

CASE STUDY:



Shackleford J.H. Arlington I.S.D.
Technology Deinstall-Reinstall
Project:
Summer of 2021

In the Fall of 2020, The Arlington Independent School District's Building Services wanted to try something new. In particular, when it came to the issue of temporarily removing the Technology items out of one of their schools that would be remodeled over the 2021 Summer. In the past they had left this task up to the General Contractor that was responsible for the remodeling work to be performed. Leaving this important task to the General Contractor that was not skilled or knowledgeable in this type of delicate work understandably cause more problems than solutions.

Also, making this overall project more difficult is the fact that the different types of technology fell under the control of several different groups in the AISD Technology Department. The Network Services Group was responsible for the Wireless Access Points. A/V Services was responsible for the Projectors, screens, and ceiling mounted Projector speakers. The Telephone Group was responsible only for the PA speakers and school PA system.

In the past each different General Contractor handled the De-install and Re-install differently. Each getting varying degrees of limited success but more often failure. Usually having sub-contractors try to handle the work that were in completely different trades and didn't handle Technology on a daily basis. In this project, besides the de-install and re-install there would not be any other Network related work needed. So, there would not be a Technology Contractor required for this project.

The AISD Project Manager in charge of this remodeling project Angel Silva, after talking to various members of the Technology department contacted the owner of Cablelink Solutions, Lee Solis. CableLink Solutions is one of AISD's preferred Network Infrastructure Contractors and works on a regular basis with all of the affected groups of the Technology department. Also, for this project the company handling this Technology work would work directly for the district and not the General contractor. Putting the Districts interests first.

Mr. Silva wanted to know if Cablelink Solutions would be able to handle a project of this size and also the uniqueness of it. It would be very much a brand-new experience for everyone involved. There would be specific dates in the beginning that needed to be met so that once the Technology items were removed then the other trades could start removing the old 2' x 4' drop ceiling grid system and eventually replace it with a new 2' x 2' ceiling grid system. Along with painting and other renovations to the bathrooms and A/C system for the school. Cablelink Solutions would remove the Technology items and store them for the district until the time came for the equipment to be re-installed. Meaning that the new Drop ceiling was installed to remount the devices to. The final point is that all the technology needed to be completely re-installed before school started for the Fall 2021 Semester on August 16th.

Lee said he would discuss it with his team and get back with him with some sort of preliminary plan. Lee discussed this with Jason DuBose a member of his Senior management team and they decided they would take on the challenge. They agreed it would take considerable pre-planning and attention to detail to be able to deliver the project to the same high standards that the district had already come to expect of Cablelink Solutions. As an added factor to this entire project, the Summer is the busiest time for CableLink Solutions working with the school district. Since the students are off on summer vacation more intensive projects are usually scheduled for the summer. Projects like I.T. Closet tear-downs and rebuilds that can take down a part of the school for several days as the work is being completed. Along with working on other planned major I.T. upgrade projects that all have to also be completed before the start of school. Also, Cablelink Solutions would need to still take care of their other non-district customers during this time.

The first real question before something like this project could proceed was what this sort of concierge I.T. service would actually cost to do properly. So, the first step was gathering information about what needed to be taken down and re-installed. Then from those numbers of separate items create some sort of estimate on the time required to take the equipment down, transport it offsite to a secure storage facility and then transport it back to the school and totally re-install it back to working order.

The information gathering process started with getting a set of 18" x 24" school plans of the 1st and second floor made and then spend almost 3 hours one Fall night walking the entire main building of the school. For this project it was decided by the district that only the main Building would need to have its technology items removed. The northern most building that housed the Gym and Cafeteria had new ceilings installed a couple of years before and didn't need any new work under this project. The information noting where every piece of the technology required to be removed was then transfer to a Visio document. From there Lee Solis created an estimate of the cost of the project.

Lee also proposed one other part to this entire project. He suggested that all the existing Network cabling in the main building be located and tested. To have a record of what the school's network cabling looked like Pre-construction. The school being built in the Mid 70's had several generations of cabling still in use. A mixture of Cat5, Cat 5e and a little Cat 6. Also there really wasn't any sort of network data drop diagram available. So that would be an additional benefit that the district would get. Actually, having an accurate print of where all the network drops were located in the building. Later after the school was turned back over to the district from the General Contractor, Cablelink Solutions would re-test all the drops again as the Post Construction testing. Then compare the results to the Pre-Construction testing to look for any damaged network drops caused by the construction. If there were damaged drops, Cablelink Solutions would rerun the effected drops and the cost would be billed back to the General Contractor.

Since the entire Ceiling grid was going to be removed and replaced. Changing the 2'x4' ceiling tiles to 2'x2' ceiling tile. Existing cabling would be exposed to all sorts of potential damage by other trades as they did their work. Cablelink Solutions were able to do all this pre-construction testing during the nights after school let out for the day. Cablelink Solutions knew they needed to get that part done at least a month before school let out for the Summer. Once school was out the priority would shift to getting the school cleared out and the work started for the remodel. Plus, that would allow a definite demarcation point to say that the cabling was working at that point before any Renovation work had started.

TECH DE-INSTALL

The Spring semester ended the last week in May and the Teachers left the next week. Since the work would be extensive there was no Summer School planned for Shackleford JH which meant as soon as the last teacher left, we were able to start the de-install process. We needed some sort of container to protect the equipment and also make it easy to move as a group of items for each room, store it then move it back to the school. Then set it out in the room it came from and re-install it in the remodeled classroom. The container to be used only had to last the de-install process, moving to storage, and then moved back to be reinstalled without falling apart. A uniform container to create a "room module" so to speak. Which required two types of medium duty cardboard boxes 24"x24"x24" or 30"x30"x30". Plenty

of Clear packing tape and permanent markers. Also, giant rolls of bubble wrap to protect the equipment and blue painters' tape to secure the bubble wrap and to write where the device came from.

You hope to have the exact same staff that De-installed the equipment later Re-install, but you can never be certain of something like that with several different projects going on simultaneously. So, the system needed to be easy and setup so that anyone could come in and at least have some sort of idea of what went where. Plus, we might need to bring in additional people to re-install because the time frame for us to get back in and re-install depended on the progress of the General Contractor, and we had little control over it. All we knew was we needed to be finished before the first day of school on August 16th.

We found with a large box we could get the contents for two full classrooms in it. That was usually two Epson 685W Short throw projectors and wall mount bracket, the (2) projector 2'x2' lay in speakers, the assorted cables, the C2G video switching box and the Roemtech PMA-245H projector speaker amplifier. Then a Cisco Wireless access point, and the room's old style 25V 8inch circular grill PA speaker. Each item would be taken down and bubble wrapped. For the Short Throw Projectors, we took off the entire projector and wall mount. For the Ceiling pole mounted style, we took them off where the pipe attached to the ceiling Chief bracket. We left the bracket and the threaded plate that the mounting pipe threaded into. There were only 9 rooms of the 53 with this style. We could not remove the Chief bracket because it had a duplex 110V electrical outlet. The Contractor had already agreed to reinstall the Chief brackets, above the ceiling with the same wire anchor cables and Electrical back with the new ceiling grid. For these we also took down the Wall and Ceiling mounted Projector screens. Then we used pink plastic locator ribbon to mark all the remaining cabling and wires that the devices were attached to. We did this for two reasons. First to let the contractors know what cabling was important and not to damage. And second in case the ceiling tile contractor put the ceiling tiles in faster than we could re-install the equipment. That would make it easier to locate our cabling above the ceiling with a flashlight later. We wrote on each box on both the top and the front the Room or Rooms that the Tech came out with a Sharpie. This would help locate an individual box and help speed up the reinstallation process when that time came. Also, so we could group rooms together by number sequence and by floors. It also was a quick reference when looking at what rooms on the print were completed and which rooms still needed to be cleared.



Using a hand truck, we loaded all these boxes onto a rented moving truck and took them to the Warehouse to be stored. We made sure to really reinforce the bottom on the boxes with plenty of runs of clear packing tape down the seam and across the seam in multiple places. To make sure the bottom would not fall out with the weight. We also made sure that all boxes were team lifted off the truck with at least two people. The boxes were not only heavy but also cumbersome to get a good grip. Having a person on each side lifting and sitting down the boxes insured that no one was injured moving the boxes. And that none were dropped because someone didn't have a good grip on a box. De-Installing the Tech was only half the project. Eventually it would all have to be re-installed and be in working order.

In the storage unit we setup industrial grade warehouse style shelving racks. Putting the 30'x30'x30' boxes on the bottom shelf and the 24'x'24'24' boxes on the upper shelf. The small boxes were used for any rooms that had the ceiling mount style projectors and also for the hallway tech. The hallways and the Main office also had tech that needed to be de-installed, and the smaller boxes worked great for that.



When we made sure that all the devices were removed and taken to the storage unit, we told the General Contractor that we were completed with the de-install. They really started tearing out the ceilings. They also sealed off certain parts of the school for abatement work. So now we needed to keep track of the G.C.'s progress and find out when we could get back in there to start re-installing the tech.

Mainly, what we were looking for was the new ceiling grid to be installed in the classrooms. And any required painting in the rooms needed to be completed. The halls would be the last to get ceiling grid. Second it needed to be before they put all the new ceiling tile in if possible. We could still perform our work with the ceiling tile in, but it would not go as fast. So, we really wanted to get in before that stage. Plus, there would be less chance to be blamed for damaged ceiling tiles.

TECH RE-INSTALL

We were hoping to be able to get back into the school and start the RE-Install process somewhere around the first of July. After all, we knew that it would take a lot longer to preform the Re-install that to De-Install it. The equipment such as the Epson projectors had to have the audio and visual components adjusted back to working order. So, we were getting a little antsy when the ceilings and painting in the classrooms had only been completed on about half of the 2nd floor Classrooms by Mid-Month in July. After meeting with the G.C. we decided to get started on the completed 2nd floor Classrooms on Monday July 19th. We couldn't wait any longer. We decided that it would be better to get done possibly early than have to flood the jobsite with extra people to get all the Tech re-installed at the last minute. We also had a feeling that other issues would come up with construction that would delay us in some areas. We felt that it was better to get everything completed we could and then any delays for our completion would fall on the General Contractor.



Being an open construction site, we had to make sure that the items were as secure as possible. The school's exterior security cameras remained operational. That would help some if there were any items going missing. Also, we only brought on site the number of boxes we thought we could complete that day or day and a half. Then make a trip to pickup more Room boxes as needed. This meant that we would have to make more trips to retrieve boxes from the warehouse. It also gave us more piece of mind that there was less on site not reinstalled to go missing or be moved somewhere else by other

trades. We started on the 2nd floor Northwest end classrooms. We picked a classroom and used it as a base of operations. Having keys to the classroom door unlike most of the general contractor's sub-contractors meant we could also lock the days' remaining boxes. We could also lockup our ladders and other equipment in the classroom so that it remained safer than sitting in the hallway or an unlocked classroom.

Behind the scenes Lee Solis was working with the AISD Telecomm Group that handled the Campus Rauland PA system. It was agreed that, if possible, replace the old circular style PA speakers with the newer style rectangular lay in PA speakers. This would mean that we would not have to cut out the new ceiling tiles for circular speakers. At most we would need to split a ceiling tile in half so the 1'x2" lay in speakers would fit.

This same summer two other AISD schools were being demolished to eventually have a brand-new school built in its place. Using the reclaimed speakers from those schools plus some the Telcom Group had on hand we would have 42 of the needed 63 speakers. We ordered some more of the rectangular speakers to make up the difference. This allowed our techs to install the PA speakers a lot quicker than having to cut a circle in the center of new ceiling tiles. Most of the ceiling tiles were cut for us by the ceiling tile installer so we didn't have to cut very many of the half tiles either. It does pay to have a good working relationship onsite with the other trades. They did a lot of this as a favor for us especially in the rooms that they still hadn't installed the ceiling tiles in yet.

We didn't know how difficult it was going to be to get the additional speakers in. Due to Covid issues we had to change the manufacture twice. Finally, Bogen came through even though the speakers didn't arrive until the week before school started. Luckily, we had enough for most of the classrooms. We really only needed to install the remaining speakers in a couple of teacher work rooms, the main office and the halls on the first and second floor. The Telecomm group wanted to take this opportunity to add some more coverage in the halls on the first and second floor, so we installed about 10 additional speakers.

We came up with a system where most of the techs would install all the Tech items, then I would follow and adjust the Projectors. We learned lessons for the next time we do this sort of project. First, we learned that with the Cisco Wireless Access Points its better when taking it down to reassemble the bracket including all the screws as if it was on a ceiling grid bracket. Then tightly bubble wrap it. We tried it this way and also with bagging all the small parts in a separate Ziplock baggy. The reassemble method worked better and allowed for a quicker re-installation later. The baggy was fine until it got a small tear in it then all the tiny mounting screws would fall out. The cardboard boxes served us well, but we found they were not great about keeping in tiny parts if they got loose.

This was also the case with the tiny #4 fine thread ¼" screw for the C2G box's ground connection. I had to go to five hardware stores before I found a supply for the 11 missing screws. That I needed to be able to reconnect the grounds. Even tightly bubble wrapped they got loose and apparently fell out of the boxes during moving.

The tech would install the projectors and do the basic connections for me and then move on to the next room. I would then use my laptop and plug a HDMI cable int the C2G wall plate. This had a shielded Cat 6 cable that went up to the opening for the wall mount projector and plugged into the C2G switcher box. That combined the audio for the speakers and the video for the Epson projector so the

audio and video would be synced. I used the same guided meditation program to tune all the different projectors in the school. That way it would be consistent. The white video screen and the audio that changed volume level several times allowed me to tweak and adjust each system until it was correct. The file was 21 minutes long, so it also let me know how long I had been working on a projector.



We would make sure that the Audio came out clear from both of the 2'x2 square projector lay in speakers. Making sure there was no 60-cycle hum or crackling. When the Audio was good, I would move onto the Video.

For the Video I worked on adjusting the size and shape of the picture on the white board or the screen depending on the type of the projector. Taking down the projector mount, no matter how careful would still mean that the projector was out of alignment in some way. I later found out from the staff that some of the units that were giving me the

most trouble had been having issues before they were taken down.

That adds another lesson we learned. Never assume that the equipment is working in perfect order. It needs to be tested and any issues noted before it's taken down. Luckily The A/V Group helped with spare parts that we recovered for them from the other two schools that were demolished. It's a nice feeling to have a teacher tell you thank you for fixing their system that had been having issues sometimes for a couple of years.

In several cases I would have to hook up a temporary power cord to power the Projector, C2G video switcher and Roemer power amp because the electricians didn't remount the ceiling quad 110v outlet in the right spot or at all. Luckily the G.C. and the electrician worked with us closely to get these minor issues resolved quickly.

I spent the week before school was to start, making sure that any issues were resolved with the staff. I also worked on getting the rectangular PA speakers mounted in the areas they were missing once they came in from Bogen. The only issue we had with the PA speakers were in a few of the classrooms on the second floor. We later found out that because we used several different types of speakers that came from the other schools there was an issue in these rooms. There were six 70v speakers that didn't have a transformer on the speaker, so they caused an issue with the Rauland Borge PA system. Causing the volume to crack out and over driving operating at 25V. Having ordered extra PA speakers allowed us to replace these odd ball units and the problems completely went away. This problem would have never happened if we were putting all the exact same type of speaker back in. It took some trouble shooting and some phone calls, but it got resolved. And we learned a lot about these PA systems.

The final part of this project was the post-Construction cable testing using our Fluke meter to test and see what the cable plant looks like compared to the Pre-Construction testing. Off hand it looks like now that about nine cables were damaged and will need to be replaced. If this testing had not been performed these cables would have issues that the school's staff would have to wonder? Were the cables bad to begin with or were they damaged during the construction. Then they would have to

figure out how to get them repaired . Now the cabling will be replaced and certified to Cat 6 being paid for by the General Contractor.

In conclusion, The District was completely satisfied with Cablelink Solutions-Texas performance and has decided this is the way they want to handle this sort of project in the future.

Cablelink Solutions-Texas is ready and able to help you with similar projects that might come up. Not only are we a Legrand Ortronics-Superior Essex C.I.P. (Certified Installation Partner) we also have partnerships with other Key I.T. Manufactures. We also have the skill sets that you need to oversee your Technology infrastructure projects. Feel free to contact us for a free consultation. As this case study shows we are not afraid to take on the unknown when it comes to Technology Infrastructure projects and deliver outstanding results.

Cablelink Solutions-Texas

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