

## **Prototype Testing:**

### **Engineering Metric Being Tested: Size of Largest Gap when Assembled**

#### **Purpose:**

*The purpose of this protocol is to determine the size of the largest gap in the toilet system to determine if it is an adequate diameter to discourage the entrance of pests.*

#### **Goals:**

*The goal for this engineering metric is to limit the size of the largest gap to a 1 cm diameter. This will limit the amount of pests that can enter the system. Note that the definition of gap does not include the gap from the hole of the toilet seat, or the front door on the frame.*

#### **Conclusions:**

There are gaps between the frame and the back of the toilet seat, which may allow pests to enter the toilet. The hinges limit the size of this gap a little bit, however it may be beneficial to move the location of the mounting holes closer to the backside of the frame.

There are no gaps along the bottom of the toilet, which will help prevent pests from getting inside of the toilet.

#### **Materials:**

- *Complete toilet system prototype*
- *Ruler*

#### **Procedure:**

1. *Identify all gaps in the toilet system.*
2. *Using the ruler, measure the largest cross-section of the gap and record the value.*
3. *Determine which gap measurement is the largest.*

#### **Results:**

Gap 1 = 10 x 2 cm

Gap 2 = 8 x 2 cm

Gap 3 = 10 x 2 cm

Largest Gap = 10 x 2 cm

#### **Analysis:**

The only gaps in the assembled toilet are located behind the seat, near the hinges. There were no other gaps around the frame, and the bottom of the frame sits flat on the ground.