



### PROJECT SUMMARY

The core design concept approaches a **mixed-use block scale development** with a business model that incorporates existing homeowners and repurposes vacant structures. Exterior walkways and an elevated podium provides **universal access** to units on all floors (existing and new) via a heavily landscaped exterior corridor. The podium supports several **prefabricated wood-frame structures**, each two to three stories in height and angled towards solar South to optimize solar radiation collection for passive heating, natural interior daylighting, and the conditions for public/private greenspace. Units are mixed-rate, to offset the costs of affordable housing without compromising quality interior space. Materials are spec'd through an optimization sequence, eliminating extraneous materials and the impact on **indoor air quality** (avoiding VOCs and sprayed treatments or adhesives). After designing with analysis driven passive strategies, the next step towards optimal performance is a super-insulated airtight envelope. Compartmentalization of spaces create thermal buffers at envelope penetrations which enables the **building's air systems to source from preconditioned air**, saving energy on cooling in the Summer and heating in the Winter.

### DESIGN STRATEGIES

- Earth Berming w/ Native Plants
- Super Insulated Pre-Fabricated Envelope
- Air-Tight Details w/ Drained Assembly
- Low-Carbon Materials
- Energy Recovery Ventilator (ERV)
- Variable Refrigerant Flow (VRF)
- Blockscale Stormwater Management
- Water Collection/Recycling
- Carbon Sequestration
- Vegetative Shading (Deciduous)
- Geothermal Energy Piles
- Passive Ventilation/Cooling
- Clip-Mounted PV Array
- Solar Hot Water Panels
- Pollinator Roof
- Multi-source Water Harvest
- Waste Water Heat Recovery

## PROJECT INTRO

### Project Data

Philadelphia, PA [Climate Zone 4a]  
 Total Site Area: 40,604 sq. ft.  
 Existing Building Area: 18,600 sq. ft.  
 New Construction: 62,329 sq. ft.  
 Zoning: RMX-1

2229 W Seybert  
 St. Philadelphia, PA  
 19121

Baselines:  
**PASSIVHAUS:** Detailing, Assemblies, and Air Tightness of 1-1.5 ACH @50pa  
**LIVING BUILDING CHALLENGE:** Rigorous Performance with dedicated response to surrounding ecosystems.  
**HERS Score:** -6



- A. **Wall Assemblies:** R-38 Holzraum System Prefabricated Envelope
- B. **Foundation** insulation: R-28  
**Podium** insulation: R-38 in select locations
- C. **Roof** insulation: R-52 w/ staggered insulation + drainage board
- D. **Window Performance:** Triple glazed, fixed & operable  
Uw value = 0.15 W/(m²K), (SHGC and VT vary per orientation)
- E. **HVAC Strategy:** VRF System with ERV + Passive Ventilation, Thermal Mass, with intentional Thermal Zoning.
- F. **Renewables:** PV panels, Preconditioning Ext. Air, Water Recirculation System, Food Production

**Energy Star Baseline EUI:** 59.6 kBtu/ft²/year  
**Target EUI:** 20 before renewables  
**Energy from Renewables:** 247,987 kWh/year  
 (4333m² / 6.5m²) x (18.9%) x (2613 hrs/yr) x (0.75)