Custom Rooftop Greenhouse Design

Client: Professor Hamid Timorabadi | University of Toronto

Project Overview

Designed a rooftop greenhouse tailored to the specific needs of the client, Professor Hamid Timorabadi, for installation on his townhouse in Toronto. The structure was intended for both plant cultivation and recreational use, incorporating windows, a sliding door, and a fireplace within a fixed footprint and budget.

My Contribution

- Participated in client interview and requirements gathering
- Conducted environmental and stakeholder analysis (urban wind, snow, building code, rooftop mounting)
- Helped define primary functions: structural support and solar energy capture
- Assisted in material selection and Ontario Building Code compliance
- Supported cost estimation and concept validation under budget constraints

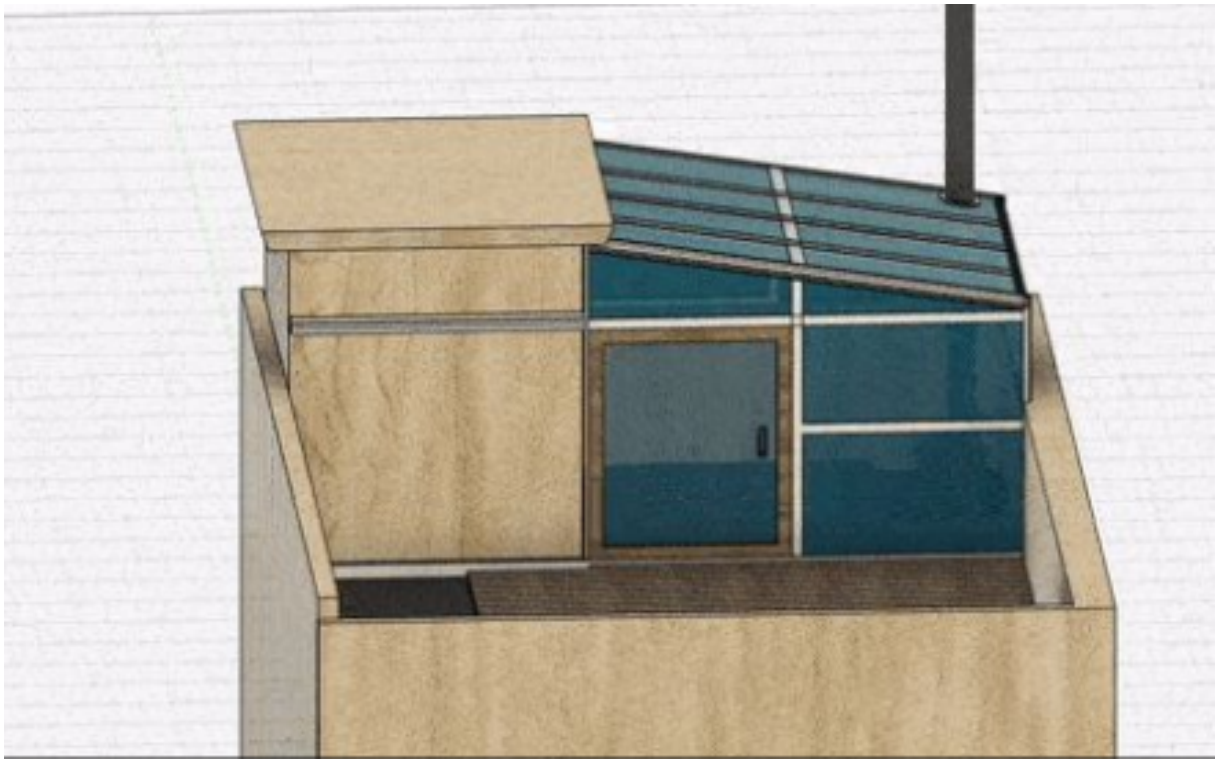
Key Design Decisions

Structure Shape:	Lean-to, wall-mounted
Materials:	Aluminum frame + Double-pane glazing
Light Transmission:	80% PAR or higher
Thermal Insulation:	R-value > 2.0, U-value < 0.5
Dimensions:	3m (L) x 2.3m (W) x 2.5m (H)
Budget Constraint:	< $15,000 CAD

Service Environment Considerations

- Urban wind tunnels formed by nearby buildings
- Snow accumulation and rainfall in downtown Toronto
- Building-mounted plumbing vents affecting placement
- Impact on residents, contractors, inspectors, and city regulations

Final Design Rendering



Site Constraint Sketch & Rooftop Layout

The rooftop layout sketch was created to identify potential installation constraints, such as plumbing vents, door clearance, and wind exposure from neighboring structures. These factors were essential in defining greenhouse dimensions and anchoring methods.

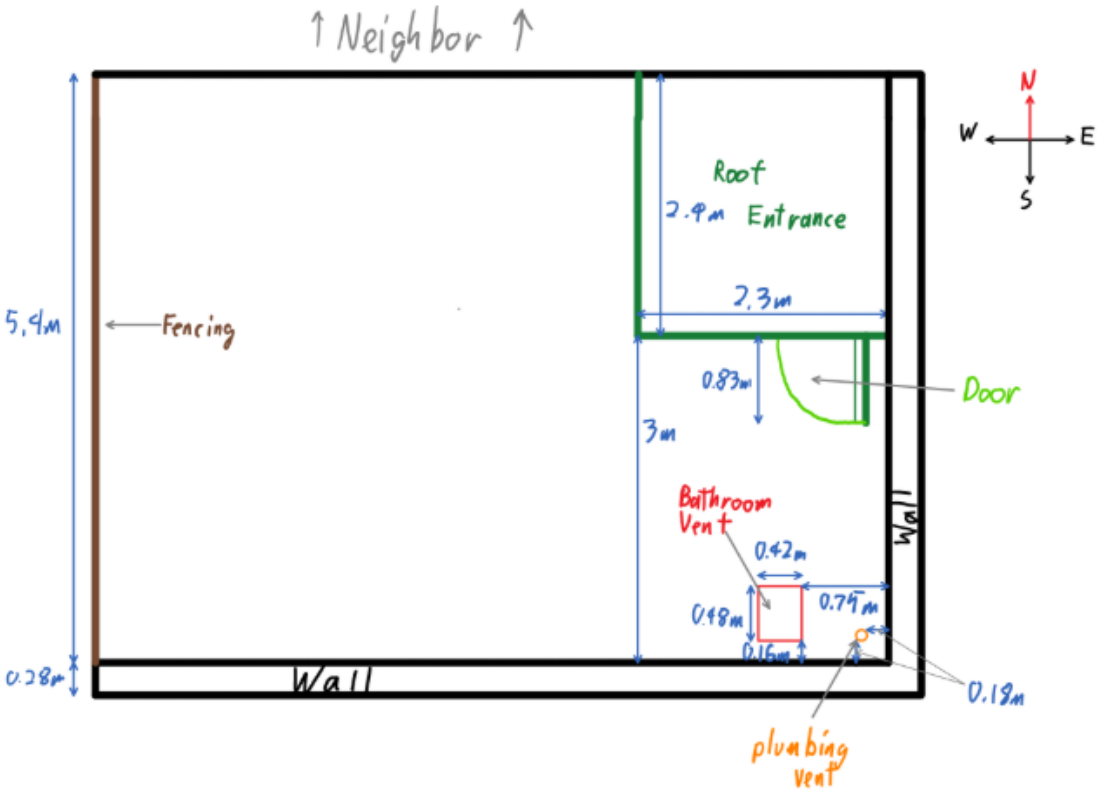


Figure 3.3.1: Top-Down

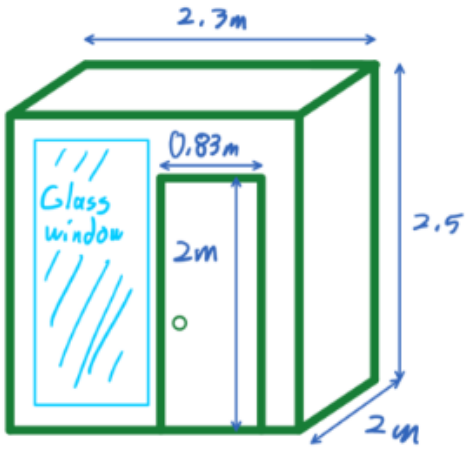


Figure 3.3.2: Roof Entrance Dimensions

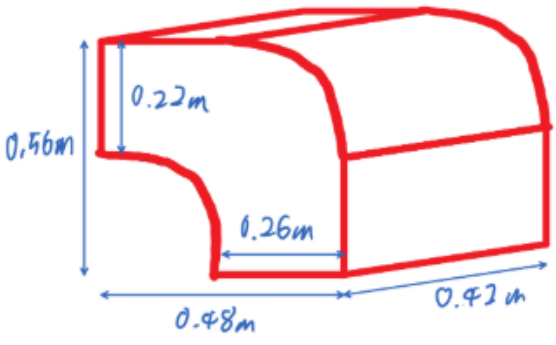


Figure 3.3.3: Vent Dimensions