

Design Criteria

At the request of the First Nations Guardianship program, developing a design for a workspace is the focus of this report. The criteria and specifications of the design are listed below along with products currently on the market that may be utilized depending on its cost-efficiency. The products being benchmarked include Refrigerators, Security Systems, and Rolling Tables. Taking the clients recommendations and wishes in mind, the criteria and specifications were developed, however it came to our attention that limited requirements regarding the products being benchmarked were available. The unforeseen consequence of this has led to the discussion of further client meetings to be increasingly relevant. Altogether, a well-thought-out list with various benchmarked products has been produced that can be realigned with the client's approval, where afterwards an even more thorough plan can be produced.

As we lack experts in refrigeration, security, and table design, research was required to determine valid products to benchmark. Looking into models and variants similar to those used by businesses was the first step. Secondly, we compared the specifications of various models to the needs of our project, namely, sizing and capabilities. The size of the refrigerator is a critical consideration so products with various possible suitable dimensions were accounted for depending on the space that can be allocated. The security system must be capable of monitoring the area with ease of access for what is assumed to be staff with limited security training. The table must be portable while remaining suitable as a lab bench. Various products fitting those specifications were selected. However, we are lacking in knowledge of further specifications regarding the security staff and features of the table such that a more suitable design may not be selected for. As detailed prior, the need for further discussion with the client is paramount, and questions have been proposed to bring to the next meeting. Since no new information has been acquired, the needs have not changed since the last deliverable.

To conclude, we have developed a series of design criteria and specifications and benchmarked several products that may be suitable for our needs. We've identified that some of the requirements requested by the client are poorly detailed and further discussion is necessary to maximize suitability for this specific project. The research we've undergone will continue to support the benchmarking process regardless of changes and additional specification from the client as we are now capable of identifying products available, as well as considering features and reliability from reviews. Altogether, the significance of this phase of the design process is clear as we've developed an understanding of the requirements and have benchmarked various products to determine the most suitable.

| Aspect | Score | Justification | Requirement |
|---------------------|--------------|--|--------------------|
| 2-year build time | 3 | The sooner it can be operational, the sooner it can make profit | Additional |
| Functional Building | 5 | The structural integrity of the building is paramount | Functional |
| Utilities | 5 | People need to be able to work in their building, and have access to all the amenities to make their stay comfortable and productive | Functional |
| Weather Protection | 5 | Same as utilities | Functional |
| Timber Build | 3 | As the building is situated on an Algonquin reservation, it is important that the building doesn't impose | Thematic |
| Vehicle Capacity | 4 | People need a way to travel and transport items to and from the facility | Utilitarian |
| Loading Dock | 3 | Enables more efficient loading and alighting of items, but is not strictly necessary for small items | Utilitarian |
| Expandability | 4 | There is a current lack of office space in the area, and the facility may most likely need to expand in the future | Additional |
| Washrooms | 5 | People need to pee | Utilitarian |
| Tool Storage | 3 | Handheld tools need to be easily retrievable | Utilitarian |
| Freezer Space | 4 | There needs to be space for plants to be preserved | Specific |
| Kitchenette | 3 | People need to eat | Utilitarian |
| Rolling Table | 4 | Specifically requested | Specific |
| CCTV | 3 | As the building with pharmaceuticals, it is important to protect them as well as the users of the building | Utilitarian |
| Office Spaces | 5 | People need places to work on non-active work | Utilitarian |
| Herbarium | 5 | People need places to physically manage the plants | Specific |
| Extra Office Space | 3 | See "Expandability" | Additional |
| Community | 4 | Where non-workers can learn about the process | Utilitarian |

| | | | |
|------------|---|--|-------------|
| Space | | | |
| Board Room | 4 | A place where workers can exchange ideas can lead to more efficiency | Utilitarian |

Y=Yes, N=No

| Requirement | Relation | Value & Units | Verification Method |
|---|----------|----------------------------------|--|
| Construction Time | > | 2 yrs | 75% Analysis (As explained in class) |
| Building Lifetime (Without majors repairs required) | > | 50 yrs | Analysis |
| Floor Area | > | 400m ² | Analysis |
| Utilities (Water, Electricity, Internet, etc...) | | Y | Testing |
| Vehicle Capacity | > | 2 pickups | Analysis |
| Loading Dock Capacity | > | 1 pickup | Analysis |
| Washrooms | > | 1 G-N | Analysis |
| Tool Storage | > | 2m ³ | Testing |
| Kitchenette | | Y | Analysis |
| CCTV | > | 90% visibility | Testing (Day where people try to break into the building without getting caught) |
| Office Space | > | 5 Offices | Analysis |
| Board Room | > | 1 Room | Analysis |
| Extra Space | < | 10 Offices & 2 Board Rooms Total | Analysis |
| Community Space | > | 75m ³ | Analysis |
| Refrigerator Space | > | 1m ³ | Analysis |
| | < | 4°C & -18°C | |
| Herbarium | > | 50m ³ | Analysis |
| Rolling Table | | Y | Analysis |

| | | | |
|--------------|--|---|----------|
| Timber Build | | Y | Analysis |
|--------------|--|---|----------|

| FRIDGE | Dimensions W*L*H | Temperature | Total volume | Mobile | Price |
|---|---------------------------------|----------------|--------------------|--------|------------|
| Avantco SS-3F-HC 81 5/16" | 81 5/16" 32 3/16" 82 1/2" | -18° to -22° C | 2 m ³ | yes | \$4,249.00 |
| CoolSteel CS-2DRF - 54" | 53.9" 32.2" 82.5" | -18° to -22° C | 1.3 m ³ | yes | \$3,535.00 |
| Ikon IT28F - 26.8" | 26.8" 32.7" 82.3" | -18° to -22° C | 60 cm ³ | yes | \$2,296.00 |

| Security System | Night video quality | Ease of use | External use | Sensor Detection | Price + installation |
|---|---|---|---|---|--|
| Lorex 4K - 8TB Wired - Bullet Cameras | Color night vision, long range infrared. 4k | User friendly, able to be used from a mobile device | Waterproof, temperature tested | Movement detection | \$3,109.99 - \$4,999.99 (16 to 24 to 32 cameras) |
| ADT Security Solutions | Infrared Technology. 720p | User friendly, able to be monitored from mobile device | Outdoor, indoor and mixed solutions available for cameras | Door sensor, glass break-in sensor, motion sensors. | \$500-\$899 upfront \$45.99-\$60.97/month |
| CTVISION 6MP | Infrared Technology up to 80 ft. 1080p | Not as easy, requires a computer or laptop in order to access video files | Waterproof, can be installed inside and outside | Person detection software. | \$960.30 |

| ROLLING TABLE | Area (W*D*H) | Surface Material | Storage(W*D*H) | Price (\$) |
|---|-------------------------|-------------------------|--|-------------------|
| Husky D Steel 1-Drawer Power Adjustable Height Solid Wood Top Workbench Table | 52" 30" Adjust | Wood | 29.21" 16" 3" | 600 |
| TMG-WB7210S | 72" 19" 38" | Rubberwood | (10) drawers, (1) cabinet, (4) casters, (2) flat keys | 2300 |
| Husky Mobile Workbench | 72" 24" 37.7" | Wood | 75" 22" 35" | 1200 |