410.929.2174
requity.org

REQUITY

2142 Presstman St.
Baltimore, MD 21217

Blueprint for a Community-Focused Passive House Redevelopment Project

Resource for Public Dissemination

This plan provides a structured approach for a redevelopment project that addresses housing needs, environmental goals, and vocational education through strategic planning, community partnerships, and sustainable practices. While general enough to apply in any city, examples from Baltimore are included for reference.

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1. Site Acquisition & Budgeting

I. Identify Vacant Properties

A. **Utilize Online Resources:** Many cities provide interactive maps or databases listing city-owned properties available for sale or adoption. For example, Baltimore has the BuyIntoBmore platform, which aggregates property information from various city agencies, providing a map of available city-owned properties.

B. **Field Surveys:** Explore target neighborhoods to identify additional vacant properties that may not be listed online. This method allows for flexibility in finding properties that align with specific project goals.

C. **Environmental Scan:** Assess the surrounding area to identify environmental factors that could impact the project, such as industrial activity, pollution sources, green spaces, or areas prone to flooding. Understanding these factors early can help in site selection and inform necessary preparations, ensuring the property and its surroundings are suitable for redevelopment. An environmental scan can also reveal property status not reflected in city agency reports

II. Gain Site Control of the Property

A. **Importance of Site Control:** Gaining site control is essential for moving forward with project planning, financing, and partnerships. Without ownership or control of the property, it is challenging to secure funding, attract stakeholders, or fully engage in design and development. Site control establishes a legal and operational foundation, allowing the project team to confidently invest resources and make long-term plans.

B. **Methods of Site Control:** Site control can be obtained through property purchase, lease, or an option-to-purchase agreement. Early engagement with city resources or property owners can help secure the property before investing significantly in planning and development.

III. Understand Acquisition Programs

A. **Fixed Pricing Programs:** Some cities offer properties at fixed prices for specific purposes, such as affordable housing or community development. For instance, Baltimore's BuyIntoBmore initiative includes a fixed pricing program with properties as low as $1 for primary residence buyers.

B. **Open Bid Process:** Many cities offer an open bid process where individuals and organizations can bid on properties. Baltimore's

Department of Housing & Community Development (DHCD) conducts such bids for vacant properties, allowing for competitive pricing.

C. **Adopt-A-Lot Programs:** Consider Adopt-A-Lot programs, which allow individuals or organizations to maintain and utilize vacant lots for community benefit. Baltimore's Adopt-A-Lot program supports community beautification projects and community gardens on vacant lots.

IV. Engage with Local and State Representatives

A. **City Council Member:** Identify the relevant council member based on the property's location. Many cities have a lookup tool on their council website; for example, Baltimore has a City Council District Lookup tool. Initial contact with the council member helps introduce the project, and ongoing updates help gain support in navigating city resources.

B. **State Delegates and Senator:** Use the state assembly website to find state representatives based on the project's address. Maryland, for example, has a "Find My Representatives" tool. Engaging state representatives can help access state-level resources, grants, or legislative support.

V. Conduct Due Diligence

A. **Property Assessment:** Evaluate each property's condition, zoning requirements, and any existing liens or legal restrictions.

B. **Environmental & Historical Reviews:** Conduct environmental assessments to identify any hazards. For properties with historical significance, work with organizations like the Maryland Historical Trust to maintain compliance with preservation standards.

VI. Budget Planning

A. **Student Compensation:** Allocate funds to compensate students participating in the project, providing vocational learning while ensuring fair wages.

B. **Education-Focused Build Timeline:** Plan for a slower construction timeline that accommodates educational goals, allowing students to fully engage with each phase and build competency in various trades.

C. **High-Performance Building Materials:** Set aside funds for high-efficiency materials, like energy-efficient windows, advanced insulation, and eco-friendly finishes.

D. **High-Performance Testing:** Include a line item for testing to meet high-performance standards, like blower door tests or thermal imaging, to ensure the home achieves net-zero or passive house status.

E. **Job Experience for Cost Offset:** As students gain skills, such as high-performance masonry, they can secure paid work under instructor supervision, helping offset project costs while gaining real-world experience.

F. **Example Documentation for Financing:** Entities like Requity may need to have certain documents prepared and accessible to secure funding, such as net-zero construction loans. Below is an example list of typical documentation required by Maryland DHCD for a net-zero construction loan:

1. Organizational Documents:
    a) Certificate of Good Standing
    b) Articles of Incorporation
    c) Bylaws
    d) Corporate Resolutions
    e) Financial Statements

2. Evidence of Ownership:
    a) Deed or Purchase Contract
    b) Zoning Letter

3. Insurance:
    a) Property/Builder's Risk Insurance
    b) Borrower's Liability Insurance
    c) Flood Insurance

4. Construction Documents:
    a) Plans and Specifications
    b) Budget
    c) Draw Schedule
    d) Construction Schedule
    e) General Contractor's Liability Insurance
    f) General Contractor's Certification
    g) Building Permits
    h) HERS Rating (with cost estimation for energy efficiency validation)

2. Research & Partnerships

I. **Community & Expert Collaboration:** Form partnerships with **architects**, **consultants**, and **contractors** who specialize in sustainable design and passive house construction. These experts can help guide the project to meet high-efficiency standards and support workforce development. In Baltimore, Requity partners with certified passive house professionals to ensure quality and sustainability.

II. Educational Integration

A. **District-Level Involvement:** Partner with the school district's career and technical education (CTE) office to align the project with CTE goals and expand vocational learning opportunities. For example, Baltimore City Schools' Office of Secondary Success and Innovation oversees CTE programs and can facilitate connections with district resources and support structures.

B. **Collaboration with Additional Schools:** Engage other schools with trade-focused programming to broaden the project's impact and provide hands-on learning experiences across multiple institutions. Schools such as Forest Park High School, Edmondson High School, and Carver Vocational-Technical High School (Carver) in Baltimore, which have robust trade programs, can provide students with opportunities to apply skills in carpentry, electrical work, HVAC, and more through direct involvement in the project.

C. **Proximity Benefits:** Positioning the project near a local trade high school minimizes logistical coordination and enhances communication. This proximity allows the project team to work closely with the school as challenges arise, enabling quick problem-solving and flexible collaboration with instructors and students on-site.

III. **Strategic Partnerships for Resources, Skill Development, and Expertise:** Seek partnerships with various organizations that support high-performance construction. Potential partners include:

A. **Nonprofits:** Collaborate with other nonprofits involved in high-performance construction, like CivicWorks, to share resources, knowledge, and expertise.

B. **Construction Companies:** Partner with construction companies, such as Whiting Turner, that bring industry expertise and additional capacity for complex projects. These partnerships create opportunities for professionals to work directly with students and instructors, building their trade knowledge and preparing them for future career pathways.

C. **In-Kind Resource Providers:** In the pilot project, Requity received in-kind donations of solar panels from ADT, flooring from MAFI, and windows from Wythe Windows. These partnerships provided critical resources while enabling industry professionals to work alongside school trade programs, enhancing students' hands-on learning experiences and building meaningful industry connections.

IV. **Researching Similar Programs Nationwide:** Look to similar programs in other cities for insights into effective structures and operational strategies. Requity, for example, connected with the Foundation for Applied Construction Technology for Students (FACTS) in Prince George's County, Maryland. Through this collaboration, they discovered an insurance provider experienced in underwriting policies essential for such projects, including student accident insurance, general liability, and builder's risk insurance.

3. Construction Phases

The construction process for a passive house redevelopment project should be carefully planned to meet high-performance standards, accommodate educational objectives, and ensure environmental sustainability. The construction phases include:

I. Site Preparation

A. **Demolition and Deconstruction**: If necessary, start by safely demolishing existing structures, salvaging materials where possible for sustainable reuse.

B. **Foundation Work**: Lay the foundation, with attention to high-performance specifications such as insulation and moisture protection to improve energy efficiency.

II. Structural Framing and Roofing

A. **Framing**: Erect the structural frame, ensuring it aligns with passive house standards for insulation and airtightness.

B. **Roofing**: Install energy-efficient roofing with appropriate insulation to minimize heat loss.

III. Building Envelope

A. **Siding and Exterior Insulation**: Add exterior insulation and siding to create a highly efficient thermal barrier.

B. **Windows and Doors**: Install energy-efficient windows and doors with high insulation values and airtight seals, critical for achieving passive house standards.

IV. Interior Construction

A. **HVAC and ERV Systems**: Install heating, ventilation, and air conditioning (HVAC) systems, including an energy recovery ventilator (ERV) to improve indoor air quality and reduce energy use.

B. **Electrical and Plumbing**: Complete all electrical and plumbing work, with a focus on energy-efficient and water-saving fixtures.

V. Finishing

A. **Interior Finishes**: Apply drywall, paint, and install flooring using environmentally friendly, low-VOC materials.

B. **Exterior Finishes and Landscaping**: Complete exterior painting, landscaping, and any additional outdoor improvements to enhance curb appeal and environmental resilience.

VI. Energy Efficiency and Testing

A. **High-Performance Testing**: Conduct final tests, such as blower door tests, to confirm airtightness and energy performance. This phase ensures the project meets passive house or net-zero standards.

VII. Final Inspections and Certification

A. **Net Zero or Passive House Certification**: Obtain certifications that verify the home's energy efficiency and environmental sustainability.

B. **Punch List and Warranty Period**: Address any remaining tasks or adjustments, followed by a warranty period for quality assurance.

4. Community Engagement & Strategic Alignment

Integrating Existing Development Plans, Data, and Local Resources

Rooting the project in the local community strengthens its alignment with both community needs and economic goals. By engaging with local vendors and service providers, Requity ensures that investments and benefits are localized, creating a direct, positive economic impact on the community.

General Steps for Strategic Alignment

I. Research Comprehensive City Plans

A. Many cities have master plans that outline long-term goals for growth, equitable development, and quality of life improvements. For example, Baltimore's Our Baltimore Comprehensive Plan focuses on equitable neighborhood development and community engagement.

B. Actionable Elements:

1. **Equity and Fairness**: Highlight strategies to promote equitable access to housing, employment, and resources.
2. **Sustainability**: Demonstrate the project's commitment to environmentally responsible practices.
3. **Community Involvement**: Emphasize methods for local participation in the decision-making and development process, resonating with similar themes in comprehensive city plans.

II. Identify Key Components from Existing Neighborhood Plans

A. Many cities have neighborhood-specific development plans that address unique community needs. For example, Baltimore has tailored neighborhood plans under its Department of Planning. For a project in the Greater Rosemont area, examine any available plans to align the project with locally relevant goals.

B. Actionable Elements:

1. **Tailored Neighborhood Strategies**: Incorporate approaches addressing specific challenges or needs of the neighborhood, such as targeted revitalization, economic development, or housing improvements.
2. **Community-Led Initiatives**: Support and build on programs initiated by residents or neighborhood associations, emphasizing collaboration and local leadership.

3. **Resource Allocation**: Highlight how the project's resources will be deployed to meet identified community needs.

III. Utilize Local Vendors and Service Providers

A. **Local Partnerships**: Being intentionally rooted in the community enables Requity to identify and partner with local vendors and providers of essential services, ensuring that project investments and benefits remain within the community.

B. **Community Economic Impact**: Engaging local businesses helps stimulate the local economy, creating additional opportunities for growth and keeping the project's impact centered in the neighborhood.

C. **Long-Term Relationships**: Building relationships with local providers fosters community trust, enhances project sustainability, and provides ongoing support for future initiatives.

5. Student Engagement & Educational Scheduling

Creating a Flexible Learning Schedule and Work-Based Learning Framework

To effectively train students in trades while aligning with their academic schedules, Requity integrates a multi-seasonal approach to student engagement, supported by work-based learning agreements and on-campus initiatives. This structure ensures consistent skill-building opportunities, enabling students to apply learning in a structured, real-world setting.

I. Work-Based Learning Agreements

A. **Regular Participation**: Establishing work-based learning agreements with participating schools allows students to engage in project activities on a regular basis. These agreements are critical for ensuring that students' participation is consistent, creating a foundation for progressive skill-building and meaningful educational outcomes.

B. **Compliance and Coordination**: Coordinate with school administrators to ensure compliance with educational requirements and align program expectations with school policies. These agreements clarify roles, responsibilities, and learning objectives, ensuring the program's success.

II. During School Hours

A. **On-Campus Initiatives – Carver Hut**: Projects such as Requity's Carver Hut initiative allow for high-performance skill trade development directly on school grounds. This setup provides students with hands-on training access without needing additional agreements, facilitating seamless integration with their daily schedule.

B. **Classroom Integration**: Coordinate with local schools' vocational or CTE (Career and Technical Education) programs to integrate project activities during school hours, giving students real-time, practical experience without disrupting their academic schedule.

C. **Project-Based Learning**: Work with instructors to align on-site activities with curriculum goals, ensuring that students' participation reinforces relevant coursework.

III. After-School Time

A. **Extended Learning**: Requity offers additional training sessions after school, giving students more time to hone skills and gain industry knowledge under the supervision of instructors and mentors.

B. **Flexible Scheduling**: Coordinate with students' after-school obligations, making adjustments to support ongoing participation and retention.

IV. Summer Engagement through YouthWorks

A. **YouthWorks Partnership**: During the summer, Requity aligns with Baltimore's MOED (Mayor's Office of Employment Development) YouthWorks program, offering employment and continued hands-on training. This collaboration provides students with paid work experience and intensive project involvement.

B. **Extended Project Phases**: Summer sessions allow students to dive deeper into project tasks and take on more substantial roles, increasing their skills and knowledge while contributing to significant project milestones.

V. Food Access: By combining in-school, after-school, and summer training opportunities, alongside initiatives like the Carver Hut, Requity's approach ensures flexible, continuous engagement and supports student learning across multiple seasons and schedules. This structure also accommodates students' needs, allowing them to progress in their trade education consistently throughout the year.

6. Project Management and Execution

Organized Collaboration with Digital Tools

Effective project management is key to a successful passive house renovation. Digital tools like MIRO, Trello, or Asana can streamline communication, task tracking, and documentation.

I. **Centralized Workspace**: Use a shared platform to create timelines, task boards, and project maps for clear visibility across phases.
II. **Milestone and Task Tracking**: Set and monitor deadlines for each phase (e.g., site prep, inspections), assigning tasks with clear owners and progress updates.
III. **Document Storage**: Store key documents, such as permits and protocols, in a secure shared location for easy access.
IV. **Continuous Improvement**: Conduct phase-end reviews to capture lessons learned and refine processes for future projects.

Supporting Data for Grant Applications & General Grant Management Needs

To create a robust foundation for grant applications, it's essential to gather comprehensive, neighborhood-specific data that demonstrates the community's unique challenges and the project's potential impact.

I. **Neighborhood Data Aggregators**: Tools like the Baltimore Neighborhood Indicators Alliance (BNIA) provide detailed neighborhood-level data on demographics, housing, economic conditions, and quality of life indicators. Data from BNIA or similar aggregators can:

   A. **Illustrate Community Needs**: Use indicators related to housing, employment, crime, and health to underscore the challenges the project aims to address.

   B. **Highlight Project Impact Potential**: Present data on anticipated project outcomes, such as improvements in housing quality, economic opportunities, or environmental impacts.

   C. **Demonstrate Diligence**: Referencing reliable data signals a well-researched, community-focused project.

II. **Alignment with City and Neighborhood Development Plans**:

   A. **Research** local strategic development plans and align project goals to demonstrate how the project fits within broader city or neighborhood objectives. For example, Baltimore's Our Baltimore Comprehensive Plan provides an equitable neighborhood development framework.

   B. **Incorporate language** and goals from existing city or neighborhood plans to highlight alignment with citywide priorities and maximize grant competitiveness.

General Grant Management Needs

I. **Organizational Assessment and Documentation**

   A. **Grants Manual Review**: Regularly review the current year's grants manual to stay updated on requirements and processes.

   B. **W-9 and ACH Forms**: Submit a current W-9 for tax identification and an ACH form for direct deposit.

   C. **Annual Grant Award Budget**: Provide a detailed annual budget outlining fund allocation in alignment with grant objectives.

   D. **Signed Grant Agreement**: Ensure the grant agreement is signed and submitted by the required deadline.

II. **Insurance and Compliance Requirements**

A. **Certificate of Insurance (COI)**: Submit a COI meeting all specified insurance requirements, ensuring adherence to coverage criteria in the COI Checklist.

B. **Criminal History Record Check Attestation**: Annually attest that all personnel involved in grant activities meet criminal history requirements.

III. **Staffing and Employment Compliance**

A. **Local Hiring Law Compliance**: Complete forms verifying adherence to local hiring requirements (e.g., MOED's Employment Analysis Form).

B. **Monthly Staffing Reports**: Submit reports detailing personnel hours, roles, and any staffing changes relevant to the grant.

IV. **Financial and Program Reporting**

A. **Monthly Expense Reports**: Track and submit monthly expense reports to monitor and ensure spending aligns with budgeted amounts.

B. **Quarterly Programming Reports**: Provide quarterly updates on program metrics, outcomes, and progress toward grant goals.

C. **Annual Site Visit**: Schedule and prepare for an annual site visit from grant monitors to review program implementation and assess impact.

V. **Clearance Dates, Deadlines, and Supporting Data**

A. **Compliance Tracking**: Maintain records of clearance dates (e.g., insurance renewal) and deadlines to ensure ongoing grant eligibility.

B. **Supporting Data Collection**: Organize demographic data, community needs assessments, and neighborhood-specific information from sources like BNIA to support grant applications and project monitoring.

C. **Annual and Interim Reports**: Submit reports detailing program achievements, challenges, and budget adherence as required.

VI. **Compliance Reviews and Continuous Improvement**

A. **Annual Grant Management Practice Review**: Conduct a yearly review to identify improvements and align practices with grant guidelines.

B. **Site Visit Preparation and Follow-Up**: Prepare documentation for scheduled site visits and follow up on any corrective actions or improvements identified.

This comprehensive grant management framework supports effective compliance, ensures transparency, and strengthens future funding opportunities through thorough documentation, compliance, and proactive planning.

Carver Hut: A Hands-On, Replicable Training Model

for Teaching Sustainable Construction Skills, Applicable to Larger Projects like the Carver House

Resource for Public Dissemination

The Carver Hut is a regenerative model for teaching high-performance construction skills at Carver Vocational-Technical High School. Designed as a small-scale, modular structure, the Carver Hut serves as a teaching tool that students can construct and deconstruct annually. This project allows students to gain hands-on experience with the principles of passive house construction—such as airtightness, insulation, and energy efficiency—that they later apply to larger projects like the Carver House.

This project plan provides a comprehensive framework for replicating the Carver Hut model in other schools and training centers. It details the objectives, key components, scheduling, and budget considerations needed to implement a similar program that prepares students for green building projects on a larger scale.

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Objectives

1. **Provide hands-on training in sustainable construction** through a regenerative, modular structure that students build and rebuild each year.
2. **Teach high-performance building principles** that can be applied to full-scale projects, equipping students with transferable skills for real-world applications.
3. **Offer trade-specific instruction** across multiple phases of construction, from foundation work to roofing and renewable energy.
4. **Create a structured scheduling system** that supports consistent student engagement and skill-building across various trades.
5. **Develop a replicable model** that other institutions can implement to introduce students to green building practices applicable to larger-scale projects.

Key Components

I. **Comprehensive Architectural Drawings**

A. A complete set of architectural drawings is essential for constructing the Carver Hut, detailing each component required to meet passive house standards. These drawings should include:

1. *Foundation Plan*: Specifications for an insulated concrete floor slab with vapor barriers, enhancing energy efficiency and thermal performance.
2. *Floor Plan*: Layout with dimensions for walls, window, and door placement, optimized for insulation and airtightness.
3. *Wall Elevations and Roof Plan*: Detailed views of each side, including insulation layers, vapor barriers, and the roof structure with an optional solar PV system.
4. *Electrical and Mechanical Plans*: Wiring and service cavity layouts designed to maintain airtight construction.

B. These drawings are reusable as students construct the Carver Hut each year, allowing them to practice and apply the construction principles they will later use on larger projects.

II. **Concrete Floor Slab Built with Passive House Principles**

A. The foundation includes an insulated concrete floor slab with vapor barriers to prevent thermal bridging, a key passive house principle. This foundational approach creates a high-performance base that students learn to replicate on larger structures.

III. **Multi-Phase Construction and Scheduling**

A. The Carver Hut project uses a structured, multi-phase approach to construction that can be applied to more extensive projects. Each phase—foundation, wall assembly, insulation, roofing, and renewable energy integration—is scheduled to align with academic terms, allowing consistent student engagement.

B. *Structured Shifts*: Students participate in scheduled shifts across different trades, such as masonry, carpentry, and electrical, giving them exposure to each phase of construction.

C. *Sequential Learning*: Students progress through foundational skills in the Carver Hut before applying them to larger-scale projects like the Carver House.

IV. **Trade-Specific Training and Soft Skills Development**

A. **Masonry**: Students learn cinder block layout, mortar mixing, and parging—skills directly transferable to large-scale construction.

B. **Carpentry and Electrical**: Carpenters learn framing techniques with service cavities, while electricians practice wiring within these cavities to maintain airtightness.

C. **Soft Skills and Project Management**: Students also develop teamwork, leadership, and communication skills essential for coordinating larger projects. Business students manage project scheduling, budgeting, and documentation.

V. **Final Structure: Four Sides and Roof**

A. The Carver Hut is constructed as a complete four-sided structure with a roof, equipped with insulation, air barriers, and a solar PV system. This structure provides a practical, small-scale application of sustainable construction practices that students can later implement on a larger scale.

B. *Roof and Renewable Energy Integration*: The roof includes framing, insulation, and a solar PV system, giving students a foundation in renewable energy systems as part of sustainable building practices.

VI. **Testing and Evaluation for High-Performance Standards**

A. *Blower Door Testing*: Students perform blower door testing on the Carver Hut to measure airtightness, an essential skill for verifying energy efficiency on larger projects.

B. *Thermal Imaging and Insulation Assessments*: Students use thermal imaging to assess insulation and identify areas for improvement, skills that are critical when working on more extensive projects like the Carver House.

VII. **Community Engagement and Documentation**

A. *Public Open Houses*: The Carver Hut hosts open houses where students showcase their work and engage with the community, promoting awareness of sustainable construction practices.

B. *Project Documentation*: Detailed documentation (video, photos, time-lapse, and drone footage) captures each phase, creating resources that can be shared with other institutions looking to replicate the model.

Timeline (Aligned with Academic Calendar)

- **Month 1-2**: **Planning and Curriculum Development**
  - Finalize modular construction design and deconstruction components.
  - Develop curriculum covering passive housing, energy efficiency, and modular construction techniques.
- **Month 3-4**: **Initial Construction (First Wall) and Additional Wall Assembly**
  - Complete the high-performance wall and apply air barriers, documenting each step.
  - Continue with remaining walls, using skills learned in the initial phase.
- **Month 5-6**: **Roof Installation and Solar PV System**
  - Complete roof installation, including framing, insulation, and solar PV integration.
  - Conduct workshops on renewable energy.
- **Month 7-8: Community Engagement and Testing Demonstrations**
  - Host open houses to demonstrate construction techniques and testing, such as blower door testing.
  - Conduct thermal imaging and other tests to evaluate energy efficiency.

Budget

I. **Mock-Up Wall Supplies**:
   A. Insulation, wood, fasteners, air barriers: $1,100 (Home Depot)
   B. Paint and fasteners: $57 (Carey Hardware)
   C. Flooring: $50 (In-Kind)
   D. Visconn air barrier: $50 (475 Supply)
   E. **Total**: $1,257

II. **Materials for Four Sides and Roof**:
   A. Insulation, framing lumber, air barriers for walls: $2,000
   B. Roof insulation, framing materials, and PV system components: $3,500
   C. **Total**: $5,500

III. **Job Supplies**:
   A. Chairs: $254 (Dicks)
   B. Camera: $527 (GoPro)
   C. Locks: $96 (Amazon)
   D. Office supplies: $87 (Amazon)
   E. Cooler: $28 (Home Depot)
   F. **Total**: $992

IV. **Educational Resources**:
   A. Curriculum materials, guest speaker fees, and outreach resources.
   B. **Total**: $5,000

V. **Documentation and Public Dissemination**:
   A. Photography, video production, time-lapse, and drone footage.
   B. **Total**: $3,500

VI. **Training and Labor**:
   A. Instructor stipends, guest speaker fees, and student compensation.
   B. **Total**: $6,500

Evaluation Metrics

I. **Skill Development Across Trades**:
   A. Track progress in masonry, carpentry, electrical, and renewable energy skills.
   B. Assess competencies through practical application in the Carver Hut before students apply them to larger projects.

II. **High-Performance Standards Testing**:
   A. Conduct blower door testing to assess airtightness and monitor energy efficiency.
   B. Evaluate insulation using thermal imaging to ensure students understand energy conservation.

III. **Community Engagement and Impact**:
   A. Measure community attendance and feedback from open houses.
   B. Gather insights on public awareness of sustainable construction.

IV. **Replication and Adaptation**
   A. Assess the effectiveness of documentation for replicating the project in other institutions.
   B. Gather feedback to refine the modular design and student engagement model.

Replication Guide for Other Institutions

I. **Establish a Core Curriculum**
   A. *Core Concepts*: Introduce students to building science, passive housing, and green construction skills.
   B. *Modular Learning*: Design a curriculum that progresses from small-scale models like the Carver Hut to applications on larger projects.

II. **Use Detailed Architectural Drawings and Multi-Phase Construction**
   A. *Drawings and Plans*: Follow comprehensive plans that cover foundation, walls, roof, and renewable energy, ensuring students build a complete high-performance structure.
   B. *Phase-Based Scheduling*: Organize construction phases to align with academic terms, allowing students to gradually progress to larger projects.

III. **Implement Structured Engagement and Scheduling**
   A. *Coordinated Shifts*: Use structured shifts to maximize exposure across trades.
   B. *Project Milestones*: Schedule milestones that reinforce skills from the Carver Hut and apply them to full-scale projects.

IV. **Community Engagement and Documentation**
   A. *Open Houses and Demonstrations*: Engage the community to highlight the value of sustainable construction.
   B. *Project Documentation*: Record and share each phase of the project for educational purposes and potential replication.

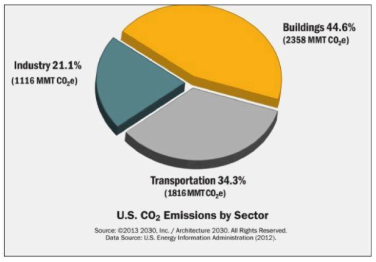
V. **Replication Resources**
   A. **Project Guides**: Include detailed guides, material lists, and safety protocols.
   B. **Assessment Templates**: Use feedback forms to track student progress and project impact.

Conclusion

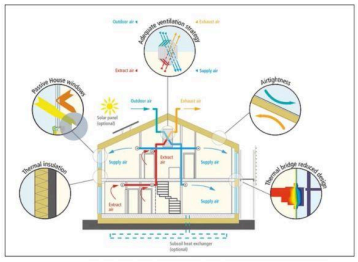
The Carver Hut provides a small-scale, hands-on training model that prepares students for sustainable construction projects. By replicating this model, institutions can introduce students to passive house principles and regenerative construction, which they can apply to larger projects like the Carver House. Through a structured curriculum, modular learning, and community engagement, this replicable program equips students with essential skills in green building practices.

Design Plans

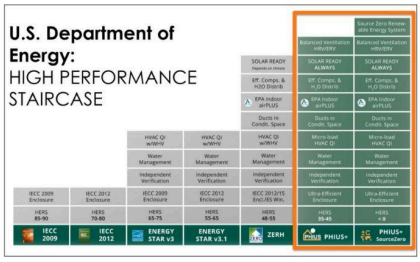
Passive House Design



Buildings are the key source of Carbon Emissions, that directly leads to Climate Change, Environmental Degradation, negative Health Impacts and large utility bills!



Passive House design, is a high performance building design system that is based on five science based principles that eliminates most energy losses and is the basis for making Net Zero buildings.



Passive House design is the most highly rated high performance of building design systems and a model for future building construction.

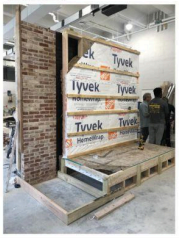
Carver House Project, Baltimore

Since 2020 the Requity team has insitgated a series of workshops and on-site project based learning experiences to better the opportunities for Baltimore's youth aiming to join the construction trades.

The drawings and model for the 2023 workshop were developed and made by: Olivia Zheng, Makayla Colon, Austin Kramer & Brittany Coe students and alum of MICA Department of Architectural Design with instructors Katie Zaeh & Timmy Aziz. Thanks to Michael Rosenband, Marc Stauffer of Requity Foundation Inc. and Professor Lindsay Jones of Carver Vocational Technical High School. Many thanks Requity Foundation Inc, a nonprofit community organization and to MICA, AD for making this workshop possible.

2021: a high-performance wood entry door was designed and built for Carver House.

2022: A mock-up of a high performance wall and floor was built.



2023: The workshop will incorporate work from the previous two workshops to produce a high performance 'Tiny house'

CARVER HOUSE BALTIMORE

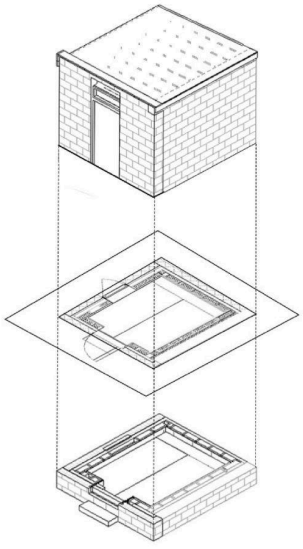
Requity Foundation Inc., Baltimore, MD

MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Carver Hut: Passive Tiny House Mock-Up project, 2023

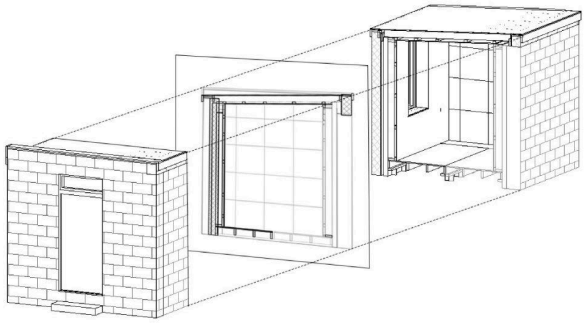
COVER PAGE

Project number	Project Number	A000
Date	June 13 2023	
Drawn by	M.C., O.Z.	
Checked by		Scale



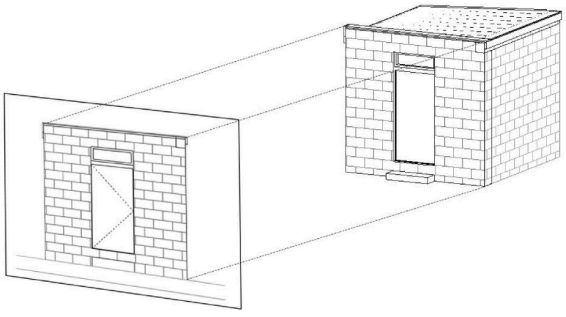
PLAN

SEE SHEET A101



SECTION

SEE SHEET A102



ELEVATION

SEE SHEET A103

CARVER HOUSE BALTIMORE

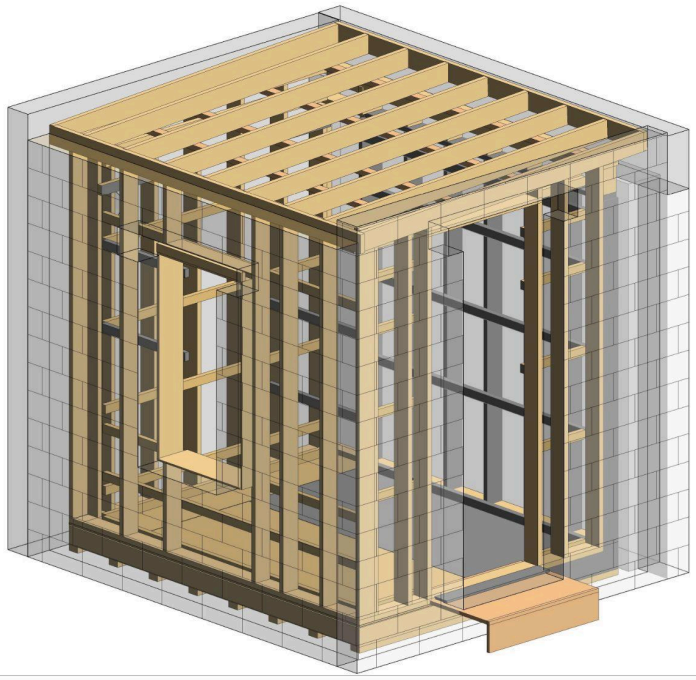
Requity Foundation Inc., Baltimore, MD

MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Carver Hut: Passive Tiny House Mock-Up project, 2023

PLAN, SECTION, ELEVATION KEY

Project number	Project Number	A001
Date		
Drawn by		
Checked by		Scale



1 Framing 3D

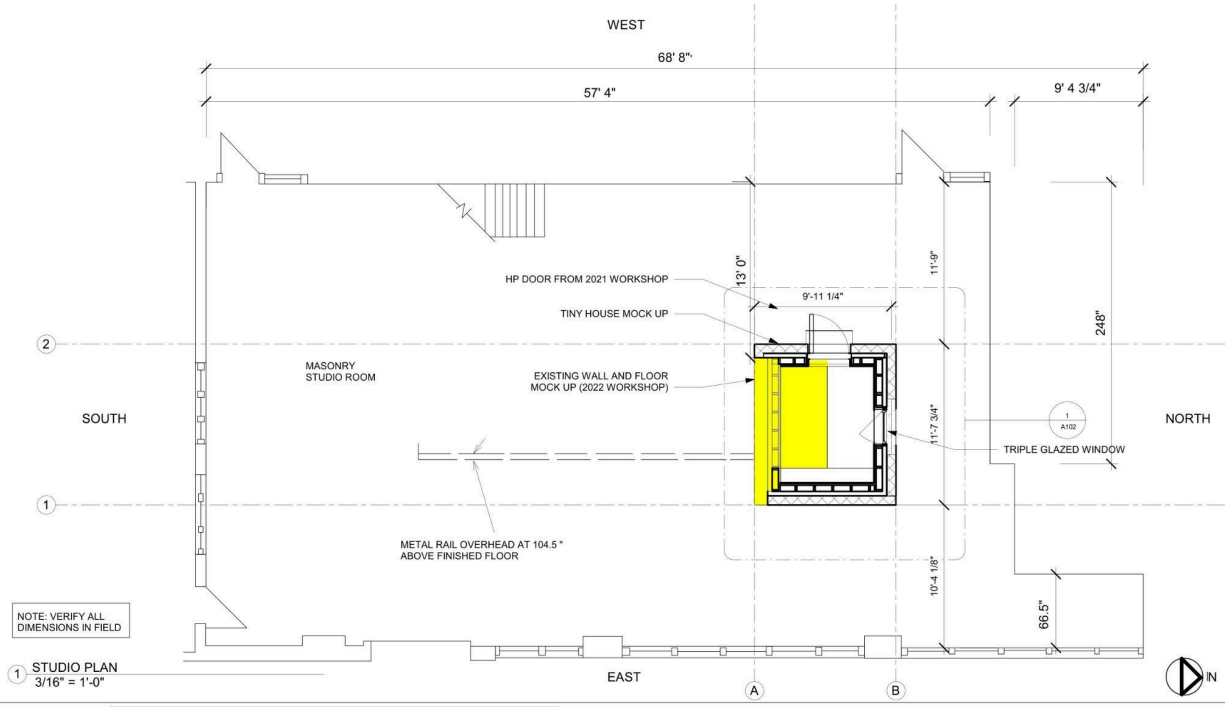
CARVER HOUSE BALTIMORE

Requity Foundation Inc., Baltimore, MD

MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Carver Hut: Passive Tiny House Mock-Up project, 2023

Framing 3D		
Project number	Project Number	A002
Date		
Drawn by		
Checked by		Scale



1 STUDIO PLAN
3/16" = 1'-0"

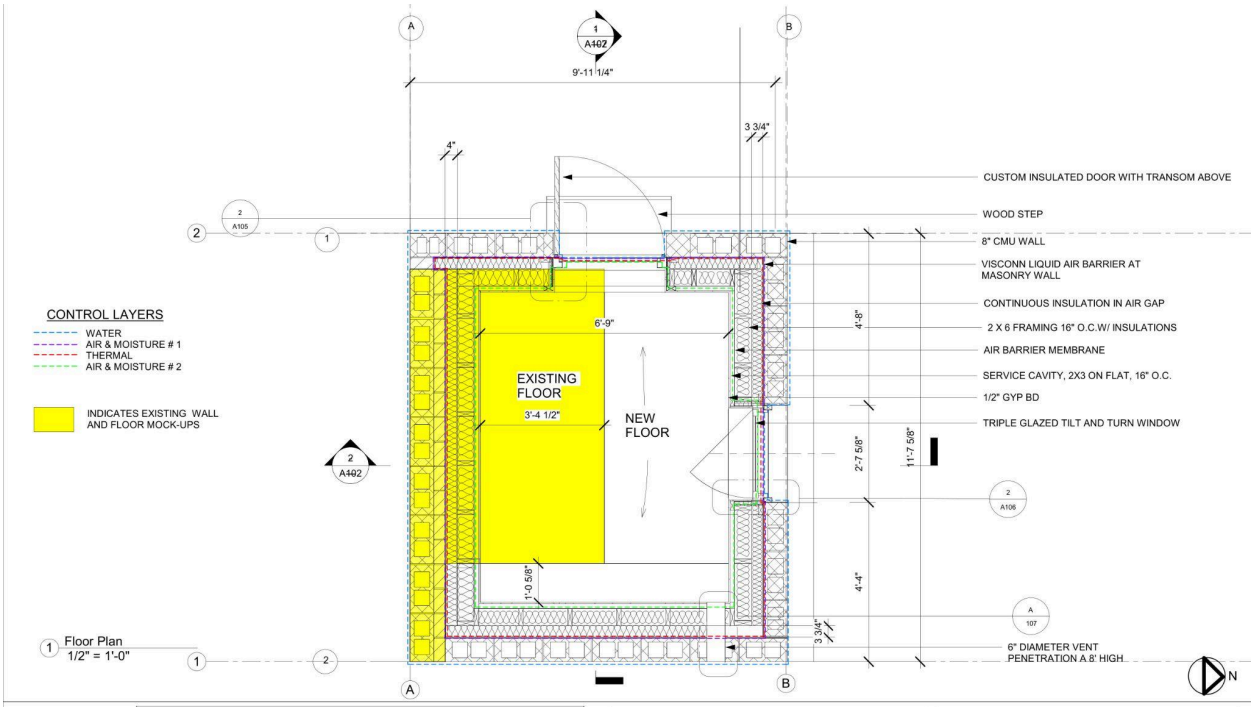
CARVER HOUSE BALTIMORE

Requity Foundation Inc., Baltimore, MD

MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Carver Hut: Passive Tiny House Mock-Up project, 2023

STUDIO PLAN		
Project number	Project Number	A100
Date		
Drawn by		
Checked by		Scale 3/16" = 1'-0"



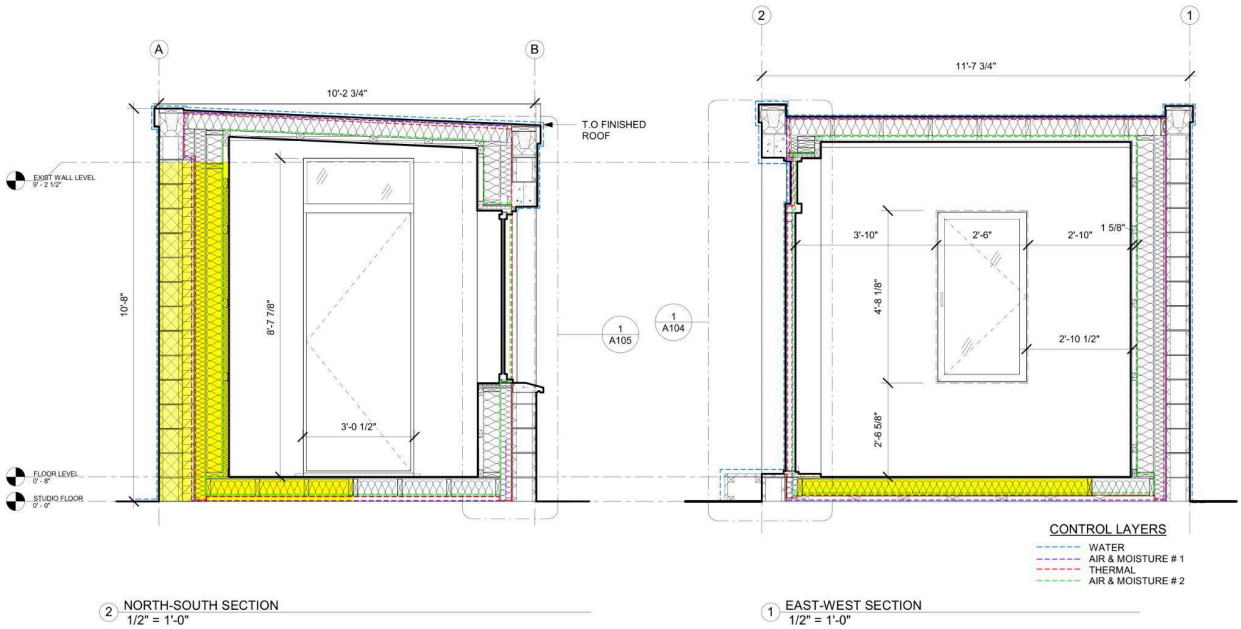
Requity Foundation Inc., Baltimore, MD

MARYLAND INSTITUTE COLLEGE OF ART — ARCHITECTURAL DESIGN

Carver Hut: Passive Tiny House Mock-Up project, 2023

FLOOR PLAN

Project number Project Number	A101
Date	
Drawn by	
Checked by	Scale 1/2" = 1'-0"



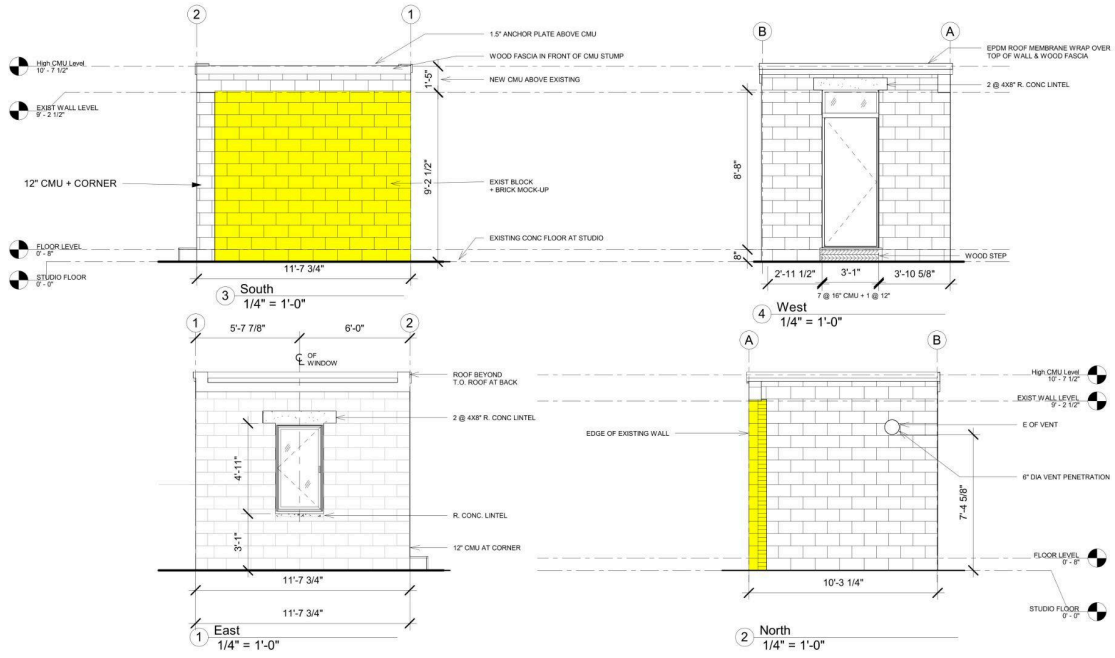
Requity Foundation Inc., Baltimore, MD

MARYLAND INSTITUTE COLLEGE OF ART — ARCHITECTURAL DESIGN

Carver Hut: Passive Tiny House Mock-Up project, 2023

SECTIONS

Project number Project Number	A102
Date	
Drawn by	
Checked by	Scale 1/2" = 1'-0"



CARVER HOUSE BALTIMORE

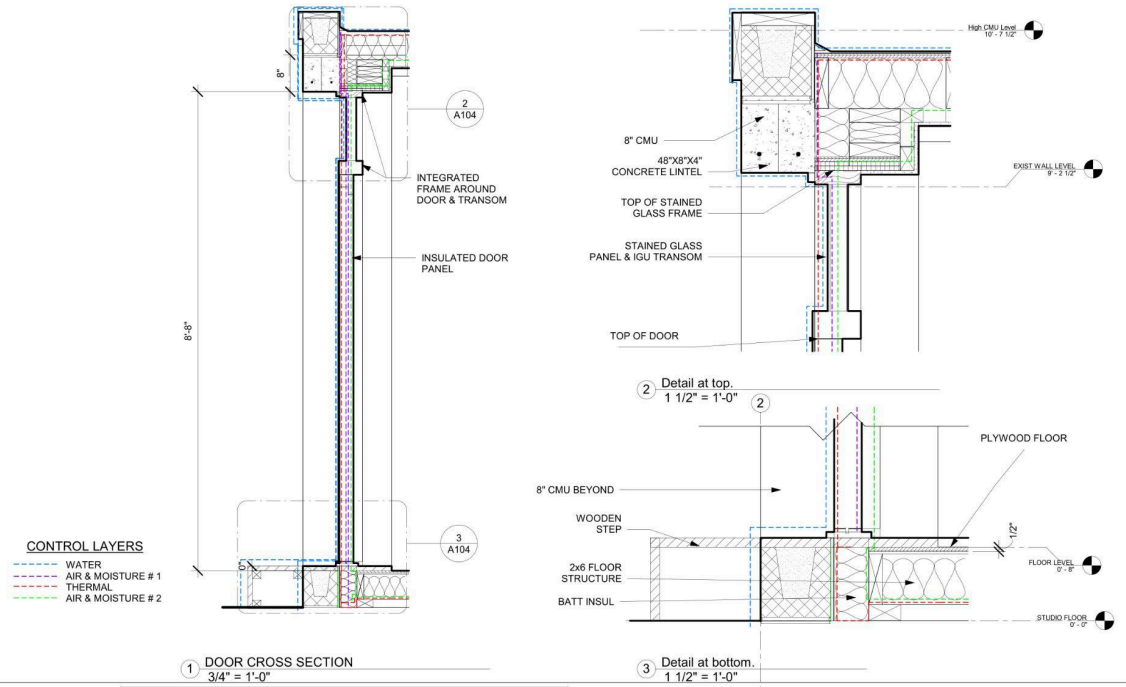
MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Requity Foundation Inc., Baltimore, MD

Carver Hut: Passive Tiny House Mock-Up project, 2023

ELEVATIONS

Project number Project Number	A103
Date	
Drawn by	
Checked by	Scale 1/4" = 1'-0"



CARVER HOUSE BALTIMORE

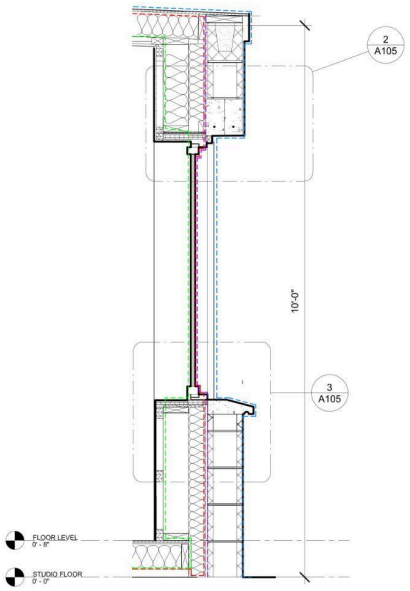
MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Requity Foundation Inc., Baltimore, MD

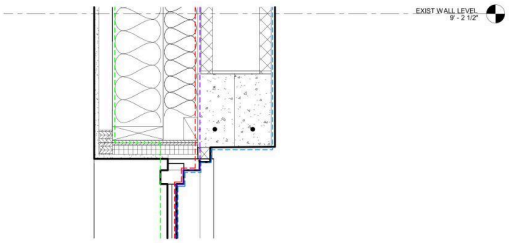
Carver Hut: Passive Tiny House Mock-Up project, 2023

DOOR DETAIL

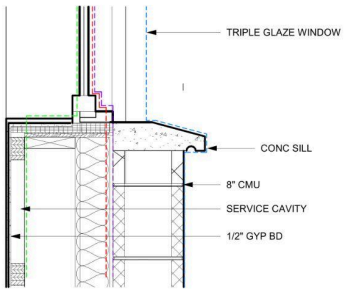
Project number Project Number	A104
Date	
Drawn by	
Checked by	Scale As indicated



1 WINDOW SECTION
3/4" = 1'-0"



2 WINDOW HEADER DETAIL (JAMB SIM.)
1 1/2" = 1'-0"



3 WINDOW SILL DETAIL
1 1/2" = 1'-0"

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MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Requity Foundation Inc., Baltimore, MD

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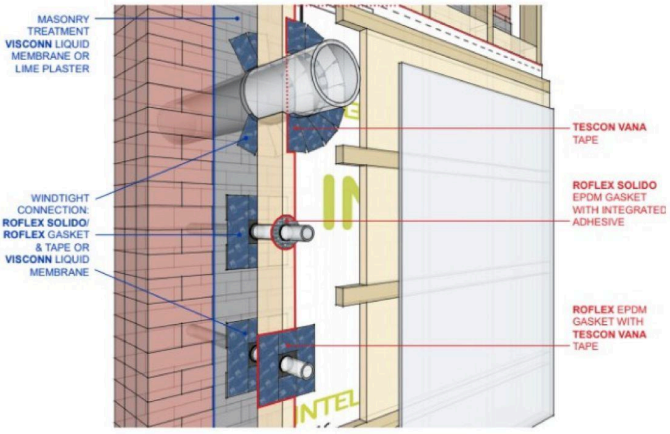
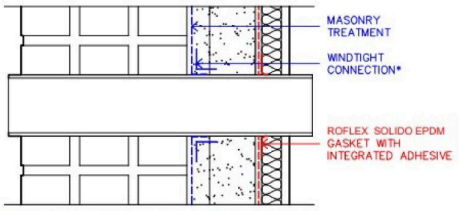
WINDOW DETAIL

Project number Project Number	A105
Date	
Drawn by	
Checked by	Scale As indicated

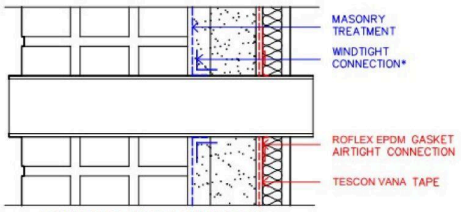
Image source:
475 High Performance Building SUpply "Masonry Retrofit Details'



Detail at 6" Dia Vent Penetration similar



ROFLEX SOLIDO 50 (2" - 3 1/8" DIA PIPE)
100 (3 1/2" - 4 3/4" DIA PIPE)
150 (5 1/2" - 6 5/8" DIA PIPE)
200 (7" - 8 3/4" DIA PIPE)



ROFLEX 20 (0.6"-1.2" DIA PIPE)
30 (1.2"-2" DIA PIPE)
50 (2"-3.5" DIA PIPE)
100 (4"-4.7" DIA PIPE)
150 (4.7"-6.7" DIA PIPE)
200 (6.7"-8.7" DIA PIPE)

CARVER HOUSE BALTIMORE

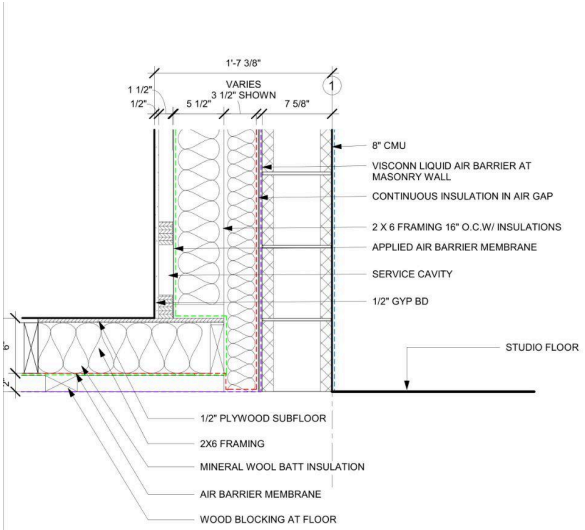
MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Requity Foundation Inc., Baltimore, MD

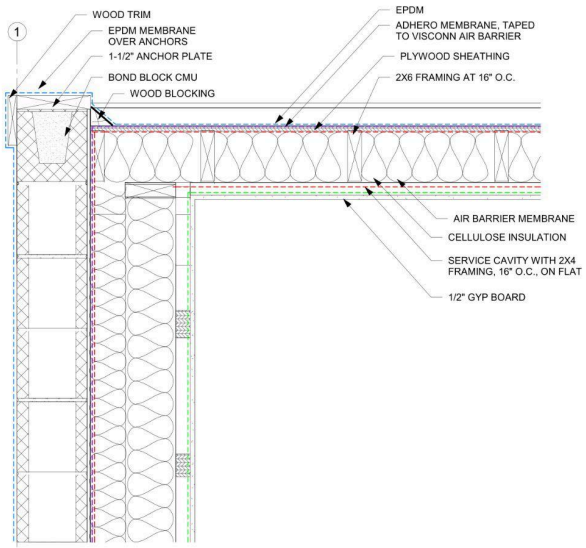
Carver Hut: Passive Tiny House Mock-Up project, 2023

VENT PENETRATION DETAIL

Project number Project Number	A106
Date	
Drawn by	
Checked by	Scale



1 WALL TO FLOOR CONNECTION
1 1/2" = 1'-0"



2 ROOF TO WALL CONNECION
1 1/2" = 1'-0"

CONTROL LAYERS

- WATER
- AIR & MOISTURE # 1
- THERMAL
- AIR & MOISTURE # 2

CARVER HOUSE BALTIMORE

MARYLAND INSTITUTE COLLEGE OF ART ARCHITECTURAL DESIGN

Requity Foundation Inc., Baltimore, MD

Carver Hut: Passive Tiny House Mock-Up project, 2023

TYPICAL DETAILS

Project number	Project Number	A107
Date		
Drawn by		
Checked by		Scale As indicated

Empowering Future Technicians: Electric Vehicle Charging Station Pilot Program (Citywide)

Resource for Public Dissemination

Program Overview

Requity is excited to share our progress with the **EV Charging Program**, a unique initiative that gives youth interns hands-on experience in maintaining and repairing electric vehicle (EV) charging stations. Developed through a partnership with the local utility company, this program aligns closely with our commitments to environmental justice, workforce development, and community-driven sustainability initiatives.

As cities transition to cleaner, greener transportation options, access to reliable EV charging infrastructure becomes essential for supporting widespread EV adoption and reducing carbon emissions. Through this program, Requity empowers high school students to develop the technical skills necessary to support this critical clean energy infrastructure. Participants gain experience in EV technology, station maintenance, troubleshooting, and repair, equipping them with valuable skills in a rapidly growing industry.

The **Requity EV Charging Program** is about more than technical skills—it's about investing in a new generation of environmental stewards who are ready to lead the transition to sustainable energy solutions. By bridging the gap between vocational education and real-world applications, we help students gain marketable skills while supporting a more climate-resilient, equitable Baltimore. With Requity interns successfully engaged in this program for over a year, we are now expanding it citywide, bringing charging stations to multiple school locations and impacting communities one charging station at a time.

Table of Contents

Project Phases

1. Site Evaluation and Proposal

- **Objectives**: Identify optimal locations for EV charging stations at Baltimore high schools, focusing on infrastructure accessibility, environmental justice, and community needs.
- **Activities**:
  - Conduct site assessments and tours of existing EV stations to analyze layout and access.
  - Document observations and develop site proposals, presenting them to Requity and partnering stakeholders.
  - Schedule bi-weekly in-person check-ins and weekly virtual meetings with BGE, ChargerHelp, and Requity team members.
- **Student Engagement**:
  - Students from multiple vocational programs conduct site evaluations and prepare a collaborative citywide proposal.
  - Attend weekly EVC Zoom meetings and bi-weekly in-person sessions with partners, including an introductory meeting with ChargerHelp.
- **Outcome**: Approved site proposal for multiple school locations, establishing a model for citywide implementation.

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2. Project Design

- **Objectives**: Develop a comprehensive design for each site that aligns with safety, operational, and environmental goals.
- **Activities**:
  - Work with engineering vendors and BGE to refine layout, technical requirements, and charger specifications.
  - Define hard-fixed dimensions for installation, ensuring user accessibility and maintenance ease.
  - Host collaborative design sessions with Requity, ChargerHelp, and BGE engineers.
- **Student Engagement**:
  - Participate in design discussions and review technical drawings, learning about EV technology components and electrical layouts.
  - Document the design process and provide input during Requity's EVC weekly meetings.
- **Outcome**: Completed, site-specific designs that meet safety and operational standards for citywide EV infrastructure.

3. Project Signoff

- **Objectives**: Obtain final approvals for the design, ensuring each site meets technical and regulatory requirements.
- **Activities**:
  - Conduct final reviews with Requity, BGE, and ChargerHelp.
  - Present the finalized designs to stakeholders, making any necessary adjustments based on feedback.
- **Student Engagement**:
  - Prepare and present design proposals for signoff.
  - Document signoff details, learning about quality assurance and stakeholder alignment.
- **Outcome**: All designs approved, ready for the permitting process.

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4. Permitting

- **Objectives**: Secure the necessary permits for code compliance and safety for each installation site.
- **Activities**:
  - Submit applications for local permits, adjusting designs as required.
  - Track the status of permit applications and update stakeholders.
- **Student Engagement**:
  - Observe the permitting process, gaining insights into regulatory compliance for sustainable infrastructure.
  - Participate in Requity-led discussions on the importance of safety and environmental compliance.
- **Outcome**: Permits obtained for each site, authorizing construction.

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5. Construction

- **Objectives**: Build EV charging stations across selected Baltimore school sites according to approved designs.
- **Activities**:
  - Pre-construction meetings with Requity, BGE, and ChargerHelp to coordinate schedules and responsibilities.
  - Site preparation, including trenching and conduit installation, followed by charger installation.
- **Student Engagement**:

    - Observe and assist in site preparation and installation, working with Requity and BGE technicians.
    - Document each step of the construction process, providing weekly updates at EVC meetings.
- **Outcome**: Fully constructed, operational EV charging stations at each participating school.

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6. Celebration/Promotion

- **Objectives**: Host ribbon-cutting events at each location, introducing the stations to the community and celebrating project partnerships.
- **Activities**:
    - Plan and promote ribbon-cutting events with Requity, BGE, and ChargerHelp.
    - Conduct community outreach to highlight the program's environmental and economic benefits.
- **Student Engagement**:
    - Assist with event planning, manage event-day operations, and work on social media outreach with Requity's communications team.
- **Outcome**: Successful ribbon-cuttings across locations, enhancing community awareness and engagement with sustainable energy solutions.

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7. Maintenance

- **Objectives**: Implement a maintenance program to ensure the longevity and reliability of each charging station.
- **Activities**:
    - Conduct annual preventative maintenance and manage any corrective repairs with BGE's technical support.
- **Student Engagement**:
    - Perform inspections, document maintenance requirements, and participate in training with Requity and BGE technicians.
    - Track maintenance records and gain hands-on experience in equipment upkeep and troubleshooting.
- **Outcome**: Reliable, well-maintained EV charging infrastructure supported by ongoing student involvement.

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8. Ongoing Data Collection

- **Objectives**: Track station performance, usage trends, and environmental impact to inform program expansion and improvements.
- **Activities**:
  - Collect usage data from each site and analyze trends in demand and environmental benefits.
- **Student Engagement**:
  - Access Requity's data tools to analyze performance metrics and report findings.
  - Prepare quarterly presentations, comparing data across sites to assess program success.
- **Outcome**: Comprehensive data reports, informing decisions for expanding and improving EV infrastructure.

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9. Additional Program Components

Urban Alliance Program Participation

- **Internship Overview**:
  - Part-Time Internship: Spring to Early Summer, Monday – Thursday, 2:00 pm – 5:00 pm
  - Full-Time Internship: Mid-Summer, Monday – Thursday, 9:00 am – 5:00 pm
- **Learning Opportunities**:
  - Resume-building, time management, and professional skills through Requity's workshops.
  - Use of online platforms to track work hours and manage schedules.
  - Gain insights into project planning, time management, and professional conduct.

ABC Program Involvement

- **Field Trips**: Monthly visits to ABC facilities for electrical and technical trades training.
- **Activities**:
  - Industry-standard training in technical skills with exposure to EV charging technology.
- **Learning Outcomes**:
  - Gain foundational electrical skills and hands-on experience with equipment and tools.
  - Explore technical career pathways through Requity's partnership with ABC.

10. Project Schedule and Meetings

- **EVC Weekly Meetings**: Thursdays, 3:30 pm – 4:00 pm, with BGE, Requity, and participating vocational schools.
- **In-Person Meetings**:
    - Bi-weekly in-person meetings scheduled with Requity, BGE, and ChargerHelp for updates and coordination.
- **Field Trips and Site Visits**:
    - Scheduled visits to BGE EV stations and Requity partner sites for additional training and observation.

Summary of Project Outcomes

The **Requity EV Charging Station Pilot Program** offers a transformative, citywide vocational education model for sustainable infrastructure. Through hands-on training, data collection, and community engagement, students develop technical and professional skills while contributing to environmental justice and sustainability initiatives. Expanding this program across multiple schools ensures that a new generation of skilled environmental stewards is ready to lead Baltimore's transition to a greener, more resilient future.

The Electric Vehicle Charging Station Program has provided valuable lessons in both technical and operational aspects, highlighting key factors for successful deployment and long-term sustainability. Early in the process, understanding the various types of chargers (Level 1, Level 2, DC fast chargers) and their compatibility with regional infrastructure allowed for more tailored solutions. A strong emphasis on safety, electrical fundamentals, and proper load calculations minimized downtime and improved system reliability. Additionally, lessons in charger hardware, including the need for universal connector compatibility and scalable station design, were critical to ensuring long-term success. Effective communication protocols, such as OCPP, were essential for network interoperability, and investing in real-time monitoring tools helped address issues proactively. Preventive maintenance practices, including regular inspections and updates, significantly reduced operational inefficiencies and emergency repairs. Site evaluations and thorough coordination with local utilities proved essential in overcoming infrastructure challenges, while clear communication and planning during construction and commissioning phases ensured smoother project execution. These insights underline the importance of a comprehensive, hands-on approach in training youth, while also emphasizing the need for collaboration across stakeholders to support sustainable, equitable growth in EV infrastructure.