

## Senior Design Project Data Sheet

Project #	Project Name	Project Track	Project Family
P13431	Shelter Cots	Sustainable Systems	Energy & Sustainable Systems
Start Term	Team Guide	Project Sponsor	Doc. Revision
Fall 2013	John Kaemmerlen	St. Joseph's House	A

### Project Description

#### Project Background

St. Joseph's House is a soup kitchen and homeless shelter that operates a bed shelter in the winter months. In 2011, the shelter experienced a bedbug infestation in which their benches and cots had to be disposed of. As a result, the shelter purchased army cots to replace the former cots. However, due to the fact that many of the tenants tend to bring bed bugs due to their current living conditions, the shelter takes extra precautions and places the current cots in the freezer to kill any living bacteria and washes the linens on sanitary settings. This has reduced the cradle-to-graveness of the current cots which are not expected to last more than one more season. RIT students worked together and came up with a preliminary design in which cots are able to be stacked when not in use and double as a bench. However, they were not able to analyze the design or create a prototype. As of October 2012, the shelter implemented a pulley system which allowed the current cots to be suspended into the air.

#### Problem Statement

Want to create a cot that is bedbug and fluid resistant, which can be easily stored when not in use.

#### Objectives/Scope

1. Create a bedbug resistant, anti-bacterial, and easy-to-clean cot that does not require a mattress.
2. Create a comfortable cot that is easily accessible for elderly guests / has good use of ergonomics.
3. Create a cot that is at a minimum weight so it can hang in both vertical and horizontal positions.

#### Deliverables

- Functional bed that meets project needs.
- Develop new designs.
- Analyze previous and new designs and choose one based upon varying needs.

#### Expected Project Benefits

- Cot expected to have a long life which will help the shelter financially.
- Due to the storage aspect of the cots, the shelter will be able to have more room for guests.
- Shelter will be able to guarantee their guests a safe and clean environment when they stay.

### Core Team Members

- Kevin Encarnacion
- Libbi Cook
- Derek Kirsch
- Jennifer Patterson

### Strategy & Approach

#### Assumptions & Constraints

The team must first understand the figure out how much room is available when actually placing the cots. The team must then understand the ergonomics of the cot, in terms of how low or high the cot should be, as well as sleeping positions. Since the requirements state that the cots must be bedbug resistant, the team must start to do research on bedbugs and their habitats. Due to the limited amount of space required, the team must analyze the current pulley system and design a cot that will be able to adhere to this system. The team must also keep in mind that because this is for a homeless shelter, the cots must be relatively inexpensive, under \$200. After understanding all of these things, designs will be developed and analyzed according to the requests. Material selection then must be made depending upon the varying circumstances.

#### Issues & Risks

- Project understanding
  - Studying bedbugs and ergonomics.
  - Identifying what the customer actually wants.
- Design needs.
  - Analyzing previous design.
  - Coming up with new designs that will adhere to the varying conditions set.
  - Analyzing pulley system currently in place.
- Available resources.
  - Budget not set.
  - Hard to get ahold of people at the shelter.
  - Material selection dependent upon design and budget.
- Manufacturing a prototype that will adhere to all of the needs as well as being able to obtain the material easily.