

## ***2015 AGC ACE Awards***

***Category 7:*** Best Building Project – Specialty Contractor (Over \$10 Million)

***Specialty Contractor:*** Sturgeon Electric Company, Inc.

***Project Name:*** South Terminal Redevelopment Project (STRP) - Denver International Airport

---

The next time you fly out of Denver, your eyes will be drawn to a massive new unusual shape emerging from Denver's eastern skyline; a shape that locals have described to resemble a whale's tail, a battleship, a bowtie, or a monolithic moustache. Regardless of what you think the building looks like, you won't forget it; it looks like no other building in America, and stands as a landmark project for Denver, representing one of the most profound and strategic civic investments in a generation.

The imposing building can be seen from 30 miles away, but as massive as it is, it surprisingly only represents 1/3 of the new upgrades known as the South Terminal Redevelopment Project (STRP). Comprising three new large projects which would individually be the envy of most any U.S. city, the \$544 Million trio of integrated infrastructure projects which make up STRP will elevate the Denver region to a new nationally competitive level over the next several decades.

The first and most visually striking portion of STRP is the new Westin Hotel-DIA. Designed to appear as a bird in flight against the metro skyline, this 433,000 square foot, 519-room hotel is framed by 14 stories of glass-curtain walls which are articulated on the east and west sides. The hotel soars above the airport terminal's south end and is designed to offer the ultimate in comfort and technology: every room offers floor-to-ceiling windows with sweeping views of the Rocky Mountains, downtown Denver, and Colorado's enchanting landscape. Fashion-forward lighting and chic, contemporary design illuminate the fitness center and pool on floor 11. The modern design theme is contiguous throughout 519 soundproof guest rooms, 35 suites, 15 board-meeting rooms, a grand ballroom and 37,500 square feet of elite-function conference center space. The building's transparency allows the halls to be infused with natural light and with views out to the Denver landscape, while modern intelligent lighting systems provide a contemporary and polished feel throughout. With such amenities, Denver International Airport has evolved from a travel hub to a travel *destination*.

The second segment of STRP is the Public Transit Center (PTC), which boasts two separate improvements for the traveling public. First, a new 22.8 mile commuter rail station provides passengers a new travel option between DIA and Denver Union Station in under 35 minutes, unimpeded by traffic or weather. The second element of the PTC furnishes a major improvement for public access. As a highly efficient centralized pick-up and drop-off location, the PTC provides greater accessibility for city buses while simultaneously reducing the impact to traffic around the airport.

The third segment of STRP is the Public Plaza, regarded as the civic heart of the project. Aesthetically unique to the United States, you'd have to look overseas to places such as Germany's Munich Airport for a comparable design. The 82,000 square foot open-air plaza is designed as the new urban "hub" between the Jeppesen Terminal and the new Westin Hotel-DIA. Equally accessible to air travelers and the community, this wide-open gathering place extends across all three major additions of the STRP project.

### **Solutions of Special Projects**

The enormous scale of the project and schedule expectations perpetuated considerable challenges, which were shaped by the goals of the City and County of Denver, severely congested construction access, and limited resources for qualified labor:

1. City goals: an unprecedented requirement for participation by Minority and Women-Owned Businesses (M/WBE) meant that Sturgeon Electric would need to push its outreach program to new heights.
  - We responded by successfully delegating \$17 Million of the \$44 Million electrical contract to over a dozen M/WBE businesses.
  - We successfully drove Safety culture buy-in from the dozen-plus M/WBE companies, resulting in strong relationships and reduced incidents.
2. Severely congested access: To reduce impact to the traveling public, construction access was restricted to designated roadways. These roadways were bottlenecked due to FAA and DIA Operations regulations. This threatened higher costs for material procurement and wasted labor.
  - Sturgeon Electric employed Lean Construction methods, such as Just-In-Time delivery and the Last Planner System, reducing deliveries.

- We secured an office/warehouse unit very near to the project boosting our capabilities for material procurement, staging, and delivery times. This also boosted pre-fabrication resources; we were able to pre-fabricate items such as entire panelboard/branch conduit assemblies, fixtures, and mounting brackets. As a result, were able to implement a process of getting pre-assembled material to crews at the exact time they needed them. Crew leaders constantly gauged their installation schedules and coordinated with the remote pre-fabrication team to streamline this process.

### **Excellence in project execution and management/team approach**

The Value Engineering (VE) and innovative management approach which Sturgeon brought to the STRP project provided great savings and reduced waste for the owner. We worked diligently to reduce costs for materials and labor by implementing several alternatives from the original design, which included:

1. Substitution of Aluminum wiring for Copper in larger electrical equipment wiring.
2. Reduced the number of required circuits in hotel guest rooms.
3. Used flexible metallic-clad cable in lieu of traditional pipe & wire.
4. Reduced the size of electrical equipment such as bus risers/feeders, and transformers.
5. For underground installations, we eliminated concrete encasement for duct-banks located within the building footprint and utilized fiberglass conduit bends in lieu of traditional PVC-coated metal conduit.
6. Worked with our vendors to reduce the cost of the lighting package by recommending more suitable fixtures for specific areas and combining lighting control panels in areas to reduce the amount of equipment required.

Sturgeon Electric provided nearly 20 VE solutions to the owner, resulting in approximately \$4.4 million in savings overall.

Electrical Code enforcement on the project was challenging due to the number of authorities involved, which threatened to hinder inspections on the project; governing bodies of the Denver Fire Department, City & County of Denver, and Hughes & Associates were sometimes at odds on codes and how they translated to managing Life Safety on the project. To rectify this

situation, Sturgeon Electric enlisted a former state inspector and Electrical Code educator as our QA/QC person, who was able to bring these parties together, driving the groups towards agreeable solutions prior to installation.

Due to strained accessibility to the site, we initiated staggered start times for crews as a work-around to the impossible challenge of getting crews to their work sites at the same time.

### **Construction innovations/state-of-the-art advancement**

Heavy use of Building Information Management (BIM) on the project translated to more efficient installations; Foremen were able to use detailed drawings to submit pre-fabrication plans to the off-site warehouse, while using iPads for document control, production tracking, and collaboration. Pre-fabrication was pushed to new levels; for example, our off-site warehouse successfully put together a 16-foot by 8-foot wall of Lighting Controllers, which included the Lighting panel and all interconnecting conduits, allowing the system to be installed in a fraction of the standard time. The STRP project is seeking Leadership in “Energy and Environmental Design (LEED) Silver certification.

### **Environmental/Safety**

While many of our M/WBE partners came into the project with excellent safety cultures, it took considerable investment by Sturgeon Electric to bring everyone’s cultures to the same level of quality. Sturgeon Electric has successfully employed an in-house, 8-hour program called Supervisor Training and Accident Reduction Techniques (START) to help us establish and maintain an elite safety culture. For the STRP project, we brought all leadership from our M/WBE subcontractors to our START class to elevate their safety culture, to which they responded notably. They also attended our daily Morning Huddles, and weekly Safety Meetings.

### **Excellence in client service and/or contribution to community:**

The STRP project, which comprises the Westin-DIA hotel, Public Transit Center, and Public Plaza, serves as a catalyst for economic growth in the Denver metro region. In addition to having already created nearly 1,000 jobs, including 600 - 700 construction and design jobs and over 200 permanent hotel jobs, the upgrades are anticipated to generate approximately \$2 million in annual tax revenues for the City and County of Denver’s General Fund.

*“We are building Denver’s future today at DIA... (this) means opportunities and jobs for local and diverse businesses, spurring a new frontier of economic growth for the entire region”*. -Denver Mayor Michael B. Hancock

Generating more than \$22 billion annually, Denver International Airport is the primary economic engine for the region; it is the 5<sup>th</sup> busiest airport in the United States, and the 11<sup>th</sup> busiest airport in the world, hosting over 53 million travelers annually. As the next 50 years transpire, the stunning additions of the STRP project will be the awe of billions who travel through DIA, and the installations of Sturgeon Electric will literally light their way.



Photograph provided courtesy of Denver International Airport

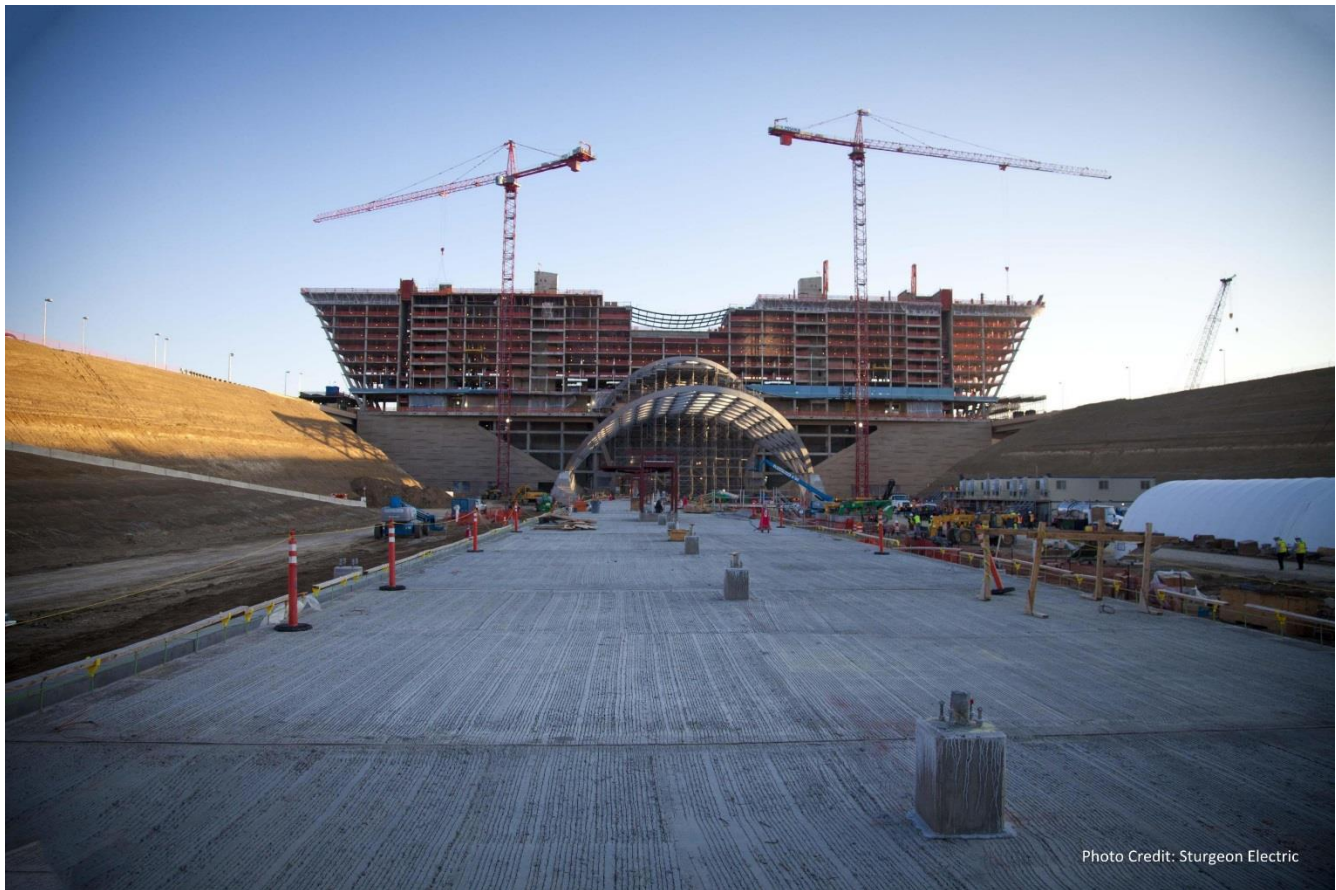


Photo Credit: Sturgeon Electric



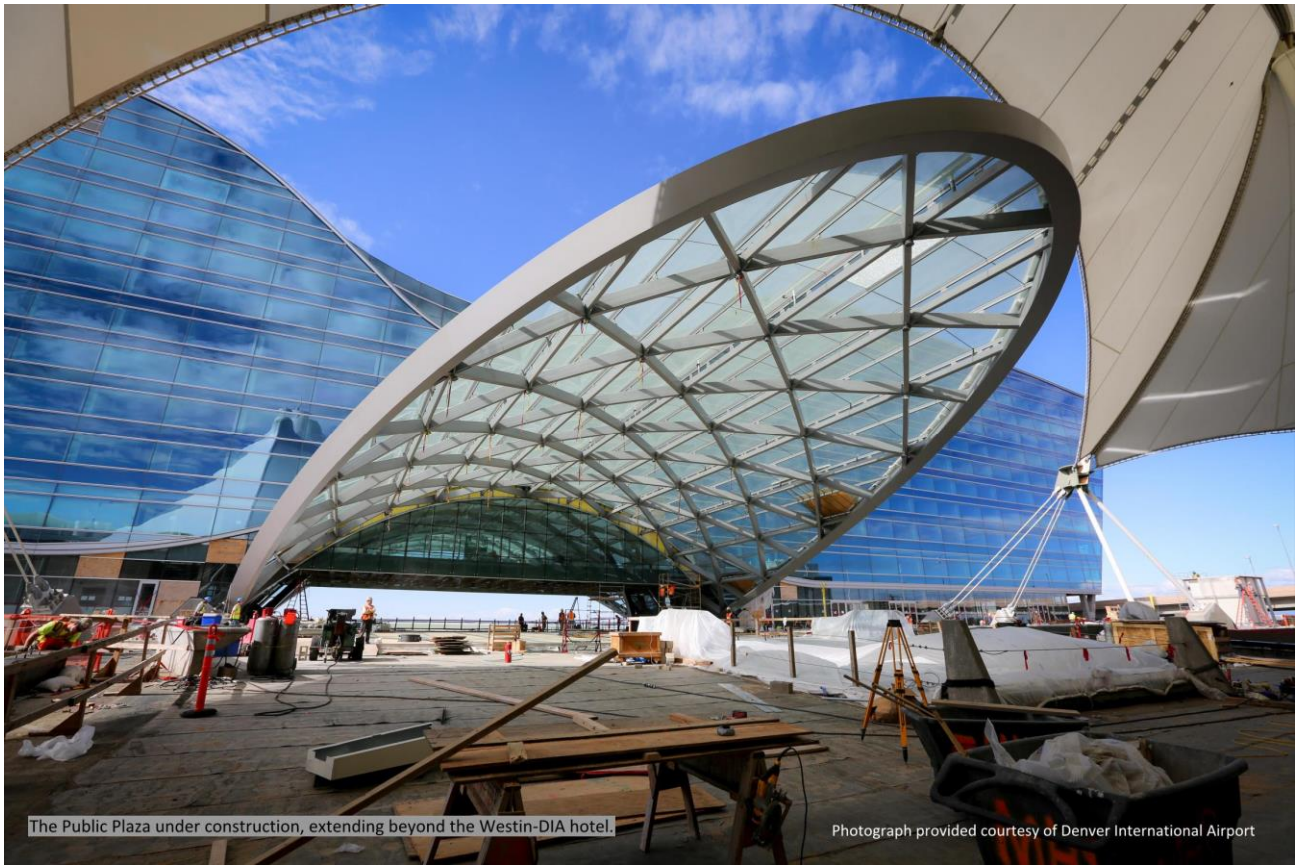
Photo Credit: Sturgeon Electric



Photograph provided courtesy of Denver International Airport



Photograph provided courtesy of Denver International Airport



The Public Plaza under construction, extending beyond the Westin-DIA hotel.

Photograph provided courtesy of Denver International Airport





A view of the STRP project from within the existing South Terminal at DIA.

Photograph provided courtesy of Denver International Airport



A theme of back-lit arches - common throughout the Westin-DIA hotel - illuminates one of the spacious conference rooms.

Photograph provided courtesy of Denver International Airport



Photograph provided courtesy of Denver International Airport



Photograph copyright Jackie Shumaker Photography