

Weekly Report 7 (July 16 – 20)

This was the final week of the 2018 IRES program. Students spent a final day in Badong and then spent a couple of more days in Shijiazhuang to learn more about the engineering research projects there. Finally, students spent their last day in Beijing and reflected upon their time in China.

Monday, July 16

Students departed at 9 am from the dorm to visit Shen Long (神龙小区), a fairly new residential district built to house the displaced residents of Huangtupo (Figure 1, 2). To give a little context, Huangtupo was the district which sat directly atop the Huangtupo landslide. Huangtupo residents were forced to vacate the district and move to Shen Long to avoid risk. While walking through Shen Long (a.k.a. the new Huangtupo), students considered the inextricable relationship between social science and geology. Dr. Wang proceeded to tell a story related to the word 'chai' (拆 = demolish) which helped give insight on the concept of residential displacement in China. In China, the character chai 拆 is painted on any building that is to be demolished, whether it be due to a landslide or due to gentrification etc. From a western perspective, the concept of displacement in China is usually explained in a negative light (especially in the context of the Beijing Olympics). However, in many cases, if a family is displaced, their fiscal situation is also improved because of compensation from the local government. And the families that are negatively affected are actually those that, for whatever reason, are *not* displaced/demolished and become the remnants of the former locality.



Figure 1. Dr. Wang leading students through streets of Shen Long



Figure 2. Students take a photo at the highest point in Shen Long. Pictured (left to right): Margarita M. Solares Colon, Lorena Ramirez, Anika Huq, Anna Wang, Zachary Parra, Daniel Rusinek, Bhavya Merchant and Matthew Law.

As students explored the town, they fortuitously ran into a local man who was using a drone to take aerial pictures of the town for the purposes of city planning – a method that students had the opportunity to experience at the beginning of the program in UHCC (Figure 3). After exploring, students enjoyed a final meal (in Badong) at a local restaurant and celebrated the birthdays of two students.



Figure 3. Students observe local man operate the drone.

Tuesday, July 17

Students set their alarms for 4 AM to depart from Badong on the bus at 4:30. Almost the entire day was spent traveling. The first leg of the trip was from Badong to Wuhan by bus. In the second leg, students departed from Wuhan on board the high speed rail (Gao tie) to Shijiazhuang, a city about an hour ride away from Beijing. After a long journey, students and teachers enjoyed a grand meal together in the hotel restaurant (Figure 4).



Figure 4. Students and professors enjoy a plentiful and delicious dinner at the hotel restaurant after a long journey.

Wednesday, July 18

Students were given the morning off to explore the city of Shijiazhuang. They set off after a hearty breakfast in the hotel to look for gifts to bring back home. Although unsuccessful in finding gifts after thirty minutes of walking, they stumbled upon a string of street vendors selling the delicious 'crepes with the crunchys' (a.k.a. 煎饼) and ate lunch as they walked back to the hotel (Figure 5).



Figure 5. Vendor owner makes a lovely aromatic jian bing with some nice crunchys.

At 2 PM, students met with Dr. Wang and a couple of other professors involved in a project that monitors and facilitates the building of a subway tunnel (a continuation of Line 1 of the Shijiazhuang subway system) underneath the Hutuo river. First, Dr. Wang and the leaders of this engineering project showed the students the two GPS stations situated within the Hutuo river



Figure 6. The two GPS monitoring stations in the Hutuo river as seen by students standing on the bank.

itself to monitor the two tunnels underneath; one tunnel is for the inbound direction and the other is for the outbound direction. The width of the Hutuo river is 470 meters – the large width can be attributed to the dam upstream. The tunnel lies about 20 meters under the ground surface, the depth of the water is about 3 meters, and the groundwater level is much lower than the depth of the tunnels. They have been monitoring the tunnels since mid-April of 2018 and will continue monitoring for as long as they can. In order to install the GPS stations, they use an empty oil tank and then refill with cement and sand (which must be performed on site).

Afterwards, students went to the construction site to see how the tunnels underneath are actually built. They use a shield machine to dig the tunnels in soft sediment. The outer diameter of the tunnel is 6 meters, while the inner diameter of the tunnel is 5.4 meters. Therefore, the width of the protection is about 1 meter. Due to an outdated system, female students (or any female for that matter) were not allowed to step foot inside the tunnel.



Figure 7. Students walk toward the entrance of one of the tunnels.



Figure 8. A picture of the shield machine that workers used to dig out the tunnel.



Figure 9. The entrance of one of the tunnels. The large cart is used to remove the soft sediments and transport them to the surface by crane.



Figure 10. A view inside the partially completed tunnel.

Thursday, July 19

Students began the day having breakfast in the hotel and then attending Dr. Wang's morning lecture at Shijiazhuang Railway University (石家庄铁道大学). During his lecture, Dr. Wang discussed the differences in applications of both GPS and LiDAR in the research of natural disasters.



Figure 11. Students tour the museum at Shijiazhuang Railway University.

After the lecture, students were given a tour of the Shijiazhuang Railway University campus and an introduction to the intriguing research projects taking place there (Figure 11). Students learned about the history of railway construction in the educational outreach building on campus (the university museum). Shijiazhuang Railway University was founded in the fifties during the onset of the formation of a new China (the PRC was officially proclaimed in Beijing in 1949). The anticipation of a new China called for the creation of a railway, and per convenience the university previously functioned under military jurisdiction until connections to the military were severed in 1984 (during the war with North Korea, Chinese students from the railway university were sent after training to build train tracks in North Korea for the transportation of materials). From 1984 until 2000, the university fell under the jurisdiction of the Department of Railways. Finally, after 2000, the university was and continues to be managed by the local government in Shijiazhuang. The museum not only shows the transitions of management within the university, it also shows the transitions of the railroad design as well. At first, the trains ran on coal, then switched to gas and then became electric. Students were also able to visit the Wind Engineering Research Tunnel and step into the wind tunnel (Figure 13). The simulated wind moves clockwise through the tunnel; the gray is made of brick and concrete and the green is made of steel (Figure 12).

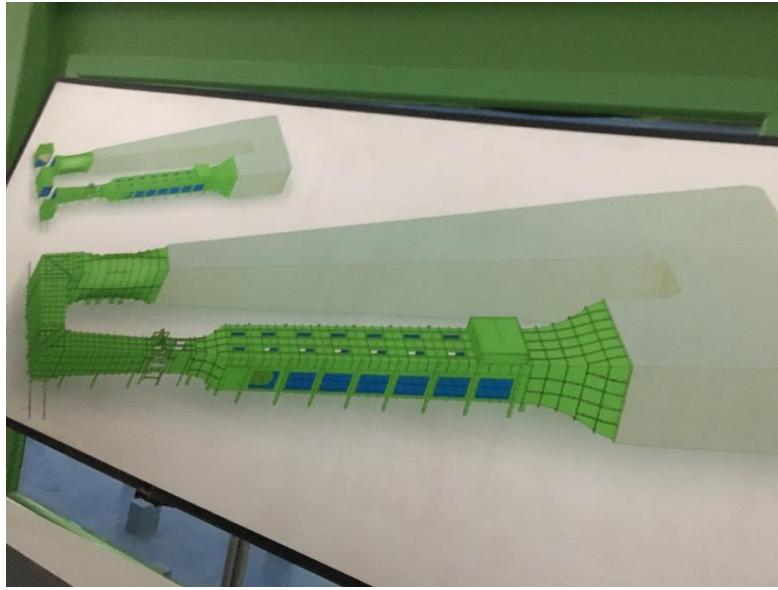


Figure 12. Schematic of the wind tunnel; gray is brick and green is steel.



Figure 13. Students listen as the head of the Key Lab of Structural Health Monitoring and Control of Hebei Province explained the applications of the wind tunnel and the importance of wind engineering research.

Friday, July 20

Students spent their last morning in China visiting the Great Wall at Badaling. They met at 6 AM at the South Gate of the Beijing Institute of Technology. The volunteer, Li, who led the great wall excursion in 2017 once again volunteered to guide students this year. After taking 3 public buses totaling a 3 hour travel time, students arrived at Badaling. Unfortunately for students, that Friday was one of the foggiest days of the year, and there was absolutely no visibility - even a mere 10 meters ahead would immediately be engulfed in fog. Despite the unlucky weather, there were still a jarring amount of visitors and tourists making the climb up the wall and taking pictures. And, ironically, the permeating fog also became a unique opportunity to take striking photos and

question human existence within a seemingly endless void. After returning to the dorms and resting for a bit, several students went to shop at the Pearl Market for some last minute shopping for family and friends. At the market, students practiced their bargaining skills and their Chinese and shared many laughs (and some inevitable dirty looks) with the vendors. After a busy day, students enjoyed their last supper at a restaurant close to the dorm. They recounted funny moments and memorable experiences. A big thanks to all who were involved in making this program happen!



Figure 14. Students enjoy the fog at the great wall.