

## **Prototype Testing:**

### **Engineering Metric Being Tested: Water Retention of Materials**

#### **Purpose:**

This test will focus on measuring how much water is retained in the materials after they are exposed to liquid. This will be achieved by measuring the change in weight after each component of the toilet is submerged in water.

#### **Goals:**

Ideally, the materials used to construct the toilet will retain little to no water. Because Haiti is prone to flooding, and consistently very humid, it is necessary that the toilet does not retain much water. This is to prevent damage to the toilet itself, and also to avoid the toilet from becoming too heavy due to absorbed water. This corresponds to the customer requirement G4, ensuring that the toilet is robust and is able to withstand environmental wear and tear.

#### **Conclusions:**

Completed post testing. *This section of the protocol will include a brief summary of the experiment as a whole. Including overall success of the design and how we plan to move forward of the design.*

#### **Materials:**

- Complete toilet prototype
- Scale
- Water basin
- Stopwatch
- Towels

#### **Procedure:**

1. Disassemble the toilet prototype into its designated sub systems. i.e. Toilet frame, seat, urine jug, feces bucket, urine diverter.
2. Weigh the dry components and record the measurements in the provided table.
3. One component at a time, fully soak the part in water.
4. Leave each part submerged for 2 minutes.
5. Wait until components stop dripping water. Surfaces may be patted dry with the towels, however any pressuring causing water to strain from the materials should not be applied.
6. Weigh each component on the scale again and record the measurements in the provided table.

#### **Results:**

<b>Sub System</b>	<b>Dry Weight</b>	<b>Wet Weight</b>
Toilet Frame		
Urine Diverter		
Urine Jug		
Feces Bucket		
Toilet Seat		

**Analysis:**

*Completed post testing. The analysis will be completed with the experimental goals in mind. Using the results portion of the protocol, the analysis will be written with the purpose of validating the goals of the experiment.*