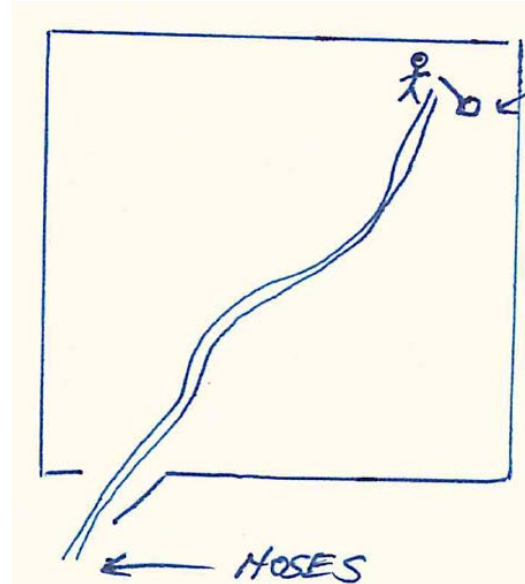


## Project Description

GDR Janitorial and Carpet Cleaning of Billings has the need for an engineered solution to their standard operation procedure (SOP) that leads to inefficient use of personnel time. The cleaning of carpets is a 1-man operation utilizing hardware fixed in the external vehicle, similar to the picture below.



## Current Situation

The operator starts in the FURTHEST corner of the room and moves towards the door. About 1/3 of the way complete the operator must stop, go out of the room and pull the slack out the hoses or have a second person pulling the hoses out of the room. This process adds inefficiencies to the productive hours of the process.

The Sponsor would like a solution to this dilemma, such that the operator is not distracted by moving hoses. The solution will entail either a remote controlled device to extract the hoses, or a passive system that retracts the hoses when slack is sensed. The method and solution will be driven by the capstone students who choose this challenging, local and relevant engineering problem.