

## **SENIOR CITY – Affordable Senior Housing Case Study**

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### **GENERAL**

#### Project Information:

- Location: Federal Way, WA
- Occupancy: 61 one bedroom apartments for seniors  
1 two bedroom apartment for resident manager  
Common areas including social hall, commercial kitchen, computer room and resident manager office  
3,000 s.f. of administrative office space for the Korean Women's Association
- Owner: Korean Women's Association
- Rating System: Evergreen, Green Communities
- Site Area: 30,834 SF
- Project Size: 68,021 SF
- Density: 87.52 units/acre
- Completion Date: April 2010

The Korean Women's Association (KWA) provides multi-cultural and multi-lingual social services to people of all cultural backgrounds. With this latest 68,021 square foot senior housing project, they have continued their commitment to increasing housing for low income seniors in a healthy, environmentally sound building with on site social services and easy access to public transportation and to the social and retail amenities of downtown Federal Way.

The Senior City site is adjacent to the Sound Transit Federal Way transit center, and contains sixty two units of affordable housing, 3,000 square feet of social service office space, a central court and limited underground parking. The project team collaborated closely in developing site and building strategies that focused on creating a healthy and secure place for residents. The design seeks to:

- Minimize automobile use,
- Encourage public transportation,
- Maximize green space,
- Encourage community among residents,
- Create well designed spaces with ample natural light, views and healthy indoor air quality.

An integrated design process started with a green charrette facilitated by the architects to establish broad project goals. The entire project team, potential residents, the contractor, Sound Transit staff, City staff, and the utility district collaboratively developed a green development plan that with specific tasks and milestones used to track the implementation of the green strategies.

These strategies focus on:

- Decreasing energy use
- Reducing construction waste and encouraging the use of recycled materials
- Decreasing water use
- Maximizing daylighting to decrease artificial lighting needs
- Providing good indoor air quality
- Providing durable, maintenance free materials and systems

The following is a summary of some of the sustainable strategies that included in the project and generally follows the outline of the proposed Evergreen Sustainable Development Criteria and Green Communities Checklist.



#### **SITE, LOCATION AND NEIGHBORHOOD FABRIC**

##### Smart Site, Connections to the Neighborhood:

The proposed project site is within ½ mile of the center of Federal Way. This is easy walking distance to stores, restaurants, pharmacy, banks, and medical buildings. It is also next door to the Federal Way Transit Center. Multiple Sound Transit Bus Lines are easily accessible to residents.

The existing site was an undeveloped parcel from Sound Transit's adjacent transit center development. However, utilities were available at the site and the access drive to the Sound Transit garage doubles as the access to the Senior City site.

##### Compact Development:

The development is at a density of 87.52 units per acre (62 units on .7076 acres);

##### Solar Access:

The building is L-shaped with elongated axes in the north/south and east/west directions. The south façade of the building is passively shaded by built in sunscreens. The built in sunscreens allow winter sun in the units while shading the units from the summer sun without obstructing ambient light or views to the outside. The first level has vertical planted green screens where there is no glazing. In addition the floor plans are narrow so that all rooms in the apartments have ample daylight. All common circulation spaces also have natural light. A common corridor lines the west façade so that few apartments absorb the massive heat of the afternoon sun.

Apartments on the Main Level facing North, East and South (at the inside of the "L") have views to the green roof terrace.

## **SITE IMPROVEMENTS**

### Landscaping/Irrigation:

A majority of the landscaping is native vegetation and will be irrigated only as necessary to establish the plants. The irrigation system is an efficient system and includes a rain sensor. Native turf is used in the lawn at the entry stair terrace and the design for some of the storm water runoff assists in irrigating this area.

The green roof is landscaped with over 50% native vegetation. Very low-maintenance guidelines will be followed to help the green roof plantings establish and then will supplement rain water with a once a month watering in the summer months only. The green roof terrace provides visual relief to the surrounding units, decreases the Urban Heat Island affect by “cooling the air, slowing air movement and acting as a substrate for pollution to settle out and detoxify”, and will reduce storm water run off. The green roof also provides added longevity to the waterproof membrane over the parking garage in this area.

### Storm Drainage:

The design incorporates a vegetated bio swale on the west side of the building to supplement for water quality treatment. Storm drains are labeled showing where the storm water leads.

## **WATER CONSERVATION**

### Efficient Plumbing Fixtures:

Water conservation is one of the primary ways to reduce energy consumption (by saving hot water consumption). The project uses plumbing fixtures that exceed the Washington State Energy Code and meet the following standards:

- Toilets- Dual flush with 0.8/1.6 GPF
- Showerheads- 1.75 GPM or better
- Kitchen faucets – 1.5 GPM or better
- Bathroom faucets – 1.0 GPM or better

### Irrigation:

Irrigation is high efficiency system with a rain sensor and efficient controls as discussed above. The management will evaluate continued use of the system after the plants are established.

## **ENERGY EFFICIENCY**

### Efficient Building Envelope:

The designed project is 15% more efficient than the requirements of the 2006 Washington State Energy Code. This is achieved by using exterior wall insulation (above and below grade) with R21 values, raised-heel roof trusses with minimum R42 insulation in the roof, R30 insulation in the floors above the crawlspace (or other unheated areas) and vinyl windows with an average 0.25 U-value rating. All concrete slab-on grades at heated spaces will have perimeter R10 rigid insulation.

### Energy Star Lighting:

All lighting is Energy Star rated and exterior lighting is controlled by timers. Daylight and occupancy sensors are specified for all lighting in the office and common use spaces.

Common Area Lighting:

Sections of the corridors have occupancy sensor controls to save energy when the corridors are not in use. The common stairs have bi level lighting (low level lighting always on with additional lighting turned on with occupancy sensors) to further reduce common area lighting costs. The garage lighting is also bi-level lighting though the upper level is controlled with a switch.

Individual Electric Metering:

Each apartment is individually metered for electric use and there is a house meter for common areas. Refrigerators are Energy Star rated. The common clothes washers and dryers will also be Energy Star rated.

Efficient Domestic Hot Water:

The design includes common gas hot water heaters that will serve all units. These hot water heaters have energy factors of 93% or better (typical buildings of this type are 80% efficient).

Cooling:

Operable windows are located to promote cross ventilation and provide fresh air and cooling. Sun shades on the south facing windows add to residents' comfort during the summer months.

Heating Systems:

Electric energy saver wall heaters are specified for the apartments for initial cost effectiveness and because it allows for a high degree of occupant control at each room. Efficient digital controls for the heating system allow for nighttime setback.

Thirty four of the apartments have electric ductless heat pumps that are predicted to reduce heating costs by as much as 40%. All common areas are heated (and cooled) with efficient heat pump units.

**MATERIALS BENEFICIAL TO THE ENVIRONMENT**Waste Management:

The contractor has submitted a waste management plan, which was monitored throughout construction exceeding a recycling rate for construction waste of 75%.

Recycled Building Materials:

Building materials were specified for high recycled material content include gypsum wallboard, insulation, acoustic ceiling tiles, concrete with fly ash and VCT flooring. Other sustainable building materials include engineered framing lumber, prefabricated floor joists and roof trusses. Carpet and padding were specified with recycled content. The project is expected to achieve 5% recycled content as a minimum.

Heat Island Effect:

Light colored paving is provided at the patio and terrace areas, the parking lot is designed to be inside the building so that a surface lot will not add to heat island effect. The lower green roof further reduces the heat island effect. Roofing materials that meet Energy Star high reflectivity and emissivity requirements were used for the upper roof of this project.

Durable Materials:

Exterior materials selected for durability include: metal siding, fiber cement panels and vinyl windows.

## HEALTHY LIVING ENVIRONMENT

### Ventilation:

Ventilation and natural cooling is achieved at all habitable spaces with operable windows located to allow cross ventilation. Fresh-air vents are provided at each bedroom and in the living rooms of all apartments. Exhaust fans at all points of odor and moisture generation assure elimination of mold supporting environments and provide. The whole house fan in each bathroom operates on a twenty four hour timer and is low sone and Energy Star rated. The range hoods are Energy Star rated.

### Mold Free Environments:

To ensure mold free environments, the partial basement is well waterproofed (including an underslab drainage system) and air barriers at the concrete walls will be provided at the insulation (to minimize condensation).

The laundry rooms vent to the outside. The tub surrounds in the bathrooms are one-piece plastic laminate with fiberglass reinforced backing board.

All hot water tanks are installed in mechanical room on the garage level with a floor drain connected the sanitary sewer system. The flooring in the mechanical room is slab on grade reducing the potential for mold growth under the heaters. There are no direct combustion heaters or hot water tanks in any of the apartments to minimize the presence of CO in the apartments. CO detectors are installed in the garage and on the first level above the garage.

### Healthy Materials:

Low VOC (volatile organic compounds) paints, adhesives and sealants are used to increase the indoor air quality. Prefinished trim is used to further reduce on site off gassing and odors. Trim and doors are prefinished to minimize painting and odors from painting.

Carpet, Carpet Cushion and Adhesive complies with the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program.

## OPERATIONS AND MAINTENANCE

The Owner and residents will be trained in the operation and maintenance of the building, as well the green features. The Owner's manual will include detailed information about all of the building's systems and the Contractor, in a daylong walkthrough, will train equipment and the Owner's staff.

A resident manual will be prepared for all residents. The management company, with the assistance of the architect, will provide a walk through and orientation for all residents.