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1. INTRODUCTION:

This deliverable aims to produce a set of conceptual designs addressing our problem statement. These designs have been based on technical benchmarking and user benchmarking we have developed in previous deliverables. We will analyze and evaluate these subsection designs based on the list of prioritized design criteria we have created previously. Many of the concepts below will be chosen for further development in future project deliverables.

2. Bathroom Subsection:

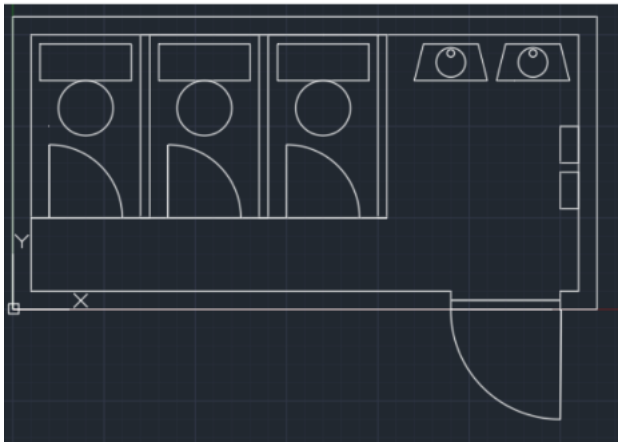

Figure 1. Bathroom Floorplan

For our restrooms, shown in Figure 1, our priorities were functionality and efficiency. A restroom is an elementary yet necessary room in any building, so it is important to ensure that it meets all the requirements that any restroom should have. Here we have included multiple stalls, sinks and hand dryers to ensure multiple users at once can be accommodated. Our design will also include lights and taps that automatically turn themselves on and off to avoid wastage. This room fulfills the requirement for washrooms within the building and is structured to abide by the Ontario building code, with accessible stalls and wheelchair turning space (O Reg. 332/12). The functions of the washroom are optimized for sustainability, with hand dryers, compostable toilets, and water-saving sinks. This design was chosen over a single-stall bathroom setup for its efficient use of space, although single-stall washrooms are superior in privacy, accessibility, and ease of cleaning. We therefore believe the ideal building would contain both.

3. Small Office Subsection:

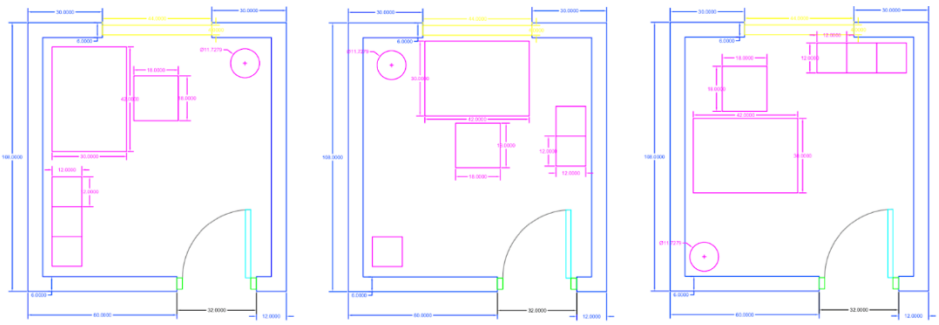

Figure 2. Small Office Floorplan

For our small office spaces, shown in Figure 2, customization is the primary focus. Each piece of furniture (desk, chair, 3 cabinets, and a plant) is easily movable, each being on wheels or lightweight. The above design shows 3 of the infinitely many possible room layouts. The feel and dynamic of the space can be drastically changed in a matter of minutes, ensuring each user gets the most out of the office. Each office can be customized to one's needs and liking, making accessibility easy. This room fulfills the need for offices and private workspaces and is built to align with the non-functional requirement for a natural, sustainable, and comfortable work environment. Further improvement may include the addition of one or two more chairs in the room. The client also requested that the size of each office be decreased to conserve space.

4. Computer Lab Subsection:

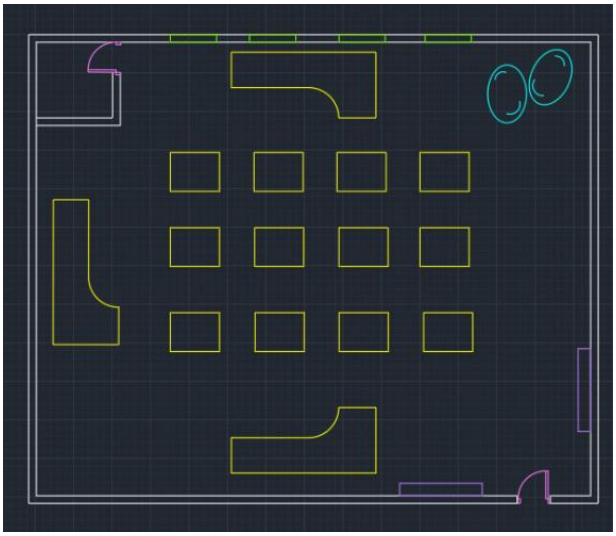

Figure 3. Computer Lab Floorplan

The primary principles for the computer lab, shown in Figure 3, are comfortability and multi functionality. We want to create a computer lab that ensures every user is comfortable, this is why there is a bean bag at a corner in case someone wants to sit there and relax with their laptop. Instead of the desks with the mounted desktops, someone can use the larger desks at the end of the room if they need space. At the top left corner, there is a storage to keep cables, laptops, adaptors etc. Placed next to the entrance, the TV there can be used to project any material to the whole lab. This room fulfills the needs for a work lounge and workspaces and allows workers to use laptops and move from desks to bean bags to their offices at will. User benchmarking told us that workers and managers alike work best in adaptive and semi-social, semi-private offices. For this reason, our design, with both a worker lounge and private offices, aims to strike a balance between a private and social work environment.

5. DISCUSSION:

The above subsections were analyzed and evaluated on each of their own specific benefits and drawbacks. These three subsection designs were chosen for their overall themes of comfortability, functionality and versatility. There were other projected designs brought up in our teams brainstorming, however when matched to the design criteria and benchmarking, they were not chosen to be finalized subsystems. It is important to note that while we have included these subsystems in our deliverable, we are prepared and expecting to modify them as new client feedback becomes available. A major part of these subsystems shown is the concept of sustainability and eco-friendliness. Our restroom subsection has been designed to include composting toilets, and water wastage interventions, and our small offices include motion sensor lighting. We interpreted our clients wish to have a sustainable, ecologically friendly building, and turned it into 3 functional and highly sustainable subsections. When compared to other proposed designs, these subsections had the most desirable ratio of sustainability to functionality and comfortability.

6. CONCLUSION:

Overall, this deliverable has contributed greatly to setting the framework and foundation of our overall building design. We have achieved our goal of creating subsystems that reflect and are well aligned with our projects objectives and set criteria. The evaluation of these subsystems against certain design criteria has provided insight into future designs and problems we may face ahead. Furthermore, this analysis can be used immediately to adjust our plans to meet the desired requirements and to align our future designs even closer to the client's needs.

7. REFERENCES

Ontario Building Code, O Reg. 332/12