uOttawa

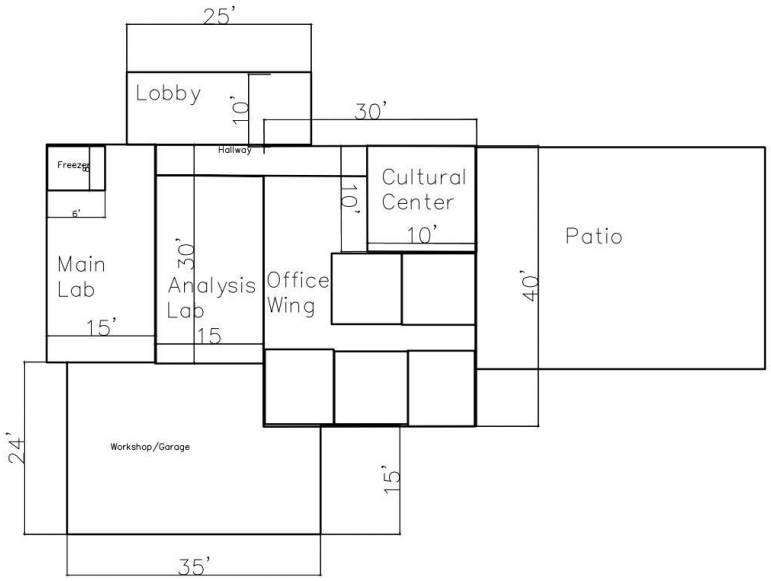
Project Deliverable E

GNG 1103 A05, Group 19

By: Jacob Cearns, Nicholas Stirling, James Neske, Esther Olalekan

October 29th, 2023

Section 1: Design Drawing



The main portion of the building consists of the reception/main lobby, computer and main lab, office space, and cultural center. Surrounding these sections are standard exterior walls with studs, insulation, drywall and siding. The siding is stained eastern white cedar panels which not only provides aesthetic value for the building but is a native species to Ontario (see figure 1). For interior walls it is just studs and plywood. The height of the exterior walls is 12 ft and the roof is an open gable that peaks at about 17 feet. The flooring throughout the inside of the building is hardwood floors. The floor in the garage/workshop is poured concrete.

(Figure 1)

Section 2: Budget Spreadsheet

https://docs.google.com/spreadsheets/d/1282CDeUZeHH5hpNXcKM68_-_On3UxsjQhVbf0gv7ka4/edit?usp=sharing

Section 3: Hardware and Software List

Section 4: Significant Project Risks & Contingencies

Section 4.1: Inclement weather

It is possible that inclement weather will increase build time and delay the completion of the project. Since it is not safe to work through inclement weather we will simply have to have a section in our agreement with the client to stipulate that we cannot be punished due to delays caused by inclement weather.

Section 4.2: Supply Chain breakdowns

A breakdown in the supply of critical materials to the project could both increase costs and increase build time. To mitigate this, room in the budget should be allocated for increased costs, and a section in our agreement with the client to stipulate that we cannot be punished due to delays caused by supply chain problems.

Section 4.3: Implementation Problems

It is very possible that some systems present in the prototype will need to be significantly reworked or redone when translating them to the full scale project. This can be mitigated by committing significant time and resources to making the prototype as applicable to real life as possible. Otherwise we will simply have to leave room in the budget and schedule for complications caused by having to rework any systems.

Section 5: Prototyping Plans

Test #	Objective	Desc. of prototype and basic test method	Desc. of what will be recorded, and how	Planned start date and plan duration
1	Receive feedback on the basic layout of the project after having a physical prototype.	Construct a 3d model of the basic layout of the building.	The feedback of the client will be recorded.	November 7rd.
2	Verify proper dimensions and materials that meet the specifications of the client.	Create an analytical model of the building on autocad. **Stopping Criteria-**	Record the feedback that the client gives on what dimensions need to be changed or if anything is not	November 7th

		The first prototype will not be extensively detailed however, once the dimensions are set for the building this will verify feasibility with regards to the budget and structural integrity of the building.	acceptable.	
3	In the context of building design, risk mitigation is a critical objective when carrying out a prototype. Building design projects involve a range of risks, including structural, functional, and budgetary risks, among others. Hence creating a prototype for early identification will mitigate risks in structural integrity, cost estimations, construction risks, and environmental impact among others.	Analytical Prototype is a comprehensive tool for risk mitigation in building design, as it allows for thorough analysis and validation of design aspects, making it an effective choice for identifying and addressing potential risks at multiple levels of the project. **Test Method for Risk Mitigation Using an Analytical Prototype**: Structural Analysis, Energy Simulation, Thermal Analysis, Environmental Impact Assessment, Regulatory Compliance Check,	Use of software tools like CAD for detailed structural simulation. Also, the use of daylight simulation data around that geographical environment would help in modeling the daylight, sunlight, and ventilation for window construction. Also, a compilation of environmental reports on the soil's ecological features will heighten sustainability. Create a user-friendly report experience that would help get feedback from clients. Keeping in mind safety concerns and design changes for mitigation. Lastly, compile all corrections, and adjustment feedback into a comprehensive record. And work with response to modification and issues of concerns that need changes	Using the Gantt chart, to monitor our work and keep us up to date. Nov 7th seems like a feasible date. We will commence building the prototype as soon as possible. Adhering as well to the deadline.

		Cost Estimation and Value Engineering, Regulatory Compliance Check, Cost Estimation and Value Engineering, User Experience Assessment, and Iterative Design Improvement	iteratively.	
4				

Section 3: List of equipment

For this project, we will make use of CAD(computer-aided Design) software for the 3D modeling. Also, we use 3D printers for creating physical prototypes for better visuals. Laser cutters are used as well for precision cutting. Various materials such as plastics, metals, wood, and fabrics would also be incorporated in building the prototype.

Wrike

https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=Vbl6NDDdpuKgqyF3G0dBUO19jDciXeeP%7CIE2DSNZVHA2DELSTGIYA