



Category: 2 – Meeting the Challenge of a Difficult Job | Specialty Contractor

Specialty Contractor: Weifield Group Contracting

Project Name: DCPA Space Theatre Project

When your project is a 38-year old building that’s had only minor cosmetic touch-ups made to it in its decades of life, something much more than a “facelift” – and a team much more than *average* – is needed to transform it.

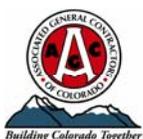
The Space Theatre, built in 1979 and the second-largest of five theatres located within the Helen Bonfils Theatre Complex at the Denver Center for the Performing Arts (DCPA), began its renovations in May 2016. The project scope included a complete demolition and overhaul from the bowels of the existing building, up – followed by a rebuild of a brand-new 380-seat theatre. Although not categorized as design-build, that is exactly what this project turned out to be; every piece and bend was custom-built.

“It was by far the most challenging project of my career,” said Weifield field supervisor, Michael Arledge.

A More Functional and Accessible 21st Century Space

DCPA’s goal for this project was to bring the theatre up to code and make it fully ADA-compliant as well as improve the theatre’s amenities, access, audience experience, and backstage support environment.

“We needed to ensure the theatre would serve patrons as well as it did 30 years ago,” said Clay Courter, DCPA VP of Facilities Management/Event Services. “We decided to demolish it and take it back to the bare black box space it was prior to 1985 – and rebuild a new theatre inside of that.”





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Weifield’s work encompassed renovations to the theatre’s lighting, power, fire alarm, A/V, cooling, electrical, and raceway systems. Renovations were completed in three phases: 1) Level 3 & 4 restrooms, 2) Dressing rooms, and 3) The remaining theatre space.

“I cannot tell you how impressed we are with Weifield – the amount of forethought they had was amazing,” said Courter.

Solutions of Special Projects

A New Central Nervous System: To provide the theatre with all-new power, Weifield needed to execute the installation of a new 3,000 lb., 300 kVA ground transformer – which required a shut-down of power to everyone within a quarter-block radius during an eight-hour window. Adding to the complexity were tight space constraints and scheduling issues, however, Weifield performed the installation in just two hours – passing final inspections with flying colors.

Rapid Restroom Deadline: Two sets of Level 4 restrooms had a hard completion deadline of 9/26/16 so the building could have functional restrooms. Simultaneously, during the summer, shoring for new concrete was being installed by another contractor. Weifield skillfully navigated around that work and utilized BIM virtual design to successfully complete the project 1.5 months early.

The Unforeseen: Unexpected challenges popped up at every turn; for example: certain systems did not fit in the catwalk space – such as a refrigerator-sized 200-amp disconnect box; there was nowhere to load circuits from the mezzanine down to the trap room; and since the catwalk needed to be clear, raceways entering building from above needed to be tight to the outer walls and ceiling – but no drawings existed for how to build them. Weifield worked to solve these





issues, designing raceways and a system to lift the boxes onto the railings – and off of walkways.

Other Special Challenges

Emergency Lighting: Weifield solved a potentially disastrous emergency lighting issue, to DCPA’s delight. The engineer’s original system wouldn’t work as it required manual on/off switching and therefore, emergency lighting would have stayed on in the theatre, continuously. Weifield caught the error and helped design a new system incorporating automatic, programmable switching.

Theatrical Control: Critical to DCPA was achieving 100% control of the theatre environment – utilizing an LED lighting solution with dimming capabilities from .0001% to 100%. Weifield integrated this solution with other electrical components and installed numerous switches so that each individual light can be controlled by any one of the theatre’s five control booths.

“The sheer number of conductors Weifield had to land was astounding – we installed 380 new dimmers, each with three wires. They landed 1,000+ conductors to satisfy dimming capabilities, alone,” said Charles MacLeod, DCPA Lighting Director.

3+ Miles of “Artistic” Conduit: Weifield installed 16,634 feet – or 3.15 miles – of conduit, in total.

“Weifield’s conduit runs are works of art; I don’t mean that lightly,” said Courter. “Conduit is often thrown up wherever convenient – that is not the route that Weifield chose. They put it where it made sense – it’s perfectly formed, bent, and aligned. This gave me confidence they would do everything with as much thought.”



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Said Rebecca Kalinowsky, Special Projects Operations Manager at Turner Construction (General Contractor): “The routing required creative solutions with minimal impact. When Weifield discovered a challenge, they didn’t discuss the problem – they focused on solutions. It’s been a pleasure to work with Weifield on this project.”

Excellence in Project Execution and Management / Team Approach

Out-of-the-box thinking meant survival – so Weifield continuously submitted new ideas to the City and DCPA, attended weekly OAC meetings, and held daily meetings to drive the schedule. Weifield also presented numerous VE ideas to lower the budget – an example: saving DCPA cost by putting all switches into one zone versus separate units.

“There are not enough superlatives to describe Weifield’s performance,” said George Hartman, DCPA chief engineer (former Turner superintendent). “Weifield navigated around minor obstacles all the way to the finish.”

Said MacLeod: “There were so many on-the-spot decisions; Weifield’s communication was excellent – they were proactive and always quick to problem-solve.”

Construction Innovations / State-of-the-Art Advancement

Because so many items were not represented on the plans – the biggest question Weifield had in building the Space Theatre was, *how?* How do you bend conduit perfectly along the spine of a five-sided theatre, and build all other custom requirements? The answer quickly emerged – Weifield engaged our in-house BIM team to develop virtual drawings of every square inch of the theatre. Once approved, these drawings were sent to Weifield’s Prefabrication department to build materials to specification and label them so their exact destination would be known upon arrival, on-site. Weifield was the first contractor to utilize BIM at DCPA, and the owners were amazed: BIM shaved two+ months off the schedule and organized all subcontractors around the design.



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BIM facilitated solutions around seemingly impossible tasks – such as identifying where the trap overlapped the walls in order to find an entry point – after which Weifield re-routed 25 switch legs (2.5 miles of wiring) back to the existing trap. In the mezzanine, BIM mapped out raceway in the ceiling around 350 LED dimmable cans to avoid every one.

“BIM showed us the layers in rooms not yet built; it was extremely helpful in identifying solutions,” said MacLeod.

Special Systems: Weifield designed a truly customizable lighting control system; overall, 1,400 connections were installed, an on-site generator was added, and other special systems were implemented – including a dimmable emergency lighting relay panel, an Auxiliary 250 system to control lighting and sound, a TP panel with IP address interfaces, a programmable fire alarm system, and a custom electrical room. Weifield also installed 200 additional circuits within the catwalk/trap/theatre to achieve full lighting capacity.

“We could not have accomplished this project without BIM; it helped identify conflicts to maximize the available space,” said Courter.

Environmental / Safety

Weifield performed 11,500 total project hours – 250 of which were dedicated to safety. The main priority was bringing the 38+ year-old building up to code per NEC Article 520. Various hazards presented themselves due to the building’s age – e.g., when working on old switchgear, it faulted and caused a small fire. Weifield held frequent safety huddles to discuss task-related dangers and due to the risk of working at great heights, also custom-designed safety procedures and restraint systems to go around all five sides of the mezzanine, tying off at appropriate points. Weifield’s diligence ensured we experienced zero lost time or incidents.



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Excellence in Client Service / Contribution to the Community

Work completed on July 31, 2017 – in time for DCPA’s September opening of the 2017/18 season. The new theatre features:

- In-the-round seats over two levels
- Double the amount of restrooms the theatre had, previously
- A reduced seat count (by 150) for a more intimate experience
- Flexible performance space with adaptable staging/design
- An enlarged lobby with one central doorway (and elimination of previous stair access)
- Full ADA compliance with elevator access to control booths and a fully accessible entryway
- Improved sightlines and additional main level seating
- State-of-the-art technological advances

For the first time, patrons with accessibility needs have access to all seating within the theatre – instead of only the mezzanine – providing a truly equal theatre experience.

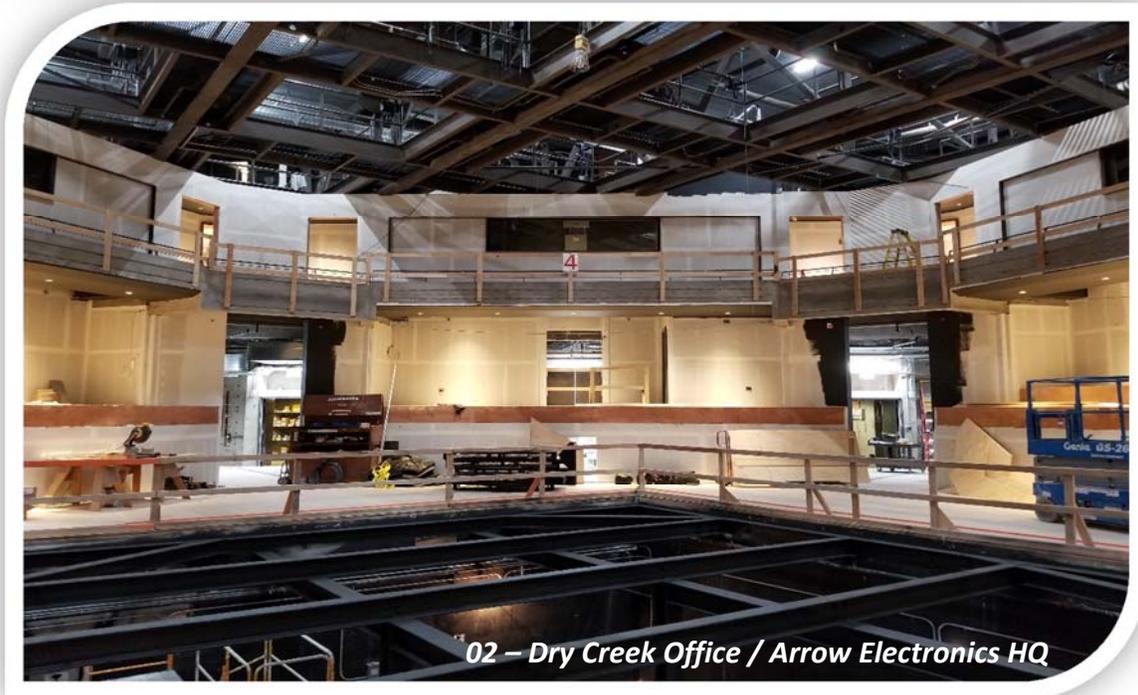
The first show in the new theatre, Shakespeare’s *Macbeth*, opens on September 22, 2017; DCPA has high hopes for the public’s reaction to the new space.

“Weifield was collaborative and had the job’s best interests at heart,” said Hartman. “I’ve been in construction for 43 years and I’ve never worked with better electricians.”

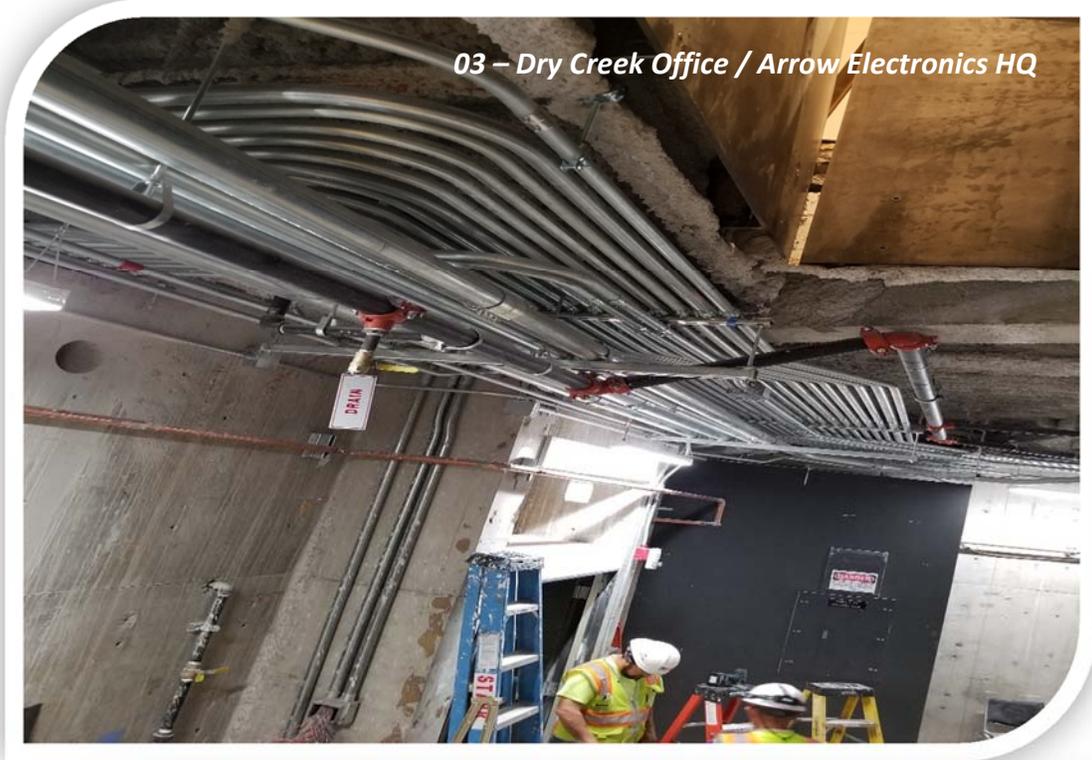
Said Courter, “Weifield pushed this theatre into the 21st century – by being adaptive, flexible, and creative. They truly understood our needs and garnered the respect of everyone here at DCPA. I couldn’t have asked for a better working relationship.”



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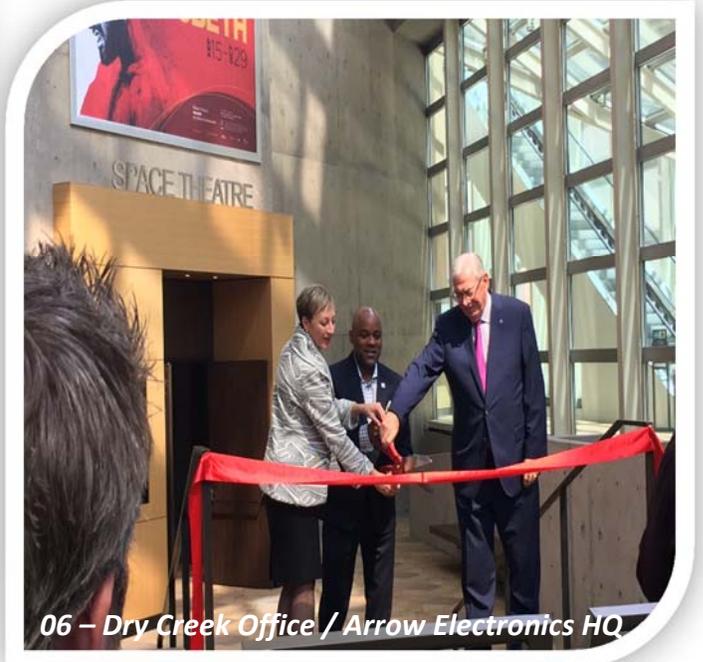




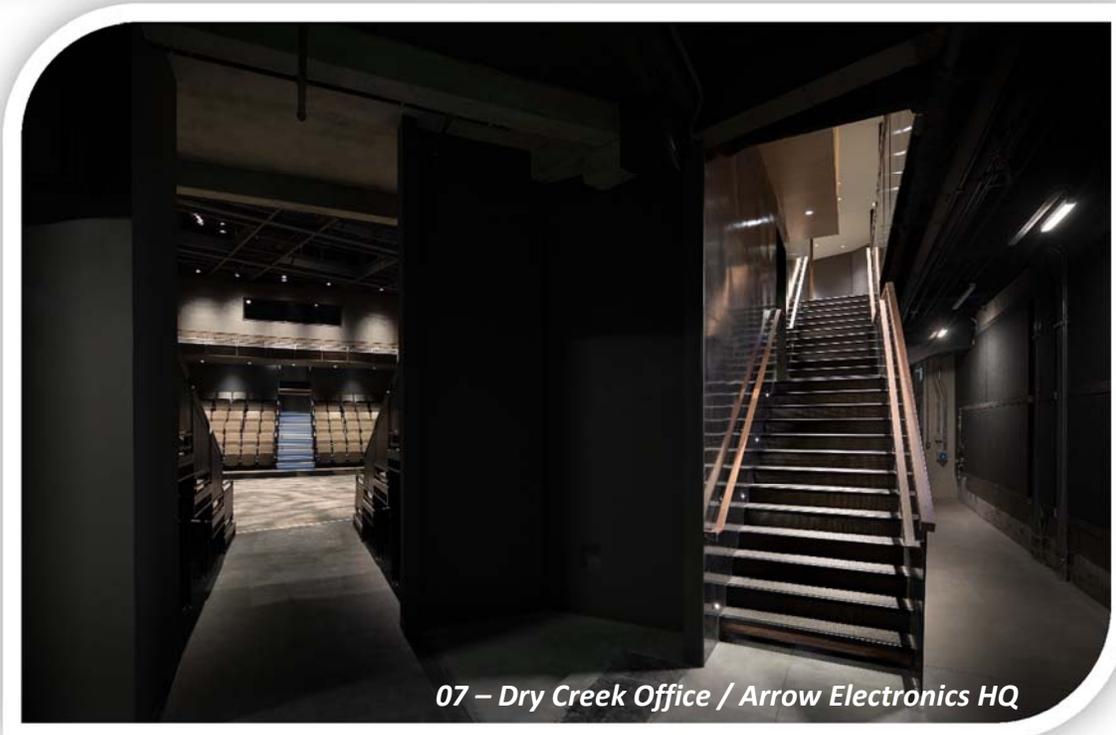
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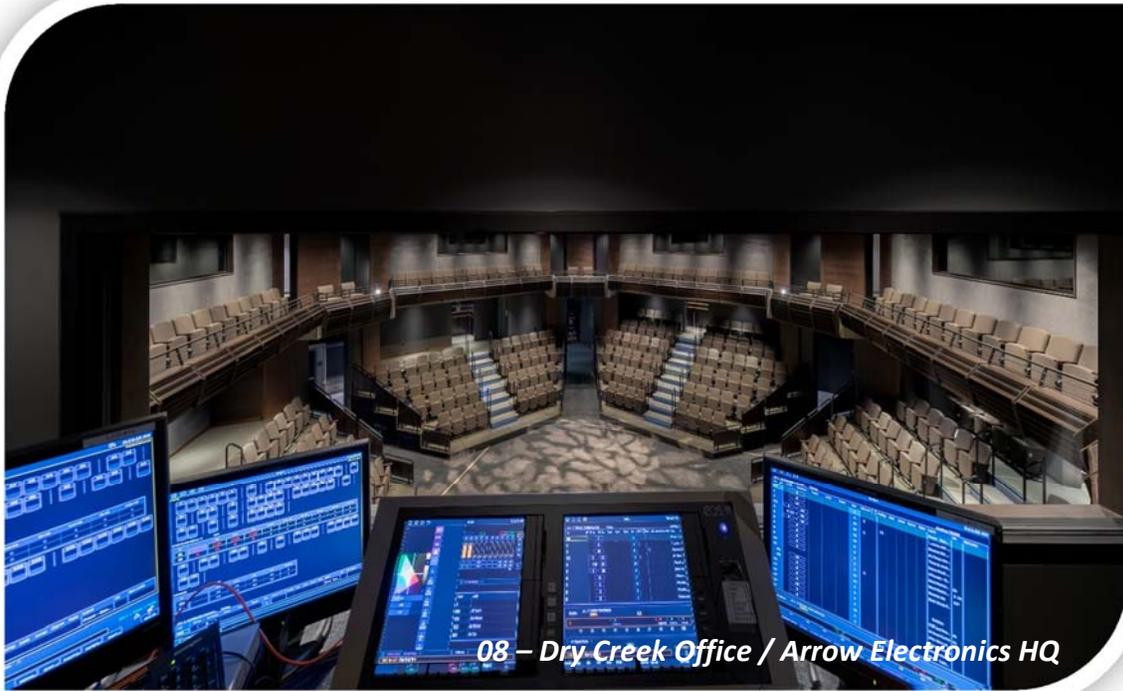
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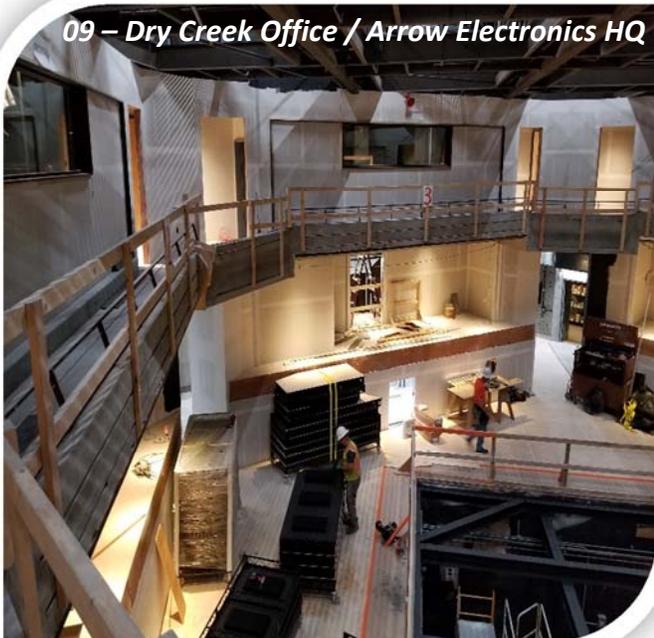
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