

Sitting with Nature

A Seating and Nature Engagement Installation



Andrea Pergel

Industrial Design, Carleton University

In partnership with the Rideau Valley Conservation Authority

ANDREA PERGEL

I'm Andrea Pergel, and I designed Sitting with Nature, an accessible outdoor seating installation for Baxter Conservation Area. The project combines rest, sensory interaction, and environmental learning to enhance visitors' connection with the site.



table of contents

0 1 Initial Research and Ideation

About the RVCA	01
The Site	02
Observations from Site Visit and RVCA Input	03
Opportunities Driving the Proposal	04
Brief Overview	05
Critical Design Drivers	06
Initial Ideation	07
First Concept	08

0 2 Development and Refinement

Evolving the Design	09
Developing Construction Logic	10
External Review & Iteration	11
Iterating Based on Feedback	12
Final Design — Use Scenario	13 - 14

0 3 Details and Construction

Final Model	15
Details	16
Construction Details	17–18

Initial Research and Ideation

ABOUT THE RVCA

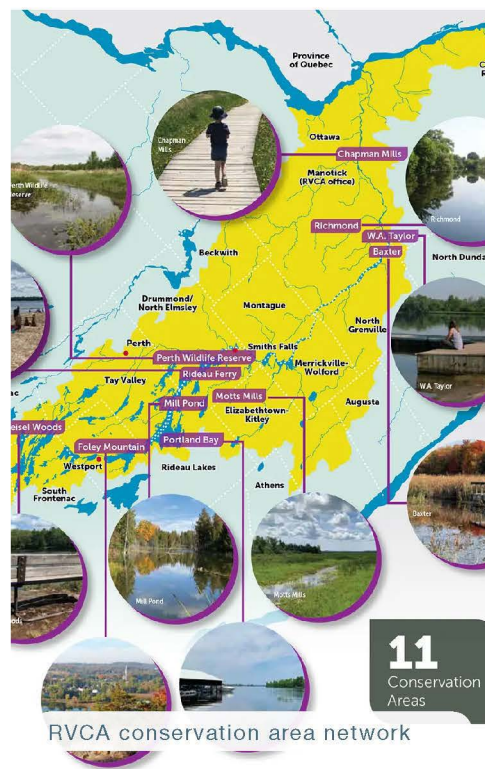
PROJECT OBJECTIVE

Enhance the visitor experience across RVCA conservation sites.

The Rideau Valley Conservation Authority (RVCA) works across the Rideau watershed to protect natural systems, manage conservation lands, and support public access to nature. Baxter is one site within a broader network of conservation areas that together provide recreation, education, and ecological value.

11 conservation areas

Public access + ecological stewardship



WATERSHED ROLE

Protects and manages natural systems across the Rideau watershed.

SITE NETWORK

Baxter sits within a larger family of RVCA sites, giving the project relevance beyond a single location

VISITOR EXPERIENCE

The design brief connects ecological stewardship with how people arrive, orient, gather, and spend time in these places.

The Site

Baxter combines waterfront, forest, open lawn, and gathering spaces within a compact site. During my visit, the area revealed a mix of beach access, wooden circulation routes, informal rest areas, and educational amenities such as the forest school and wetland boardwalk



Arrival, beach, amenities, and circulation

SITE VISIT



Open lawn and informal gathering area

CIRCULATION + NATURE EXPERIENCE



Boardwalk experience through the forest

NODES + AMENITIES

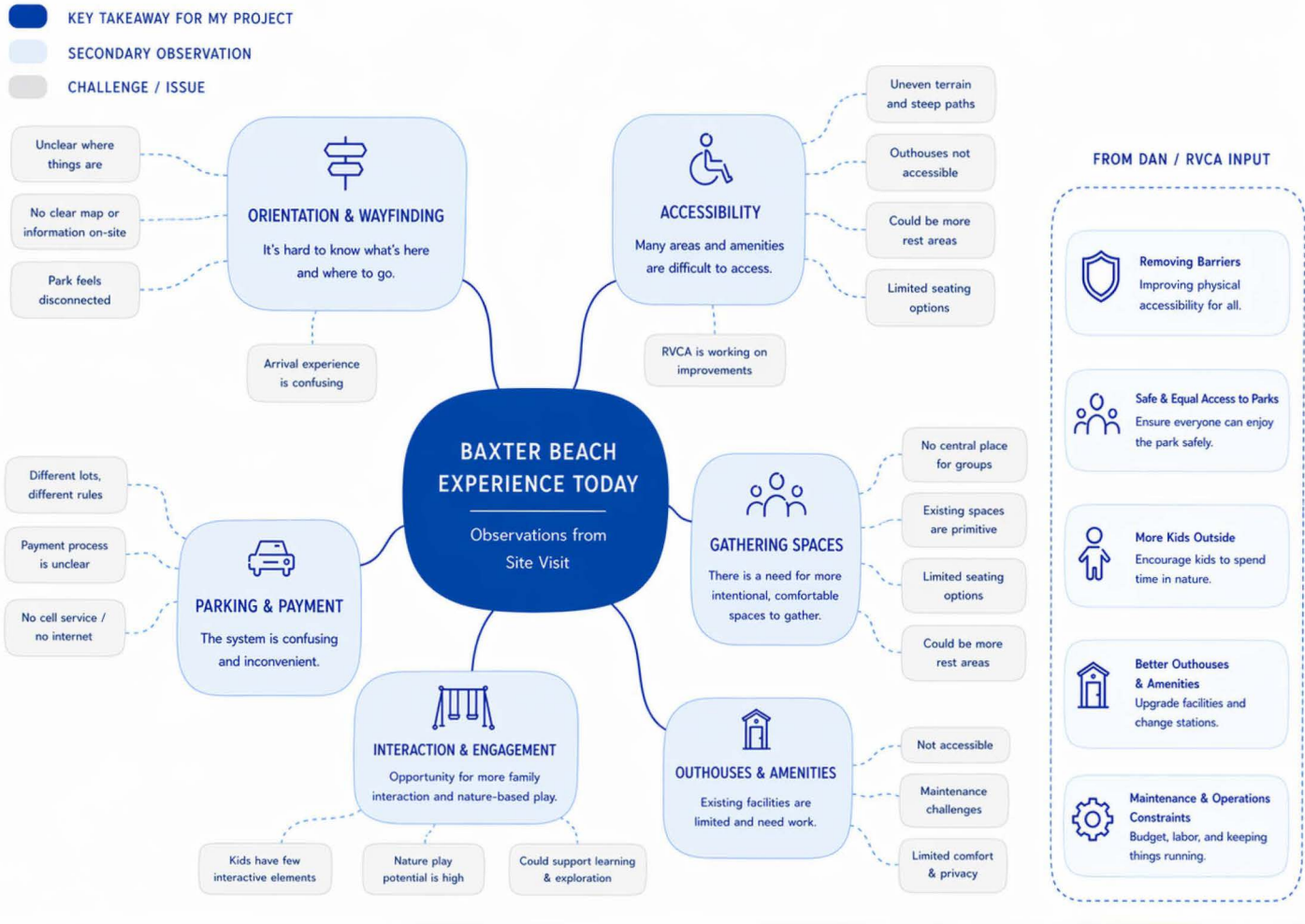


Forest School entry and service area



Wetland overlook and interpretive edge

Observations from Site Visit and RVCA Input



KEY TAKEAWAYS / DESIGN DRIVERS



ACCESS FOR ALL
 Create a more inclusive experience for every user.



CLEAR & WELCOMING
 Improve wayfinding and arrival experience.



GATHER & CONNECT
 Provide intentional spaces for people to come together.



ENGAGE & EXPLORE
 Encourage interaction with nature and each other.

Opportunities Driving the Proposal



NATURE-BASED PLAY

Creates opportunities for open-ended interaction with natural materials and forms. These experiences invite exploration, movement, and discovery while supporting informal learning through the environment.

PRINCIPLES

- Open-ended play rather than fixed use
- Sensory engagement through touch and movement
- Natural materials as play elements
- Exploration, curiosity, and discovery



SEATING VARIETY

A range of seating types can support different ways of being in the site. The space can accommodate conversation, gathering, solitude and contemplation through social conditions.

PRINCIPLES

- Social and solitary use
- Multiple seating heights and postures
- Group conversation and quiet reflection
- Comfort without over-prescription



LANDMARK + WAYFINDING

A distinct form can act as a visual marker within the site, helping visitors understand where they are and where activity is located. This creates orientation through form and presence.

PRINCIPLES

- Visual distinctiveness at the site scale
- Recognizable form and identity
- Supports passive wayfinding
- Signals gathering, activity, and rest

Brief Overview



PROJECT DESCRIPTION

a seating and nature engagement installation at Baxter Beach (RVCA) that combines seating, playful interaction, and environmental learning. The sculptural structure creates a spatial experience within the landscape, encouraging visitors to rest, explore, and engage with the natural environment.



USERS & CONTEXT

Designed for seniors, families, children hikers, and individuals with disabilities. Located in a grassy area near the beach, the installation must withstand weather exposure and heavy public use



DESIGN CRITERIA

- Provide varied seating types
- Encourage interaction through lift-to-reveal plant and sensory panels and musical elements.
- Create a spatial experience that supports rest and environmental engagement



STAKEHOLDERS

Rideau Valley Conservation Authority (RVCA), park visitors, and academic supervisors.



Critical Design Drivers



Accessibility
Through Variety



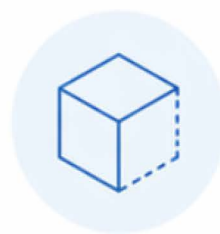
Connection
to Nature



Enhancing the
Visitor Experience



Site
Responsiveness



Constructability
& Modularity



Safety &
Risk Mitigation



Structural &
Material Logic



Multi-User
Social Interaction



Durability &
Low Maintenance

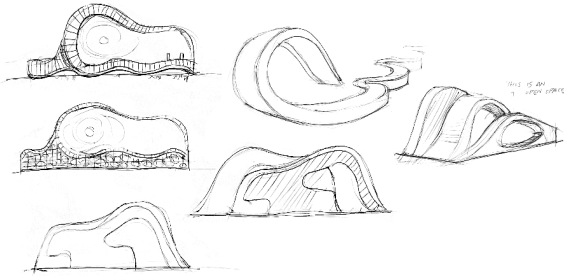


Institutional &
Network Context

15

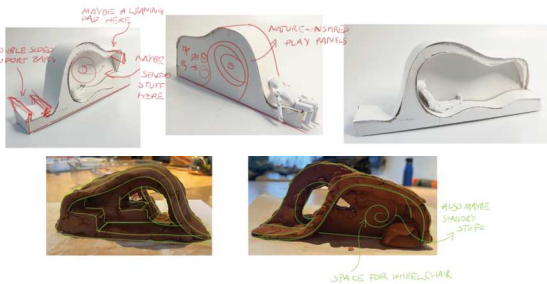
Initial Ideation

SKETCH IDEATION



MOCKUPS

Building mini mockups of helped me start thinking in 3d and visualizing the project as part of a system

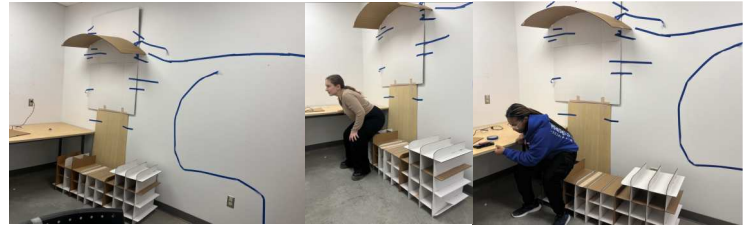


EXPERIENTIAL RESEARCH



Went to a nearby accessible park to try out the accessible play options to gain first hand experience with the accessible play element of my design.

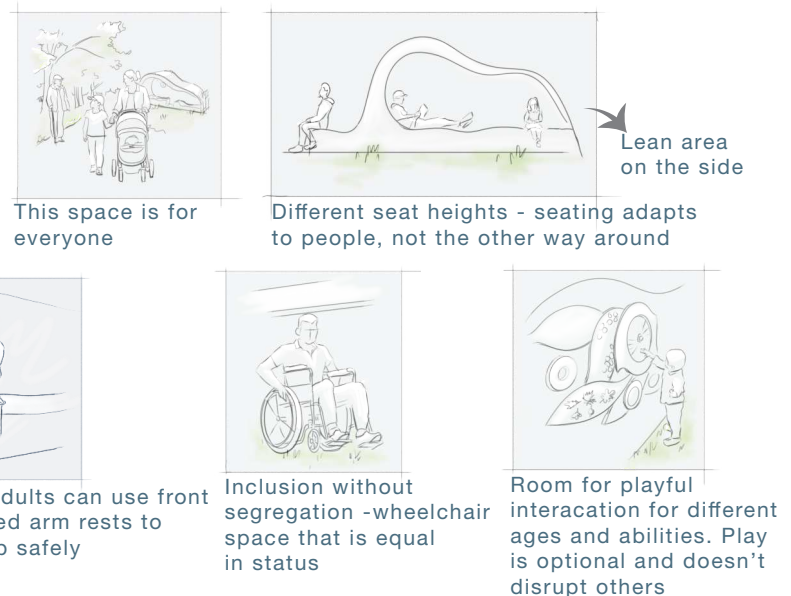
USER TESTING



TESTING SENSORY PLAY



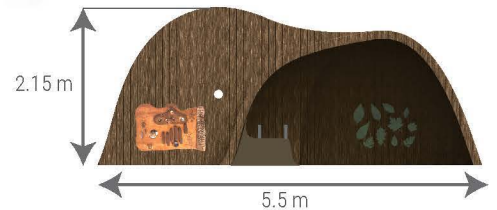
STORYBOARDING



First Concept



This initial concept explores a continuous, sculptural seating form that creates a sheltered space for rest and interaction. The curved structure frames moments of engagement through integrated sensory and educational elements, while maintaining a strong visual connection to the surrounding landscape. At this stage, the design investigates how form, enclosure, and materiality can support both comfort and environmental engagement.



SOME DETAILS

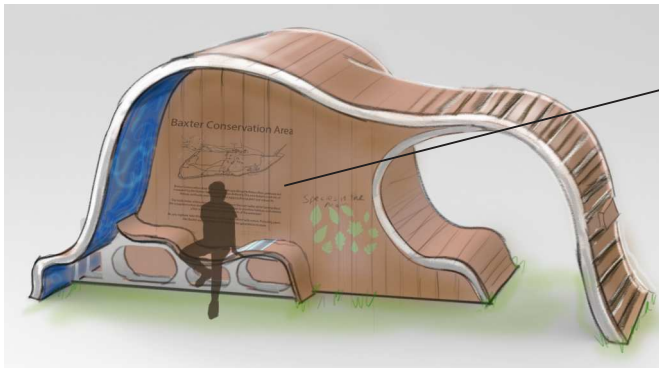
Holding bars on both sides for extra support



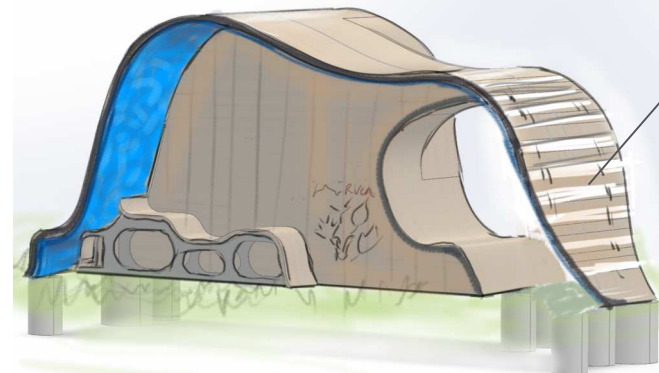
Development and Refinement

EVOLVING THE DESIGN

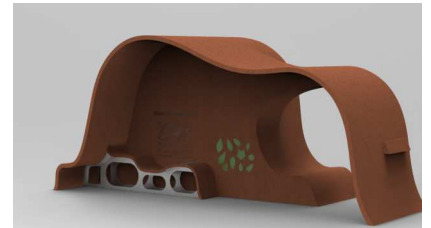
At this stage, I refined the spatial experience to accommodate a broader range of users. I opened up the form to feel more accessible and inviting, while increasing seating capacity and integrating additional support elements. I repositioned sensory features and introduced a Baxter information panel. I also began considering how the structure could be constructed and anchored within the site.



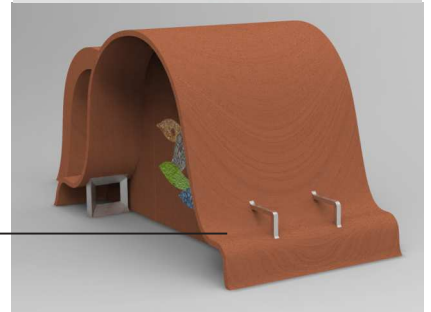
Info Panel Added



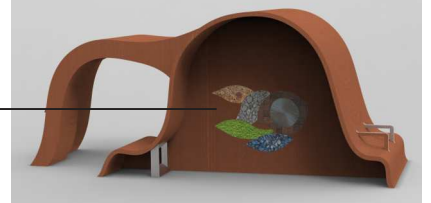
Wood planks spaced apart to allow for a scattered light pattern



Increased Seating

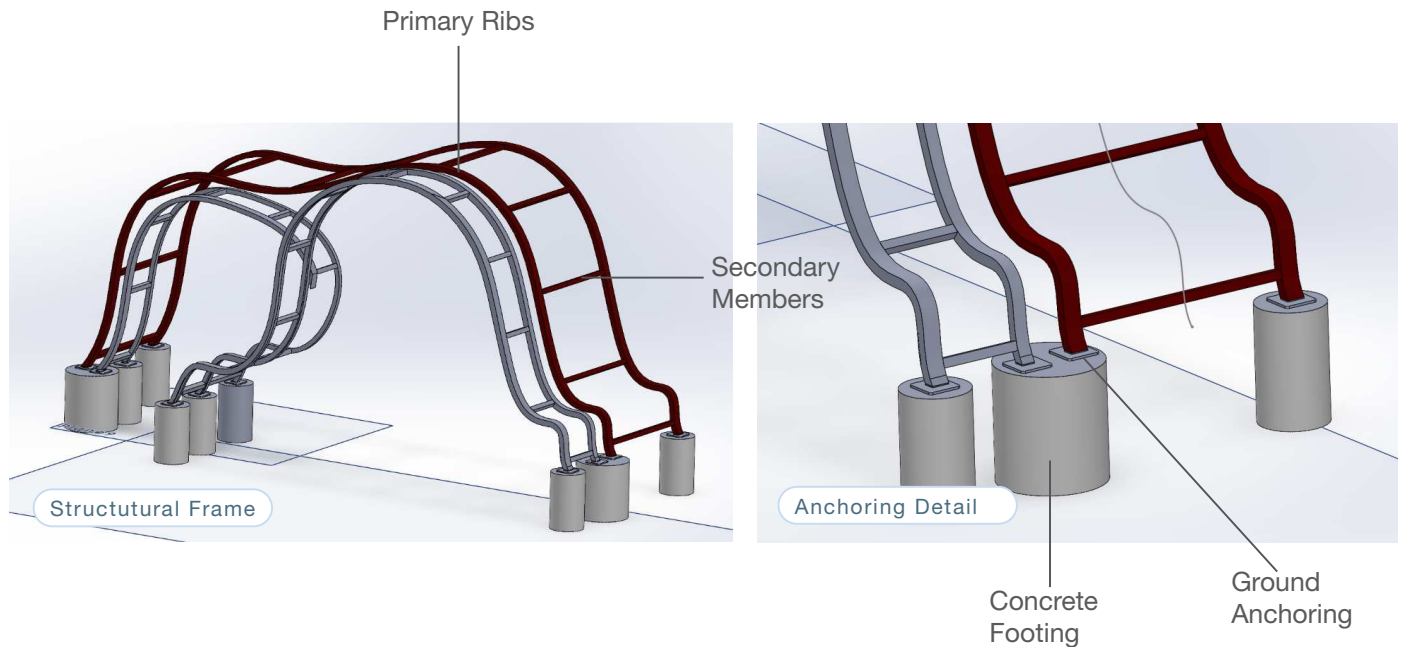


Sensory play panels



Developing Construction Logic

This stage explored how the sculptural form can be translated into a buildable system. The design begins to break into structural components, testing how curvature can be supported, segmented, and anchored into the ground.



EXTERNAL FEEDBACK - ENGINEER WITH STRUCTURAL EXPERIENCE

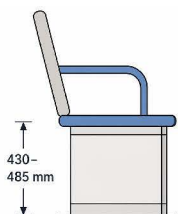
- Components too large for efficient fabrication, transport and assembly
- Structure sits too close to ground, increasing risk of moisture damage and material Degradation

Establishing structural logic revealed constraints that informed later design refinement

External Review & Iteration - Carleton Accessibility Institute



Feedback was gathered through email correspondence with a Data and Evaluation Officer at the Carleton Accessibility Institute. This consultation provided targeted insight into seating ergonomics, spatial accessibility, and sensory considerations, informing key refinements to the design.



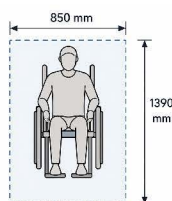
SEATING

- Primary seat height 430-485 mm
- Armrests (rounded, 30-40 mm)
- Upright backrest
- Rounded seat edge for comfort



SENSORY ELEMENTS

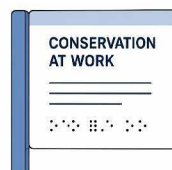
- Low-effort interaction (D-pull handles)
- Sound elements carefully controlled
- Avoid overstimulation; consider quiet use and overall context



MOBILITY & INCLUSION

- integrated wheelchair space (850 x 1390 mm min.)
- Users remain within group setting, not separated
- Covered area sized to accommodate mobility devices

VISUAL ACCESSIBILITY & INFORMATION

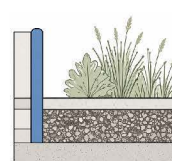


- High contrast between edges and surfaces
- Sans-serif fonts, high contrast, legible text
- Information visible from both seated and standing positions



SPATIAL EXPERIENCE

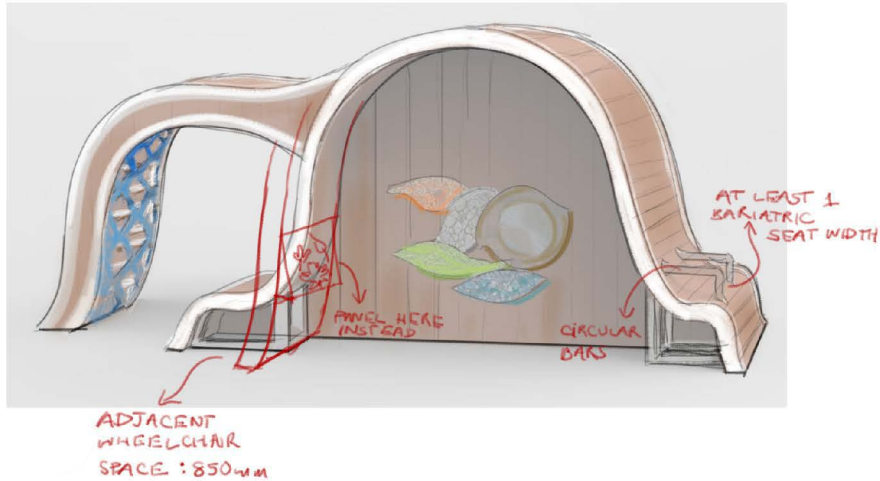
- Supports a variety of postures
- Adequate head clearance across seating zones
- Flexible space allows mixed user participation



GROUND SURFACE

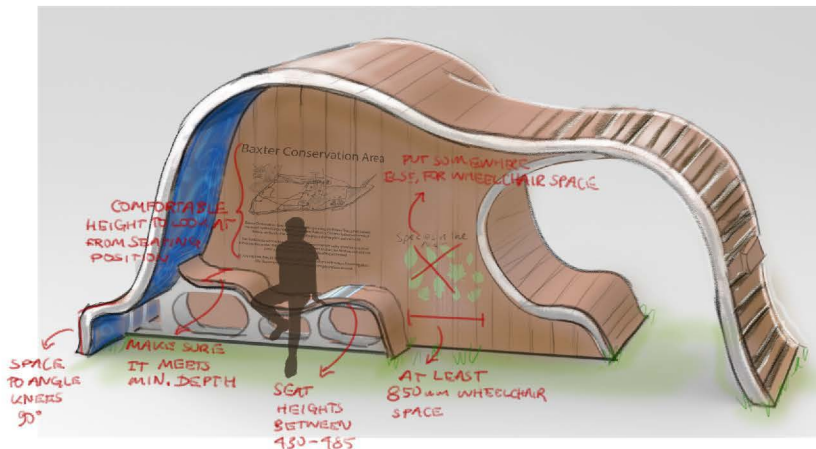
- Firm, stable, slip-resistant surface
- Suitable for wheeled mobility devices
- Accessibility considered across entire approach, not just under structure.

Iterating Based on Feedback



Testing out D-pulls

Adjusting design based on input



After learning about concerns about the volume of musical sensory elements, I decided to omit the wooden Kalimba, but I kept the ribbed scraper panels, since it had a lower resonance sound

Final Design



Designed as both shelter and interface, the structure invites visitors to pause, explore, and connect with the natural environment through integrated seating and tactile, educational experiences.

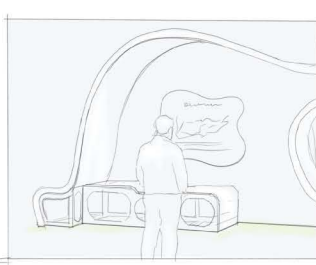
The installation creates a sheltered, accessible space for rest, play, and learning, integrating seating, sensory interaction, and environmental interpretation within a continuous, flowing form that responds to the landscape of Baxter Conservation Area.



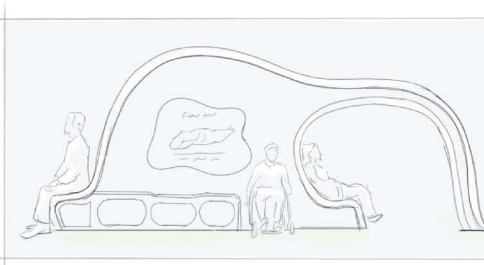
USE SCENARIO



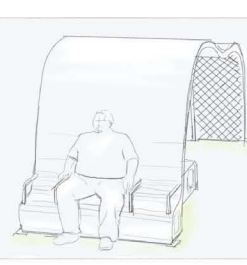
Visitors visit Baxter...



Visitors approach the integrated map panel

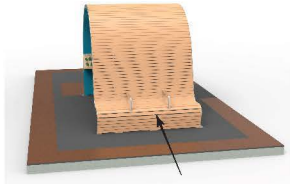


The structure provides a place to sit, rest, and gather, accommodating a range of users and postures.

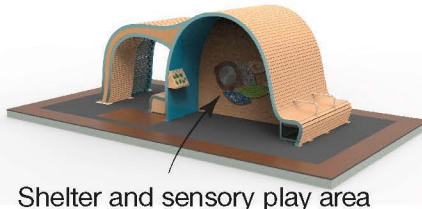


Bench with armrest accommodates elderly and bariatric users

FEATURES



Bariatric Seating width



Shelter and sensory play area



Adjacent wheelchair space



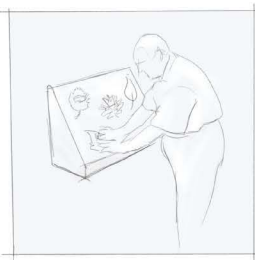
A continuous rubberized surface provides a stable, slip-resistant foundation that supports wheelchair users



Interactive, lift-to-reveal panels invite users to match leaf silhouettes with local species. Durable D-pulls make each tab easy to grasp, supporting tactile engagement



Intermittent cladding pattern on this side to let in some light

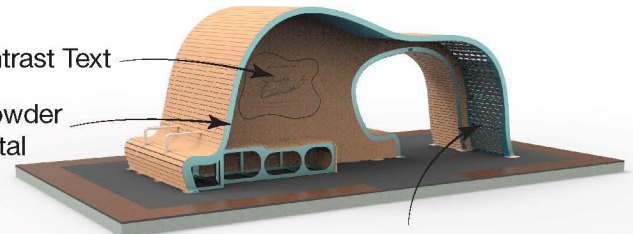


Educational elements fosters awareness of local ecology



Users engage with tactile and visual elements, encouraging hands-on exploration

High Contrast Text
High Contrast Powder coated sheet metal



Periferation Pattern in the acrylic, for scattered shade, further along the curve

Final Model



Model built at a 1/10 scale out of 1/16 in segmented plywood and various 3D printed components

Details

SENSORY ELEMENTS



A front-facing panel provides an overview of the site through a clear, easy-to-read, high contrast map. It helps orient visitors within the broader conservation area while highlighting key features and points of interest, reinforcing the connection between the installation and its surrounding landscape.

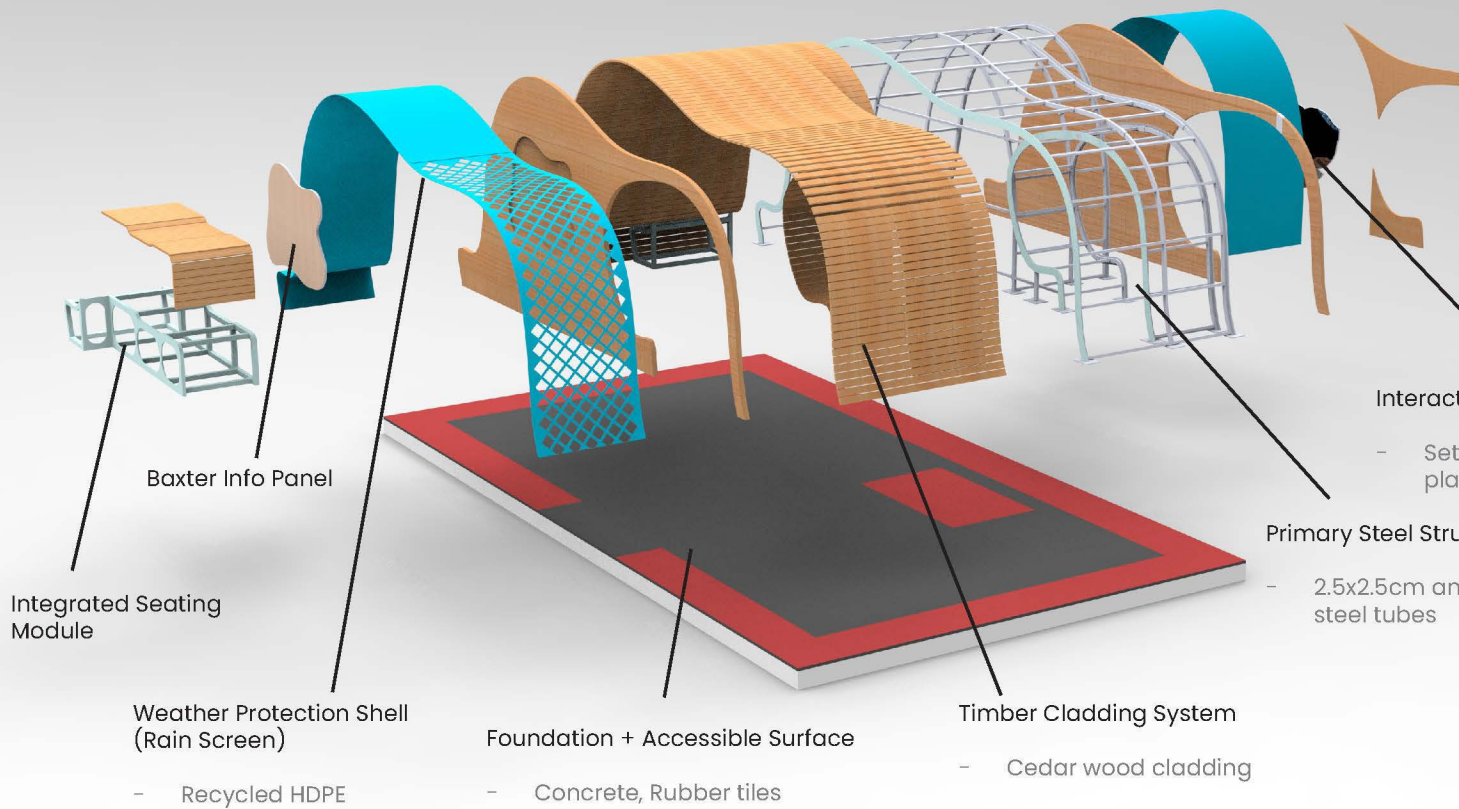


An angled interpretive panel introduces local leaf species through clear graphics and simple interaction. Designed for quick engagement, it supports visual learning and discovery while connecting visitors to the ecological context of the site.

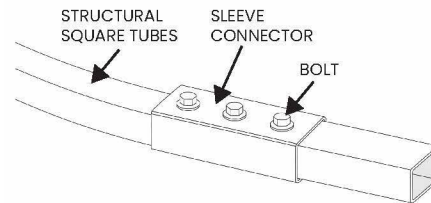
An angled interpretive panel introduces local leaf species through clear graphics and simple interaction. Designed for quick engagement, it supports visual learning and discovery while connecting visitors to the ecological context of the site.



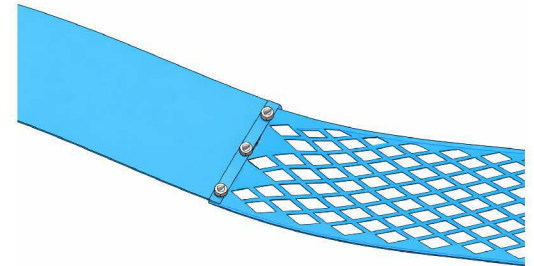
Construction Details



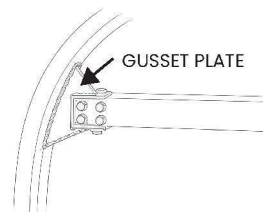
tive / Sensory Panel System
 with resin and/or framed into
 ce
 structure
 d 2.5x4 cm



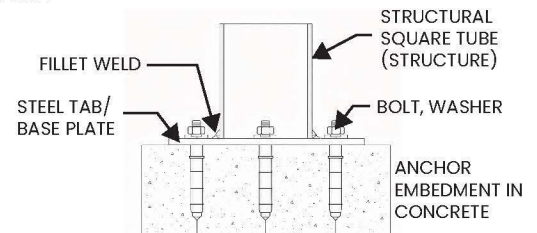
The weather protection shell are joined in segments with the help of overlapping tabs that are bolted together



Curved structural members are joined along their length using a steel sleeve connection. The sleeve wraps around adjacent square tubes and is secured with through-bolts, allowing for modular assembly while maintaining alignment and structural continuity across the curved profile.



A welded gusset plate reinforces the junction between curved and horizontal square tube members. This connection distributes forces at the intersection, increasing stiffness and stability while accommodating the changing geometry of the overall structure.



Vertical structural tubes are anchored to a concrete foundation using a welded steel base plate and mechanical anchors. This connection transfers loads into the ground while allowing for precise installation and long-term durability in outdoor conditions.