Project Deliverable E: **Product Schedule and Cost**

Group 10

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Abstract

As in past deliverables, our group is continuing to work towards the client's desires: a building that will highlight the First Nations culture and provide a working and community space to grow as a program. Group 10 members have each contributed to select parts of the report and completed the work with the client's needs in mind, in order to continue on the path of project development with empathy to the client and their requests. This report will present a summary of all the components contributed to this deliverable, notably the work leading towards the first prototype of the Guardian building.

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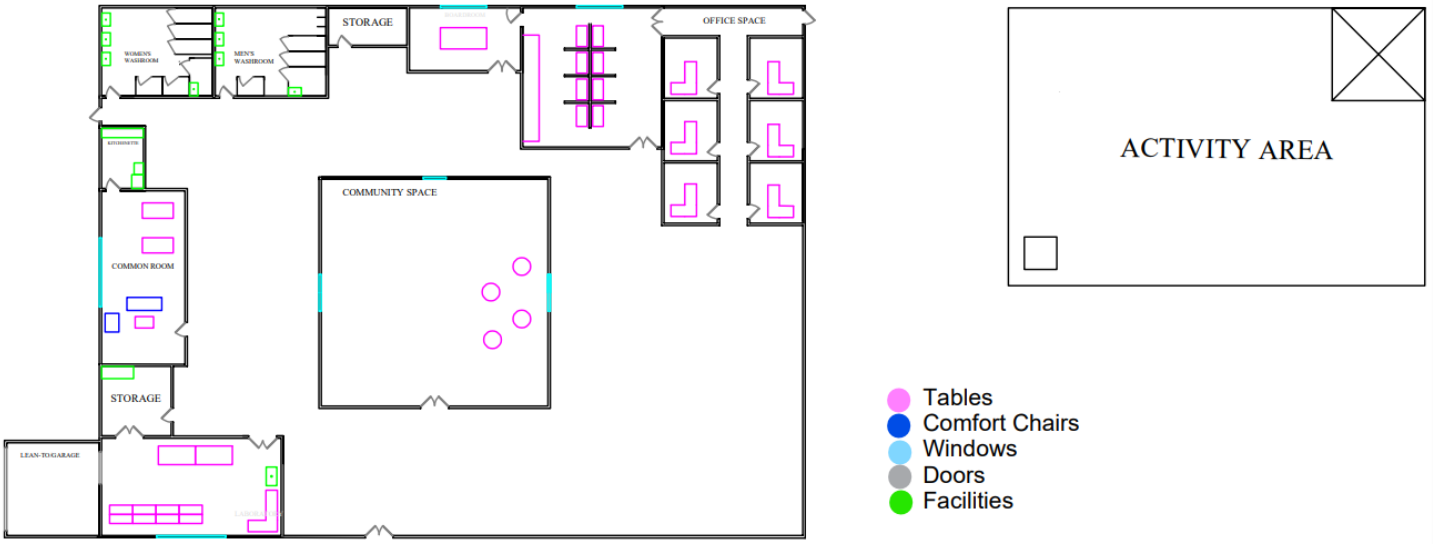
1. Introduction

In this deliverable, the following information was gathered and organized to further the progress of the design project and work towards the prototyping design stage. Based on Deliverable D, the subsystems (rooms) were all collected together into a detailed design drawing. Other components of this deliverable are the costs of the building organized in a product cost spreadsheet, the prototype equipment list detailing the equipment we will need for building our first prototype, a list of potential product risks with our contingency plans to mitigate those risks, and our prototyping test plan. Each section below includes a brief description to summarize each component, which are found in detail in their respective links.

2. Detailed Design Drawing



After taking into consideration the feedback on each subsystem from the client, we create a detailed design of the floorplan for the Guardians Building. As part of the feedback, the lean-to was moved to be attached to the laboratory to easily bring in the harvest via the roll-up door. A larger storage room attached to the lab as well as a storage room next to the washrooms have been added. Furthermore,

we have included a large activity area outside the building for big events to be held with comfortable space for up to 100 people. The entire building is 17880 ft² and the additional activity area is 5400 ft².

3. Project Cost Spreadsheet

Project Cost Spreadsheet

Squarefootage estimate.pdf

The product cost spreadsheet (linked above) outlines in detail the initial cost estimate for our building. RSMeans was used to determine the estimated cost for the square footage of the building (see the second link above). This is also detailed in the Product Cost Spreadsheet.

While the current total estimated cost for the building is over budget, changes and cuts can be made throughout the prototyping process to lower this amount.

3.1 Equipment List

The equipment list for the first prototype is also included in the Product Cost Spreadsheet. Since it has been decided to build the first prototype out of legos, with support from a digital design software (AutoDesk Autocad 3D), both of these selections have been listed.

4. Project Risks

Some significant project risks include:

- Lack of sufficient time to complete prototypes
- Committing to more work than we can handle (ie a prototype that requires very much effort, is very detailed, very big, very time consuming)
- Underestimating costs and overspending the budget
- Poor choice of materials / designs that require going back and redoing several steps

- Layout of building is not efficient or up to clients standards
- Operational costs
- Lack of clarity with instructions and/or communication between team members or between professor and student
- Scope Creep
- Added workload or time requirements because of new direction

4.1 Contingency Plans

Our contingency (backup) plans for mitigating these project risks include:

- Leaving extra days for review and repair
- Researching materials ahead of time so wrong ones are not used
- Ensuring expectations are clear before beginning
- Creating an overestimate for the budget so it is less likely to overspend
- Having meetings with team members and the client to make sure the project is on track
- Setting firm objectives
- Creating a list of risks
- Talking to client and/or professor when there needs to be clarity
- Always reviewing alternatives (layout plan or subsystem layout)
- Testing often

5. Prototyping Test Plan

Test ID	Test Objective	Description of Prototype used and of Basic Test Method (What)	Description of Results to be Recorded and how these results will be used (How)	Estimated Test duration and planned start date (When)
1 Safety hazard inspection	Safety	Comprehensive, Analytical: The CAD and lego prototypes give us the basic idea of the structure of the building, we then inspect the possible safety hazards within the prototypes.	Results that reflect on the safety concerns of the actual building are required to determine the safety of the building.	The testing would be performed throughout the design and needs to be done after making the prototypes. The feasibility of the prototypes depend on the result of the building.
2 Peer Feedback	Obtain feedback from peers & members of the community.	Presenting both the physical and digital prototypes for feedback will yield the best results for the test.	Record and implement this feedback into the prototype's design.	This test can be performed throughout the rest of the projects duration as revisions are made to the prototypes
3 Client feedback	Implement client feedback to the prototypes	Presenting both the physical and digital prototypes for feedback will yield the best results for the test.	Record and implement this feedback into the prototype's design.	This test can be performed throughout the rest of the projects duration as revisions are made to the prototypes
4 Cost Estimate	Obtain the estimated cost	Estimate the cost based on the dimensions of the prototypes and then project onto the design.	The estimation of the cost for the prototypes show the approximated cost of the final design.	This test can be performed after obtaining the clear dimensions. It is then recorded to the properties.

6. Conclusion

Each of these components will come together in the following deliverable as we further work towards prototyping the Guardian building. Changes will be made as needed, and efforts will be made to avoid needing to employ the contingency plans.

The project cost spreadsheet includes materials and furniture that we plan to implement into our design of the building; this spreadsheet includes description of the item (size and dimensions) to the cost and amount of units we plan to use. Furthermore, the detailed design drawing that we came up with includes an adjusted layout after meeting with the client. The prototyping test plan we have created covers hazard inspection, gathering feedback from the client/peers and developing a cost estimate giving us enough data and what to improve so that we can further improve our idea to create a better prototype.