IPRO 324 Project Plan

Spring 2007

# Disaster Recovery:
# Do-It-Yourself Home Building

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Team leader: Martina Dolejs

Building Manual Team:
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Andrew Dilger
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Construction/Structural Team:
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Jonathan Navarro
Homero Rios
Eric Rogers
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Design Team:
Edward Peck
Federico Diaz De Leon Orraca
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Business Team:
Federico Diaz De Leon Orraca
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## Project Profile:

In 2005, America was blindsided by the fury of Hurrican Katrina. Many people lost their homes and entire communities were destroyed. In an effort to help those hardest hit, Frank Flury and teams off IIT students built two buildings in Mississippi. But it became obvious that in order to help more people effeciantly, a project would have to be created that would enable people to help themselves. IPRO 324 was created for this purpose. The team was created to design a

simple, inexpensive building and create an instructional handbook detailing the construction of the building. This handbook will enable the average individual to construct a new building at the price of approxiametely $16,000.

## 1.0. Revised Objectives

A. The current objectives are still the same but what has been revised is the time of when certain objectives will be obtained.

B. The objectives are:
- To begin the creation of the manual illustrating how to build the design.
- The design for handicap accessibility as a provision to the current design.
- To market the manual to a disaster relief organization that would be responsible for distribution
    - this objective will be saved for a future IPRO since the manual is being worked on currently and it does not yet have enough substance finished in order to market towards any relief organizations.
- To find a client interested in having the project built.
- To find funding in order to build the design.

## 2.0. Results to Date

Building Manual Team:

This team has been working on organizing the materials and information that is needed in order to create a manual which a layperson could understand in order to build a simple structure. Parts of the manual complete are the title, introduction, table of contents and the glossary. The glossary is continually being compiled with construction, material and architectural terms. A graphic design for the layout of the pages has been investigated and presented to the group. Two choices were finalized and they are going forth with the layout.

Construction/Structural Team:

They have talked with structural professionals to get their expert opinion. From this they have found out that a flat roof is not the best option and that it should be slightly pitched. There has also been a general discussion on using a different type of joist for the roof which could make the entire structure cheaper and more easily built. Most of the information given to the group was general and would need further study by the team itself to give any specific proposals. Proposals for the change of the foundation and the roof were worked on with the design team. This will be discussed with their results.

Design Team:

Research went into the feasibility of the design for the Gulf region. FEMA guidelines were looked at and presented to every member of the team. This insured that everyone understood the concerns and regulations that are possibly imposed onto the building if it were to be built. One of the crucial parts of this research was to determine the site location of the building. How close is it to the coast? Based on the FEMA guidelines there are 3 main zones. There is a V zone, a coastal A zone and an inland A zone. Each zone has regulations which impose onto the integrity of the design of the building. They are also regulations which are to insure the safety and structural soundability of the building, which is an important thing to the IPRO since it is hopeful that one day the building will be built.

The design team also looked at the options of whether this building was to be a permanent structure vs. a temporary structure. This issue is very important in the construction for the cost and it can increase it if it is to be a reliant permanent structure within a hurricane region like the Gulf coast. If the design was to result in a permanent structure, then extra measures needed to be taken to insure the security of the roof. Since the plan is so simple and would be a screened structure, the roof is the a main concern in the case of hurricane like winds. The structure would also have to be thoroughly braced with weather stripping and other methods of insuring the transfer of loads.

With this as a concern, the design team paired up with the structural team to come together and pose certain solutions. The solutions that resulted were 3 options of using a hip roof, a small steeped roof, or a barn like roof that would be steep and have a small vent at the roof. This discussion continued on within the entire group and it was decided to sketch all possibilities but to develop the most cost effective method for the manual. It was also decided that, since this is a do-it-yourself housing project, it is at the liberty of the owner to make the amendments (which we will put into the manual) in order to make it a temporary structure or a structure which can withstand a hurricane.

The ADA design was completed. Two plans resulted in the change of dimensions by Edward Peck. He showed one plan that used different roof joists than previously discussed. He also rotated the core of the building which holds all of the plumbing and mechanical work, 90 degrees. This rotatation allowed the building to create a separate space for the kitchen instead of its previous arrangement of being open into the living space. The discussion held on whether this should be done was intense and in the end it was voted to keep the original core direction because of lateral load issues, and possible expansion issues with the building. The wall partitions could become more awkward if the plan changed.

Business Team;
Client research was done based on a few factors. Frank Flury had a lead with the United Church of Christ. The church supported a group called the Back Bay group that is located in or near Biloxi, Mississippi. The group helps people of poverty, minority or those who are homeless. They are currently looking for a facility to house themselves within the region. At the moment they are still talking with Flury but haven't shown any promise.

Other research was done by trying to contact other organizations within the Gulf area. There were very few leads and the few who were interested could not help with funding so at the moment, there is no client.

A. The progress of the design and structural team has been very useful in understanding the project in how one must focus on issues of construction that may or may not be within the control of a supervisor. It has addressed issues concerning the manual and its ability to instruct a common person who may or may not have certain construction knowledge into building a small structure.

## 3.0. Revised Task / Event Schedule

| TASK | START | FINISH |
|---|---|---|
| **BUSINESS GROUP TASKS** | | |
| Establish Mission Statement | 1/29/07 | 1/31/07 |
| Project Plan | 1/29/07 | 2/16/07 |
| Develop Template | 1/29/07 | 1/31/07 |
| Define Objectives | 2/5/07 | 2/5/07 |
| Write Project Background | 2/1/07 | 2/2/07 |
| Write Project Methodology | 2/1/07 | 2/2/07 |
| Write Expected Results | 2/1/07 | 2/2/07 |
| Update Schedule of Tasks with Milestones | 2/1/07 | 2/2/07 |
| Record Assigned Responsibilities | 2/12/07 | 2/13/07 |
| Research Clients | 2/13/07 | 2/18/07 |
| Compile Information | 2/19/07 | 2/25/07 |
| **DESIGN GROUP TASKS** | | |
| Additional ADA req. design | 2/13/07 | 2/18/07 |
| Structural Consult | 2/15/07 | 3/12/07 |
| Manual Organization | 2/13/07 | 4/14/07 |
| Materials of Construction | 2/20/07 | 2/25/07 |
| Sections, Dtls, etc | 2/20/07 | 3/28/07 |
| Graphic Organization and Writing | 3/1/07 | 4/10/07 |
| Establish Method of Transport | - | - |

| | | | |
|---|---|---|---|
| Develop Method of Construction | | - | - |
| Establish Schedule of Construction | | - | - |
| Finalize Construction Documents | | 3/18/07 | 3/27/07 |
| | | | |
| **GENERAL TASKS** | | | |
| IPRO day presentation | | 3/26/07 | 4/25/07 |
| | Design Brochure | 4/14/07 | 4/20/07 |
| | Design Booklet | 4/14/07 | 4/20/07 |
| Mid-Term Report | | 3/19/07 | 3/23/07 |

A. Changes have been made in the amount of time it will take to complete certain tasks. The focus for the rest of the IPRO is to work on the manual and have it complete.
B. There was a dropout in the client's interest and ability to help with funding so the tasks of creating any sort of a construction schedule will be saved for a later date.
C. Subtasks have been given out to everyone in general research and design issues. These sub tasks have helped the progress of the manual and the overall understanding of the issues surrounding the idea of building within a hurricane and flood region, even if the structure will be temporary.

# 4.0. Updated Task Assignments and Designation of Roles

## *1.0 Individual Team Member Assignments*

| LAST | FIRST | MAJOR | TEAM | TASKS |
|---|---|---|---|---|
| | | | | |
| Chacko, | Serena | BioMed Eng. | Building Manual | Manual-Graphics and Writing |
| Dakowisz, | Dukasz | Architecture | Construction | Manual- CD's |
| Diaz De Leon Orraca, | Federico | Architecture | Design | Structural Considerations |
| Dilger, | Andrew | Architecture | Building Manual | Manual- CD's |
| Dolejs, | Martina | Architecture | Business | Deliverables |
| Grosse, | Christopher | Architecture | Business | Research |
| Kim, | Jung-Jae | Computer Sci. | Building Manual | Manual- CD's |
| Kirsch, | Joseph | Architecture | Building Manual | Manual- CD's |
| Navarro, | Jonathan | Architecture | Construction | Manual- CD's |
| Peck, | Edward | Architecture | Design | ADA design, Manual- CD's |
| Ray, | Monmayuri | Architecture | Design | Manual- CD's |
| Rios, | Homero | Architecture | Construction | Research |
| Rogers, | Eric | Civil Eng. | Construction | Structural Considerations |
| Rotella, | James | Architecture | Construction | Structural Considerations |

A. The only changes that have happened is that there has been a break into other subgroups from the design team.

## 5.0. Barriers and Obstacles

Building Manual Team:

This group has not encountered many obstacles in their work. They have been waiting to move forward with instructions because of the continual discussion on whether or not the design or structure will change. With this wait they have been given more time to work on the graphic nature of the manual but are anxious to continue on. Decisions have been recently made on the design nature and so the progress of the manual should move quicker within the following weeks to come.

Construction/Structural Team and Design Team:

Both teams have been researching and working on their own and with the structural team. This has been an good obstacle, for both groups are focused in on different areas of interest and most come together and understand each others points of view. There have been multiple discussions and meetings to try and figure out the problems with the project at hand that are a joined design and structural issue.

This obstacle has set the timeline back and delayed the progress of the manual. Yet is has proven to be very informative for everyone in understanding how to move forward in the way of addressing construction and a "construction manual" for do-it-yourself housing.

Business Team;

Barriers of clients and funding have been extremely difficult for this group. The main obstacle is in finding a client who can produce the funding for the project within the Gulf coast area. While there are many interested parties involved, there haven't been any substantial agreements with anyone to go forward and plan a site visit. The team will continue to stay in contact with the people who are interested and are hoping that this can provide leads for future IPROs. They are adjusting to work with the design team as well, in order to complete the manual and have it as an example to excite more people within the Gulf area region to get involved with this project.