Project Deliverable H:
Prototype III and Customer Feedback

GNG 1103 - Engineering Design

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Faculty of Engineering

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Why are we doing this test?

*This is an introduction. Capture the reasons for the test, giving enough background information to justify doing **any** prototyping at all. Is the **general** objective one of: learning, communication, de-risking, etc.*

The purpose of this final test is to validate our actual hydroponics system in a real environment, where the system is expected to operate properly. The test will again check for the followings: water leakage, maximum weight tolerance, hinges endurance etc. Since this is the last test that we will perform on the prototype, it is crucial that all the flaws are ironed out and addressed accordingly.

Test Objectives Description

*What are the **specific** test objectives?*

One of the test objectives is to verify that the overall size of the size of the frame will sufficiently work with the amount of plants we are planning to use and the use that this design is intended for. Another objective is to find out if the wood frame is sturdy enough to hold the intended weight of the system. A third objective is to figure out final details of the system such as the placement of the wheels, hinges, and tubing for water.

*What **exactly** is being learned or communicated with the prototype?*

Through this prototype, we are learning if the size of the frame needs to be smaller in order to increase mobility of the system and be able to fit in the elevator. Another thing that is being learned is if our basic triangular is sturdy enough to hold everything intended in the system with the amount of support it has. We are also learning exactly where the best placement of the wheels, tubing and hinges.

What are the possible types of result?

Some results are the frame is too big or too small. Another result that is optimal is that the frame is about the right size so that the pipes for the plants is sufficient and it can easily be moved around in an elevator. Some other results are that frame is not strong enough to hold everything needed for this design. Hopefully the result is that the frame is strong enough to hold everything we need.

How will these results be used to make decisions or select concepts?

From these results we will decide if the frame needs to be made smaller or if the size is not sufficient and needs to built bigger. It will also determine if additional support (if any) needs to be added and at what points in order to increase the sturdiness and durability of our frame. We are also going to use this test to determine where the wheels, tubing and hinges need to placed in order to increase the functionality of the system.

What are the criteria for test success or failure?

The criteria for failure is that the frame cannot hold the full weight of the pipe system to hold the plants or if the frame is difficult to move around and fit in an elevator. The criteria for success is that the frame hold the entire weight of all parts needed and is can be easily pushed around with little force.

What is going on and how is it being done?

*Describe the prototype **type** (e.g. focused or comprehensive) and the reason for the selection of this type of prototype.*

This prototype is a fully functioning model, a working representation of the final product for our customers.

Describe the testing process in enough detail to allow someone else to build and test the prototype instead of you.

Moving up to this point, a number of tests have been completed on the system to ensure the quality of our designed project, and to safeguard against failures of the project's systems. We

have let each system run individually to allow for any flaws in these systems to come forth. We tested the water delivery system, then the strength of the wooden structure, then the strength of the wheels on the model, as well as the water reservoir, and the pvc plant holding system.

*What information is being **measured**?*

Now that the project has been completed no real information is being measured anymore other than if the system faces any complications or problems.

*What is being observed and how is it being **recorded**?*

The proper function of our model is being observed, and it will be recorded and marked by judges at the design day event.

What materials are required and what is the approximate estimated cost?

The materials required were all purchased and in the end, incurred a fee of $217. The $100 provided by the school will be removed from the project's cost, and the rest will be split between the 5 group members of our group.

What work (e.g. test software or construction or modeling work or research) needs to be done?

As of now the project is completed and the finished project must now be taken to the design day event at SITE.

When is it happening?

*How long will the test take and what are the **dependencies** (i.e. what needs to happen before the testing can occur)?*

The length of this test will approximately take a couple of days or so, just to check if everything in the project is functioning successfully and that there are no chances of failure.

When are the results required (i.e. what depends on the results of this test in the project plan)?

These results will be needed by March 29th.