

FAIRFAX intergenerational modular housing

THE PLAN

The concept of intergenerational living brings with it the challenge of connecting two groups of individuals that can feel far removed from each other. In terms of architecture the challenge is how to create spaces that can allow these two groups to interact with each other while also allowing for privacy. The other issue that the plan must be cognizant of is allowing the child to feel that they have privacy but always allowing their caretakers to be able to keep a watchful eye.

- 1 Front Living Room. Allows for privacy and a removed room that can be quieter than the activity zone of the house.
- 2 Kitchen/Laundry Room. Open to rear family room. Large work table/breakfast counter for children to do homework while Grandparents are preparing meals or washing clothes. Has views of carport outside and rear yard to where children may be playing.
- 3 Rear Bedroom/Grandparents Bedroom. Located off of private hallway on accessible route adjacent to fully accessible bathroom.
- 4 Accessible Bathroom. Tub for bathing and washing younger children. Sized to accommodate changing and children getting in and out of tub.
- 5 Bedroom #1/Children's bedroom. Allows for Grandparents with mobility issues to take care of infants or young children all on one floor. As children get older they can move to the more private rooms on the second floor. Also if the children's parents return to the home these rooms would be good for them.
- 6 Stairs to second floor. Stairs are provided for the expansion of the unit into a three or four bedroom unit. These stairs can also, if desired, be used to access a basement.
- 7 Second floor. Allows for the possible expansion or contraction of the unit from as little as two bedrooms to as many as four bedrooms. The construction of the unit allows for the second floor to be built as a shell and finished as necessary. This allows the flexibility of any unit to be up or downsized without having to move families around.
- 8 Lift hallway. The two bedrooms and one bath on the second floor is connected by a lift hallway. This is designed to allow for the ability of the grandparents to maintain a watchful eye over to the activities of their grandchildren in their "privacy quarters".

The units are designed to avail themselves to modular construction methodologies. Based on a 12' width, each unit consists of two modules next to each other. The second floor module is repetitive of the first floor bedroom module.



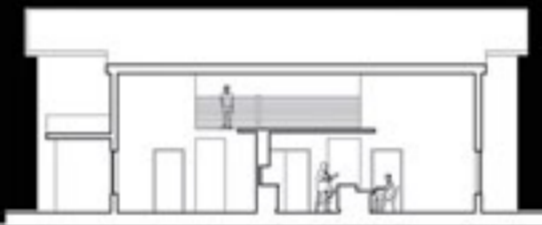
SECOND FLOOR



FIRST FLOOR



VIEW - B



LONGITUDINAL SECTION



VIEW - A



THE SITE

Beginning with the base unit, the site plan is designed to evolve from the single module into a small grouping of dwelling units, to the plan of a small community, and finally into the larger neighborhood context. Along with the grouping of dwelling units, many elements throughout the design are repetitive such as shared backyards, bioretention areas, and gateway markers. Lot acquisition, lot consolidation, lot depth, and desired density inform the groupings and arrangement of the dwelling units and site elements.

Several groupings of dwelling units on deep lots allow for the creation of a greenway. The greenway is a semi-public space that provides a safe space for children to play, walk from unit to unit, and walk to bus stops for school. The greenway also acts as a natural filtration system for the site's improved areas.

- 1 Gateway element to distinguish the private yard from the public realm.
- 2 Private shared backyards present opportunities for gathering spaces such as vegetable gardens. Vegetable gardens create a green neighborhood practice of growing your own food.
- 3 Bioretention areas are scattered along the Greenway. Bioretention areas serve as gardening opportunities for families as well as a sustainable practice for stormwater management.
- 4 The Community Center is situated along the Greenway, across from the Recreation Center. Internally the Community Center provides learning and gathering areas for all members of the community. The rear of the Center is a large porch that serves as outdoor shelter for Grandparents to keep a watchful eye over their children in the playgrounds.
- 5 Outdoor activity areas around the Community Center, along the Greenway path, present neighborhood children of all ages with programmed play areas.
- 6 Seating built into the landscape for neighbors to gather and watch children.
- 7 Incorporating a porous paver system along new roadways for stormwater run-off.
- 8 The Greenway path is a material such as a fine gravel or stones that will allow water to filter through the ground surface yet allows senior residents to safely move through the landscape.
- 9 The Greenway is a semi-public linear park that utilizes the depth of many Cleveland lots. The Greenway provides a safe space for neighborhood children to play with eyes watching from inside the rear dwelling units, the outdoor activity area, and the Community Center.

CONCEPTUAL COST ESTIMATE

Proposal: Utilize a modular manufacturing method to deliver 36 units of housing, staff cottage and community center on a 3.5 acre urban site.

Cost estimate is broken into Structural Cost, Upgrade Cost and delivery, foundations and set crew for each unit type.

- Structural Cost: \$41.84 / sq. ft.
This cost is that of the shell for a conventionally built modular home. This baseline cost is necessary to determine the increased cost associated with attaining LEED Platinum designation. This cost includes the following:
- Floor System
 - Wall and Ceiling Systems
 - Exterior envelope
 - Roof System
 - Electrical (NIC fixtures)
 - Plumbing (NIC fixtures)
 - General Conditions
- Upgrade Cost: \$48.55 / sq. ft.
In order to deliver a sustainable LEED Certified Platinum project, additional upgrades to conventional construction are necessary. In addition, added cost is incurred to exceed Volatility, Universal Design and Fair Housing standards. These additional costs include the following:
- Roof System \$ 1.21 / sq. ft.
 - Insulation \$ 2.54 / sq. ft.
 - Windows \$ 14.86 / sq. ft.
 - Doors \$ 2.80 / sq. ft.
 - Interior Trim \$.35 / sq. ft.
 - Cabinetry \$ 2.72 / sq. ft.
 - Counter tops \$ 5.18 / sq. ft.
 - Bath Accessories \$.32 / sq. ft.
 - HVAC \$ 2.33 / sq. ft.
 - Electrical \$ 1.29 / sq. ft.
 - Plumbing \$ 1.67 / sq. ft.
 - Floor Covering \$ 1.85 / sq. ft.
 - Stair Package \$.57 / sq. ft.
 - Appliances \$ 1.39 / sq. ft.
 - Landscaping \$ 1.28 / sq. ft.
 - General Conditions \$ 8.81 / sq. ft.

Delivery / foundation / set crew: \$8.89 / sq. ft.
In modular construction, site work, foundations and the delivery and setting of the dwelling are separate costs - often associated with site conditions and location. We are assuming a full basement for each structure although a crawl space is adequate to accept modular construction.

Dwelling Unit (1,700 sq. ft.)
Base Structural Cost: 1,700 sq. ft. x 41.84 / sq. ft. = 71,128.00
Upgrade Cost: 1,700 sq. ft. x 48.55 / sq. ft. = 79,135.00
Delivery / foundation / set crew: 1,700 sq. ft. x 8.89 / sq. ft. = 11,373.00
Total cost / unit: 71,128.00 + 79,135.00 + 11,373.00 = \$161,636.00
Total cost / sq. ft.: 161,636.00 / 1,700 sq. ft. = \$95.08 / sq. ft.

Cottage Unit (950 sq. ft.)
Base Structural Cost: 950 sq. ft. x 41.84 / sq. ft. = 27,196.00
Upgrade Cost: 950 sq. ft. x 48.55 / sq. ft. = 30,257.50
Delivery / foundation / set crew: 950 sq. ft. x 8.89 / sq. ft. = 4,348.00
Total cost: 27,196.00 + 30,257.50 + 4,348.00 = \$61,802.00
Total cost / sq. ft.: 61,802.00 / 950 sq. ft. = \$65.05 / sq. ft.

Community Center (2,800 sq. ft.)
Base Structural Cost: 2,800 sq. ft. x 41.84 / sq. ft. = 109,794.00
Upgrade Cost: 2,800 sq. ft. x 48.55 / sq. ft. = 121,020.00
Delivery / foundation / set crew: 2,800 sq. ft. x 8.89 / sq. ft. = 17,394.00
Total cost: 109,794.00 + 121,020.00 + 17,394.00 = \$247,208.00
Total cost / sq. ft.: 247,208.00 / 2,800 sq. ft. = \$88.29 / sq. ft.

Total project cost:
Dwelling units \$5,818,896.00 (36 units x \$161,636.00 / unit)
Cottage Unit \$61,802.00
Community Center \$247,208.00
Total \$6,127,906.00

36 units / 10 units per acre / 1.3 parking space per unit including adjacent on-street parking

