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2016 ASC Bidding Competition – Commercial Building

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ASC Bidding Competition 2016

Commercial Building Team



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2016

Abstract

Our group traveled to Reno Nevada to participate in the Associated Schools of Construction (ASC) annual bidding competition which took place from February 10th- 14th. The competition included teams from all over the western United States with many different categories for groups to participate in. The category that our group decided to participate in for our senior design project was commercial bidding. The commercial bidding category had a total of 12 teams competing on a bid estimate for Mortenson construction. The project, which we did not know anything about until arrival, was a multi-million dollar sporting complex addition that we only had 16 hours to prepare the bid for. Once the bid estimate and any documentation that was required was completed and turned in our group had to prepare a presentation for the judges who were all Mortenson employees that knew the project extremely well. In order to prepare for the completion we met weekly and worked on a practice bid estimate that we thought would be similar to what we would be exposed to in Reno. The competition was a valuable experience to all group member as it gave us all practice for problems and scenarios that we may come across when we are out working in industry.

Keywords:

ASC Bidding Competition, Commercial Team, Mortenson Construction, Vanier Football Complex

Acknowledgements

We would like to thank Perryn Raymond, our beloved team member and friend, for his hard work and dedication to the project and to the team. When other team members stepped down due to conflict with leadership he marched in and immediately started playing catch up, devoting numerous hours and weekends to learn the ins and outs of what would be required to complete this project. We would also wish to thank Larry Hunter, for mentoring us, and giving us invaluable insight on the logistics of construction, and the overall process of putting a bid together. We would also like to thank contractors throughout the state of Montana for their generous donations that helped us get to Reno and participate in the competition.

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Competition Preparation

When we began preparing for the bidding competition we were initially preparing for the marine and technical structures competition however, due to lack of interest from other schools in this category we switched to commercial. Our team captain participated in the commercial competition last year so we had a good idea of what to expect. We also were provided with a lot of information from last year's commercial competition which proved to be very helpful in our preparation efforts.

1.1. Fall Preparation

Our team received a pre-problem statement from Mortenson Construction that advised us to look at atriums. We did look into atriums however, we avoided putting too much emphasis on them as our team leader suggested that it would likely only be a small portion of the project. So we focused the majority of our efforts elsewhere.

Each of our team members was assigned an area to focus on based on the Mortenson project from last year. The areas of focus included: take offs, scheduling, LEEDS, contracts, and site logistics. We began working on a practice bid from a Kiewit bridge project and treated as we would a commercial project. Each team member worked on their area of focus and learned how the bidding process worked during weekly meetings throughout the semester. This preparation proved to be extremely valuable and was an excellent learning experience.

A large portion of the points in the commercial competition come from the presentation, so our team made that an area of focus. Throughout the semester each team member researched various construction topics and presented to the group on those topics. This helped improve the presentation skills of each team member and provided us with more construction knowledge. We

also had to create a presentation for Larry Hunter at the end of the semester discussing what we had done and what we planned on doing in the Spring Semester. This presentation gave us more practice and Larry provided us with valuable insight and suggestions on what we could do to be more prepared for Reno.

1.2. Spring Preparation

Our preparation time in the Spring Semester was limited as the competition took Place in early February. During this time we finished our practice bid on the bridge project and presented it to Larry. Larry critiqued our presentation and provided suggestions to improve our presentation skills and the quality of our bid. We then began finalizing everything for the competition to make sure we were as ready as we could be for Reno. We gathered the supplies we needed for the competition and made sure everything was working so we could pack it up and ship it to Reno.

1.3. Fundraising Efforts

This project was made possible through donations and personal contributions made by business and individuals from Montana and across the country. Fundraising letters were prepared and distributed throughout the state and country. Multiple companies made very generous financial contributions in response to the letters. The majority of the club traveled to Fairmont Hot Springs, outside of Butte, to participate in the Montana Contractor's Association's annual meeting. It provided a great opportunity to meet contractors from across the state, as well as a chance for companies to donate funds to the local state collegiate chapters. The team promoted Montana Tech by providing items for auction and rose over \$16,000 that was shared with the North Campus and Highlands College teams.

Tables I and II give a broad overview of the expenses occurred for participation in the competition, as well as the funding that was completed over the course of the year.

Table I: Competition Expenses

Lodging	9,410.00
Per Diem	4,965.00
Uniforms	3,500.00
Materials	800.00
Shipping	1,000.00
Flights	10,941.10
Total Cost	30,616.10

As seen by Table I, participating in the competition requires a lot of funding. Note that the above table shows expenses for the entire Associated General Contractors (AGC) club, which consists of three other teams, and not just the commercial team. Table II below shows the fundraising that was completed over the course of the fall and spring semesters.

Table II: Competition Fundraising

Beginning balance from 2015	25,521.43
Lisac's Tire	100.00
Northwestern Energy	250.00
Quest Ventures	500.00
MCA	16,000.00
Great West Eng.	1,000.00
Manson Construction	1,500.00
Goodfellow Bros.	1,000.00
ASMT	1,500.00
Triple "S"	100.00
General Department	1,000.00
Total	48,471.43

Again, these donations were not only for the commercial team, but rather the entire AGC club. Fundraising efforts were made by the entire club; however, we all contributed our

individual and team efforts and whatever resources we could to the fundraising efforts. We were very grateful to receive leftover funds from the previous year's teams, and we wanted to return the favor and leave as much money for next year's teams as well.

2. Competition

The 2016 ASC Student Competition was held at the Nugget Casino Resort in Sparks, Nevada. The day began with each Commercial team meeting in a room to receive the problem statement from Mortenson Construction. They provided a presentation to the group explaining what the project was that we were to complete and all of the material that we would have to turn in. After their presentation, the teams were released back to their rooms to begin working on the project. They uploaded necessary documents such as project plans, sub-contractors, and other project-related material that we were able to use throughout the day to help us with the project. The Mortenson officials periodically stopped by in our rooms throughout the day to check on progress and answer any questions we had. They also allowed teams to submit questions online that would be addressed in scheduled meetings in which a member from each team would attend and receive the answers to all of the questions. We had until 9:00 PM to turn in the required documents for the project. Afterwards, the teams were to prepare a presentation to present the finished product to the Mortenson officials the following day (Friday). On Friday each team presented in a random order. After the presentations were completed, the teams were allowed to relax until a meeting later in the afternoon. At this meeting, Mortenson presented the project and how they personally completed it so that we were able to mentally compare our results with theirs. Following the meeting, the teams were able to socialize and meet personally with the Mortenson officials in a more relaxed and laid back environment. On Saturday, an award

ceremony was held to name the top three placing teams of each category in the competition. In addition, a career fair was held for the majority of the morning.

The Commercial problem statement provided by Mortenson Construction for 2016 consisted of complete demolition and rebuild of the Kansas State University Vanier Football Complex. An animated picture of the finished result is displayed in Figure 1.



Figure 1: Kansas St. - Vanier Family Football Complex

This new complex was to include a state of the art training facility and locker room, a modern three-story atrium, an elegant staircase, and hydrotherapy pools. Mortenson wanted us to determine the GMP, Concrete Estimate, Schedule, Site Logistics Plan, Integrated Work Plan, and requirements for LEED certification. We also had to turn in a Project Overview report briefly describing each aspect of the project. There were three total curveballs given to us during the competition. The first curveball was that specific tasks, which were grouped into three different groups based on importance and the required time to complete the tasks, had to be approved by

the owner and the subcontractors notified by specified dates. This required manipulating the schedule to allow for the deadlines to be met. The second curveball was that a scrimmage football game was going to be held in April, which was the middle of our construction schedule. It would require one day of preparations that would have to be incorporated into the schedule. The last curveball was as a surprise curveball that given to us at 9 PM after turning in our project. The owner decided that he wanted a “party-platform” in one of the corners of the football stadium that fans could watch the games from. This required a new concrete quantity estimate and price.

To begin the day, we talked as a group to understand the important aspects of the project and major items that we needed to focus on. We created a timeline for the day to set deadlines for each task required by the end of the day. We then split into our individual workplaces and began our jobs. We had one person working on site logistics, one person working on the LEED certification, one person working on the contract documents and subcontractors, one person working on the schedule, and 2 others working on take-offs. As the time approached our deadline, everyone was helping everyone with each individual task. Throughout this competition, our team learn a great deal about hard work and working as a team. This project would not have been possible without each of us stepping out of our comfort zone to learn what we needed to learn and help others to complete the necessary tasks. In the end, it wasn't about each person's individual tasks, but the group's mission as a whole.

3. Advice for Next Year

Through the initial preparation process as well as the competition itself, there are many things that we learned as individuals and a team that we believe would be helpful for future

students participating in the ASC bid competition. The following sections will look at topics that we felt were important to keep in mind during the preparation and competition process as well as some of the pit falls that we found ourselves in that could hopefully be avoided.

3.1. Preparation Advice

- First thing we learned after the competition was take the pre problem statement with a grain of salt! By that we mean don't spend too much time concerning yourself with what the hint says. For example, our hint we received dealt with atriums. When we got down to the competition and received the plans for the Vanier Family Football Complex the closest thing we had to an atrium was large picture windows. So lesson learned was to focus on getting a good overall knowledge of your specific individual topics, without expending too much energy on the hint provided. Recognize it as help but don't gamble your preparation on it.
- Divvy up the work load as soon as you are broken down into your teams. For us, our first team meeting consisted of finding out what everyone's strong suites were through past experiences and decided how they could best help out the team. For us we decided that the following topics would be most beneficial when it came to the competition:
 - Take offs – Make sure to have multiple people familiar with the blue beam program and searching through drawings. Part of our deliverables was concrete take offs so being fluent in these programs was a vital tool.
 - Planning and Scheduling – Being able to search through documents to find relevant start dates and contract times is something that someone on the team needs to be able to do quickly and efficiently. Being able to run

either Microsoft project or ASTA is also a must for the scheduler. Suggest having multiple people being able to work these programs. Another important factor with this that we missed out on was knowing actual times that construction items would take and the sequencing that went along with those. Advice: Take the time to look up sequencing of how building are built; from foundation all the way to finishes, as well as approximately how long these individual items will take.

- Bid Documents/Subcontractors – This person is going to be constantly busy during the competition! The person who takes on being the document specialist needs to be able to navigate through bid documents and plans to find information that other teams members may need for their respective proportions. This may involve being able to find contract times as well as any small details to the job that may trip you up. For example working hours: can you work on the weekends, hours per day? Are there any specific TCP that need to be in place? Environmental protection? Just to name a few. Sub contracts is also another big topic. In preparation you are going to want to find out what to look for when choosing a subcontractor. Do they have a good safety record? Can they be bonded? How much is there bid and what are there working hours? Choosing subcontracts consisted of 75% of our total GMP so being able to choose these efficiently is going to save a lot of time. Becoming comfortable with how the subcontract bids are set up will be a big help.

- Site Logistics/Safety – Individuals given this task have a lot of small pieces to the puzzle that need to come together to make a full presentation of your knowledge. Some of the things you need to be aware of and prep for are as follows. Crane set ups and critical lifts. Be able to look through crane specs to size the proper equipment for the job as well as all other equipment that might need to be used. Also understand where these can best be placed on site to make the job easier and efficient. Be able to set up staging and storage areas in convenient locations as well as providing the proper housing facilities for workers. With respect to safety, be able to understand TCP (traffic control plans) and how best to implement them on the specific jobs. For example our project was being done on a campus full of students so being able to monitor this was something we had to be concerned with.
- LEED Certification – This is a topic that not many people will have any clue how it works, and may be the most challenging at becoming comfortable with. To start there is an 800 page LEED handbook that you will want to become comfortable with navigating as well as understand the “intent” section behind each point category. Going through the book is going to be your best chance at understanding how the process works. Once you have got a good understanding of the concepts you will then want to start looking into different systems and designs you can put into place that can help achieve certification levels. Example: implementing solar panels and gray water recycling systems, heat absorbing green fields

to use as a heat source; check out MSU new building for hints on this. If you can't seem to figure out the concepts I would try and get in contact with the previous year's team members for more help.

- Practice bids are going to be a huge help when it comes to familiarizing yourself with what you will see down at the competition. For the 2017 commercial team, looking at the Vanier Family Football Complex documents and plans would be a good place to start. Not only is it a Mortenson Project but it is a very complex jobs that encompasses a lot of work items that you could spend time figuring out how they all come together in a final bid. Multiple practice bids would be beneficial, the more buildings you see the more you will be prepared for whatever they will throw at you down at the competition. Practice these in your respective topics you decided at the beginning of the year but still be able to understand what the other team members are working on so you can be prepared to jump in and help at any time.
- Presentation skills are VERY important! Taking the time to present to even just your team members is something every team should do as often as possible. Even if it just some simple topic that will take 5 minutes. Practice being able to project your voice clearly, good posture and be confident with your words. A good presentation can make up for a lacking deliverables section. These are great to do for your practice bids, once the bid is complete do a mock presentation to either students or professors and start getting comfortable with public speaking.
- Take the team meetings seriously. As much as you don't want to be there, not only is required for your senior design class but it is going to be your best chance

at getting to know your team members. Learn how each other operates and begin to learn how to communicate. This is key! Once you get down to Reno you will be shoved in small motel room for 16 hours, so being able to work well together is very important.

- Take advantage of the opportunities that arise when speakers come to club meetings. These individuals that come to talk to you: examples being Quest and AGC members, are a wealth of knowledge that you can gain inside information to the how the construction industries work. Don't be afraid to pick their brains for information it can only help in the long run. Last year Quest came in and gave a presentation on searching through bid documents and some of the things to look for that will help you in your estimating process. Make sure to pay attention.
- Seek outside advice and opinions as often as you can. There are a lot more knowledgeable people that have experience that will greatly help you along your way. For example go out and talk to professors if you get stuck with a topic or just need a new direction or angle to approach it from. They might be able to get you in contact with someone that may have the answer to your question. People working in the construction field, if you can get ahold of them, are a huge help with any construction related topic you may have questions on. Example would be finding out how long construction items take and sequencing that goes along with it.
- Commit some time! Preparation can be tedious but if you want to do well at Reno it is a must. The more information and knowledge you expose yourself to before you get down there will make a world of difference. Who knows you might get

lucky and find the exact same project, and bringing home hardware would be an impressive resume booster so remember to take this seriously.

3.2. Competition Advice

- Pack more than you think you need, when it comes to equipment and information. You will much rather have more than you think you need rather than show up down there and find out you missed something. This means packing extra ink cartridges paper, text books, pencils, HDMI cords, monitors and other sorts of material. Extra computers are a big one. We ran into the problem last year that some computers just would not connect to the internet and made them useless for basic searches. And the year before that they had computers that completely crashed all together. Whatever you think may become useful pack it, and if you don't think it will be useful pack it anyways and you might find a use for it later.
- The most important lesson and skill to possess when heading down to the competition is to know when to "let it go". You are going to be bombarded with information for the project you get assigned to as soon as you get down there. You need to learn to not get hung up on the small stuff. You only have 16 hours to complete a bid that a normal company would take months to complete. They are going to look at whether or not you get the overall concepts and workings of the project and aren't going to be concerned with every nut and bolt that goes into it. If you get stuck on some small portion of the project and can't solve it quickly, you need to cut your losses and move on, only coming back to this topic if you find extra time.

- Once the competition starts set a schedule for tasks you want to have completed! You will get lost in the rush and panic right off the bat, so having a schedule to collect your thoughts is going to make it easier to stay on task and complete the bid on time. For instance they do RFI sessions that are conducted at specific time and you want to be have your questions ready the times that the judges are coming around to answer them. You don't want to have questions but then be caught off guard once they come around and not get them all answered. There is also a lot of documents that they require, and by placing them up on the board and having an approximate time to have them completed it gives you reference to what time you hope to be completed and get everything submitted.
- When you are given the deliverable sheet with the designated points for each, you need to decide what categories are worth the most points and come up with a plan of attack to get those tasks completed, as completely and accurately as possible. For instance you don't want to find a category that is only worth 10 points and spend 9 hours working on that when there are other categories worth much more points. Categories worth the most points usually have a lot of subcategories in them; keep this in mind when you are looking at setting your schedule.
- Communicate! No one on the team is going to be able to complete their section without input and information from the other team members. The team needs to be able be in constant communication so as not to miss important details that may trip you up, or if you find information that may help out a team mate, let them know. If you get lost while working and just don't know what direction to head next ask your team mates! They might know something that could point you in

the right direction and that is what team members are for, because you are not going to know everything. Everyone needs to help keep each other on task and on time. Tempers may rise under the pressure as well, if people start getting at each other's throats you need to step back for a second to calm yourself before moving on. Conflict between team members will only slow down the process.

- Get your presentation on lock once you have completed your bid. The presentation portion of the competition is a large chunk of points and if you are able to give a good presentation you can make up for lost points in the deliverables. You are going to want to have everyone's timing down as well as hitting information that the judges are going to find important and relevant. Work on confidence when you talk, the judges will definitely take notice if it looks like you have a good grasp of the project you are proposing to them. Same goes for the Q&A session. Even if you do not know the exact answers, continue to be confident but just tell them that you had not considered that thought before and you will get back to them. They want to see if they can frazzle you with hard questions so don't let it get to you. A tip with the questions even if it may be a gamble is to set yourself up for questions during your presentation. For example during the LEED portion of the presentation the deliverables asked for what type of price increase would be seen if they searched for LEED certification. Spencer only briefly touched on the price topic during the presentation, then when the Q&A session came the judges wanted more details on this. He was then able to give detailed prices for items he had refrained from stating and showed a grasp of

what the judges were asking for. Essentially you are framing the judge's questions they may ask for questions that you already know the answer too.

- The entire weekend is a giant career fair. No matter what you are doing or where you are at, there is always going to be people paying attention to what you are doing; whether that be good or bad. You may have impeccable deliverables and a killer presentation but if that night you go down to the casino and make a fool of yourself, not only are you giving yourself a bad reputation but it reflects poorly on the school. So remember to keep it professional and not do anything you might regret later.
- Last word of advice we have is to have fun! You are going to have to put a lot of work in beforehand to be competitive, and the 16 hour competition itself is hectic and stressful. But in the end this is a great experience to take advantage of. If you make a good impression you can come out of there with jobs or connections you wouldn't have had before. You also get to meet some great people that may be working with in the future so take advantage of this great opportunity. And once presentations and everything are over go and enjoy a cold one, or two... that night is a great time to get acquainted with your peers and is always a blast! Just remember to be smart.

Conclusion

In conclusion, the 2016 Montana Tech Commercial Bidding Team learned a lot of useful skills throughout the school year. We learned how to properly bid on projects such as scheduling, subcontractors, takeoffs, site logistics, and much more. We also learned how to work together as a team to complete an entire project with a heavy time crunch. Although we did not place in the competition itself, we did improve our familiarity with the procedure of finalizing a bid as well as accomplishing the goals we set for ourselves at the beginning of the year. Although taking 5th place was not what we had planned, it was an improvement from previous years and teams. Looking back there are some aspects that we should have done differently, however this was a positive experience and everyone left with more knowledge on the inner workings of completing a bid. We look forward to seeing the growth of the Montana Tech AGC club in the future and we all wish the best of luck to the competitors in years to come.

References Cited

K State Sports. (2016). Retrieved from
<http://www.kstatesports.com/page/facilities-football>