A Treehouse for Everyone

The Craig VanLaanen Treehouse and Woodland Retreat at Trail's Edge Camp at the Fowler Center near Mayville, Michigan, was built for children needing to use ventilator assistance and often wheelchairs. Innovative in both its structural system and its development as a community-based volunteer effort, the 300-square-foot treehouse (22 ft. in the air) is supported by a structurally efficient branching column. All labour was donated, including design, analysis, fabrication and construction. The actual material cost of the entire facility was about $88,000. The Treehouse was dedicated and enjoyed by campers during the 2004 camp.

After the Trail's Edge Camp in 2002, the University of Michigan Hospital, along with camp director Mary Buschell, RRT, and her camp staff, met with faculty from the University's architecture program to discuss the feasibility of developing a structure that would allow children with limited mobility to experience the height and excitement of spending time in trees. Moving beyond compliance with the Americans with Disabilities Act and beyond modifying pedestrian-friendly design to meet the needs of the campers, the Treehouse team developed a structure that would allow all users to experience *super-mobility*, regardless of physical restrictions or limitations.

Super-mobility – or mobility beyond an individual's perceived capabilities – is made possible in the Treehouse through an array of body prosthetics, including harnesses, ropes, tracks and cradle-like seats. Everyone entering the Treehouse uses these prosthetics to be "launched" 22 feet into the air, leaving wheelchairs and other terrestrial implements behind.

Trail's Edge Camp's poor soil strength and the cantilevered load produced by the Treehouse prompted the team, led by Kristine Synnes, an architect and Fellow in the School of Architecture at the University of Michigan, to design a structure that branched both upward and downward. The geometry of the Treehouse was also based on the restrictions of the site. Part of the structure is nestled among the branches of an existing maple tree, without disturbing either its canopy or root system. To avoid damage to the root system, the branching column's foundations had to be placed to the side of the maple's trunk, while the upper portion of the Treehouse is cantilevered through its branches.

The Treehouse was designed for a moist, woodland environment. The concrete footings raise both the Treehouse and the boardwalk structures clear of the damp earth. Even though the roof provides weather protection with a continuous rubberized membrane, exterior-grade materials were used throughout the structure.

The lifting harness is designed to safely transport a person who may need spinal support or ventilator assistance. In this harness the visitor is lifted 22 feet vertically, through a hatch in the Treehouse floor. Once aloft, the visitor is transferred to the cradle chair. The cushioned cradle chairs, with adjustments for both backrest and footrest angles, are hung from an overhead track and allow the visitor to travel through the Treehouse and out to the observation deck on the far end. The way in which the chairs attach to the track allows them to swivel 360° for views in any direction.

Peter von Buelow is a design engineer and Professor in the School of Architecture at the University of Michigan, Ann Arbor. For more information, visit **www.umich.edu/~tecamp**. *This article first appeared in the Spring 2005 issue of* Ventilator-Assisted Living. *Reprinted with permission.*