

LIGHT, CORK, & VEGETABLES

SITE:

The first location I thought of when reading through the rules is the north side of Alabama st. 1513 Alabama is a subdividable lot that would roughly create a 60 x 80 lot. Alabama creates a big design challenge: How do you create homes on the north side of a major road through town that have both good daylight and private space for occupants?

FORM:

The proposed design has a private greenhouse on the south side that can reuse the translucent solar panel glass from the restore. The greenhouse provides: year round growing, a mudroom, intermediary space for when it's raining, and further separation from the busy road.

The building section and roof are designed to be as low as possible and provide as much light to the north side of the lot as possible. This yard could be used as a communal garden/ outdoor space for all the residents. Based on the solar diagrams, the north side of the yard would provide a full growing season.

The highest windows on the south elevation would provide light to the north side ground floor living space with interior walls having glass at the top 18". This is shown in the building section.

With the lot being 60' wide, it was a tossup on whether to provide 3) 1 bedroom homes at ~16' wide each or 2) 2 bedrooms at ~25' wide. The design can easily be adapted to a 2 bedroom 1 bath home.

COLOR:

The mullions on the exterior of the house would be brightly painted to provide a contrast to the duller cork. With the weather being gray and rainy for half the year, subtle bright colors are a nice way to brighten the town.

ENERGY USE:

The shading device on the south elevation will house solar panels that are on hinges to raise and lower based on optimizing solar gains and adjusting for solar shading. The solar panels will provide an estimated 2,200 kWh per year which will be up to the residents how much of their electric bill that will cover based on their use. The heating system will be a ductless heat pump. An HRV will be used as well to provide fresh air to the house.

CONSTRUCTION:

With the fast increasing housing prices, how do we lower prices on construction? Lower the amount of labor needed and lower amount of materials needed. Equally important: limit the amount of unsustainable & toxic materials.

The interior walls are a code needed 1 hr rated assembly for fire separation between the units. These walls are painted white for brightness. The rest of the walls are 2x4's with let in braces

that take the place of plywood. On the outside of the framing is 2 layers of cork with staggered seams that provide the weather barrier, air sealing, insulation, and siding.

The walls are built in 2 steps:

- 2x4 Framing
- Cork

Typical construction being 8 steps:

- 2x6 framing
- sheathing
- weather barrier
- rainscreen
- siding
- insulation
- drywall
- paint

The wiring would be run in a 18" tall chase that is blocked on top in the 2x4 cavity and is covered by plywood. The switches and lights would be wired in metal EMT conduit. & the HRV would be run in exposed galvanized ducting.

All interior doors are marine plywood on tracks, which would be CNC cut out from the same plywood as the cabinets.

The roof assembly would be 4" CLT panels. The CLT would be exposed on the interior. Cork insulation would be installed on top of the CLT, and then 2x4s @ 24" o.c. run horizontally that would provide nailing for the exposed seam corrugated roofing. The use of CLT would greatly reduce the amount of labor needed. The CLT panels would get craned in, and lagged in 1 day.

CONCLUSION:

Living in exposed studs like this would be an adjustment for residents, insurance companies, & lenders, but we need to rethink how buildings are put together and with what materials.

Design is currently underway for an ADU near Fairhaven that will start construction in 2025 that will use very similar construction methods and will be used as a model home for people to tour and stay in with the goal of selling this idea for a cheaper and more sustainable way to build homes in a town that desperately needs more affordable housing.