

Columbia Cluster

Columbia Cluster is a mixed unit townhouse designed to be integrated into a small lot (50' x 100') existing neighborhood. Balancing the existing scale of the neighborhood with the need for increased density, the buildings are 2 stories and oriented with the short building dimension to the street. The orientation provides a smaller appearance from the street while also orienting the broad side of the building to the south thus maximizing room for solar panels and controlling solar heat gain in the summer months. When paired on two small lots, a common central courtyard is created to provide further community space for interaction between neighbors and fostering community.

Columbia Cluster is a low-cost, high-performance building providing mid-density solutions with a flexibility of ownership models. The project includes (2) attached 3-bedroom primary units with (2) additional 2-bedroom ADU units. Designed under the IRC code, the project delivers flexibility in size and ownership models. Imagined as owner occupied spaces, the ADU portion provides flexibility for extended family, caregivers, rental income, or can be sold off as a separate owner-occupied condo unit.

Affordability & Constructability:

Townhouse, Vertical Unit Separation (IRC)

Instead of stacking units are arranged side by side as in a townhouse model. This allows the use of a less expensive vertical fire separation construction method allowed within the International Residential Code (IRC) building code.

For both affordability and constructability, "Stacked flats" were avoided as they require a more expensive horizontal fire separation method and would come with increased requirements per the International Building Code (IBC), all of which raises the cost of construction.

Simple rectilinear footprint (easy to construct) & common structural materials selected

Built to Zero Energy Ready Home standards (low operation/utility costs)

-5,000 tax credit per unit to contractor/developer

Flexibility of ownership models allows these homes to become affordable to both owners and renters.

- Individual ownership of units (Condos)
- Rental ADU incomes for primary units

- Mixed / Generational Living models between primary units & ADU's (smaller ADU footprint = lower rental fee)

Sustainability & Resilience:

Building orientation - Elongating buildings in the East and West dimension helps to maximize south light exposure and to minimize over heating from the harsh East and West sun.

High quality & Durable Materials (less maintenance cost overtime, safer for occupants/installers, & improved indoor air quality)

- Windows | High performance windows with Passive House u-values
(Thermal & Solar Heat Gain optimization)
- Roof | Standing seam metal
(Durability, Recyclable, potential for rain catchment)
- Siding | Metal & Durable Local Wood
(Repurposed Invasive Juniper from Oregon grass lands)

Continuous Thermal and Air Barrier Strategy

- HVAC located within conditioned areas
(increased efficiency)
- No thermal bridging of structure
(increased efficiency of thermal barrier & durability of structure)
- Air tight, Passive House air sealing levels with vapor open assembly
(increased structural durability & HVAC efficiency)

Systems - Integrated appropriately sized heating, air ventilation, and hot water systems not only ensure high energy performance and low environmental impact, but they also guarantee a comfortable and healthy home.

Continuous Exterior Insulation

- (Prevents condensation in wall assembly, & increases HVAC efficiency)
- (Preference for low carbon materials like cork or wood fiber)

- Rainscreen cladding - natural ventilation of siding / wall assembly
(Increased durability of wall & cladding)

Parking

- (1) space per unit provided
- Ev Charging
- Increases mobility options for occupants in locations less served by public transportation

Innovation & Creativity:

Flexible Outdoor Courtyard

- Open communal space
- Play space for kids & families or gardens

Covered porches open to Courtyard

- Semi-private space buffers transition from public space to private space
- "Eyes on the street" for increased safety
- Fosters neighbor interaction for stronger communities in the event of natural disasters

Separate covered bike storage or garden shed

- 10'x12' design does not require building permit