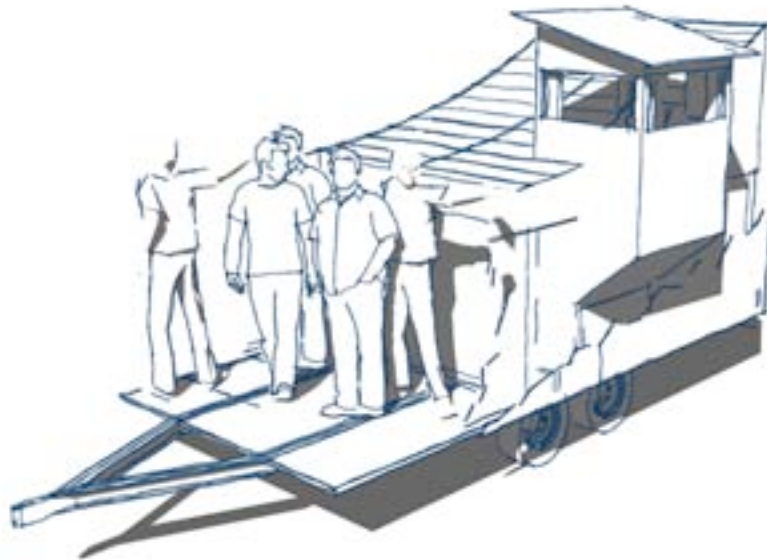


The Design and Construction of a Homecoming Float



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June 26, 2008

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I. Introduction

In the fall semester of each year, Penn State University has a homecoming football game drawing over 200,000 people into State College, Pennsylvania. With the football game comes a homecoming parade composed of fraternities, sororities, campus clubs, and other student run organizations that compete for points on various aspects of the float and presence in the parade. For the past two years, I was charged with designing and managing the creation of a homecoming float for the Penn State Ski Team, an organization I have been a part of since my freshman year. According to the rules, an organization may start building the float only three days before the parade. This document will provide some insight into my thought processes and the problems I encountered as I solved this design problem.

II. What Am I Getting Into?

There are many pages of rules and regulations when it comes to building a float for the homecoming parade. The Ski Team gets around many of them by not competing with the other floats. Essentially, all floats must be built from chicken wire, paper tissue pomps, and must have a certain number of people on the street walking along with the float. The official building materials tend to limit creativity quite a bit. Also, since the competitive spirit is high, many organizations attempt to sabotage their competitors. It is for these reasons that the Ski Team chooses not to participate in the competition. We choose our own building materials and don't have the added stress of losing "points" for doing something considered wrong by the Homecoming Overall Committee.

Before I get into the actual float construction issues, I feel that it is necessary to provide some background on the Penn State Ski Team. The Ski Team competes in alpine ski races each spring semester with a dozen other schools in the Pennsylvania region. Traditionally, the racers on Penn State's team perform relatively well and many of the elite members start to develop egos as with athletes of most other sports. College students in general are stressed out from exams, wait to the last minute to get things done, and often don't get along when forced to work or live together for long periods of time. These facts present a bit of a challenging work environment in which to build a homecoming parade float.

III. Things to Keep in Mind

Keeping the aforementioned worker concerns in mind before the float construction begins is important because it will help you identify a problem before something is about to go wrong. For instance, I know that it is better that I have a lot of people standing around while the float is being constructed and have only a few people doing work than it is to not have enough people there to do any work. In order to prevent shortages in people to help construct the float, I made it clear at least a week before the build process started that I will need plenty of help and invited everyone on the team to come assist in the float construction. Even if only 20% showed up to assist with the build, I would have enough people to accomplish the tasks.

Also, it is important to understand that I am not just trying to build a giant, wheeled manifestation of the Ski Team – I am trying to create an experience for the team members and the people watching parade, both at eye level and high above in apartment buildings. After the float is rolling down the parade-route, I am counting down the seconds until the parade is over. The longer the float is on the road, the better the chances are for something to go wrong. If the lights burn out or the trailer hitch fails, the parade experience will be ruined for everyone, not to mention the Ski Team will look rather foolish.

IV. The Design Phase

As I was attempting to indicate earlier, this is more of a time and resource management job than it is a design job. My job was to make sure the Ski Team was able to create a successful float, which involves dealing with the financial and human related quantization. I tackled this task with the understanding that it was a very complicated endeavor. I broke it down into difference phases to enable myself to gain a better grasp of what I was dealing with. The first phase, the most important, was the physical float design phase. This is where I would lay the foundation for the construction phase. Up against a tight time schedule and homework, I designed the float over the course of a week, conferring with the Ski Team officers quite often. The first part of this process involved creating ideation sheets with various float concepts that had to conform to certain size constraints. After the ideation was completed, I took the selected sketch to 3D with Google SketchUp.

Step 1: Ideation

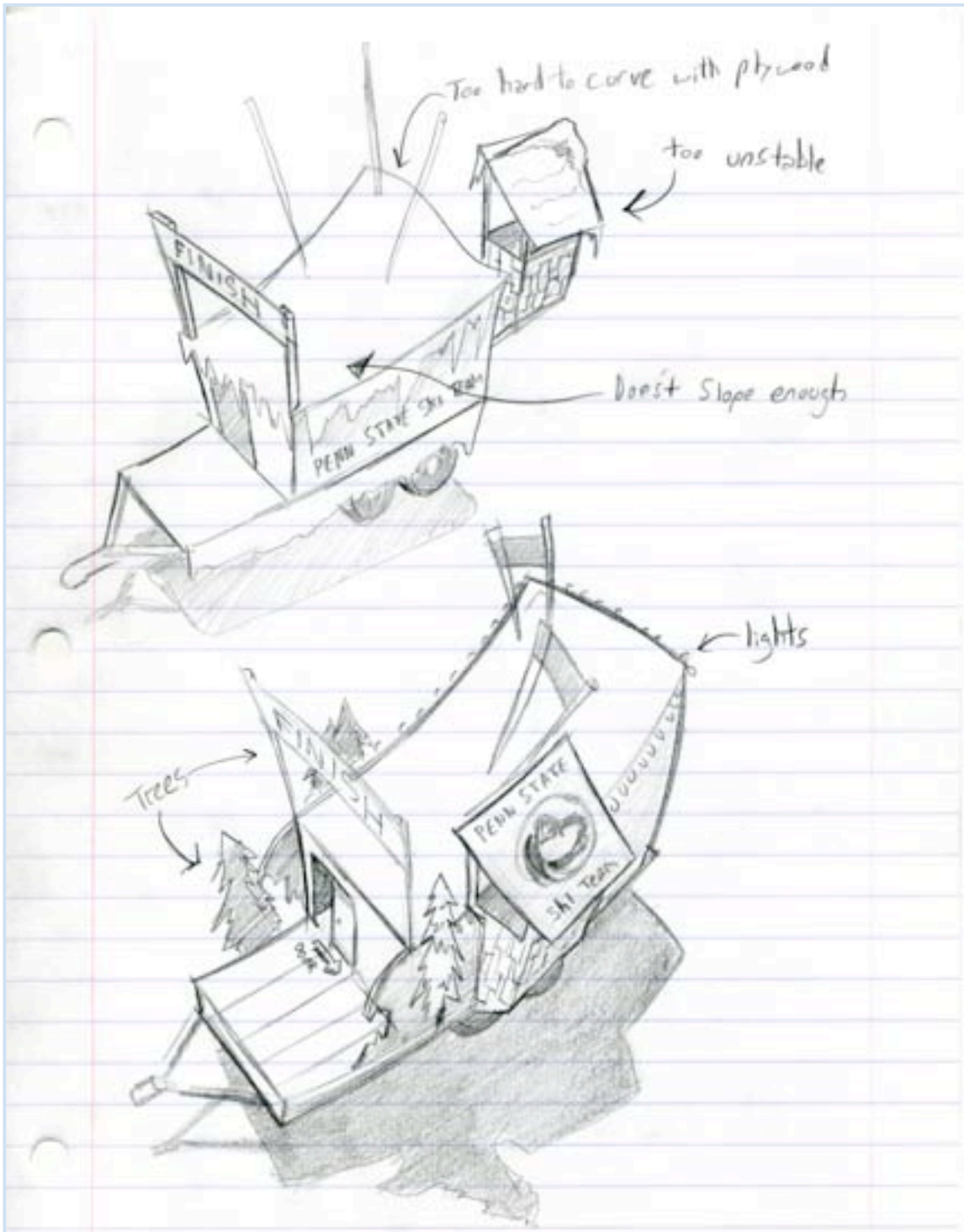
About a month prior to the parade, the officers of the Ski Team and I met and discussed float theme possibilities. I had a notebook with me where I sketched out the various ideas that were being thrown out and jotted down notes about each design possibility. After we had the ideas down on paper, we went down the list and discussed feasibility, whether the theme will convey the right type of message, and whether we had enough funds for the design.

We ultimately went with a finish line theme for a slalom course. The design called for an actual ski racer to be bolted by his skis to a white felt-covered wooden ski slope appearing as if he was about to go through a finish line. There would also be a cedar shingle-covered finish line timing house that would protrude from the side of the float. There needed to be ample standing room in the front of the float as well as hidden seating in the cavity underneath the slope. Our goal was to have 20 people on the float, 15 inside and 5 in the standing area outside. There also needed to be a way to get inside the float and then back out to the standing room relatively unnoticed by the parade watchers.

We also thought about lighting and a sound system. In this case, Christmas lights would provide ample lighting, which could be powered from the tow vehicle. The sound system was a harder issue, since it could not be powered from the tow vehicle. Instead of building a custom sound system, the tow vehicle's sound system was used to provide music. A sample of some ideation sketches are included in Figure 1 below.

Figure 1: Ideation Sketching

The image below shows a page from my notebook. Pictured are two sketches of the chosen float theme.



Step 2: 3D Modeling

To get a better understanding of how the float will be built, how much space there will be on the inside, and how it would actually look, I interpreted the design into a 3D model based on the ideation sheets. I knew that we had certain size and signage guidelines to follow to make the float street legal, but the design was fairly open to interpretation. SketchUp is a great tool because it allows you to rapidly model an object or environment and easily show cast shadows without having to deal with complicated rendering engines. I worked up the underlying 2x4 structure entirely in SketchUp. The structure had to be sturdy because the theme called for a Ski Team member to be standing on the top of the float, which mimicked a slalom course finish line. See Figure 2 below.

Figure 2: SketchUp Model

The render below shows the float SketchUp model in x-ray view. The trailer was downloaded from a stock 3D model library.



V. The Construction Phase

With the SketchUp model completed, I inferred a parts list and went to the hardware store. I priced up all of the wood, nails screws, paint, tools, and any other materials we would need. I then presented a cost estimate to the Ski team officers for approval. Once the officers approved the project, we went back and purchased the materials, including a few extra pieces of wood for “just-in-case” scenarios.

My initial goal was to create several assembly order sheets and have different groups of people in charge of different aspects of the construction. Unfortunately, I had to throw them out the first night of the build. The trailer that the float was to be built onto had different dimensions than my design. A large majority of my planning was rendered useless. While I didn't have the correct trailer, what I did have was a lot of wood, people ready to start construction, and an obsolete design. I pulled out my sketchbook and crunched some numbers. I discovered that all I had to do was decrease the length of the float, tighten up the standing room and make it a bit wider. The structural supports had to be modified, but there was enough wood to accommodate this change. In a matter of hours we had constructed the frame and accomplished most of the build tasks for the night.



Over the course of three nights, we built the 2x4 structure, added plywood sheets to the sides and the roof of the structure, and painted. The timing house theme feature was also treated with plywood and cedar shingling. By the end of the third night, there was still a lot of cosmetic work to be done.

VI. Dealing With Problems

No matter how much you plan and prepare, sometimes things happen that you had no way of controlling or foreseeing. For instance, it rained two of the three build nights, making painting quite difficult. Tarps were set up so that painting could continue. However, there was another more serious event that occurred the morning of the parade.

The driver of the float, a former Ski Team coach, drove the newly constructed float directly into a tree, demolishing the timing house. Luckily, the float was constructed with wood and screws, not chicken wire, as were all of the other floats. This meant that when the roof slammed into the tree, only the immediate place of impact would sustain damage. Also, the main structural supports were screwed down to the trailer bed itself. If they had not been screwed down, the float would have flown off of the trailer and the project would have been lost. When the float finally arrived at the parade grounds, the “panic” building began in order to fix the damaged part of the float. This is where the “just-in-case” wood came in handy. As the parade start time loomed closer, more of the team showed up to help finish off painting and decorating. The float was finished with a mere hour to spare.

VII. Final Product

Overall, the project was a great success. Problems were avoided and dealt with as they came, the float looked great, and we had a lot of fun building it and riding on it during the parade. It certainly wasn't a stress free project, but that just makes the sense of accomplishment that much higher.

One of the nice things about working collaboratively on a project such as this is you get to see people do things with your design that you wouldn't have thought to do. No one who worked on the float other than myself was a visual artist, but they still had creative ideas, which ultimately led to a better float design than I could have produced on my own. The float went on to make the front page of the college newspaper (*The Collegian*), was included on the homecoming parade page in the yearbook, and most importantly, was the best received by on-lookers of all the floats in the parade.

VIII. Pictures

