

Field Trip Report



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Introduction

The Building Construction Science students at Mississippi State University went to Chicago, Illinois to visit various job sites and attractions. We left on Saturday, September 14th and came back Thursday, September 20th. We were able to attend the field trip and gain knowledge in various areas of work. The site visits and attractions that we attended were: Chicago Architecture Boat Tour, Frank Lloyd Wright House, Underwriters Laboratory, Vista Tower Site Visit, Wolf Point East Project, Gallagher Asphalt Plant, and JFG Technical Center. Not all of them were construction sites; however, they were all related to our field of work. Along with getting to see these things, we also get free time to explore the city further.

Chicago Architecture Boat Tour:

The Chicago Architecture Boat tour was on the river flowing through Chicago. As we floated down the river, we were pointed toward multiple famous buildings in Chicago and the architects that designed the building or the concepts behind them. Among the buildings we saw were Tribune Tower, John Hancock Center, Marina City, Wrigley Building, Lake Point Tower, Trump Tower, Willis Tower, and many more. We learned about how the architecture was changing and the difficulties of constructing some of the buildings because of their proximity to the river. One interesting fact the tour guide shared with us was that the river runs backwards, no longer flowing towards Lake Michigan.



Frank Lloyd Wright House:

The home and studio of Frank Lloyd Wright located in Oak Park was restored to the year 1909. This was the last year Wright lived in the home before he moved out due to a divorce from his wife. The house exterior skin is comprised of shingles with a winding, brick half-wall. The interior highlighted lots of natural wood trim. Several additions were made to the home at

various times including the studio portion of the house which attached to the main house. The structural system in the drafting room is supported by chains to eliminate columns. The octagonal shaped library became Wright's private office. At the public entrance to his studio, identical statues rotated to different degrees sit atop the brick wall. Featured here is also Frank Lloyd Wright's name with his logo. This geometric logo with incorporated into the architecture through the shape of the planters at the studio front entrance. Wright's architectural style at the time emphasized smaller spaces within each room, especially depicted in the dining room. This concept had a large influence on the space dynamics.



Underwriters Laboratory:

The Underwriters Laboratory in Chicago is responsible for testing building envelope materials, roofing materials, and wall systems as it relates to construction. The facility tests many everyday household object and parts. The UL Lab brings lots a business from overseas of companies needing to run advanced testing unavailable in their country. Different areas on the UL campus focus on a different type of test weather it is heat/fire, wind, or water.

We had the opportunity to experience a water test on a window wall system as well as a flying object test with a garage door and a wood member. Other tests going on in the lab included a hinge durability test determined by the results of opening and closing a door 2 million times. Some groups got to watch a mattress and cable flammability test.

Vista Towers Site Visit - McHugh Construction:

Vista Towers is a multi-use high rise building along the river in Chicago. The building has three towers that are different heights. We traveled to the 49th floor in a bucket of the tallest tower. They were higher than that, but for safety reasons, we were not able to go any higher than that. They were in the 70's out of 90-100 floors that they had already poured and were on a four day cycle for pouring and curing the concrete. They said they were about to move to a three day pour once they reached a certain floor. They used concrete pump trucks that went through the center of the building all the way to the floor they were pouring. McHugh Construction made a point to show us how the structural concrete changes as the building gets higher. The architecture and the engineering that was put into the building is immaculate. The building was meant to resemble a wave and will have three different shades of blue glass on the outside to help resemble this. The Vista tower had wind screens to protect the workers from getting blown off by the wind. The Vista Towers site visit was another great opportunity to see Chicago's skyline. The wind at the very top of the tower could get up to 45-50 mph, which could pose a threat to the workers.



Northwestern University Medical Building - Power Construction:

The Northwestern University Medical Building is located on Ontario St. in Chicago. This building had a large glass lobby along with multiple floors of lab space and other areas. The stand-out for this project was the green roof. In Chicago it is now a law that new construction has to have a certain percentage of their roof have vegetation on it. This building had multiple roof levels, all of which were green roofs. They were also utilizing a new roofing system called blue roof that has storage tanks to hold water right below the vegetation; therefore, if it rains heavily,

the roof will not shed the water too quickly into the streets. Instead the water will sit in the storage tank and will slowly seep out at a controlled rate to reduce the chances for flooding.





Another interesting piece of information we learned on this tour was how the elevations for the ceiling rough-in for the MEP and Fire Protection subcontractors is collaborated. They coordinate this by putting a target on the wall with the corresponding elevation; therefore, everyone is measuring to the ceiling off of the same height and not from an unlevel surface where mistakes could be made easily. Another method they used to coordinate the overhead rough-in on each of the floors were through BIM models. The models would show them if something was going to intersect in the field, saving time, effort, and money.

The owners of the building also wanted to expand in the future, so they made the mechanical room large enough to add new equipment later on. The slab that the mechanical room sat on was unique and insanely engineered. A bottom slab was poured, then insulation was sandwiched in between another slab. The top slab was then lifted from the insulation/bottom slab so that the vibrations from the mechanical equipment would not be heard, especially when the owners decide to expand.



Wolf Point East - Walsh Construction:

This is an apartment building with multiple amenities. The building was located along the river, so getting materials to the site was tricky. They had to build a temporary bridge to the site to not block off the roads and they even use the river to have barges bring in their materials. The building is still near the beginning of construction, all of the floors have not been poured and they haven't started any of the envelope for the building. One thing that will be neat about the building is the amenities provided to the apartment owners. There will be a spa, pool, an exercise room and many other things. Our tour guide told us that the owners believed that people were buying places to live based off of the experiences they got from the building and not so much their living space. Even though this is true, the apartments are still going to be nice and high end. Walsh Construction was very big on safety. They had the safety manager go over all of the safety aspects that we needed to know for the project.



Gallagher Asphalt Plant/ JFG Technical Center:

Gallagher Asphalt was founded in 1928 by James F. Gallagher Sr... The company is now in the third generation of family management. The mission statement is 'Moving Families Forward' and the values fittingly are D.R.I.V.E. these stand for dedication, relationships, integrity, vision, and excellence. This is just a little background on the company. Our trip to the Thornton, IL plant was a little incite to their world. We went into their testing lab and talked about all the additives and mixes they can product to deliver the product needed. They also talked about the process they go through to reuse of recycle old asphalt that has deteriorated. The process is similar to concrete plants but some of the differences they face is the temperature has to stay high enough to keep the asphalt liquid until they can pour it then roll it out. This can be challenging an undoable in the winter months when it is well below freezing. On of the advantages Gallagher has is the quarry they partner with is literally right next door. This makes

the specialty project with absolutely no lead time still possible because they have everything they need so close to the plant.



Reflections -

Josh: The Trip to Chicago was a great experience for me as well as the remainder of the class. At least for myself, the idea of high-rise construction is amazing and challenging all in the same way. With the limited space these job sites had and their ability to just make it work is incredible. Another thing that was eye opening is the different factors that can affect a work schedule in Chicago vs. Mississippi. Here you wouldn't think twice about working in the wind or during winter just because they are very moderate, but in Chicago these are two very real threats to the crew on site. This becomes a very real factor when you begin to get above the 50th floor. The trip was very educational as well as fun. The limited event schedule made the things we did more knowledgeable, because we never got tired of being out all day. My favorite part of the trip had to be the North Western Medical building. I felt like this project had enough finished where you could really see how it went together without just walking through a completed project. The

Vista towers was exciting but I'm not a huge fan of heights, so it was a bit nerve racking. Overall, I enjoyed the trip to Chicago and hope the trip next year can be just as good.

Tori: The Chicago field trip was a success. The itinerary featured a healthy balance of scheduled events and personal free time. The site visits and tours we went on were great. The boat tour was a great way to kick off our first night and get more familiar with the city. The UL laboratory was very fascinating; I got to see a mattress and fiber optic cable flammability tests in progress. The Vista Towers site visit was unlike any other site visit I have been on. The blue roof of the Northwestern Medical Facility was unique and informative. Frank Lloyd Wright homes have been a large interest of mine, and I even took this opportunity to see the Robie House. Wolf Plaza East's site logistics and temporary measures were crazy. And lastly, the asphalt plant was educational with very welcoming hosts. Apart from the itinerary activities, I had the opportunity to explore Chicago and most of the tourist attractions.

Tyler: The trip to Chicago as a whole was planned perfectly. It allowed us to visit different construction projects, as well as have free time to visit some of Chicago's iconic landmarks. I thought the boat trip was a great way to start the trip because it allowed you to take in some of Chicago's skyline. We visited the Frank Lloyd Wright house which was very interesting. We were able to see how the house was set up from an architectural point of view and some of the key features of the house. The UL laboratory was one of my favorite visits. I was able to see hurricane testing which involved a 2x4 being launched into a garage door. We also saw water testing being done on a glass curtain wall. I thought the roof of Northwestern Medical was innovative in that they used vegetation as a way to regulate water off the roof. Overall the trip was very informative and fun, it was the perfect balance between scheduled site visits and personal free time. I personally would go back.

Jalyn: The Chicago trip was meant to help us see construction materials and methods and how different construction is in a big city. I feel like this trip accomplished that with the various site visits and events that were planned for us. The field trip was a great way to see construction that is not very common in the south. There are not a lot of high rise buildings the methods of how construction is being built there is very different because of the types of buildings being built. The construction companies that we met with were innovative and used technology to their advantage. They coordinated with BIM models and the construction methods as a whole are more advanced because of how tall most of the buildings are. An advancement in technology in construction was the slab in the Northwestern University Medical Center, where they lifted the slab from the bottom slab so that the vibrations would not flow through to the floor below. We saw various methods of construction for high rise buildings and all of the site visits were well planned and each one of them was different in their own way. Another innovative idea that a lot

of construction companies used was taking advantage of the river and getting their materials shipped to them on barges. The site visits that we went on all utilized technological advancements.

My favorite site visit was Vista Tower. I enjoyed this site visit mostly because I like heights and the views were amazing, but the architecture and engineering that went into the building were also impeccable. I enjoyed seeing the model rooms for the building as well, the finishes were all high end and gorgeous. The construction materials were covered when we went to UL. I enjoyed getting to see some of the testing that materials go through and I didn't realize it was such a strenuous process for most products. I had just learned about the UL on the back of a light switch in my Electrical Systems class and I have a better understanding of why that logo is imprinted on the product. I had also heard of fire ratings and other various things that they actually test for in their lab. I also enjoyed getting to see all of the beautiful architecture that the Chicago had to offer. A few things that I did not like about the trip was the attention to safety that I feel like the construction companies did not have while we were visiting. On one of the sites, a safety manager was talking to us while we were on the site and he did not have safety glasses on. Other than that, each of the companies we met with were great companies and I enjoyed getting to see a different type of construction in a large city.