

AFFORDABLE HOUSING MATERIALS CASE STUDY BLOCK PROJECT

SEATTLE, WA • 125 SF • 1 ADU UNIT/HOME

DESIGN APPROACH TO MATERIALS

The BLOCK Project has a vision to not just build houses, but to build homes that embody five principles: integrated, sustainable, supported, affordable, and dignified. The 192-square foot accessory dwelling units are intentionally placed within a supportive community, in the backyard of a homeowner. The homes are literally built on relationships – with the homeowner who is providing free land, with the volunteers that help build each home, amongst the community that welcomes a new resident into their circles, and with the city that creates permitting pathways for their innovations in sustainability and land use. The materials used to construct the BLOCK project are no exception to this. The BLOCK project team seeks out manufacturers that are connected to their mission. Drawing upon a supportive manufacturing community has allowed them to incorporate durable, Red-List Free materials.

Volunteer labor for the homes keeps costs down and invests the community in the success of the project. However, volunteer labor requires additional coordination and more direct oversight since most volunteers are not skilled tradespeople. The BLOCK project team has been seeking to shorten the 3- to 5-month timeframe for construction, to limit disruption to the households lending their backyards and to move people experiencing homelessness more quickly into homes. Therefore, the Owner has rented a workshop and begun to standardize and panelize the construction of the building envelope. Through this effort, they are increasing the ability to utilize volunteers and are able to teach people with a ranging degree of skills to build a home. This prefabrication has also allowed them to create innovations in the building envelope. Air sealing materials by ProClima, vapor barriers by Prosoco, and insulation by Havelock Wool have helped create a well-sealed and highly insulated building envelope. Havelock Wool insulation is ideal for installation by volunteers because it does not require gloves – since it contains only wool, it can be handled by hand without irritating the skin. The prefabrication process also means that the project team does not need to hire a General Contractor. The Architect and Owner work directly with the subcontractors and ensure that all

NOTABLE MATERIALS

DECLARE

OWENS CORNING
ECOTOUCH INSULATION
VAPROSHIELD WRAPSHIELD
PROSOCO WEATHER
BARRIERS
ALPEN ZENITH WINDOWS
DUXTON 658 DOORS
IMPERIAL PAINTS ECOS
WOOD VARNISH
BENJAMIN MOORE PAINTS
PROCLIMA AIR SEALING
HAVELOCK WOOL
INSULATION

OTHER RED LIST FREE

SUSTAINABLE NW WOOD:
WESTERN JUNIPER, KILN-
DRIED DOUGLAS FIR,
REDBELT LVL,
COLUMBIA FOREST
PRODUCTS HARDWOOD
METAL SIDING + FLUOROPON
COATING

INTERIOR OF BLOCK HOMES (INTERIOR PLYWOOD WALLS AND BUILT-IN FURNITURE)



PHOTO COURTESY OF FACING HOMELESSNESS



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members of the team are aware of and agree to adhere to the Living Building Challenge requirements.

BARRIERS + LESSONS LEARNED

The design of the BLOCK Project relies on a beautifully minimal aesthetic achieved by incorporating materials that can be left exposed as much as possible, without coatings or finishes. This helps to avoid finishes that may contain Red List chemicals and keeps the materials in the building to a minimum, lowering cost and embodied carbon. Though some project teams have chosen to minimize wood products to mitigate premiums associated with Forest Stewardship Council (FSC) certification, the BLOCK project did not find a significant cost burden associated with FSC wood products and sourced many through Sustainable Northwest Woods. Instead, the project team found wood to be a functional and resilient product and used it as a finish on both the exterior and interior. The interior walls (including built-in shelving system) and floors use an interior-grade FSC hardwood by Columbia Forest Products, avoiding extraneous materials, such as carpet. For the exterior, a marine-grade FSC plywood and kiln-dried TSC Douglas Fir provided a reasonably priced option for structural lumber. The project team switched out Cedar on the rainscreen and siding for Western Juniper. Western Juniper is an invasive species in the northwest (and so is not required to carry FSC certification) due to its tremendous water needs that impact the Pacific bioregion. Western Juniper is actually more expensive than Cedar, but it has twice the lifespan so the BLOCK team felt it was worth the upfront investment.

The minimalist nature of the BLOCK Project means that their designs naturally align with the Living Building Challenge (LBC). Even before deciding to pursue the Materials Petal (and Living Certification), materials with high VOC content were never used. The Diamond Pier concrete foundation, donated to the project, was already Red List Free, along with several other key materials. The project team

found new sourcing for certain wood components to ensure FSC certification. They also replaced the coating for the metal wall and roof panels with a Red-List Free Fluropon Pure coating. The project team found alternative countertop options, which are still being vetted and also switched to low-flow plumbing fixtures. In alignment with LBC 4.0, they ensured that 90% of the products (including finishes and products with large surfaces areas) were Red List Free while prioritizing vetting the highest-impact products. They also replaced the coating for the metal wall and roof panels with a Red-List Free Fluropon Pure coating.

The BLOCK Project is an example of a project team prioritizing health and quality of life for their residents, along with equity and community building. While cost is always a concern for a non-profit seeking to house as many people as possible, Facing Homelessness and the BLOCK Project team utilize a different financing structure than traditional tax credit-funded affordable housing projects. They balance the upfront costs of construction with the long-term cost savings of using durable, low-emitting materials combined with on-site water reuse and renewable energy generation. The BLOCK project is showing how small-scale projects can make big changes. Though some materials will be specific to projects of a similar typology, many of the materials and material strategies can be replicated by all scales of projects.