University of Ottawa

Faculty of Engineering

GNG 1103

Deliverable F

Prototype I and Customer Feedback

Participants:

Assyl Irgebay

Aya Ali

Liam Hunt

Yvonne Polinski

Mish Bogomolov

Professor:

Muslim Majeed

NOV 3, 2023

1. **Prototype reflecting objectives**

Client/ User Feedback	Future design information	Changes improvement/ or solutions
Change freezer location and Idea to enter freezer with least amount of contamination of space	Freezer located in specific location with a connection to lab and truck loading area, In addition to provide solution for reduce bacteria and increasing safety specially when loading a deer or any hunted animal.	Freezer location been changed and located beside storage. The door connected with storage been canceled and replaced with a double door that connected to outside truck loading area A sanitizing machine been placed in front of freezer to insure the clearliness of contamination
Include more offices	At least 19 offices should be presented with enough space for a computer table and cabinet. To fit all employees and extra space just in case for any volunteering team/ individual participated in the program.	Still on 14 offices regarding the specific space and size we have. However, plan is to increase overall building size and therefore increase number of offices provided
Avoid dome, and outside glass material	Replace all decided glass material with wood or timber to reflect more the indiginous culture and sustainable for environment friendly.	Cancel dome idea, and replace all material with just wood and timber(specially for outer shell of the building)
Versatille lab design	Change the design as more versatile design and avoid any industrial common design for labs.	Some changes been done and not included alot of industrial and common lab product, In addition to keep the point of using mostly wood and timber material. However, more changes will be placed specially for material, product ad design, inside the lab

Affordable, natural and sustainable	Prefer to use timber, wood, or sustainable materials. For indigenouspeople,e culture is reflection and protectiof the of environment and nature.	90% of building will be made of wood and timber, some glass material will be used for boardroom and only in the lab will be a present of steel and aluminium regarding the safety and cleanliness inside the lab
Add extra space for loading area	There is enough space for loading stuff and a way to a storage and freezer room. To work comfortably and easilmaterials, equipment, and stuffent/stuff	Another space or room added between storage, freezer, and loading area/truck parking
Include local artist in the other design provided	More reflection for indigenous culture	A local artist been added to the main hall between the two building to present the indigenous culture in the main entrance
Prefer one-story building	Avoid using elevator/ stairs for elderly visitors and easily move for sustainable people.	Change the structure/ design of building from 2 floor building into two circular building presented on the same floor connected with main hall

2. Analysis of Critical Components/Systems

Develop a prototype which will be used to achieve the objectives your team has set out in the plan created in the last deliverable (i.e. you need to answer the “why”, “what” and “when” of prototyping).

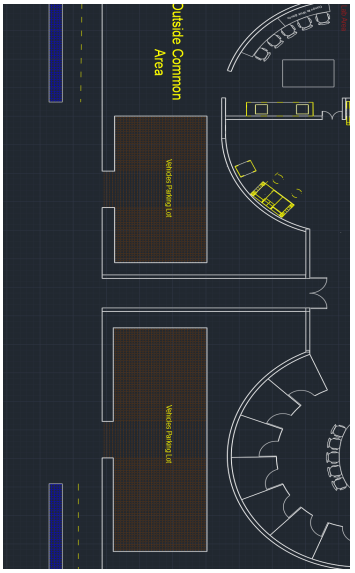
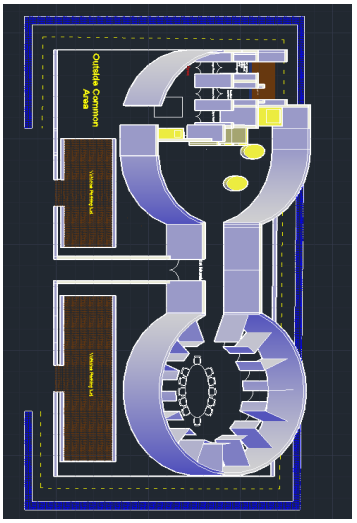
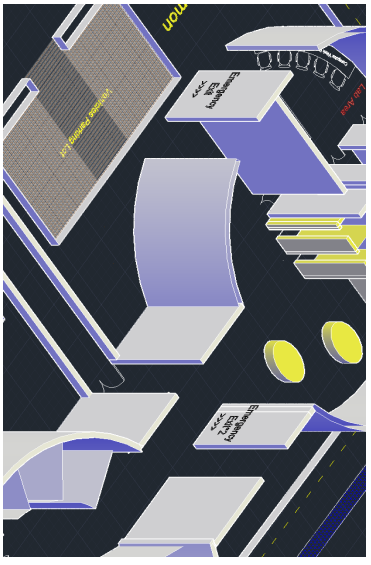
What? - Prototype type	What? - Test details	Why? - Reason for Using this test	Why? - How is the prototype used?	When?
Analytical - Building plan and layout	To conduct a check on satisfying the	Main requirement provided by	All prototypes should be tested for this requirement.	Dependencies: Sketch of the building in CAD

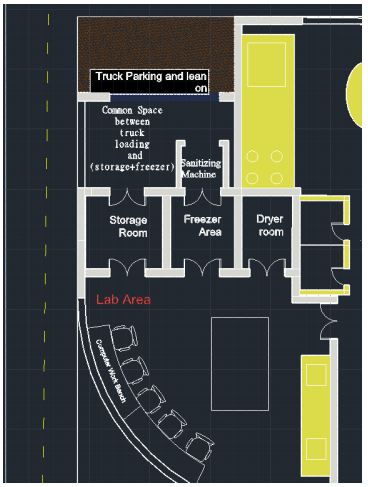
	requirements provided by the client for the representation of indigenous ideas and analyze how the prototype reflects them.	the client.	Process: Such criteria as building shape, materials that could be used for construction or decorations, etc. would be compared with the requested ones.	program. Results should be provided **before other tests** and if the prototype does not satisfy the needs, it should be reworked. Time: Appr. 1hr
Analytical - Lab space and Unloading + Storage area layout	To conduct a test of the functionality of the lab. (i.e. How comfortable it is to operate inside the building during the work process)	The core function of the building.	All prototypes should be tested for this requirement. Process: To verify that at least one half-ton truck would fit; there is enough space to transport, store and freeze large-sized samples (i.e. a deer);	Dependencies: sketch of the Lab in AutoCAD. Results should be provided and utilized to **evaluate the lab area**. Depending on the results the lab space might be reworked. Time: Appr. 1hr
Analytical - Building plan and layout	To test the building on accessibility.	Building code requirement emphasized by the client	All protypes should be tested for this requirement. Process: To make sure that the building follows the checklist created by the Ontario Business Improvement Area Association (OBIAA): https://obiaa.com/wp-content/uploads/2014/09/Accessible-Buildings-Checklist-OBIAA.pdf	Dependencies: Sketch of the building in CAD program. Results should be provided with less rush and utilized to ensure that the building is fully accessible. Depending on the results, some parts of the building may be tweaked. Time: Appr. 1hr

3. Prototype Test Plan

Carefully document your prototyping test plan, analysis and your results (including detailed images of your prototype).

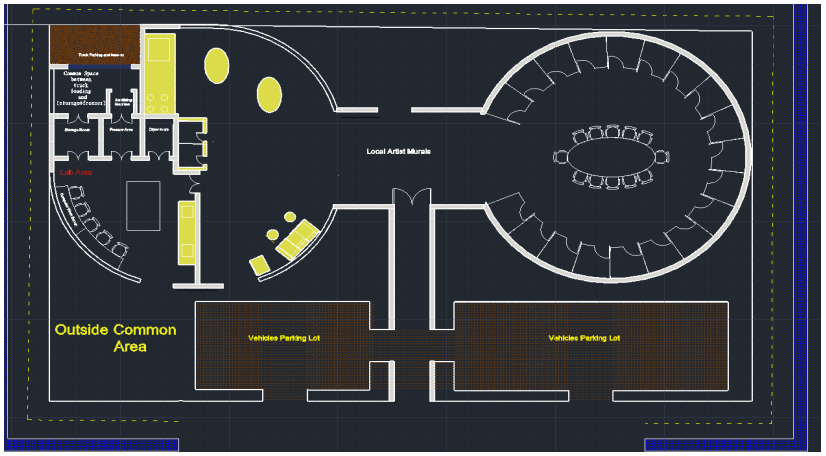
Test plan/ subsystem	Analysis	Result	Detailed image

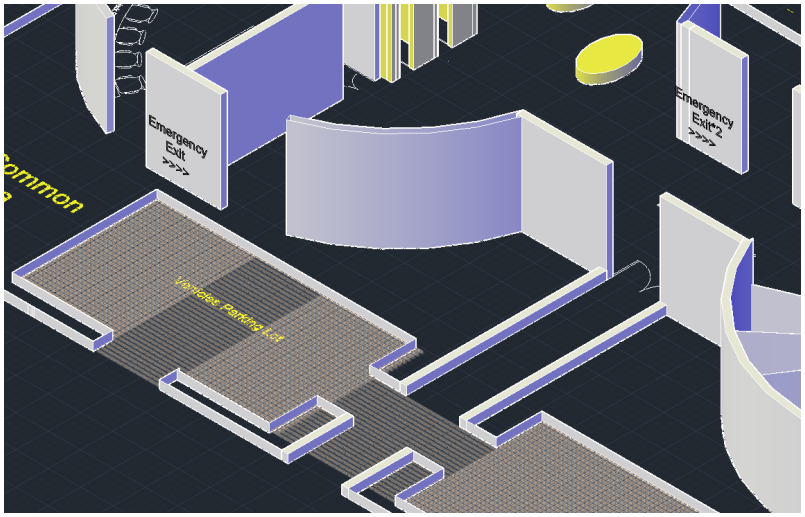
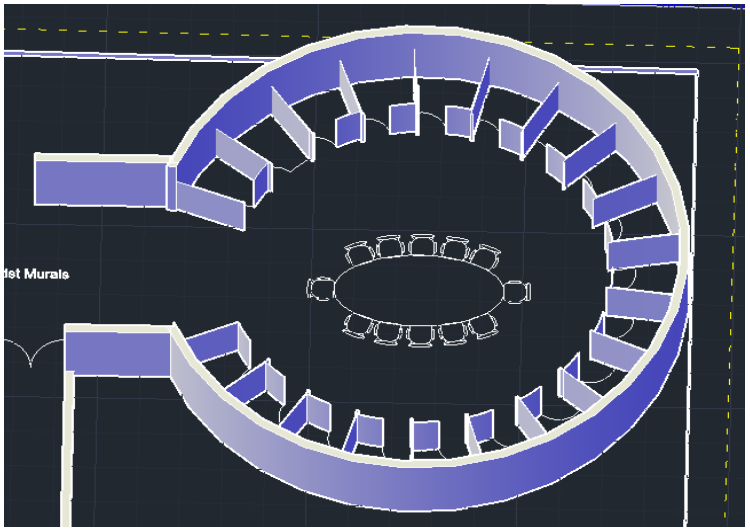
The accessibility of the building prototype. Outside area	The prototype has a big parking lot which allows the employees and visitors to park their vehicles freely. It also has some parking slots for special vehicles equipped with the wheelchair or other equipment	The prototype survives the test for accessibility for the outside space	
The overall shape and design of building to check if it reflects indigenous identity	The prototype has the circular shape which reflects the indigenous spirit circle and has the corridor which joins 2 circles where we also added some indigenous arts	The prototype reflects indigenous identity which was required by the client	
The accessibility of the prototype, Entrance, Inside space	The prototype has only one storey which makes great advantage for people with limited abilities. It also has a wide double door entrance and emergency exists over building in case of the fire.	The prototype meets all the criteria required to the comfortable using and also it follows the checklist created by OBIAA	

The lab space and Unloading + Storage area layout	The unloading has the accessibility to both storage and freezer rooms, it is well placed and it is comfortable to use everything related to the lab work because the lab is attached. The lab is well prepared for the work but kind of small so it might be uncomfortable to use it in the process of work	The prototype passes the test for the storage and lean on, but fails the comfortability of the lab space. The lab should be bigger in size to meet the requirements of the client	

4. After Test Update

In this section only Updated parts/ subsystems/ sizes will be included and specified.

	Subsystem	Target specification	BOM
Overall Building design	Shape	2 circular building Attached with main hall	same
	Size	7000 sq ft	7000*245$=1,715,000 $
			
Lab	Storage	Increase the size 12*13 sq ft	(included in total bill)
	Freezer	Increase the size 12*10 sq ft	(included in total bill)
Common Area	Emergency Exit	Added 2 emergency exits	400$*2= 800$
	Another way to parking lot	Way follow from main entrance to parking lot Way from first parking lot to the common area	Included in construction cost

<table>
<tr><td colspan="4"> 
</td></tr>
<tr><td>Offices</td><td>Increase amount of offices</td><td>From 14> 19</td><td>Included in overall cost</td></tr>
<tr><td colspan="4">  </td></tr>
</table>

5. Next prototype outline

Finally, teams will outline a prototyping test plan based on the template provided in “Lecture 11 – Prototyping Test Plan” to prepare to build the second prototype in the next deliverable.

1. Typical objectives include: communicating and getting feedback for ideas, verifying feasibility, analysing critical subsystems or system integration or reducing risk and uncertainty.
2. You must also define a stopping criteria which will allow you to end the test once you are satisfied that you have achieved your testing objectives.

3. Be very clear about what you are trying to measure and define an acceptable fidelity based on the objectives of your prototype. See

Objectives:

- Communication and Feedback
    - Get feedback on design from peers and TAs and other professional on the updated and tested design
- Feasibility Verification
    - Ensuring that the design is financially possible
    - Ensuring that the design is technically possible in the sense of having good structural integrity
- Critical System Analysis
    - Re-analyzing the subsystems for things such as energy efficiency, air control, ventilation, and waste management
- Risk Reduction
    - Identifying more and new potential risks in the building design and its operation

Key measurements:

- Feedback
    - Gather more qualitative and quantitative data through feedback meetings.
- Feasibility
    - Through assessments and analysis of system with cost projections and other requirements
- Subsystem performance
    - Measuring the efficiency of different subsystems through mock-ups and testing
- Risk Reduction
    - Identifying potential risks and uncertainties through mitigation strategies

Stopping Criteria:

- Sufficient feedback is obtained and the needs and expectations are met to the best of the ability
- Technical feasibility is confirmed and within the cost margin
- The subsystems have complete functionality and efficiency outlined in the deliverables.

- The risks are mitigated or managed and within a reasonable range as detailed either by government regulations or regulations set by the client.

Acceptable Fidelity:

- Simulation and physical representations are closely resembling the final building which is sent in for evaluation and feedback from the client
- A detailed technical assessment shows an estimate cost and all of the risks studied for each subsystem
- The functionality of the prototype is shown to be efficient and follows the criteria and needs set out by the client.

Testing Methods:

- Through feedback from the TAs, peers and the client during the short client meeting
- A in-depth study and cost analysis for the critical parts of each subsystem
- The utilisation of simulation and prototype to test critical things such as weather implications and other parts.
- A functional team assessment to discuss different risks of the project and from there deciding other testing methods that may be necessary up to that point.

6. Wrike link update

https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=EFtX4McDqStAQ2nBkP4BXhcKowrc1ccy%7CIE2DSNZVHA2DELSTGIYA