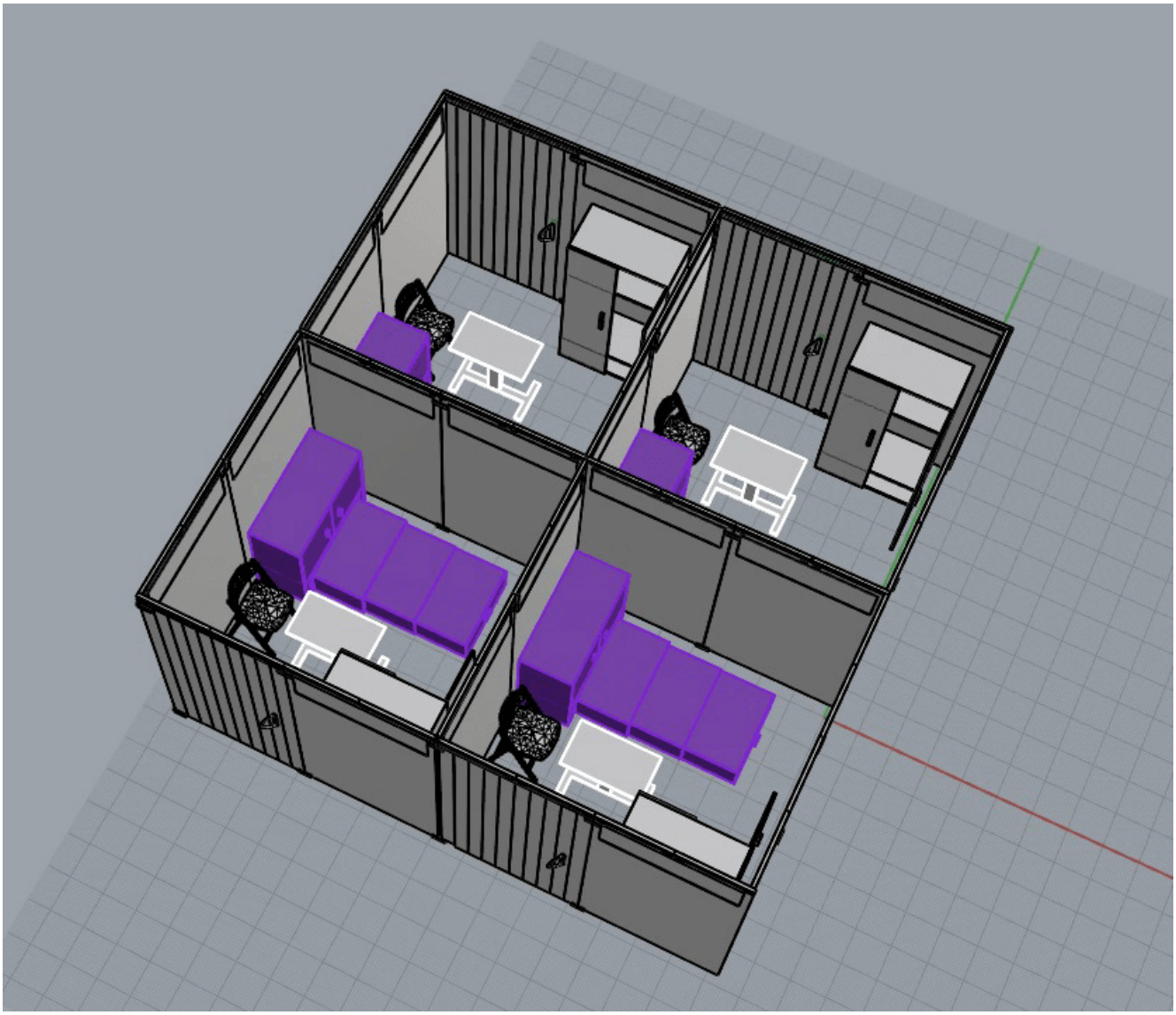
Designing Dignity: Modular Shelter Systems Informed by Lived Experience

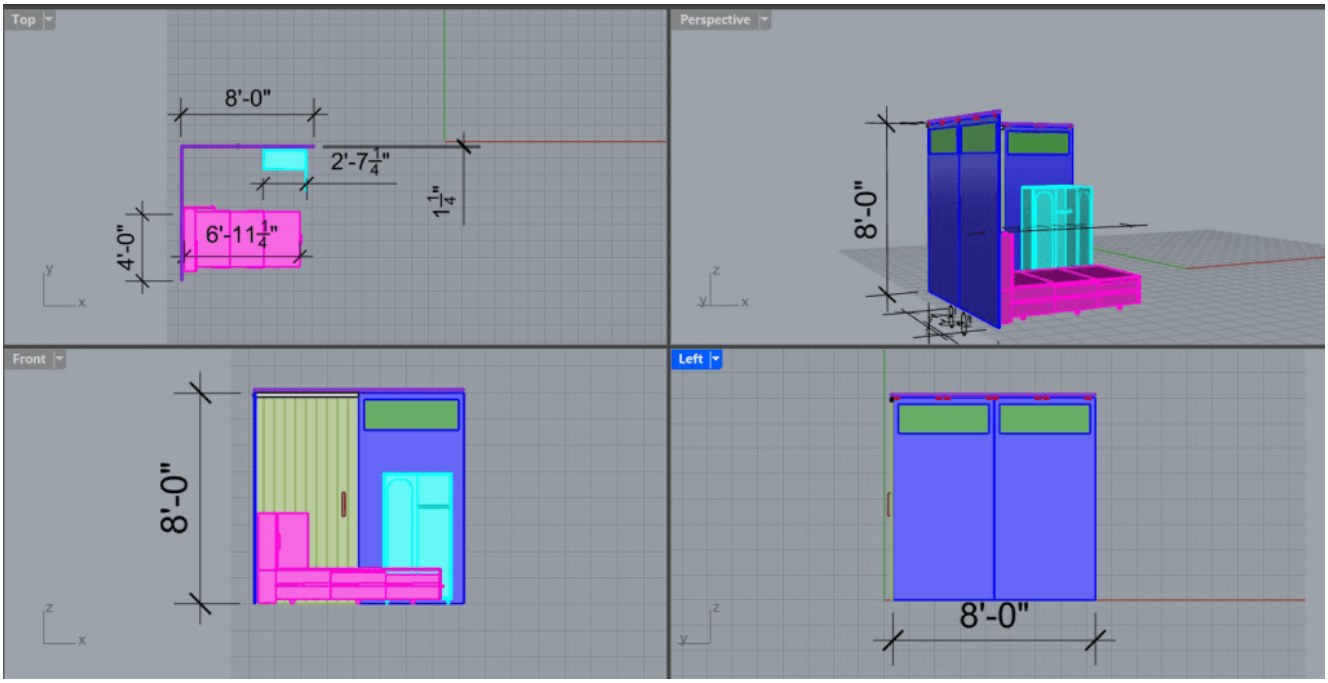
Developed through the SCAD SERVE program in collaboration with The Salvation Army of Savannah, this project proposes a flexible wall and furniture system for the new Center of Hope transitional housing facility. The design responds to the complex spatial demands of shelter environments by prioritizing dignity, privacy, and adaptability for both residents and staff. Grounded in design justice principles, the project was informed by direct engagement with individuals experiencing homelessness, ensuring that design decisions emerged from lived experience rather than assumed needs.



System configurations

The process began with research and precedent analysis, followed by a series of co-design workshops that aimed to understand how shelter spaces are used and perceived. Residents and staff participated in structured activities, including isometric room-building exercises and sensory mapping, to articulate their needs and preferences.

Across these engagements, shared priorities consistently emerged: secure personal storage, visual and acoustic privacy, access to power, and the ability to reconfigure rooms based on changing occupancy. These insights shaped a system capable of transitioning between single- and multi-occupancy arrangements across varying spatial contexts, without relying on permanent construction.

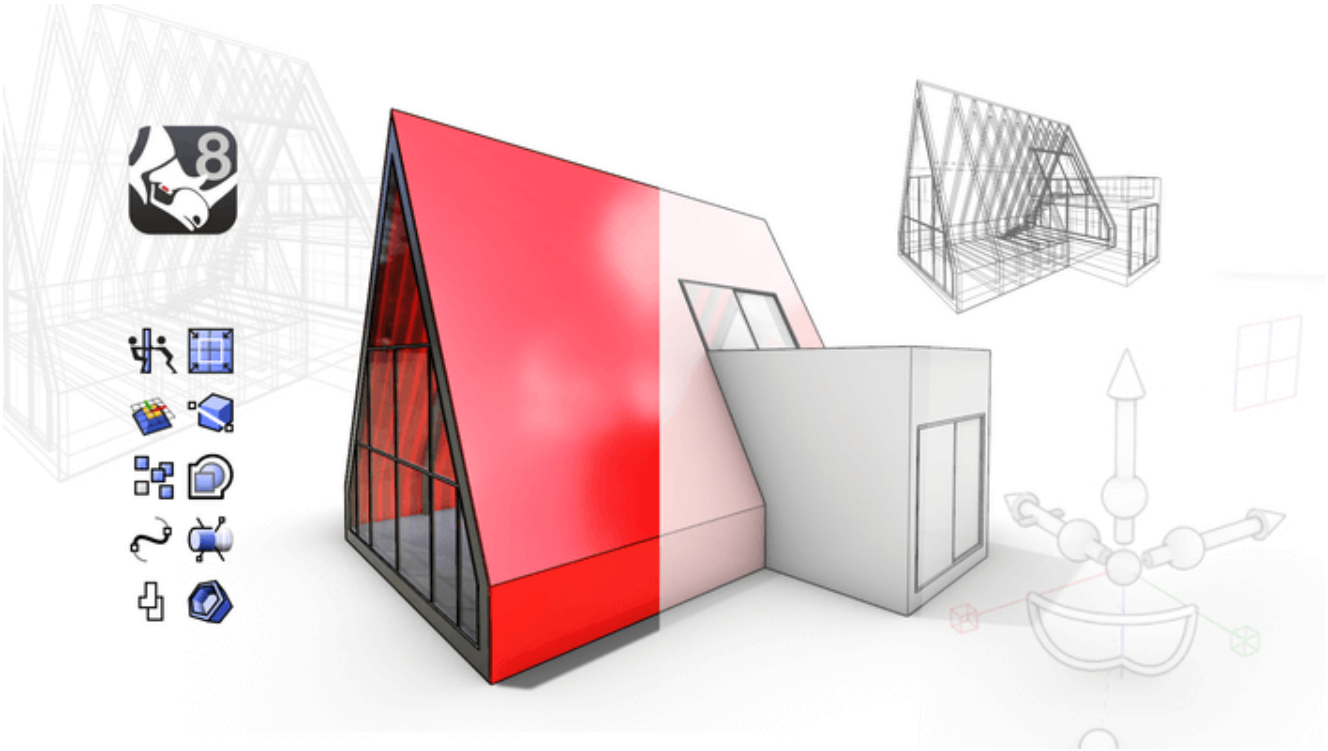


Dimensions

Rhino 3D served as the primary design platform throughout the project, supporting both conceptual exploration and technical development. Early hand sketches were translated into Rhino models to study spatial relationships, circulation, and human scale within existing Salvation Army floor plans.

Rhino enabled precise modeling of wall panels, ceiling-mounted track systems, brackets, and integrated furniture components. This level of control allowed dimensional consistency to be maintained across multiple configurations, ensuring that custom elements aligned with prefabricated components while remaining within budget and efficiency

constraints. Plans, sections, axonometric views, and configuration diagrams were generated directly from the models, creating a clear and efficient workflow from concept to specification.

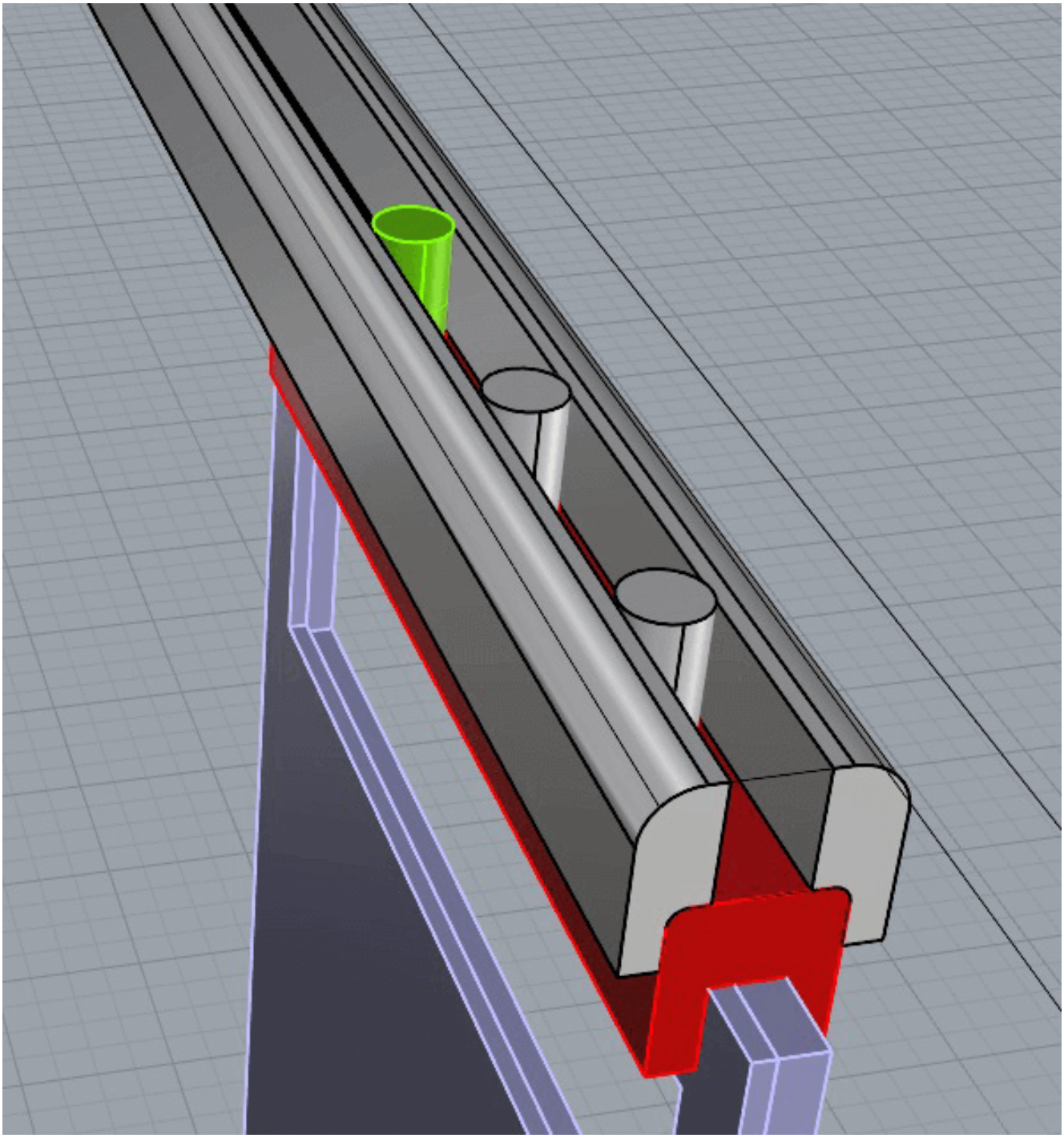


See Also

INTRODUCTION TO RHINO 8

As the design progressed, Rhino became central to fabrication planning and prototyping. Custom hardware components, including panel brackets and corner connectors, were modeled with careful attention to tolerances, material thickness, and structural performance.

These elements were exported as STL files for 3D printing, with print orientation and geometry refined to maximize strength and durability. Physical prototypes were produced to test assembly logic, panel intersections, and the use of prefabricated sliding mechanisms, allowing the system to be refined before finalizing its design.



Modularity detail

Rhino was also used to prepare files for laser-cut scale models. Panel profiles, brackets, and structural elements were converted into precise vector layouts, enabling the fabrication of accurate physical models.

These models supported hands-on evaluation of assembly sequences, spatial clarity, and reconfiguration strategies, translating digital precision into physical understanding. The iterative exchange between Rhino-based modeling and physical prototyping ensured the system remained both adaptable and feasible.

One of the primary challenges was achieving flexibility without sacrificing stability in a system intended for frequent reconfiguration. This was addressed through standardized panel dimensions, simplified connection details, and interchangeable components developed and tested in Rhino. Iterative modeling helped resolve spatial constraints while improving overall system performance.

SCAD SERVE team

The final proposal presents a modular system that enhances privacy, supports operational efficiency, and allows for scalable deployment across shelter environments. The project demonstrates Rhino’s capacity to support socially engaged design by integrating human-centered research, precise modeling, and fabrication-ready workflows into a cohesive architectural solution.

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