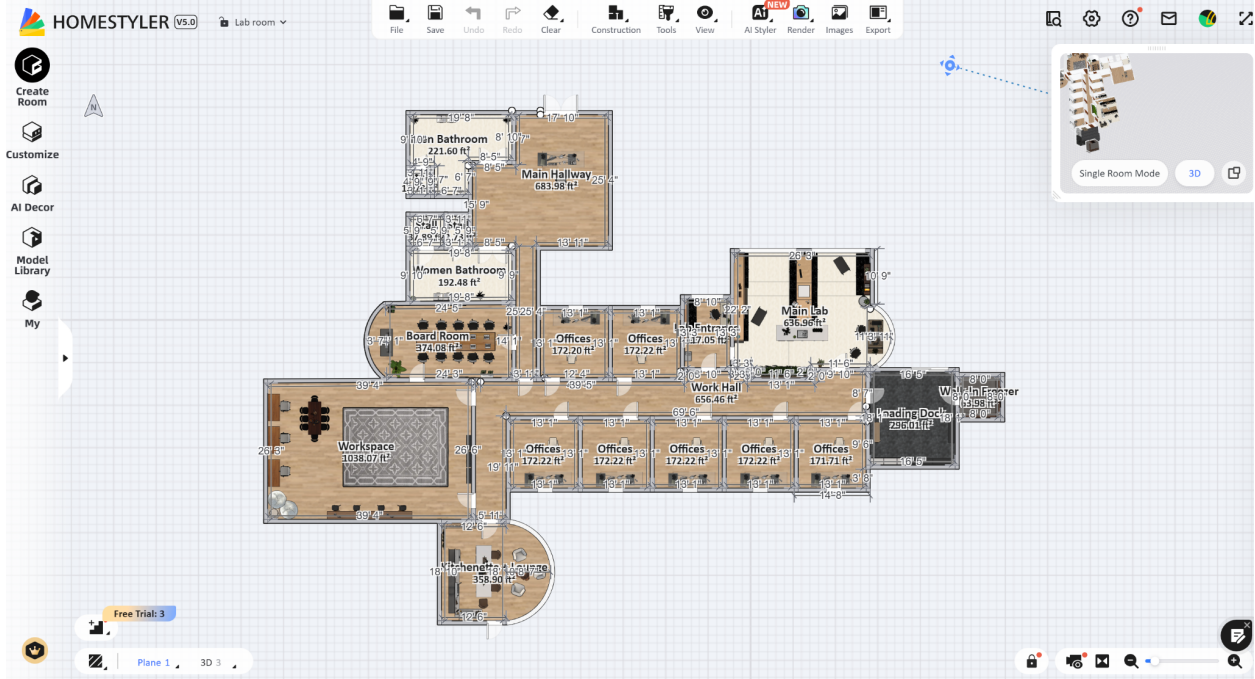


# Project Deliverable E

## Detailed Design Drawing:



## Office BOM:

Cost (CAD)	Quantity	Extended Cost	Tax	Total Cost (CAD)	Links
CAD 385.00	8	CAD -	CAD 400.40	CAD 3,480.40	<a href="#">Masonite Door</a>
CAD 145.00	7	CAD 190.95	CAD 156.77	CAD 1,362.72	<a href="#">Office Desks</a>
CAD 75.99	7	CAD 209.93	CAD 96.44	CAD 838.30	<a href="#">Ergonomic Office Chair</a>
CAD 129.00	14	CAD 59.00	CAD 242.45	CAD 2,107.45	<a href="#">LÅKTARE-IKEA</a>
CAD 1,235.00	2	CAD 98.81	CAD 333.95	CAD 2,902.76	<a href="#">Uline-Conference Table</a>
CAD 476.00	7	CAD 241.31	CAD 464.53	CAD 4,037.84	<a href="#">Filing Cabinters</a>
CAD 63.99	2	CAD 9.99	CAD 17.94	CAD 155.91	<a href="#">Storage Shelf</a>
CAD 90.00	3	CAD 5.00	CAD 35.75	CAD 310.75	<a href="#">LINNMON / ADILS</a>
CAD 79.00	3	CAD 5.00	CAD 31.46	CAD 273.46	<a href="#">ELDBERGET / MALSKÄ</a>
CAD 97.00	12	CAD 98.81	CAD 164.17	CAD 1,426.98	<a href="#">Stackable chairs-Uline</a>
CAD 55.98	5	CAD -	CAD 36.39	CAD 316.29	<a href="#">Home Depot Link</a>
CAD 92.33	10	CAD -	CAD 120.03	CAD 1,043.33	<a href="#">Overhead Light</a>
CAD 999.99	7	CAD 439.00	CAD 967.06	CAD 8,405.99	<a href="#">Office computer</a>
CAD 119.99	7	CAD 439.00	CAD 166.26	CAD 1,445.19	<a href="#">DEll lapotop</a>
<b>Total Cost:</b>				<b>CAD 26,662.17</b>	

## Boardroom BOM:

Materials for kitchen/lounge	Price (\$)	Quantity	Tax (\$)	Total cost (\$)	Link
Epson EX3280 3LCD XGA Projector	599.99	1	90.00	689.99	<a href="#">Projector</a>
Tropi co. Home Office Indoor Plant Collection 4-Pack	65	1	9.75	74.75	<a href="#">Plants</a>
Rectangular 6 ft Conference Table	364.85	1	54.73	419.58	<a href="#">Boardroom Table</a>
Home Office Chair	78.99	12	142.18	1090.06	<a href="#">Storage unit</a>
LED Flush Mount Ceiling Light	89.99	2	27.00	206.98	<a href="#">Office Lights</a>
Abstract Canvas Art	221.51	1	33.23	254.74	<a href="#">Painting</a>
Owl Labs Meeting Owl 3	1499	1	224.85	1723.85	<a href="#">Meeting Device</a>
MacBook Pro 3 14"	2699	1	404.85	3103.85	<a href="#">MacBook</a>
<b>Final cost (\$)</b>				<b>7563.79</b>	

## Washroom BOM:

Name	Description	Quantity	Cost	Extended Cost	Tax	Total Cost	Links
Toilet	Overall: 14.125" H X 15" W X 30.25" D Weight: 64 lb	3	\$321.72	\$147.23	\$41.82	\$1,090.63	<a href="#">Toilet</a>
Urinal	Overall: 12-In x 18-In	2	\$486.55	\$85.86	\$63.25	\$1,036.35	<a href="#">Urinal</a>
Bathroom Sink	Overall: 13.78" Standard White Ceramic Rectangular Wall Mount Bathroom Sink with Overflow	4	\$420.00	-	\$54.60	\$1,898.40	<a href="#">Bathroom Sink</a>
Sensor Faucet	Overall: Made of premium stainless steel, multi-layer chrome finish, smooth feeling, stunning looking, rust-proof and durable, drip-free, smooth-feel, resists scratches, corrosion and tarnishing and suitable for bathroom	4	\$171.79	\$10.91	\$22.33	\$776.49	<a href="#">Sensor Faucet</a>
Toilet Paper Dispenser	Overall: 8 x 11 x 7"	3	\$20.00	(\$2.00)	\$2.34	\$61.02	<a href="#">Toilet Paper Dispenser</a>
Framless Mirror	Overall: 40-In x 30-In	4	\$222.99	-	\$28.99	\$1,007.91	<a href="#">Framless Mirror</a>
Wall Mirror	Overall: 48-In x 30-In	1	\$165.99	\$69.99	\$21.58	\$187.57	<a href="#">Wall Mirror</a>
Plants	Overall: Artificial Fake Bamboo Plant with Plastic Planter Pot - 39.4-Inch	5	\$66.73	-	\$8.67	\$377.02	<a href="#">Plants</a>
Bathroom Stalls	Overall: Polymer Complete In-Corner ADA Approved Compartment-Left Side 60"W X 61 ¾"D-Gray	3	\$2,733	-	\$355.29	\$9,264.87	<a href="#">Bathroom Stalls</a>
Entrance Door	Overall: Steel Outward Swing Partition Door - 23-5/8"W x 58"H	2	\$394.95	-	\$51.34	\$892.59	<a href="#">Entrance Door</a>
<b>Total</b>						<b>\$16,592.85</b>	

## Lab BOM

Item Name	Description	Cost (CAD)	Quantity	Extended Cost	Tax	Total Cost (CAD)	Links
Masonite Door	4-inch x 80-inch x 4 9/16-inch	CAD 385.00	3	CAD 1,155.00	CAD 150.15	CAD 1,305.15	<a href="#">Masonite Door</a>
Brown Computer Desk	Desk	CAD 143.09	1	CAD 143.09	CAD 43.43	CAD 186.52	<a href="#">Office Desks</a>
Ergonomic Office Chair	Black Mesh office chair	CAD 75.99	3	CAD 227.97	CAD 56.93	CAD 284.90	<a href="#">Ergonomic Office Chair</a>
Epoxy Resin Countertops	Lab grade countertops (per sqft)	CAD 150.00	64	CAD 9,600.00	CAD 1,255.67	CAD 10,855.67	<a href="#">Epoxy Resin Countertops</a>
Lab Grade Chemical Resistant Sinks	A stainless steel utility sink	CAD 1,100.00	2	CAD 2,200.00	CAD 298.85	CAD 2,498.85	<a href="#">Ulinc-Stainless Steel Utility Sink</a>
Inspiron Dell Desktop Computer 13 Gen i7 Intel CPU	Dell desktop computer for computing data	CAD 1,200.00	1	CAD 1,200.00	CAD 187.37	CAD 1,387.37	<a href="#">Inspiron Dell Desktop</a>
Seagate Portable 5TB Harddrive	HDD used for storing data	CAD 180.00	1	CAD 180.00	CAD 24.70	CAD 204.70	<a href="#">External Harddrive</a>
Fisher Brand Phenolic Shelving	Chemical resistant black phenolic resin shelving	CAD 114.50	30	CAD 3,435.00	CAD 447.20	CAD 3,882.20	<a href="#">Fisher Phenolic Shelving</a>
Norbec 8ft x 8ft Walk-In Freezer	Walk in freezer with door and remote refrigeration	CAD 18,301.00	1	CAD 18,301.00	CAD 2,379.78	CAD 20,680.78	<a href="#">Norbec Walk-In Freezer</a>
Epson Expression Home XP-5200 Desk Printer	Wireless Epson Desk Printer	CAD 130.00	1	CAD 130.00	CAD 29.75	CAD 159.75	<a href="#">Epson Desk Printer</a>
Ulinc Utility Cart	Hard plastic mobile workstation cart	CAD 173.00	3	CAD 519.00	CAD 67.47	CAD 586.47	<a href="#">Utility Cart</a>
Environmental Lab Study Kit	Lab tools for studying environmental sciences	CAD 266.02	2	CAD 532.04	CAD 69.17	CAD 601.21	<a href="#">Environmental Science Kit</a>
Celestron CB2000C Compound Microscope	Professional-grade binocular microscope with 2000x power	CAD 758.70	1	CAD 758.70	CAD 98.63	CAD 857.33	<a href="#">Celestron Compound Microscope</a>
Logitech N129 Wired Keyboard & Mouse	Keyboard and mouse for computer use	CAD 24.97	1	CAD 24.97	CAD 3.25	CAD 28.22	<a href="#">Logitech Keyboard and Mouse</a>
Earth Studio 80 Pot Vertical Garden Kit (Living Wall)	A vertical wall for growing plants	CAD 1,489.95	1	CAD 1,489.95	CAD 193.69	CAD 1,683.64	<a href="#">Earth Studio Modular Garden</a>
Ulinc Industrial Steel L Desk	A steel desk 66 x 78" in dimensions	CAD 1,725.00	1	CAD 1,725.00	CAD 224.25	CAD 1,949.25	<a href="#">Ulinc Industrial Steel L Desk</a>
<b>Total Cost:</b>						<b>CAD 48,070.79</b>	

## Hallway BOM

Item name	Description	Cost (CAD)	Extended cost (CAD)	Quantity	Tax (CAD)	Total cost (CAD)	Links
Custom Wall Decal Design	20 x 20 in	57.89	28.91	1	13.02	99.82	<a href="#">Custom Wall Decal Design</a>
Nature Landscape Canvas Painting	60 x 120 cm	30.67	0	1	4.60	35.27	<a href="#">Nature Landscape Canvas Painting</a>
Red Canoe on creek. Watercolor print.	16 x 20 in	79.59	0	1	11.94	91.53	<a href="#">Red Canoe on creek. Watercolor print.</a>
					Total	226.62	

## Kitchen BOM

Materials for kitchen/lounge	Price (\$)	Quantity	Tax (\$)	Total cost (\$)	Link
Long chairs	169.99	4	101.99	781.95	<a href="#">Chair</a>
Kitchen cabinets	3299.99	1	495.00	3794.99	<a href="#">Cabinet</a>
Kitchen counter	213.99	2	64.20	492.18	<a href="#">Counter</a>
Shelves and storage unit	445.99	2	133.80	1025.78	<a href="#">Storage unit</a>
Refrigerator	1399	1	209.85	1608.85	<a href="#">Refrigerator</a>
Coffee mugs	5	6	4.50	34.50	<a href="#">Mugs</a>
Coffee maker	27.19	1	4.08	31.27	<a href="#">Coffee maker</a>
Soap dish	11.49	1	1.72	13.21	<a href="#">Soap</a>
Microwave oven	172.99	1	25.95	198.94	<a href="#">Microwave</a>
Kitchen sink and faucet	325.56	1	48.83	374.39	<a href="#">Sink</a>
Toaster	26.98	1	4.05	31.03	<a href="#">Toaster</a>
Cutery set	5.99	1	0.90	6.89	<a href="#">Cutlery</a>
Glasses set	30.95	1	4.64	35.59	<a href="#">Glasses</a>
Curtains or blinds	69.95	6	62.96	482.66	<a href="#">Blinds</a>
Rugs or carpets	294.99	1	44.25	339.24	<a href="#">Area rug</a>
Trash can and recycle bins	99.99	1	15.00	114.99	<a href="#">Trash can</a>
Arm chair	389.99	3	175.50	1345.47	<a href="#">Chairs</a>
Coffee table	139.99	1	21.00	160.99	<a href="#">Coffee table</a>
<b>Final cost (\$)</b>	<b>10872.91</b>				

## BOM of the Prototypes (Cuyler):

We will construct three different prototypes for our project. The first prototype involves a digital software called Homestyler, where we can create a 2D and 3D model of the building for our project with dimensions. We would like to purchase the Homestyler Pro Plan, allowing us to have high-quality 4K renderings of the building we will create. This will cost us \$29.40 (\$4.90 for six people). The second prototype will involve a critical subsystem, which will also be done virtually. We will have more detailed models with more intricate measurements and furnishings to show how this subsystem will look in the real world. We would like to purchase the Styler Plan as well, which will allow us to have access to all premium models and template designs, which can allow us to create a more intricate subsystem. This will cost us \$23.40 (\$3.90 for six

people). If we need to cut costs, we can reduce the number of people who get both these packages from Homestyler.

For our final prototype, we will construct a physical model of the building out of Balsa Wood Panels. Each room with scaled dimensions would be constructed, with everything held together with wood glue. The following equipment that has a cost of \$0 is the equipment we will use to construct our prototype that we can get from our own homes. The total cost of these prototypes totals up to \$101.32 CAD, but this can be changed by reducing the amount of Homestyler plans we purchase.

Prototype 1 (Virtual diagram of the building)			Prototype 2 (Virtual diagram of Critical Subsystem)			Prototype 3 (Physical Model of the Building)		
List of Equipment	Cost (CAD)	Link	List of Equipment	Cost (CAD)	Link	List of Equipment	Cost (CAD)	Link
Homestyler (Pro plan)	CAD 4.90	<a href="#">Homestyler Link</a>	Homestyler (Styler plan)	CAD 3.90	<a href="#">Homestyler Link</a>	Air Dry Modelling Clay 27 Colors	\$18.07	<a href="#">Modelling Clay</a>
<b>Total Cost:</b>	<b>CAD 4.90</b>		<b>Total Cost:</b>	<b>CAD 3.90</b>		20 Pieces Acrylic Hinges	\$18.20	<a href="#">Acrylic Hinges</a>
						3D Printing Threads	\$20.20	
						3D Printer	\$0.00	
						CAD Designer	\$0.00	
						Sharpie	\$0.00	
						Ruler	\$0.00	
						<b>Total Cost:</b>	<b>CAD 65.27</b>	
						Printing Costs (10 cents per gram):	Some printing is cut due to time restraints and costs	
						Lab (73 g):	\$7.30	
						Kitchenette (64 g):	\$6.40	
						Washroom (69 g):	\$6.90	
						Office (51 g):	\$5.10	
						Bedroom (64 g):	\$6.40	
						Workspace (78 g):	\$7.80	
						Total =	\$20.2	

### Significant Project Risks + Contingency Plan:

Constructing the real building over the span of 5 years:

- Natural Disasters: Certain natural disasters, such as rainstorms, floods, thunderstorms and snow can impede and delay the building process.
  - We can plan around this by looking ahead at the weather and planning around the weather to direct our energy to more productive tasks when unworkable conditions arise. We can also factor in worker safety to ensure no workers are harmed or uncomfortable by the weather.
- Lack of materials: There may be a shortage of materials to build the building. This can set back the building process if not all materials are acquired.
  - We can plan how much materials are needed for this building and if some materials are not available, we can find substitution materials to take its place that are available.
- Costs: The costs of the materials, labour, electricity, gas, wiring, and many other factors can be much higher than expected, which will force us to cut corners.
  - We can mitigate this by excluding unnecessary parts of the building and reworking certain parts that are costly. We can also purchase certain materials when the price is normally lower than average. This can greatly reduce costs.
- Labour: Finding enough labour workers may be tough as there may not be enough construction workers available for hire for this job.
  - Expanding our network can allow us to branch out to other people who are looking for work or who know others who are looking for work. Looking online

for people to hire can also help us find a sufficient amount of construction workers to get the job done.

- Land: The land may not be suitable for a building our size and may cause significant damage to the surrounding environments or the actual building.
  - By examining the land we plan to build on, we can test the soil quality and internal structure of the land to see if it can hold our building safely without damaging the land or the foundation of the building.

Constructing our project for Design Day:

- Lack of Time
  - Exams: The majority of group members take at least one midterm and final exam each semester. Every member takes at least 10 tests throughout the course of the academic year under the best-case scenario, which involves the fewest exams possible. Throughout the semester, studying for these tests will take up a lot of time, which will prevent us from working on the design prototypes.
    - Contingency: Being accountable by showing up to all laboratories, discussion groups, tutorials, and lectures. Since our knowledge is more efficient in this way, we may spend less of our own time learning and studying the subjects covered in a course.
  - Prototype vision: Current vision of final prototype may be too grand for our current skill level and given time.
    - Contingency: By evaluating our current capabilities and removing a few non-essential subsystems, we can lessen our effort if the prototype plan proves to be too complex.
  - Illness: Getting sick during the semester can take up to multiple weeks to fully recover. While sick, it is harder to focus on projects, hindering work quality, and ultimately taking more time to finish.
    - Contingency: Make arrangements to work during the most productive times, such as after lunch and dinner, to accommodate the illness. Drink plenty of water to stay hydrated and shorten the duration of illness.
- Internal Group Conflicts: Disagreements within the group negatively impacts relations between each member and ability to cooperate for the project.
  - Contingency: Members of the group must make compromises for one another. We need to each be the bigger person in order to prevent conflicts.
- Bad Communication: A lack of communication may create confusion among the group.
  - Contingency: Keeping track of tasks by regularly checking the task lists and group chat. Additionally, it's crucial to update task lists.

# Wrike Snapshot (Task Plan Update)

<https://www.wrike.com/workspace.htm?acc=4975842#/folder/1227809996/timeline3?viewId=216525172>

## UPDATED COST SPREADSHEET:

Prototype 1 (Virtual diagram of the building)			Prototype 2 (Virtual diagram of Critical Subsystem)			Prototype 3 (Physical Model of the Building)		
List of Equipment	Cost (CAD)	Link	List of Equipment	Cost (CAD)	Link	List of Equipment	Cost (CAD)	Link
Homestyler (Pro plan)	CAD 4.90	<a href="#">Homestyler Link</a>	Homestyler (Styler plan)	CAD 3.90	<a href="#">Homestyler Link</a>	Air Dry Modelling Clay 27 Colors	\$18.07	<a href="#">Modelling Clay</a>
<b>Total Cost:</b>	<b>CAD 4.90</b>		<b>Total Cost:</b>	<b>CAD 3.90</b>		20 Pieces Acrylic Hinges	\$18.20	<a href="#">Acrylic Hinges</a>
						3D Printing Threads	\$20.20	<b>Total Cost: CAD 65.27</b>
						3D Printer	\$0.00	
						CAD Designer	\$0.00	
						Sharpie	\$0.00	
						Ruler	\$0.00	
						<b>Total Cost:</b>	<b>CAD 50.27</b>	
						Printing Costs (10 cents per gram):	Some printing is cut due to time restraints and costs	
						Lab (73 g):	\$7.30	
						Kitchenette (64 g):	\$6.40	
						Washroom (69 g):	\$6.90	
						Office (51 g):	\$5.10	
						Boardroom (64 g):	\$6.40	
						Workspace (78 g):	\$7.80	
						Total =	\$20.2	

## UPDATED PROTOTYPE TEST PLAN:

A	B	C	D	E	F	G
Test ID	Test Objective	Description of Prototype used and of Basic Test Method	Description of Results to be Recorded and how these results will be used	Estimated Test duration and planned start date		
1	Measure the WWR to make sure a good amount of sunlight enters the building.	Measure the window/wall ratio. A 3D rendering of the floor plan (prototype 1).	The window/wall ratio (WWR) should be at least X. What we are going to do is measure the area of each window divided by the area of each wall, using Excel.  WWR=window area/area of each wall	The test should take around 30 mins. We are planning to start this on Nov 14.	Offices: 3.6	
2	Is the building accessible to handicapped people.	Analysis of features of the building and conducting a survey that asks random people for their opinion on the accessibility of the building to mitigate any bias that can come from designers. We are looking for at least 80% approval.  A 3D rendering of the floor plan (prototype 1)	The building should pass the Accessibility in Ontario's Building Code and get 80% approval from survey.	The test should take around a day for everyone to submit their response to the survey. The analysis will take place during that day too. Nov 15.		
3	Safety Features. The building must pass certain Ontario building codes.	Analysis of features of the building and seeing if it meets the criteria  A 3D rendering of the floor plan (prototype 1)	The building should pass the Ontario's Building Code	The analysis should take two days and will start on Nov 10		
4	The building must have cultural elements that relate to the algonquin culture	Conduct a survey that asks an unbiased group of people whether the building incorporates the culture adequately. We can also interview algonquin people  A 3D rendering of the floor plan (prototype 1)	The building must get an 80% approval rating.	The test should take around a day for everyone to submit their response to the survey. Nov 15		
5	The loading dock and parking lot should be capable accommodate 1-2 black trucks	The prototype is to scale so we will scale down the measurement of trucks and see if the parking lot and loading dock can accommodate	The parking lot and loading dock must accommodate the trucks with an error of 0.5m	This analysis will take 30 mins and it will take place on Nov 10		