspective Sketch: Showing Wenger-Basic Acoustic Shells (upright) + Diva (ceiling)



Proposed SECTION: A - A

NON-PROFITS:

- ...like BSA
- Outdoor Teach'g Org's

MENTORING:

- ACE &/or Shadowing

VOLUNTEERING:

- Public Schools...
...PTO-to-Dyslexia/Bldg.





Perspective Sketch: Showing Wenger-Basic Acoustic Shell



Proposed SECTION: A - A



NON-PROFITS:

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MENTORING:

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VOLUNTEERING:

- Public Schools...
...PTO-to-Dyslexia/Bldg.
- Library Group +
- Attend Design Juries



Hoover Elementary School



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BAC STUDIO COLLABORATES WITH CAMBRIDGE ARTS COUNCIL TO MAKE ARTS MORE VISIBLE AND ACCESSIBLE

ADVANCED MASTER OF ARCHITECTURE STUDENTS DESIGN A PROPOSAL FOR AN URBAN ARTS CENTER IN CAMBRIDGE, MA



Master of Architecture students working in a discussion group with Lillian Hsu, director of public art, Cambridge Arts Council. Photo by Allison Postlethwait

DATE POSTED
03/11/2015

FOR MORE INFORMATION
communications@the-bac.edu

CATEGORIES
[Students](#), [Architecture](#)

SOURCE
Boston Architectural College
Story by Allison Postlethwait

Boston Architectural College (BAC) advanced Master of Architecture students are stepping outside of the classroom and into the community to make the arts more visible, more relevant, and more accessible. Under the instruction of David T. De Celis, a principal at DCM Design, students in Architecture Studio 4 are developing proposals for a charter school and community center for visual and performing arts in Central Square in Cambridge, MA during the Spring 2015 semester.

On Monday, March 2, BAC students met with local visual and performing art leaders at the [Cambridge Arts Council](#) for a design charrette to brainstorm a wish-list for an ideal urban center for the arts. Members in attendance included:

- Lace Campbell, director and producer for Beyond the 4th Wall
- Sarah Carrier, landscape architect
- Peter DeMuro, director of the Dance Complex
- Jeremy Gaucher, public art administrator, Cambridge Arts Council
- Lillian Hsu, director of public art, Cambridge Arts Council
- Mela Lyman, painter and Cambridge resident
- Rika McMally, director of art conservation, Cambridge Arts Council

Participants broke into discussion groups led by BAC students to examine what spatial elements work well in



NON-PROFITS:

- ...like BSA
- Outdoor Teach'g Org's

MENTORING:

- ACE &/or Shadowing

VOLUNTEERING:

- Public Schools...
...PTO-to-Dyslexia/Bldg.
- Library Group +
- Attend Design Juries
- Public Commissions...





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MENTORING:

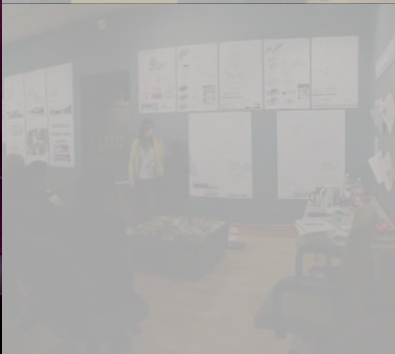
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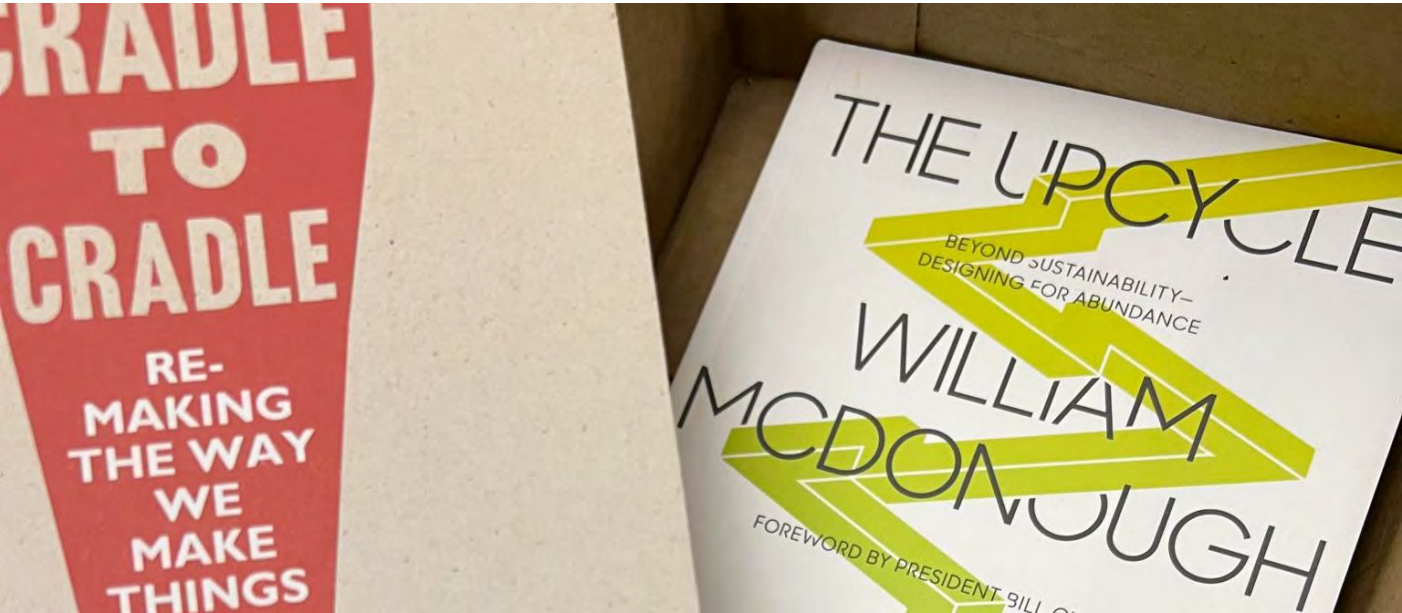
VOLUNTEERING:

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TEACHING/CEU:

- Your Alma Maters or...
...local design school?
- Attend their Conferences...





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SHARE / CELEBRATE!

- On the "night-stand"...
- Work/successes of others



DCVL PHILOSOPHY & BUSINESS MODEL

DESIGN
ACADEMICS
VOLUNTEERISM

“creating innovative, flexible spaces for the ways we live, work and learn”

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DESIGN

Proud to be MBE Certified

THANK YOU!



Co-chairs: Jeffrey Berg & Esther Huang

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— END —