

Whatcom Housing Authority

2023 ADU Design Competition - **The Tiny Purple House**

Adaptability

This ADU design incorporates several Aging in Place features that incorporate universal design principles. Specifically, the design includes ground level access, single level living, accessible passages & task areas. The kitchen features an ADA working height counter and sink, and the range is fitted with controls located at the front of the unit. The bathroom is planned for full adaptability to ADA compliance. A combined condensing washer/dryer unit allows wheelchair-level laundry use. These universal features are designed with a pleasing aesthetic to work for all ages and abilities.

The recently built version of this ADU had challenges for adaptability that were driven by the tight site. The side yard setback and limited space available to the existing garage resulted in a limited overall ADU building width. Even with those limitations, this small home achieves accessible room sizes and pathways.

Affordability

Balanced between affordability and sustainability, selections were made based on being environmentally friendly, while also being affordable. We throttled the footprint down as far as possible, while keeping all amenities. The galley kitchen is one example of this, limiting the number of cabinets just by its efficiency. Examples of affordable products utilized:

- Wicanders Cork flooring - cork is an inherently renewable material that is easy on the feet and provides thermal comfort. Cork does not off-gas. It is one of the best and lowest-priced flooring products we can offer.
- Sustainable Northwest Wood reclaimed lumber countertops and backsplashes – based in Portland, OR is locally sourced (all wood is locally reclaimed). We used Campground Blue Pine (dramatic, blue-toned reclaimed beetle-killed pine) butcher block counters and lumber backsplashes. These products also cost much less than most mainstream countertops.
- Plygem windows are the lowest-cost, high-performance windows available to us locally. We achieved U-values between 0.17 and 0.21, far below Code requirements, approaching Passive House standards, at a standard window price.
- The roof design incorporates simple, repetitive-sized trusses, limiting the types and shapes to manage costs.

Sustainability

The building is considered 'high performance' as follows:

- Raised heels on trusses allowed installation of R-64 blown-in cellulose insulation, far exceeding code requirements.
- Rainscreen design with continuous exterior insulation to limit thermal bridging, and vented air space allowing the assembly to dry out. Fiber cement lap siding will not rot as fast as wood. The wall's insulation value measuring at R25.8, exceeding code.
- Full building air / weather wrapping, below the entire foundation and continuing up the walls and onto the ceiling.

- R-10 insulation below the slab and on slab vertical surfaces to limit energy losses.
- High performance HVAC components described below.

The home utilizes a multi-port heat pump system that was sized in accordance with the Manual J calculation performed to assure the unit is not over-sized for its anticipated service loads. One wall unit serves the living spaces, and one ducted cassette serves the bedroom and office.

A through-wall heat recovery ventilator is utilized for fresh air based on Code requirements for whole-house ventilation. With such a small home, the through-wall unit was selected to control costs over a ducted system. The installed unit recovers 87% of indoor air energy prior to it being exhausted.

Post-construction, the home received EnergyStar, IndoorAirQuality and Zero Energy Ready Home (ZERH) certifications. A standard new home scores a ZERH of about 100; this home scored a 40, making it qualified to achieve Zero Energy.

Innovation & Aesthetics

This tiny home's identity was borne out of the municipal regulations at the time requiring the ADU to be subservient to the main home "*so that the ADU is architecturally compatible with the existing home.*" As the existing home is already purple, we chose to match that the home fits right in with its owners' purple Victorian home and adds to the property's legacy. It is also located back from the main home in respect of it but still tied to the street with a pleasant walkway woven through trees.

Background

In 2021, a client commissioned this detached accessory dwelling unit (with some interior accessibility variations from the plan included here) so that a family friend could live on their property. Originally planned to be built atop the 2-bay existing garage, the city regulations on height restrictions and potential construction difficulties determined the new unit would be designed and built detached. A home office was included as a client requirement. This ADU provides an efficient, sustainable, and fully accessible place to live with an emphasis on homeowner and occupant happiness.