

## **Deliverable B**

GNG 1103F

Team 3 F01

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## Introduction

Due to its size and location in the city, the University of Ottawa is required to plough large amounts of snow from pathways throughout the winter. The current method used by the university is laying large amounts of salt, since it is the cheapest option. While the price is cheap, salt corrodes infrastructure and damages the environment. Building lifetimes are 40-50 years under normal conditions, but are reduced by up to 50% due to salt. Campus lawns are heavily damaged, leaving the soil incapable of growing anything. This document discusses the needs that the university has presented to us, in order to create a prototype capable of replacing salt for snow and ice prevention.

## Client Statements

Below is a table of statements made by the client in the first meeting. As a team we have translated these statements into needs. This will allow us to really focus on the needs and functions of the product.

### *Legend*

Category		
Accessibility	Maintenance	Function

*Table 1. Client statements and Needs*

Client Statements	#	Related Client Needs
The design needs to have wheelchair access	1	Design is wheelchair accessible
The design should be scalable so we can use it throughout campus	2	Design has the ability to be upscaled
The design should be removable for the warm seasons.	3	Design is easy to remove
The design should be easily cleaned and maintained	4	Design is easy to clean and maintain
Client is indifferent to heat source	5	Design uses heat to melt ice
Design will need to accommodate city standard sidewalks	6	Design is compact

Salt will probably get on to the product.	7	Design is able to withstand salt to a certain extent
Will probably have to fit through a regular door	6	Design is compact
Client would like the design to be modular.	8	Design is modular
Design should not raise too high off sidewalk	1	Design is wheelchair accessible
The design should be safe to prevent walkers from slipping	9	Design is slip-proof
The design should be simple enough put together and repaired at the university.	10	Design is easy to assemble and repair

## Prioritized Needs List

From the client needs found above, our group members ranked the needs in order of importance. 5 being very important to 1 being less important. This will allow us to focus on the most important needs from the client.

*Table 2. Customer Needs Prioritized*

#	Need	Importance
1	Design is wheelchair accessible	5
2	Design has the ability to be upscaled	3
3	Design is easy to remove	3
4	Design is easy to clean and maintain	4
5	Design uses heat to melt ice	5
6	Design is compact	3
7	Design is able to withstand salt to a certain extent	2
8	Design is modular	2
9	Design is slip-proof	5
10	Design is easy to assemble and repair	4

## **Problem Statement**

The client is looking for a modular, scalable, and safe replacement for salt to keep sidewalks/pathways clear of snow and ice during the winter.

## **Conclusion**

Despite how cheap it is to clear pathways using salt, the repair costs from various forms of damage add up to make it an unaffordable solution. In addition, the damage to local wildlife and the environment pose an ethical issue for the use of salt and its various forms. Electric/water heated elements appear to be the most promising based on the university's research, and allows for an opportunity to create more environmentally sustainable options.