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GNG 1103

Deliverable C

Design Criteria and Target Specifications

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Introduction

Once we have defined a list of prioritized design criteria, it is essential to conduct technical benchmarking to evaluate existing solutions in the market. This benchmarking process will help identify the strengths and weaknesses of different technologies or products that align with our design criteria. Based on this analysis, we can then determine target specifications that meet our project's requirements and serve as a guideline for developing our final solution.

Design Criteria:

| Functional Requirements | Non-functional Requirements | Constraints |
|---|---|---|
| <ul style="list-style-type: none">- Portable Workbench- Accessibility features- Mobility of workbench (weight(lbs))- Lean on height and width (ft)- Storage and Working space- Reflective culturally significant ties- Mobile table with wheels- Green space | <ul style="list-style-type: none">- Sterile environment- Aesthetic- Available security devices- Storage space (ft²)- Working space (ft²)- Easy access for transportation | <ul style="list-style-type: none">- Operating conditions (snow, wind, rain, etc.)- Table size (ft²- same as lab table)- Table mobility (weight (lbs))- Size of building workspace and office space (ft²)- Freezer temperature(-4C)- Unlimited budget- Unlimited space |

Technical Benchmarking

| | | | |
|--------------------------------------|---|--|--|
| <p>Building Specification</p> | <p>USAY Youth Centre https://www.reminetwork.com/articles/empowering-indigenous-youth/</p> | <p>https://www.mccallumsathe.com/projects/woodward-labs/</p> | <p>Indigenous Research LAB https://www.guelphtoday.com/local-news/like-a-grannys-cabin-u-of-g-to-build-24m-indigenous-lab-in-woods-4216761</p> |
| <p>Company</p> | <p>Urban Society</p> | <p>Woodward Avenue Environmental Lab and Admin Building</p> | <p>University of Guelph</p> |
| <p>Indigenous culture reflection</p> | <p>Natural materials of wood, drum circles</p> | <p>N/A</p> | <ol style="list-style-type: none"> 1. Building surrounded by trees and other different kind of plants 2. area for sacred fires and structures for informal teaching. 3. Harvesting and storing plants 4. Central Kitchen table, reflects grandmothers' nature space 5. Wood stove |
| <p>Material used</p> | <p>Natural materials of wood and plant file</p> | <p>Concrete, plaster stable walls</p> | <p>Green space and land based hub Wood used for building</p> |

| | | | |
|---------------------------|---|---|--|
| Meetings and offices area | 5000 square feet, divided into 3 floors Staff offices, partnership meetings, and overflow areas for youth skill-building, practicums, and employment opportunities | Four distinct administration offices | Meeting room, |
| Common area space | 5,000 square feet eprogramming space for communal gathering and eating aligns with the Indigenous worldview of feasting | N/A | Consultation room Lounge space Large kitchen table characteristics of a home space or cabin, |
| Lab space/use | Rooftop garden equipped for traditional medicines and teachings alongside communal seating | 25,800 ft ² | 1,700 ft ² conserve plant diversity and animal habitats |
| Outdoor space | 6,400 square foot outdoor sports to markets, food handouts, employment fairs, drum circles | Some outdoor parking space, in a city not much room other than the building itself. | Outside graden (Size not mentioned) |
| Sustainable building | Solar gain and holistic elements of biophilia and natural lighting Solar panels to reduce operational costs through energy efficiency. | Achieved LEED Silver Certification as a great initiative in the city of Hamilton. Healthy work environment, for us of indoor air quality, water conservation and energy | N/A |

| | | | |
|------------------|-----------------|--|--|
| | | efficiency. | |
| Harvesting Space | | Harvested elsewhere, only consists of a lab space to review the specimens collected. | Harvesting animals inside the lab building, but none of equipment needed have been mentioned |
| Cost | 4,420,000\$ CAD | 6,200,000\$ CAD | 2,400,000\$ CAD |

| Specification | Scale Rating | USAY Youth Building | Woodward Environmental Lab | Indigenous research lab |
|---------------------------|--------------|---------------------|----------------------------|-------------------------|
| Indigenous reflection | 5 | 2 | N/A | 3 |
| Material used | 3 | 3 | 1 | 2 |
| Meeting and office spaces | 3 | 2 | 3 | 1 |
| Common areas | 4 | 2 | N/A | 3 |
| Lab space/use | 5 | 3 | 1 | 2 |
| Outdoor space | 4 | 3 | 2 | 1 |
| Sustainability | 3 | 3 | 2 | N/A |
| Harvesting space | 3 | N/A | 1 | 2 |
| Cost | 1 | 2 | 1 | 3 |
| Total scoring: | | 71 | 32 | 59 |

Target specifications:

| Target | Specifications |
|---------------|--------------------------------------|
| Cost | 1,250,000 CAD (Building space cost) |
| Building size | 5000 ft ² |
| Lean on size | 20ft(length)x16ft(width)x7ft(height) |
| Table size | 4 * 6 ft |
| Table weight | 290 lbs |
| Storage space | 50-200 ft ² / 4.6*5*5 ft |

| | |
|------------------------|-------------------------|
| Freezer temperature | -4C |
| Office Space | 150-200 ft ² |
| Amount of stories | 1-2 |
| Size of parking lot | 63*20 ft ² |
| Size of receiving area | 3L*4W*13(Depth)m |

Teams will determine target specifications (numerical values or a range of values which represent reasonable product attributes) such as minimum or maximum weight, dimensions, amount of time needed for a user to become familiar with the product (ease of use), number of items on an interface, etc.

Movable Lab Bench:

https://www.uline.ca/Product/Detail/H-7987S/Steel-Workbenches/Mobile-Steel-Assembly-Table-with-Bottom-Shelf-72-x-48?pricode=YK024&gadtype=pla&id=H-7987S&gclid=CjwKCAjwg4SpBhAKEiwAdyLwvEI2z3kfUSUGHr0qTkc1kqGbTLnbpBJQQJmOnPvwSbRctuyPK9ymxoCnhIQAvD_BwE

Drying Rack:

https://www.uline.ca/Product/Detail/H-7836/Bar-and-Sheet-Storage-Racks/Horizontal-Bar-Rack-56-x-60-x-60?pricode=YK452&gadtype=pla&id=H-7836&gclid=CjwKCAjwg4SpBhAKEiwAdyLwvNW6fEd7xkgUofqZxzV-k1Dk32XLUk4CNndm1om30DI-mgdsWOFaTRoCCSUQAvD_BwE

Wrike Snapshot Link:

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=vl91M1zsBWGCc3y13B4ItbhIjKuLQsy%7CIE2DSNZVHA2DELSTGIYA>