DELIVERABLE C – DESIGN CRITERIA

Jonathan Augustine Soliman, Rowan Kovacs, Ben Olaveson, Rotimi Akalusi
Group A04-13
GNG 1103 – Engineering Design
Professor Muslim Majeed
Sunday, October 8TH, 2023

1. Prioritized List of Criteria, including Functional & Non-Functional Requirements, and Constraints (with Metrics where appropriate).

Functional Requirements	Non-Functional Requirements	Unique Constraints
• Needs to be an open space for the lab area. • Four to five individual offices. • Walk in freezer. • Needs to be built in 2 years. • Try to incorporate local resources for the build. • Parking spaces for 1-2 trucks, and several atv's or snowmobiles.	• Reflects indigenous culture, who they are and what their goal is. • Make the space public/inviting to the community. • Ensure there is a kitchenette and 2 bathrooms.	• Budget (to be determined) • Not much info about specific constraints given from client but can be superimposed using sanity checks due to the scope of this project.

2. **Perform Technical Benchmarking (Research *<u>already-existing</u>* products that satisfy one or many needs in the project) and update user benchmarking information (user perceptions of these similar products)**

   Although there are not too many buildings out there that perfectly resemble the project that we are hoping to achieve, there are other projects that we can use to benchmark what our objectives will be on this project.

   The two main objectives of this project are a space which that can a satisfy laboratory testing facility as well as a general community gathering location where traditional ceremonies can be performed. Similar facilities do exist in these specifications and therefore can be benchmarked against.

   Even locally at our uOttawa campus, we have locations that are both technical testing facilities and places for people to gather, such as STEM which both houses advanced lab facilities and gathering areas.

   Although for the scope of this project, a building like STEM is not what we are going for, it can be used as a benchmark for our project.

   When comparing STEM to our project, STEM is clearly too large for what is needed but does have an amazing aesthetic that we can attempt to apply into our project. Given that STEM stands for science technology engineering and math, it has a futuristic look to it. Our project which will represent the indigenous people in that area should also represent who will be using the building. Symbols such as medicine wheels and circular objects are often appreciated by the indigenous people and should be added into the general aesthetic of the building.

   As well as for a small community center and lab, the budget must be considered as a project such as STEM, the building we are benchmarking against, cost around $187 million dollars, which would be far above the budget for our research facility.

By taking all these factors into account and comparing them to what is already out there through benchmarking, the ideas that become prominent in the engineering thought process start to become more refined and relevant to what is needed for the project at hand.

3. **Determine Target Specifications (Numerical Value Ranges or a range of Values that will convey the products' attributes). This will aid in evaluating potential solution ideas and provide measurable design goals which can be fulfilled by the final solution.**

- This project needs less numerical values associated with its design than a project such as University of Ottawa's STEM Building, as this building will be much smaller, and a lot of the product's attributes are of reflecting the community and culture of the indigenous people of this land. In terms of having measurable design goals, that seems to be a bit of a challenge, since there are very limited amounts of measurable data or requirements that the building needs to meet or attain.

Number	Design Specifications	Relation (=, < or >	Value	Units	Verification Method (How will we know it works?)
1	Open Space for Lab Area	N/A	N/A	Square feet.	Client Feedback, more Technical Benchmarking
2	Number of Individual Offices in The Building	=	4-5	Offices	Include in the Final Prototype
3	Freezer Temperature	<	-4	Celsius	Temperature Sensor, collecting Temperature Readings
4	Time Frame	<	2	Years	Project Timeline, Knowing when the Project is finished
5	Parking Spaces	=	1-2	Trucks	Include in The Final Prototype
		=	Several (Implies Greater than 2)	ATVs	
		=	?	Snow Mobiles	
6	Worker Utilities	=	1	Kitchenette	Include in The Final Prototype
		=	2	Bathrooms	
7	Number of Floors in The Building	=	1	Floor	Include in The Final Prototype

Commented [RA1]: I'm doing the Technical Benchmarking the same way we did it in Lecture 6, with this table. Seems silly for some of the specifications (like how we're going to verify that it took less than two years to complete the project), but otherwise I think it works well and makes the specs look organized and consistent!

Commented [JS2R1]: thanks looks great!

Commented [RA3]: All in favour of 1 floor for the design project?