

Fiesta Lanes, Tucson, AZ

40 Lanes Remove 12 Strike, Install BES-X, Auto-Bumpers, TCS.

Day 1 - Monday, July 31, 2017 - We arrived at 7 AM were let in by the Center Manager. The Truck from Richmond was waiting. We unloaded the truck, stored all equipment in the bowling center meeting room, unloaded tools from trailer and stored in same room.



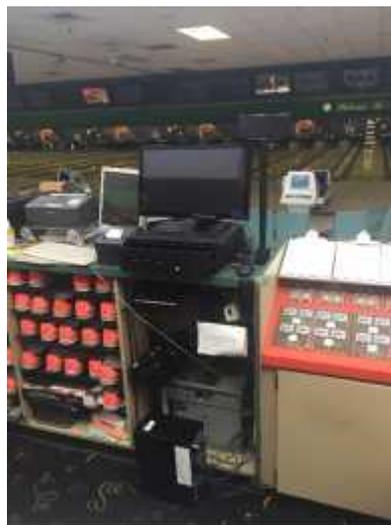


We put all of the Bumper and TCS materials, shown above, on one side of the room and tools and BES equipment on the other side. We plan on installing BES-X completely, then installing Auto-Bumpers and TCS, so we separated the components accordingly. We installed 20 lanes of 4 HD CPU's. The center has their Monitors installed against a former hanging Telescope wall over approach, so we installed the CPU's onto the mounting plates and bolted the mounting plate to the inside of this wall (out of sight), and ran the HDMI cables and the Infra-red Control cables through the existing holes behind the Monitors. We installed all Curtainwall Network Cables and Netgear Slaves and Master. We tied-up all wires neatly.





We installed the Server, one Front Desk Computer, and one of the POS computers. We ran all Conqueror Net wire. The Front Desk is a total island. We had to run the Conqueror Net wire from the Front Desk through a conduit under lanes, up pinsetter leg and overhead to the Back Office. We bought and used high grade Cat6 cable as recommended by Tech department. We went to Home Depot and bought Cat6 Jacks and Cat6 patch cables for this long Cat6 run, as recommended by Martin Vera (thanks Martin) so it would be compatible. The Cat6 run was 302' total, so it is under the 100 Meters recommended never to exceed. We ran the Solid Copper for ScoringNet from the curtainwall to the back office when we ran that Cat6 portion.



Front Desk 1

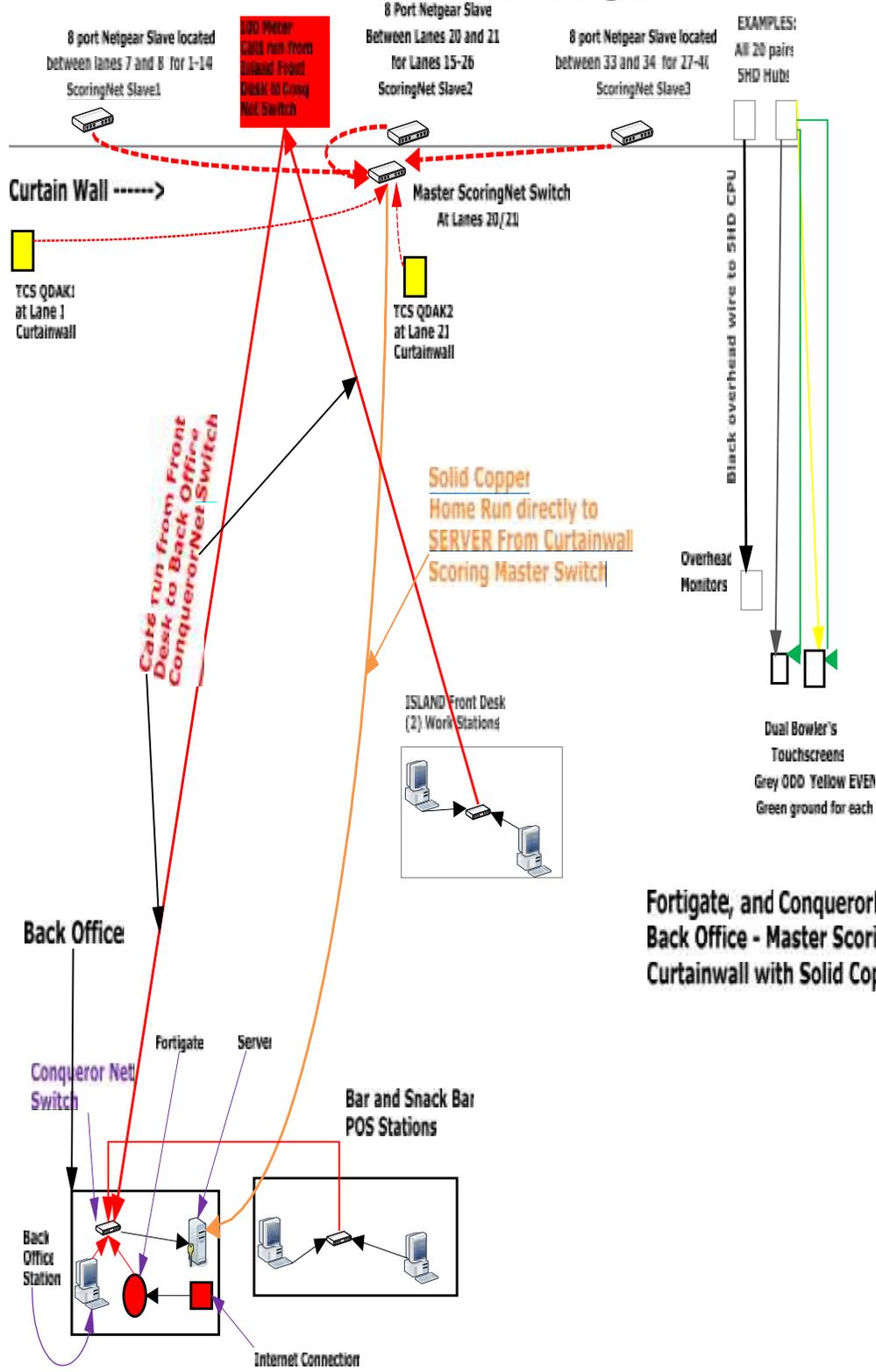


Snack Bar POS



Server (Back Office will go beneath)

Fiesta Bowl Tucson Network Diagram



Fortigate, and ConquerorNet Switch in Back Office - Master Scoring Switch on Curtainwall with Solid Copper Directly to Server

The Network Diagram is shown above. We are ready to begin swapping-out the 12 Strike for the BES-X on lanes 1-4 tomorrow. We will install only 4 lanes and get everything working, then replace 6 lanes for a couple days, then 3 days of 8 lanes per day, if all is going well. I got keys to building, tool room, and back office from GM Candy Prokosch. The entire staff at Fiesta was very pleasant and helpful - especially Candy and regional Mechanic David. We will start at 4:30 am in hopes of being gone by 1PM each day, since this center is VERY busy. Daily Hours: 9 (me) + 24 (skilled) + 8 (labor) = 41. Job Hours: 9 + 24 + 8 = 41.

Day 2 - Tuesday, August 1, 2017 - We came in at 4 AM and began replacing the scoring on lanes 1-4. The Bowling Center is staying ahead of us - removing the settee area bowler's terminals, so they can install new tile on the lanes we will do the next day. We installed the 60 degree plates, Touches and pedestals. We ran 8 things underground, using the old wire to pull. The Yellow and Beige Cat 5e for the touchscreens, the two grounds, two Bumper hoses, and 2 two-conductor wires for Foul (8 items total). We put the Cat6 jacks and Patch cables on the Front Desk-to-Back-Office ConquerorNet run mentioned above and tested. Good. We mounted the 4HD Hubs, Bumper BCU II Valves and F-boxes on the curtainwall for 1-4. We installed the New Pin Solenoids and wired the 208 from the NPS to Terminals E and H on the high voltage side of the A-2 Electrical Boxes. We ran 14 low voltage wires from the Brunswick A-2 Electrical Box/NPS to the F-Box location on the curtainwall. Two coil wires from the NPS, two Cycle conductors from terminals 16 and 17 of the Time Delay Module to Cycle terminals in F-Box, two 24 volt power wires from low voltage terminal strip terminals 6 and 9 to Strike cycle post (J-1 or J-2) in F-Box (one wire from the NPS coil and one from Low Voltage Terminal 6 on the two posts of J-1 (even) or J-2 (odd), with the remaining wires from the NPS Coil and from Terminal 9 Butt Connected - creating a 24 volt switch). Also two Power wires from A-2 Electrical Box Manager's Control plug wires from terminals B and C for turning Pinsetter on and off, Two wires from Low Voltage Terminal strip terminals 1 and 8 for 2nd ball, two wires from terminals 2 and 5 for TSC Jam Switch control, and two wires from internal Rake Drop switch (Common and Normally Open) also for TCS (to be connected later). We ran overhead wires from the 4 HD Hubs to the 4 HD CPU's, using the old 12 Strike S-Video cables to pull-in (removing them in the process). We removed the remaining S-Video cables from the 12 Strike system also (there were 2 wires per pair and we used one to pull our Cat5 and just removed the other). We installed the Q-Vision Cameras 156" from Lens to 7-10 Line, which was 95" from Kickback Noses to Pinsetter edge of Q-Vision Camera Frame. We installed reflectors 94" from Noses to Pinsetter side of Reflectors. We ran LCOM wire from Q-Vision to F-Box and from F-Box to 4 HD Hub LCOM Port, and ran LCOM from BCU II to piggy-back into 4HD Hub LCOM. We cleaned-up completely, configured Lane Setup for Tenpin, CPU serial number, English Touchscreens, 2 up/2 down, Vizio monitors, Brunswick A-2 Pinsetters with Qvision and NPS, plugged-in the Slave and Master curtainwall switches, and fired-up the Hubs.

Below is my guide for the F-Box wiring from Pinsetter Electrical Boxes:



We got repeated re-booting of the 4 HD CPU's, as if they couldn't find the server. We completely re-inspected and double and triple-checked all cables with tester and all were good - yet CPU's couldn't find server. Finally, I called Martin Vera and he entered the server via team-viewer. He found that an IP address was missing in Center Setup. He entered the missing IP address and started a reinitializing, and immediately, the process began. All came up fine, after 2 hours of waiting and checking things out, PLUS the 55 minutes of loading programs. Thanks Martin!! Nick at Tech Support configured the IGD. Thanks Nick! We adjusted Camera Ball Detects. We sent Pinsetter Parameters, Making sure to check the Automatic Foul box, so that a full rack would be set in the case of a foul, and adjusted Cameras. All lanes worked properly and we checked all functions: Power-on, cycle, foul, 2nd Ball, Gutter Balls, Strike/10th frame fill-ball NPS function, scoring pinfall, ball speed, Pinsetter on/off from front desk, cycle from front desk, cycle to first ball if on second ball upon lane opening, etc. All fine. However, the upper Vizio Monitors would not display. Touchscreen display worked properly. These monitors are at least 12 years old, and maybe we need to change monitor setting in lane setup. It was too late (eastern time) to pursue this, so we will try to find an answer tomorrow for the upper monitors. Daily Hours: 11 (me) + 30 (skilled) + 10 Labor = 51. Job Hours: 20 + 54 + 18 = 92.

Day 3 - Wednesday, August 2, 2017 - I emailed Martin concerning the Vizio Monitors not displaying. He told me to change the setting in Lane Setup > HDMI settings and send to lanes.

The second of the four settings (60 HZ) worked perfectly. All displays are now working properly.



I put 5 names in scorer to check screen size and found that the screens were perfectly fit at a value of 20. I copied these 2 HDMI settings to all 40 lanes. We removed and installed Scoring on lanes 5-10, as described above. All came up GREAT! Screens looked good. We tested for all functions as described above. The foul lights are haphazardly wired and adjusted. Of the 10 lanes we have tried so far, only four lanes were adjusted and properly working. We had to adjust those we could, to properly test the foul function. The wiring was reversed for polarity on about half of the foul units (as you might expect - a 50-50 chance of correct polarity). On the half of the lanes that were not scoring a foul, we reversed the polarity and they all worked.



We installed the Back Office computer during the Reinitialize waiting time (now about 50 minutes - getting faster!). Trainer is coming in tomorrow, so we wanted to have one front desk (of two), one POS (of two), and the back office computers up and running so trainer could train effectively. We have one POS and one Front desk yet to install, but they must be placed where existing computers rest, so we got up enough to do training and will replace the last two computers when the old system is no longer in use (right now they are using both the old system and the new until we eliminate to old system completely). We cleaned-up completely after testing all functions on the latest 6 lanes of BES-X.



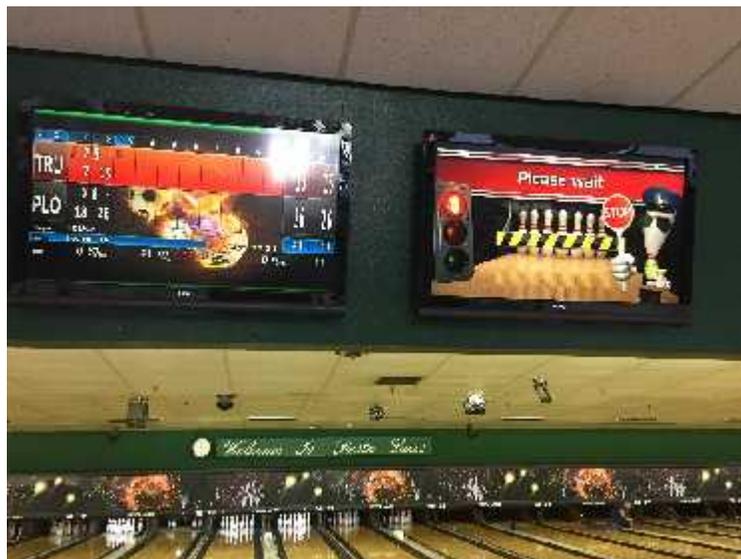
Daily Hours: $8 + 21 + 7 = 36$. Job Hours: $28 + 75 + 25 = 128$.

Day 4 - Thursday, August 3, 2017 - We removed and replaced the scoring on six more lanes - Lanes 11-16 - as described above. We cleaned-up completely. All lanes came up perfectly and all functions worked perfectly. We are short of CAB001 cable, since we are wiring the Brunswick Electrical Boxes for the TCS system (an extra 24' per lane) and for running a 75' foul unit run per pair, for foul signal to F-Boxes. This is going to leave us 450 meters short of enough CAB001 (blue 18 gauge 4-conductor), to complete the job. I called hotline and ordered 5 boxes (500 meters) of CAB001. We decided to continue to do 6 lanes per day to finish the last 24 lanes in four more days, instead of going to 8 lanes per day and finishing the last 24 in 3 more days. The center is very busy, and we haven't run into problems yet, but if we go to 8 lanes per day and then have issues, it will be bad for the center. 16 lanes installed:



Trainer Marty arrived today and is training staff. Daily Hours: $9 + 21 + 7 = 37$. Job Hours: $37 + 96 + 32 = 165$.

Day 5 - Friday, August 4, 2017 - We installed 6 more lanes today - Lanes 17-22. All came up fine and we tested all functions. All worked perfectly.



We cleaned-up completely. Our wire came in today from Richmond. Daily Hours: $9 + 21 + 7 = 37$. Job Hours: $46 + 117 + 39 = 202$.

Day 6 - Saturday, August 5, 2017 - We did 6 more lanes today - Lanes 23-28. The CPU on lanes 25-26 wouldn't reinitialize, it kept rebooting at the point where the blue screens appear, then proceed to this same point and reboot again - over and over. We changed the CPU and it came up fine, like 23-24 and 27-28. We cleaned-up completely, checked all functions, and will order another 4HD CPU. They had problems with 19-20 rebooting in the middle of open play. We tried changing the 4HD Hub and will see what happens tonight. Lane 6 last night was not always energizing the New Pin Solenoid on a 10th frame fill ball. We checked today and found it intermittent in engaging. We checked all FBox and Pinsetter Electrical Box connections and all were good. We checked inside the New Pin Solenoid and found a terminal to the 24V coil that was not well secured. We secured, and tested for many strike-cycles and it worked well every time. We will monitor. The bad CPU on 25-26 was serial number 10048. We will order a replacement.

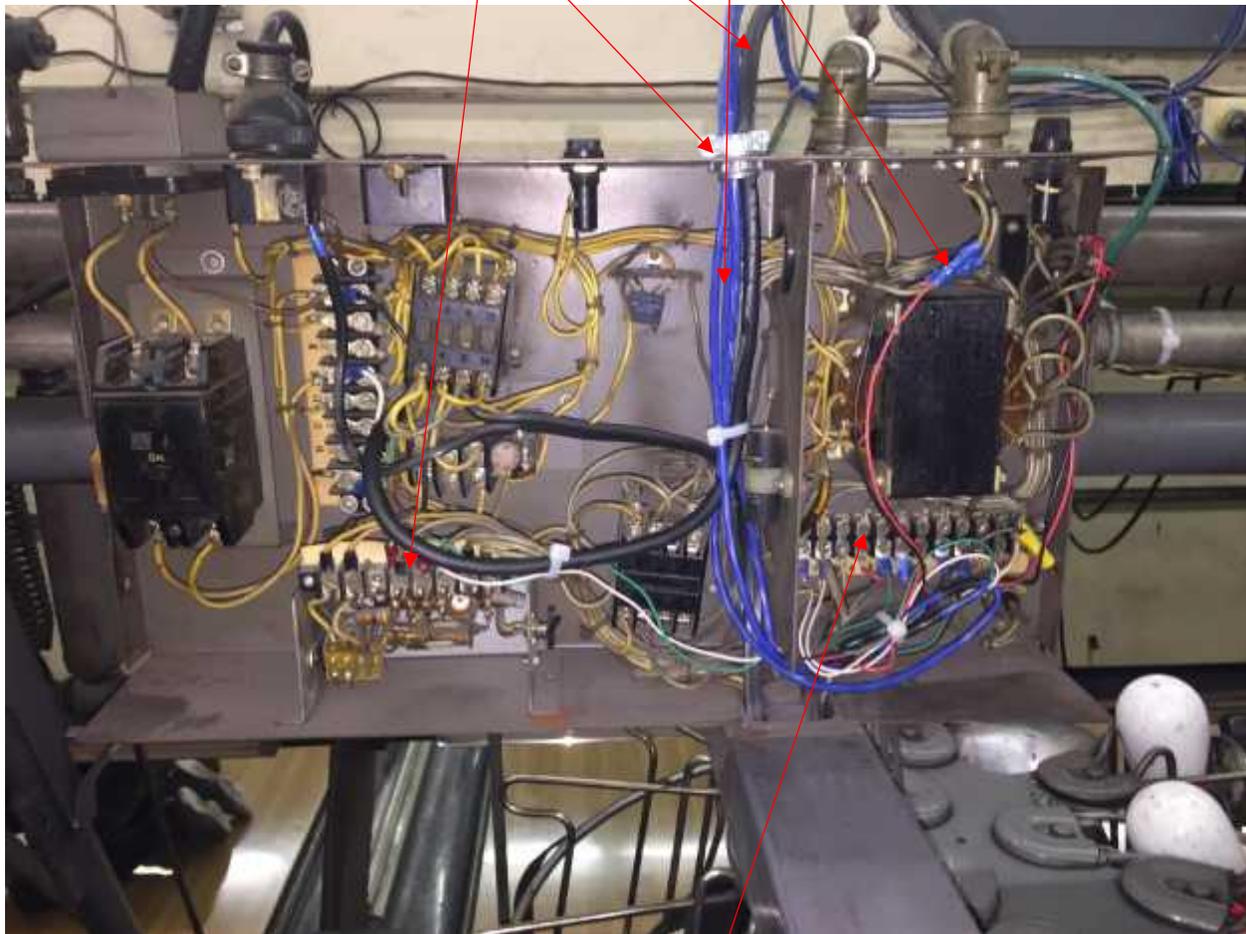


Daily Hours: $10 + 27 + 9 = 46$. Job Hours: $56 + 144 + 48 = 248$.

Day 7 - Sunday, August 6, 2017 - We installed lanes 29-34. All came up perfectly and all functions worked perfectly. We cleaned-up completely. Lanes 19 and 20 did more rebooting during open play yesterday. The error was the same as prior errors: 208 - which is error for

unable to communicate with F-Box. We checked all F-Box wiring and all is perfectly installed, so we changed the F-Box and will see what happens during play today. We asked the center to keep these lanes busy as much as possible. We put the 4 HD Hub that we changed from 19-20 yesterday, back in stock as good, and will see if the new F-Box solves the problem. Here is the picture and description of the Brunswick A-2 Electrical Box wiring that was explained on Day 2 above (Japanese A-2 Electrical Box):

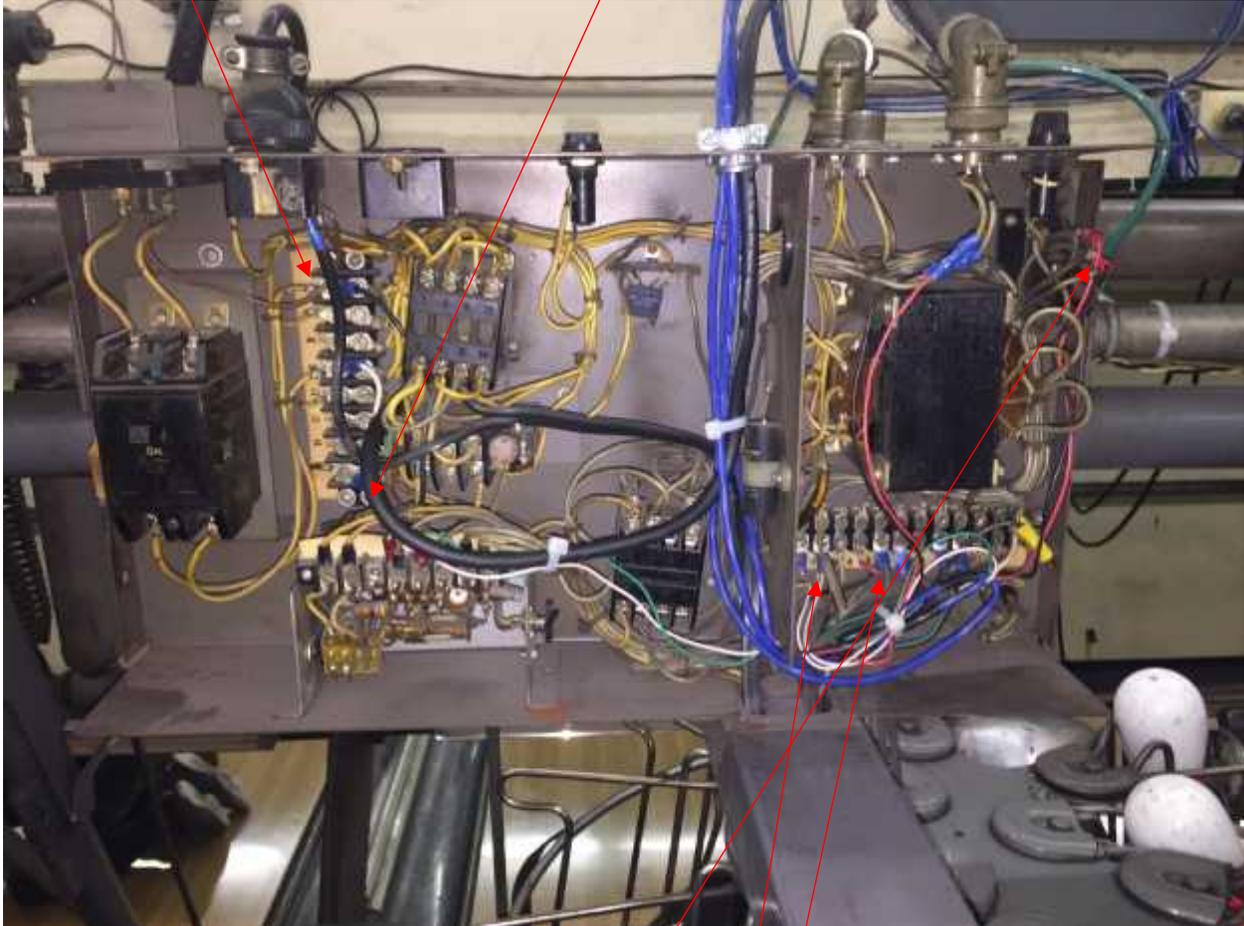
We drilled a 7/8" hole in the top of the Brunswick Electrical Box (since none was present), and installed a 1/2" Romex connector. We ran three new 4-conductors through this Romex Connector and the High Voltage wire from the New pin Solenoid that we also installed. We labeled the three new 4-Conductors with zero tape (on both ends), 1 piece of tape, and 2 pieces of tape. These three 4-conductors were ran to the F-Box. The first 4-conductor supplied CYCLE (White/Green from Posts 16 and 17 of the Time Delay Module to the F-Box), and POWER (Red and Black from Manager's control posts B and C to the F-Box).



The second blue 4-conductor (one piece of marking tape) supplies the F-Box with Second-Ball Signal (white and green from Low Voltage Terminal Strip posts 1 and 8), and 24 Volts (red and black from posts 6 and 9). The red wire (low voltage terminal strip post 6) and the white wire from the 24 V Coil of the New Pin Solenoid (the 2-conductor from the Coil, that was also run out to the F-Box), were connected to the F-Box at J-1 (even machine) or J-2 (odd). Then, the remaining wire from Low Voltage Terminal Strip (post 9), and the remaining wire from the Coi,

were butt-connected, creating a 24 V "switch" at the F-Box. When Conqueror chooses to complete the circuit at the F-Box, 24 volts is supplied to the New Pin Solenoid Coil.

The High Voltage 3-Conductor from the New Pin Solenoid, was connected to High Voltage Terminal Strip, terminals E and H and Ground, which supplies the New Pin Solenoid with 208 V at all times that the Pinsetter is on. Then, when Conqueror provides the 24 V mentioned above, the solenoid is provided these 208 V and fires.

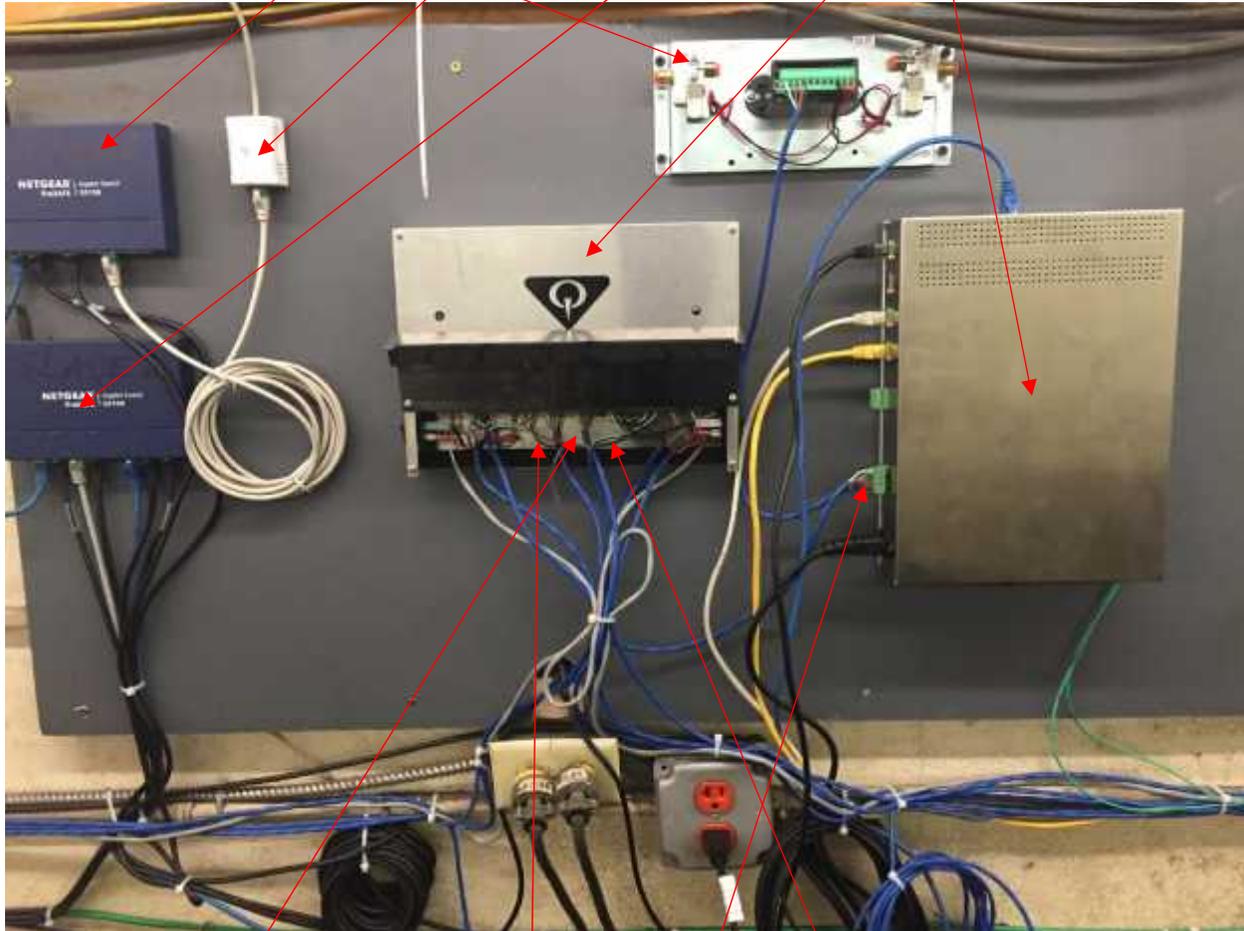


This Solenoid action mechanically switches the A-2 Pinsetter from First Ball to Second Ball. This mechanical ball change is necessary to provide the bowler with all of the Conqueror "One-Ball Games" (like Robinhood), "Smart Strike Cycle" (Conqueror scores a strike and Pinsetter simply sweeps dead wood and sets a new rack of 10 pins), Foul Cycle (Pinsetter sets a full rack of 10 pins after a first ball foul), and Tenth Frame Fill-Ball Reset (if bowler makes a spare in the tenth frame and gets less than a strike on the tenth frame fill ball, a new rack is set for the next bowler).

The final blue 4-conductor (2 pieces of tape) was run from the Electrical Box to the Curtainwall for the Trouble Call System, which will be installed this coming week. 2 Conductors (green/white) to Low Voltage Terminal Strip posts 2 and 5 of the A-2 electrical Box for Jam Switch, and 2 conductors (red/black) to the internal rake-drop switch. These will tell Conqueror

if there is a black-out of the A-2 Pinsetter or if the rake is in the down position for an unusually long period of time (needing the mechanic's attention).

Here is a picture from Lanes 19-20 (center of the house) of the 4HD Hub, F-Box, Bumper Control Unit (we will upgrade to Auto-Bumpers this week, but we already installed and wired the BCU II valve to LCOM), Master ScoringNet Switch, Slave Switch #2 (for lanes 15-26), and the Solid Copper ScoringNet Junction Box (this is before final wire-dressing and with lower cover of F-Box not yet installed).



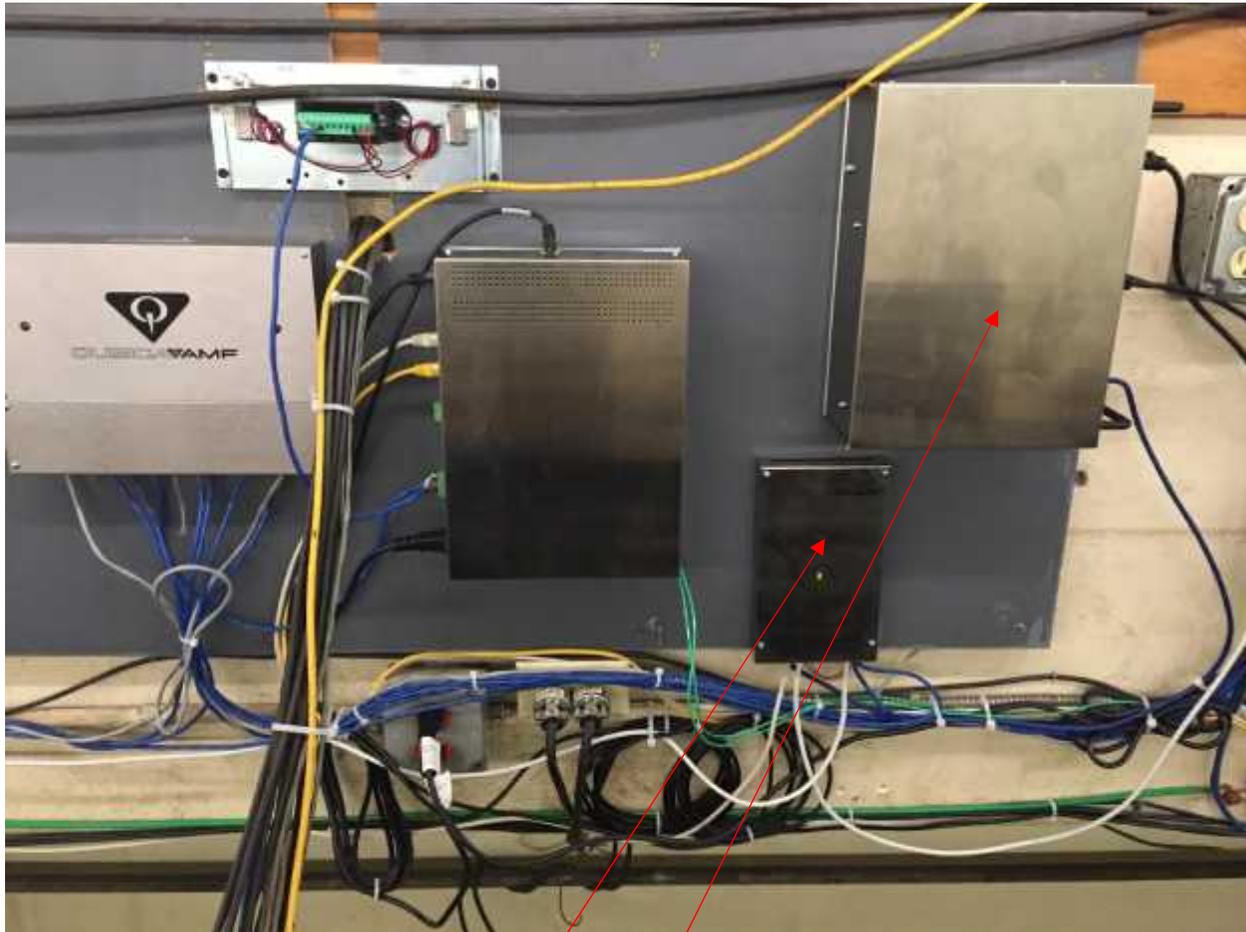
A 4-Conductor LCOM wire was run to the Q-Vision Camera from the F-Box, a 4-Conductor from the F-Box and from the BCU-II was run to the 4 HD Hub, and a 4-Conductor Foul Wire was also run to the Foul Unit at the foul line - Red/Black = Even and White/Green = Odd.

Daily Hours: $9 + 21 + 7 = 37$. Job Hours: $65 + 165 + 55 = 285$.

Day 8 - Monday, August 7, 2017 - We finished the last 6 lanes and all came up perfectly. We tested for all functions and cleaned up completely. All 40 are installed. There were no issues from yesterday reported to us. We installed the second Front Desk Station, the Laser Printer, and the Snack Bar Cook's printer. All computers and POS stations are installed and working. The F-Box we replaced of 19-20 worked great all night yesterday and this morning after repeated Errors since it was installed, so we ordered a replacement FBox and also ordered the

replacement for the bad 4HD CPU from Saturday. We will continue to monitor the BES-X install, as we install the Trouble Call system and install the Auto-Bumper upgrade over the next few days. Daily Hours: $9 + 21 + 7 = 37$. Job Hours: $74 + 186 + 62 = 322$.

Day 9 - Tuesday, August 8, 2017 - We completely installed the Trouble Call System with two QDAKs. We tested half of the Rake-Down and Turret/Deck Jam switches.



TCS Backend Box and QDAK for lanes 21-40

We began installing the Auto-Bumper Upgrade. We ran the main air hose line from regulator across the house, and installed 4 lanes of Air Cylinders / return springs. Daily Hours: $8 + 24 + 8 = 40$. Job Hours: $82 + 210 + 70 = 362$.

Day 10 - Wednesday, August 9, 2017 - We continued cutting-in Auto-Bumper Air Cylinders and connecting the underground air hoses that we ran when installing the BES-X underground wire. We connected the hoses to the cylinders up front and up the Pinsetter leg to the BCU II valves on the curtainwall. We installed lanes 5-18. The Front Desk 2 computer crashed last night and would not boot back up. Tech support gave us the number for Dell Support. We called Dell and tried all the test as they instructed us over the phone. They came to the conclusion that the computer needed a new motherboard, and are sending a service tech to the bowling center tomorrow. We continued testing the Trouble Call System. All Sweep-down switches and

Blackout switches work properly. They display the three bowler notifications on the overhead monitors as they are supposed to: 1. Stop bowling - Mechanic is on the way. 2. Mechanic arrived and is working on it. 3. Problem fixed - ok to resume bowling. These displays change as the mechanic's button is pushed by the mechanic. The phone, attached to QDAK 2 however, will not call the mechanic when an error is detected. We tried the phone on both QDAKs and tried other different settings in Center Setup > Trouble Call tab, and still no phone call. We called tech support and they will try to reload the speech software and we will try again tomorrow. Daily Hours: $8 + 24 + 8 = 40$. Job Hours: $90 + 234 + 78 = 402$.

Day 11 - Thursday, August 10, 2017 - We continued installing Auto-Bumpers. We are finished through lane 32 of this 40 lane center.



We ran the Home Run line to the Control Desk from Lane 1 for Auto-Bumper Control, and wired the 5 Power Supplies in 8-lane groups across the curtain wall. We programmed the BCU II addresses into the Bumper Controller (shown below at the control desk).



We pressurized lanes 1-20 and tested. All good except one tiny leak - on Lane 5 - a tiny pinhole that was not even visible! We cut out the pinhole portion and installed an air tube butt connector. All bumpers functioned properly with the Bumper Remote Control shown above. We tested 1-20 in Conqueror, by opening lanes and choosing Bumpers, and all responded perfectly. The IT Department in Richmond re-loaded the Voice programs into Conqueror yesterday, in response to my request, to try to remedy the problem we are having concerning the Trouble Call System. As mentioned above, we had FULL function of the trouble call system EXCEPT - the system would not call the mechanic's phone from the QDAK. WHAT THEY DID WORKED PERFECTLY! Reloading the voice system made the Mechanic's phone work just fine. We only had to slow the voice speed in Setup > Center Setup > Trouble Call System Tab, to make the phone message from Conqueror (in the case of a Blackout or Sweep down for more than 30 seconds), more understandable. We familiarized the Center Mechanic on replacing CPU's, Touchscreens, function/replacement of all curtainwall components (FBOX, 4HD Hub, Backend 3 Trouble Call Unit, QDAKs, and Mechanic's Trouble Phone). We also showed the mechanic how to access and adjust Pingspotter Parameters (explaining the values displayed and stressing that the Default settings are best) and especially Camera Parameters in Conqueror. The Dell Guy came in and worked on Front Desk 2 Computer. He replaced several components but failed to resolve the issue. He is getting a new machine from Dell, and will swap out the hard drives and install as soon as the new machine arrives. Daily Hours: $8 + 24 + 8 = 40$. Job Hours: $98 + 258 + 86 = 442$.

Day 12 - Friday, August 11, 2017 - We finished the final 8 lanes of Auto Bumpers, addressed in the Bumper Controller, pressurized lanes 21-40 and tested. All good. We did final wire dressing of all wiring. Dell called regarding the Front Desk 2 computer. They are building a new machine and will send in a technician to install it. They replaced just about everything on the first Dell Tech visit and thought it would be safer to build a complete new machine with a new hard drive. It should arrive about Wednesday of this coming week for installation. I made a notation to this on the Sign-Off papers. Daily hours: $5 + 12 + 4 = 21$. Job Hours: $103 + 270 + 90 = 463$.

11.75 Man Hours per lane, with TCS and Auto Bumper Upgrade.