

Deliverable C - Design Criteria

Problem Statement

There exists a need for infrastructure to represent the culture of the Algonquins of Pikwàkanagàn First Nations, and aid the Neya Waban Guardians in their work by giving them an office space, and a place to practice cultural activities and medicine harvesting.

Ideally, this building is a state-of-the-art facility that reflects the ideologies of the Algonquins of Pikwàkanagàn First Nations, inspired by sustainability and green spaces. It has 5 small offices, 2 bathrooms, and one kitchenette. It contains an open-concept common workspace area, with room for 5-7 spaces for monitors. There is space to store equipment, as well as vehicles. There is space for a freezer. The building is wheelchair accessible. There is a sheltered outdoor space designed with cultural activities in mind, room for 5-10 people. The building contains a mobile workbench, with storage space, that has room to store and dry medicine. The building has a circular learning centre. The building contains a loading dock for the transportation of materials, medicines, etc.

Design Criteria

Each need is listed where its priority lies within the two different types of requirements.

Functional requirements

1. Open lab space
2. Offices
3. Loading bay
4. Bathroom
5. Small kitchen
6. Storage space
7. Vehicle storage

Nonfunctional requirements

1. Sheltered outdoor space
2. Circular learning centre

Constraints

As stated by the client, there is no limit on cost for this project.

Technical Benchmarking

Due to the nature of the client's request, not many existing building specifications are easily accessible for a technical benchmark, so for this part each of the criteria will be based on provincial (Ontario) specifications.

Loading bay

The client stated that the loading bay only needs to be big enough to fit a small van. Therefore the vehicle that will be used as a reference is a Ford F-350 (19.3-22.2 ft L x 6.7-9.7 ft W x 6.6-6.8 ft H)

In the case of a traditional loading bay for a commercial truck the maximum overall limits for a trailer size is 8'6" wide and 13'6" high.

<https://www.bluegiant.com/Files/Architects/Loading-Dock-System-Guide.aspx>

Offices

The client stated that there is a requirement for 4-5 offices. Depending on how private the separate offices need to be, the size of the office can range from 80 to 400 square feet.

<https://aquilacommercial.com/learning-center/how-much-office-space-need-calculator-per-person/#:~:text=Large%20Private%20or%20Shared%20Office,110%20square%20feet%20per%20employee>

Open lab space

The client stated that the lab space should be big enough to fit about 5-10 workers. A good benchmark for how much space one researcher would need is about 165 square feet based on how big the mobile workbench will be. Therefore, a minimum of 1650 square feet is required

<https://www.linkedin.com/pulse/how-determine-your-lab-correct-size-eric-slifer>

Small kitchen

The client requested a small kitchen. The average kitchen in a single story home is anywhere from 151 square feet to 191, based on the size of the home. For the size of the facility and the addition of a small common dining area, about 1000 square feet should be adequate.

<https://cedreo.com/blog/average-kitchen-size/#:~:text=A%20single%2Dstory%20family%20home,size%20of%20191%20square%20feet>

Bathroom

The standard stall size is about 3 feet by 5 feet so depending on how many stalls are required in the bathroom, a minimum of 200 square feet is required, based on how many people will be working at the facility

<https://restroomstallsandall.com/blog/restroom-stall-dimensions-standard-and-ada-handicap-stalls/#:~:text=Standard%20Dimensions,-Now%2C%20for%20situations&text=Specifically%2C%20a%20bathroom%20stall%20door,cases%20depending%20on%20your%20layout>

Storage space

The client stated that the storage space needed to be big enough to fit equipment and it will also be used to dry plants after being on the field. A room with about 1000 square feet should be adequate for this purpose.

Vehicle storage

The client stated that there is a requirement for vehicle storage that would house ATV's and snowmobiles, and ATV is about 83" by 47", and a snowmobile is about 50" by 11 feet, so the size of this space will depend on how many of these vehicle are needed to be stored at one time.

<https://www.superatv.com/offroad-atlas/what-size-atv-do-you-need/#:~:text=The%20average%20length%20of%20an,broken%20down%20by%20ATV%20type.>

https://www.google.com/search?q=average+size+of+a+snow+mobile&rlz=1C1CHBF_enCA969CA969&oq=average+size+of+a+snow+mobile&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIJCAEQIRgKGKABMgkIAhAhGAoYoAEyCQgDECEYChigAdIBCDY0ODNqMGo3qAIAsAIA&sourceid=chrome&ie=UTF-8

Sheltered outdoor space

The client stated that there was a need for a sheltered outdoor space, based on how many people will be working at the facility, a space of 250 square feet should be adequate

Circular learning centre

The client stated that there was a need for a learning centre, a space of 1000 square feet should be adequate.

Target specifications

Loading bay

Ideal value: 22.2 ft L x 9.7 ft W x 6.8 ft H

Acceptable value: > 22.2 ft L x 9.7 ft W x 6.8 ft H (but no smaller)

Offices

Ideal value: 200-300 square feet

Acceptable value: 80-400 square feet

Open lab spaces

Ideal/acceptable value: > 1650 square feet

Small kitchen

Ideal value: 1000 square feet

Acceptable value: 1000 square feet, +/- 100 square feet

Bathroom

Ideal/acceptable value: single bathroom (40 square feet) x 2

Ideal/acceptable value: 80 square feet (40 sf each)

Storage space

Ideal/acceptable value: > 1000 square feet

Vehicle storage

Ideal value: 83" by 47" x 2 ATV + 50" by 11" x 2 snowmobile (estimate of number of vehicle needed)

Ideal value: 62 square foot

Acceptable value: 60 - 65 square foot

Sheltered outdoor space

Ideal value: 250 square foot

Acceptable value: 250 square feet, +/- 50 square feet

Circular learning centre

Ideal value: 1000 square foot

Acceptable value: 1000 square feet, +/- 100 square feet

The second client meeting has not occurred, so there has not been any drastic changes to our design criteria or specifications. All needs were ranked and prioritized based on the initial client meeting, which was held before we had begun the project.