

Project 1: Construct a low-cost Tiny Home for the Homeless in Macon

Client: Dr. Pablo Biswas & Dr. Laura Moody

Students needed for this project: ME, IE, or IDM

Project Description:

Homelessness is a massive problem that exists not only in Macon, Georgia, but also throughout the US cities. The Daybreak Homeless Shelter in Macon, Georgia is a nonprofit organization that provides multiple services such as, but not limited to, hot meals, a place to shower, and the ability to speak with a social worker. Currently, Daybreak has no permanent housing solution in place. Daybreak has no shelters to hand out that are durable and all weather proof. Daybreak needs a durable shelter that can withstand any weather conditions, while being sturdy and relatively lightweight. Last year, a senior design team designed a tiny home with a capacity of single person (Figure 1) but they could not complete their design effectively. This project proposes the following:

- a. Address the drawbacks of the previous design
- b. Propose a new robust design for a low-cost tiny home (similar to Figure 2)
- c. Finally, construct a tiny home for the homeless in Macon.

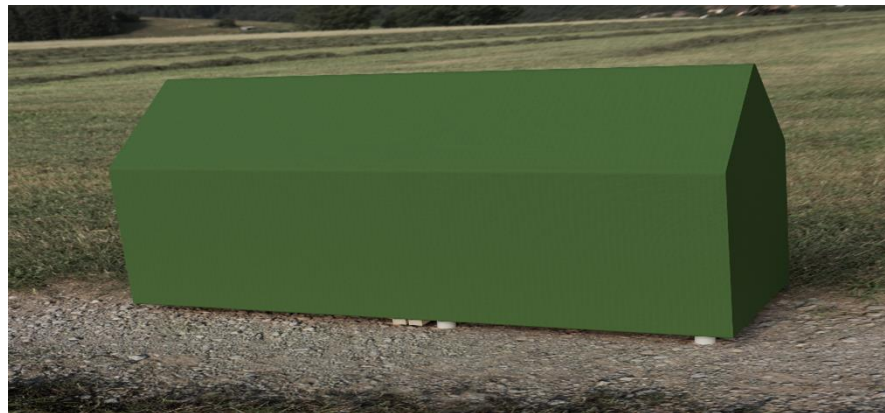


Figure 1: Tiny Home for Homeless designed last year



Figure 2: Tiny Home for Homeless design example

Project 2: Construct a Machine to recycle plastic bottles and other recycled product to create light and sturdy material

Client: Dr. Pablo Biswas & Dr. Laura Moody

Students needed for this project: ME, IE, EVE, or EE

Project Description:

This project proposes to investigate, design, and build machine/ process through which recycle or waste materials (recycled materials such as plastic bottles) can be transformed in to durable product to make base and wall and other accessories for an emergency homeless shelter or any other useful product. This process will lead to clean environment and useful materials to build mainly a tiny emergency homeless shelter. This project proposes the following:

- a. Collect waste recyclable materials
- b. Research or investigate the recyclable products to reusable product
- c. Design and develop a low-cost machine for this transformation
- d. Finally, produce reusable and sturdy materials for the tiny home as Figure 3.

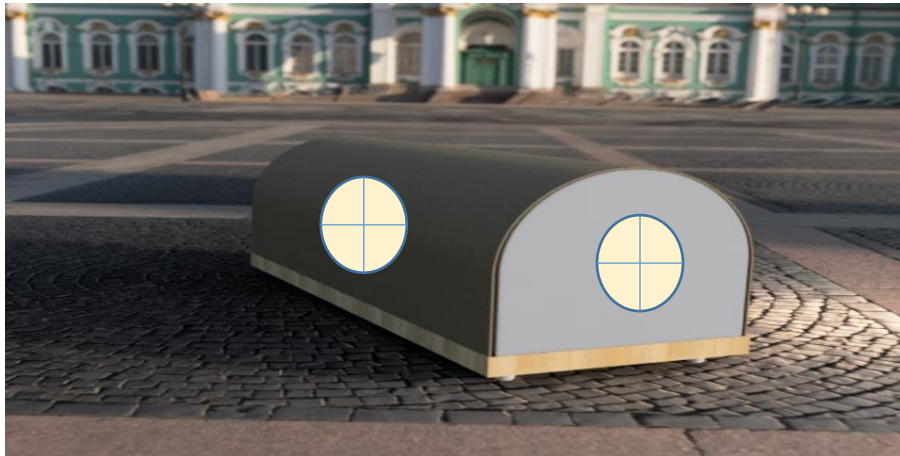


Figure 3: Tiny Home for Homeless design example

Project 3: Use recycle products to build the Base and Top of a Tiny Home for the Homeless in Macon

Client: Dr. Pablo Biswas & Dr. Laura Moody

Students needed for this project: ME, IE, EVE, or EE

Project Description:

Homelessness is a massive problem that exists not only in Macon, Georgia, but also throughout the US cities. The Daybreak Homeless Shelter in Macon, Georgia is a nonprofit organization that provides multiple services such as, but not limited to, hot meals, a place to shower, and the ability to speak with a social worker. Currently, Daybreak has no permanent housing solution in place. Daybreak has no shelters to hand out that are durable and all weather proof. Daybreak needs a durable shelter that can withstand any weather conditions, while being sturdy and relatively lightweight. This project proposes to investigate, design, and build a tiny home for the homeless in Macon using recycle or waste materials (such as plastic bottles, etc). This project proposes the following:

- a. Collect waste recyclable materials
- b. Research or investigate the recyclable products to reusable product
- c. Propose a new robust design using recycled products (similar to Figure 4)
- d. Finally, construct a low-cost tiny home for the homeless in Macon using the recycled products.

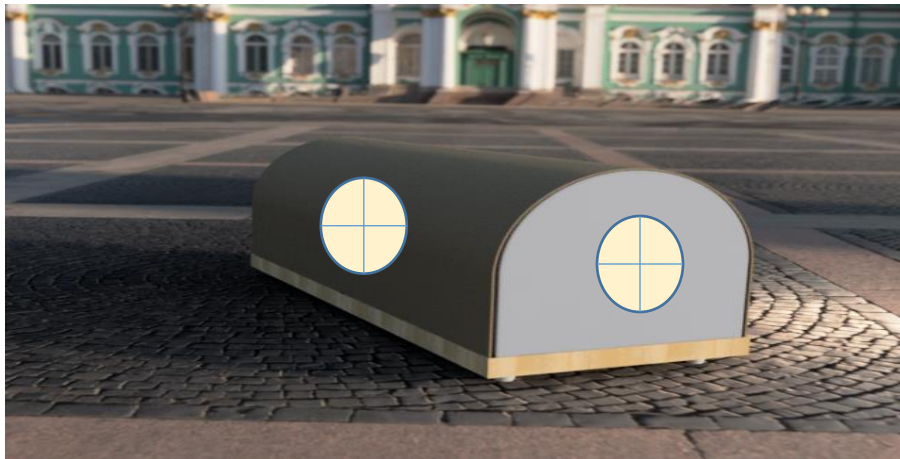


Figure 4: Tiny Home for Homeless design example

Project 4: How to generate low-cost air flow/air-condition inside a tiny homeless shelter

Client: Dr. Pablo Biswas & Dr. Laura Moody

Students needed for this project: ME, IE, or EE

Project Description:

Homelessness is a massive problem that exists not only in Macon, Georgia, but also throughout the US cities. The Daybreak Homeless Shelter in Macon, Georgia is a nonprofit organization that provides multiple services such as, but not limited to, hot meals, a place to shower, and the ability to speak with a social worker. Currently, Daybreak has no permanent housing solution in place. Daybreak has no shelters to hand out that are durable and all weather proof. Daybreak needs a durable shelter that can withstand any weather conditions, while being sturdy and relatively lightweight. This project proposes to investigate, design, and build the air flow required for a tiny home for the homeless people in Macon. This project proposes the following:

- a. Research the possible air flow or air conditioning required in a tiny home for comfort
- b. Design a low-cost air flow system or other solutions
- c. Finally, construct the low-cost air flow for the tiny home for the homeless in Macon



Figure 5: Tiny Home for Homeless design example

Project 5: Design and construct a low-cost electricity source inside a tiny homeless shelter

Client: Dr. Pablo Biswas & Dr. Laura Moody

Students needed for this project: IE, or EE

Project Description:

Homelessness is a massive problem that exists not only in Macon, Georgia, but also throughout the US cities. The Daybreak Homeless Shelter in Macon, Georgia is a nonprofit organization that provides multiple services such as, but not limited to, hot meals, a place to shower, and the ability to speak with a social worker. Currently, Daybreak has no permanent housing solution in place. Daybreak has no shelters to hand out that are durable and all weather proof. Daybreak needs a durable shelter that can withstand any weather conditions, while being sturdy and relatively lightweight. This project proposes to investigate, design, and build the electricity source to produce required electricity for a tiny home for the homeless people in Macon. This project proposes the following:

- a. Research the possible low-cost electric sources such as solar, wind, etc.
- b. Survey the homeless population for the essential electronic devices they may use inside the tiny home
- c. Design and develop a low-cost electric/power source
- d. Finally, install the electric/power source in the tiny home for the homeless in Macon.



Figure 6: Tiny Home for Homeless design example

Project 6: Design and build the low-cost mobility solution for a tiny homeless shelter

Client: Dr. Pablo Biswas & Dr. Laura Moody

Students needed for this project: IE, or ME

Project Description:

Homelessness is a massive problem that exists not only in Macon, Georgia, but also throughout the US cities. The Daybreak Homeless Shelter in Macon, Georgia is a nonprofit organization that provides multiple services such as, but not limited to, hot meals, a place to shower, and the ability to speak with a social worker. Currently, Daybreak has no permanent housing solution in place. Daybreak has no shelters to hand out that are durable and all weather proof. Daybreak needs a durable shelter that can withstand any weather conditions, while being sturdy and relatively lightweight. This project proposes to investigate, design, and build the wheel base for a tiny home for the homeless people in Macon, so that those homes can be towed way to the allocated areas in Macon. This project proposes the following:

- a. Research possible options to build a low-cost wheel base
- b. Design and develop a low-cost wheel base for the mobility of the tiny homes.
- c. Finally, install the low-cost wheel base under the tiny home for the homeless in Macon.



Figure 7: Tiny Home for Homeless design example