

Vireo determined to build emergency shelters for citizens facing critical problems: homelessness, financial emergencies, and natural disasters. These shelters, deemed “LIVE” (Lodging to Improve Vireo Environment), consist of the LIVE towers and the LIVE elevatable shelter (LIVE ES). The LIVE towers are a permanent shelter housing a maximum of 1400 people, while the LIVE ES, located under Obelisk Park, may rise up from the ground to temporarily house 1200 additional people. These shelters are located downtown near the river so that their residents may easily access hospitals, schools, transportation, and jobs.

Each building is designed with apartments on the outside to maximize natural lighting. Features like an exercise room, storage closets, elevators, and meeting rooms are located on the inside of the building. To accommodate different sized families, the interior walls are made of modular, moveable units so workers can change the floor plan to fit each family and to accommodate handicapped people. To suit peoples’ tastes, the wall units are connected to a central control system so the color or design of the wall can be changed at the click of a button. A child might select toy-themed wallpaper, while an elderly person might prefer the wallpaper of his/her previous home. Due to the durability of the chosen materials, the exterior of the complex will stand to serve the community for 1000 years, and the interior wall units will last for 500 years. This complex provides services to its target demographic including job training and search for displaced workers, physical care for the elderly and disabled, and reconstruction and relocation services for people whose homes have been destroyed.

The LIVE complex incorporates existing green technologies to produce efficient systems and comfortable living. The LIVE towers have peaceful garden roofs with native plants where residents may relax and meditate. These garden roofs filter pollutants, reduce roof temperature by 61%, and combat the “heat island” effect common in large urban areas. Inside buildings, all floors and wooden furnishings are made with eucalyptus and bamboo from local farms. Eucalyptus may be harvested between fourteen and sixteen years after planting, and bamboo may be harvested between three and seven years after planting, making them sustainable sources. Specialized workers carefully prune the trees so that fewer knots appear in the wood, reducing construction waste.

To help construct this complex, a group of Vireo materials engineers set themselves the goal of making a stronger, but less brittle replacement for glass. In the process, they discovered the element biunonium and developed the material Arpathite[®] by ion implanting biunonium into a mixture of silica and sap from native trees. During testing, they learned that one may alter the color of the material via electrical pulses of different frequencies. The materials engineers recommended Arpathite[®] to architects of the LIVE complex for the exterior wall panels and the sliding wall units inside the buildings.

These versatile Arpathite[®] wall units allow workers to quickly reconfigure the LIVE ES building into a sports center when not in use as an emergency shelter. The multi-use function of this building allows it to adapt well to the needs of the community. Arpathite[®] generates minimal construction waste because it is not brittle enough to shatter when dropped. Workers also send 90% of Arpathite[®] scraps to the plant for reprocessing.

The unique color-changing property of Arpathite[®] permits the workers to change the colors of the exterior to match the surrounding buildings. If the surrounding buildings change over time, the workers may still change the color to fit in with the rest of the city aesthetics. The residents also benefit because the designs on the interior walls may be easily changed to suit the residents' style.

Arpathite[®] is economical because it is produced locally using sustainable materials. Although 25% more expensive than glass, its lifespan is 50% longer. Drywall lacks performance and versatility because it needs a wooden support that rots and the wall cannot be moved. Arpathite[®], however, does not need any other support and may be moved. Although Arpathite[®] is 35% more expensive to install than drywall, it will last 400 years longer, making it more sustainable. The materials engineers recommended Arpathite[®] despite the tradeoff of the higher price.

The LIVE complex barely has a carbon footprint. The complex contains a recycling room and water is used twice. Water that runs down the drain in sinks and showers is stored in tanks underground and is then used to flush toilets and to water outside plantings. All toilets in the complex are composting toilets, so waste is piped to composting bins under the building. To power the buildings, no fossil fuels are used. Instead, underwater river turbines, wind turbines, and geothermal plants supply power. The LIVE complex is durable due to the use of Arpathite[®] and bamboo, a wood whose tensile strength is greater than that of steel. The living space is maintained by mechanics that use replacement parts made out of recycled materials. Also maintenance personnel can easily locate pipes and wires in the walls because they can make the Arpathite[®] panels transparent the same way the walls change color. Extra wall units of Arpathite[®] are kept in storage so when maintenance is required, the unit can be quickly and easily replaced.

Once, a hurricane or job loss meant life on the street for many Vireons. Now, the LIVE complex provides displaced persons with a secure place of residence where they can receive job training and access to healthcare while they are restored to independence. If the residents are unable to work (i.e. the elderly and disabled), they are moved to long-term residences designed to address their needs. The LIVE complex benefits the community by keeping poverty from the streets, brightening the atmosphere of the city, and thus improving the life of every Vireon. Mother Nature smiles on the LIVE complex due to its low carbon footprint, sustainable and durable materials, and low water use. Thus, the LIVE complex is the crown jewel of Vireo, ensuring every citizen a high quality of life. (999 words)

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