Sunrise Park

A vibrant, attractive, sustainable urban community

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Nestled in the foot hills of the Blue Ridge Mountains in north western Virginia State 160 km southwest of Washington DC, Charlottesville is a small American city of 40,000, steeped in History. It is home to the renowned University of Virginia, founded and designed by Thomas Jefferson, as well as the Monticello, his famous home. In 2004 the city of Charlottesville was heralded as the best place to live in the United States of America in an issue of USA Today[1]. This honour comes as a by-product of residential, commercial and industrial growth and rising real estate values, consequently forcing low-income families to move away from the city centre in favour of more affordable housing. Forcing these families to live further from their places of employment, this has caused their transportation costs to rise as well. To combat the growing financial issues of these families Habitat for Humanity is in search of a more affordable and sustainable low-income residential building model. This design, Sunrise Park, converts the site of a 23-unit trailer park into a "vibrant, attractive urban neighbourhood" of 72 mixed-income units with mixed-use facilities. The challenge lies in creating a medium to high-density development with strict site restraints, and incorporating a diverse range of market rate and affordable housing, and commercial space and doing so with utmost consideration for sustainable efficiency and cost-effectiveness. Most importantly the development must generate culturally and climatically responsive architecture and to do so through a sustainable continuum.

Sunrise Trailer Court is a 9,300 square metre site on the edge of a commercial/industrial area close to Charlottesville's Historic Downtown. To the north is a concrete plant and a heavily trafficked street connecting to the Central Business District. The other three sides of the site face another trailer park and residential streets. The initial consideration for site design is south orientation to capitalize on solar light and heat gain. The site slopes gently towards the south, where the Monticello sits above the city on a mountain. The units are organized into Habitat for Humanity 3-storey row houses on the south end of the site and 4-storey market rate condominium buildings to the north. This allows for optimal solar gain. Shading devices are used on the south face of the Habitat units, and movable screens on the south face of the market rate units enable both passive control and achieve an interesting animated facade. Also, 40 of the 72 units take

[1] www.charlottesville.org

advantage of the view to the south of Monticello. The second consideration for site design is to create a centralized green space to promote social opportunities. All units have adjacency or close proximity to the community centre and park space. This is similar to the Eucalyptus View project in Escondido, California by Studio E Architects.[2]

It is a co-operative community for local farm workers, centralizing on a communal garden with shared public facilities such as laundry, computers and childcare for the tenants. It is built along a major street but does not really address it, instead turning inwards. In order to avoid creating an entirely internalized community like Eucalyptus View, the next step is to address the street conditions and character of neighbouring uses. To the north is busy Carlton Avenue. It is a very industrial street, with heavy truck traffic accessing the concrete plant across the street as well as other industrial sites nearby. It also is a major route to the Central Business District and hosts major bus lines. Therefore, it is most logical to put commercial

[2] Architecture. November 2003. "Breaking Down the Box." Ann Jarmusch. P. 27. (including photos)

space on the ground level facing the street to capitalize on traffic and exposure. Also, in order to meet the density demands there is a necessity for tall residential building. Its location on Carlton Ave above the commercial units creates a sound buffer from the busy street and a visual barrier from the industry across Carlton. Much like the Selkirk Waterfront South Circle Building in Victoria, BC by D'Ambrosio Architecture + Urban design, the ground level commercial spaces address the activity of the street while the upper residential units honour views in the opposite direction, and embrace the community space.[3] The materiality of the commercial portion at Selkirk Waterfront amplifies the nature of its use and its autonomy from the residential units above. This is used as a model for Sunrise Park, as the mostly glass commercial facade articulates the use to the street in stark contrast to the wood and metal materials of the units above. Nassau Street to the east is a relatively quiet residential street with a trailer park facing the site. Twelve Habitat for Humanity units are placed here facing the street, in a 3-storey row house configuration to enhance the intimate residential character. The remaining 24 Habitat for Humanity units are situated facing Midland Street to the south, addressing the single-family homes across the street. The remaining market rate units sit on the west edge of the site in a double loaded building 4-storeys high adjacent to existing buildings to

[3] Canadian Architect. November 2004. "Bricklayers." Annmarie Adams. P. 30. (including photo)

the west. Here the building does not impede the north building's exposure to south light or view. Organizing the 72 units in this manner allows to maximize exposure to south light and to exemplify the central green space.

In order to be most cost-effective for low-income families Sunrise Park must be extremely sustainable to minimize energy costs to the tenants. This begins with heating and cooling. Virginia has a temperate climate but ranges enough from winter to summer to necessitate considerable heating and cooling. The major source for this is a geothermal field in the central green space. Like the University Commons at the University of Ontario Institute of Technology in Oshawa, Ontario by Diamond Schmitt this project resourcefully uses an open green space as an energy source as well.[4] Because of the continuous need for energy in a residential project there is very little time when energy is wasted, so geothermal heating is an excellent application. The field is split into 2 with the market rate circuit being regulated from a mechanical room in the community centre and the Habitat circuit being regulated from the corner unit, which doubles as a mass storage space for the tenants. In the market rate units the heating and cooling is distributed through radiant floor systems. The concrete floors also work as thermal mass. In the Habitat for Humanity units the distribution is through a continuous radiant concrete wall system. The stairs are located adjacent to this thermal mass wall creating a stack effect. Energy is supplemented by photo voltaics on a portion of the market rate roofs and by site sewage heat recovery. These systems require slightly higher initial costs, which would be covered by market rate revenues, and over time provide great cost savings. The aesthetic effect is also minimal, creating a much more pleasant space.

[4] Durham College – University of Ontario Institute of Technology. www.ellis-don.com/markets/projects/durham

Many other sustainable measures are made on the site, and are implemented to serve as responsible design as well as an educational tool for the tenants and community abroad. All sustainable initiatives are diagrammed in an interactive display in the community centre. Water is controlled on site in numerous ways. The butterfly roofs collect water in cisterns for landscaping. Bioswales are planted with indigenous species and flank the central green space and run along Carlton Ave, Nassau Street and Midland Street. This allows for better site filtration so that waste is not allowed into the water table. All parking surfaces are semi-pervious similar to those at the Vancouver Island Technology Park in Victoria, BC by Bunty Coady Architects and Idealink, with grass growing out from a gravel in-filled concrete grid.[5] This minimizes the harmful effects of oils and waste from automobiles, and also minimizes heat island effect. Heat island is also combatted on the site by maximized green space, and by a green roof on the portion of the market rate buildings that have no photo voltaics. Local lumber is used for all Habitat for Humanity units as well as the wood siding. Fly ash concrete is used throughout the site. All metal siding is from recycled metals. Energy efficient appliances and light fixtures are used in the interiors. The site is also in close proximity to major bus lines to promote public transportation. All of these contribute to a sustainable, efficient and vibrant community.

The measures employed to make Sunrise Park a sustainable and cost-effective neighbourhood are also implemented to create a place that is desirable to live for all classes and ages of people. There are community provisions, prominent communal spaces, and many opportunities for moments of social exchanges. The Habitat for Humanity units are mostly buildable by volunteers and the revenues from the market rate and commercial spaces contribute to the initial costs of the project. Sunrise looks at precedents before it and draws from successful applications of mixed typology and innovative technology to create a vibrant, attractive urban community.

[5] Vancouver Island Technology Park.
http://www.architecture.uwaterloo.ca/faculty_projects/terri/366_research/vitp_ppt.pdf