CONNECTING STEEL ERECTORS, FABRICATORS AND CONTRACTORS

SUMMER EDITION 2022

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MISCELLANEOUS CATEGORIES

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THE OFFICIAL MAGAZINE OF THE STEEL ERECTORS ASSOCIATION OF AMERICA

Amtrak Middletown, Train Station and Walkway, Middletown, Pa.

Structural Steel Class I (up to \$500.000) **Erector and Fabricator: Steel Fab** Enterprises, Inc.

Architect: Sowinski Sullivan Architects Structural Engineer: HNTB Corp. GC: Wickersham Construction & Engineering, Inc. Contract Value: \$444,000 Tons of Steel: 273 Topped Out: February 2020



Missoni Baia 57-story Condominium Miami, Fla.

Structural Steel Class I Honorable Mention Erector: Hodges Erectors Inc.

Fabricator: Suncor Inc. National Metals Architect: Revuelta Architecture International, Structural Engineer: DeSimone Consulting Engineers GC: Civic Construction Co., Inc., and Yapi Group Contract Value: \$498,200

Tons of Steel: 375 Topped Out: December 2021



Wekiva 6, 5.5 Miles of Roadway and 4 Bridges, Central Florida along the Wekiya River

Miscellaneous Metals Class II (Over \$500,000)

Erector: Shelby Erectors, Inc.

Fabricator: Commercial Metals Company Architect: WGI Structural Engineer: Finley Engineering Group, Inc. GC: Superior Construction Company Southeast, LLC, and Vecellio & Grogan, Inc. Contract Value: \$7.2 million Tons of Steel: 8,187 Topped Out: December 2021

COVER STORY By Tracy Bennett Similarities, contrasts, and common themes

Steel Fab fabricated and erected all structural steel, ornamental stairs and handrails on a jobsite that was adjacent to active Amtrak train tracks.

art one of the Project of the Year coverage features Structural Class I and Miscellaneous Metals Class II winners. (There were no submissions this year for Structural Class II or Miscellaneous Metals Class I.) The winning Structural Class III and IV projects will be featured in the Fall Issue of Connector.

To re-align the awards program with the makeup of our membership, SEAA has added a new category for Miscellaneous Metals projects. Projects could be submitted in one of two contract classes. Examples include bridges, reinforcing steel, decking, ornamental steel, and steel fabrication projects. The Structural Steel category remains the same with four contract classes.

In the brief overviews that follow, you'll discover that one of these projects took 11 days, while another lasted for more than two years. Two of the projects had to deal with extreme environmental risks—working at night, dealing with rain and high winds. In those similarities and contrasts, there are common themes. The importance of preparation in bidding the job. Clear communication internally and with other contractors. Getting creative with equipment and other tools.

Structural Class I Winner: 11 Days Start to Finish

Steel Fab Enterprises, Inc. is a family-owned, AISC-certified steel fabricator and erector located selected to build the Amtrak Train Station and in Lancaster, Pa. The Fisher family has worked Walkway in Middletown, Pa., which supports in steel construction in the mid-Atlantic region Harrisburg International Airport and the local since 1962. The company operates a 60,000 sq community. What appears on the surface to be a ft structural steel fabrication plant with room straight-forward job was actually very challengto build large steel trusses, as well as a 20,000 ing due to the environmental conditions and the sq ft miscellaneous metals plant. "We are really tight turnaround required to get Amtrak back to known for our fabrication services, with an fully operational. "We have a reputation for doing erection department that can deliver turnkey some crazy projects," said Steve Fisher, President. projects," said Dan Stoltzfus, Project Manager.

Tracy Bennett is Managing Editor of Connector and Principal Partner of Mighty Mo Media Partners, a marketing consulting firm. Her technical expertise is in construction, lifting equipment, and workforce development.

This is a primary reason the company was "The GC came to us for this job."

Steel Fab fabricated and erected all structural steel, ornamental stairs and handrails on a jobsite that was adjacent to active Amtrak train tracks. All assemblies had to be lifted by crane over de-energized transmission lines in a four-hour window at night.



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Bolt up and detailing, as well as staging for the night-time lifting, primarily took place during the day.

Careful coating

The original specs called for the steel to be galvanized, then painted. However, this would have drastically increased fabrication time and the amount of material handling required. "We wanted to erect as many unit assemblies as possible to minimize the steel erection duration," said Stoltzfus.

Instead, Steel Fab proposed using a high performance coating from Carboline. "This was an SP 10 blast with three-coat Carboline products (Carbozinc 11 HS, Carboguard 893, and Carbothane 133). The result is a very hard surface that will last a long time against the elements," said Stoltzfus. The other benefit was turnaround time. By pre-assembling unitized sections of column bents, stairs, canopies, the bridge, and roof structure off site, about six months was shaved off of fabrication on the front end of the job. "We got the coatings manufacturer involved early to demonstrate the quality of the finish to the customer," said Fisher, which then received approvals from the Engineer of Record.

It also meant that larger assemblies could be built, reducing the total number of times the crane had to swing across the tracks or over the transmission lines. In all there were just 15 major picks. To protect the finish, the company lined all dunnage and the forks of the telehandler with foam padding. Synthetic slings were used to lift the pieces, with foam padding used as softeners. Bolt up and detailing, as well as staging for the night-time lifting, primarily took place during the day, using a JCB telehandler for material handling and Genie or JLG boom lifts provided by United Rentals for personnel lifting.

The South Tower steel erection took just 11 days.

Mitigating many risks

"Because of working near active railroad lines, close coordination with Amtrak officials was very important," said Fisher. Train signal training was provided to all personnel so they understood what the different horns, whistles, and signs meant, which communicated things like which tracks were open and which ones are closed. "We also met every morning with Amtrak officials to discuss train schedules and work activities for the day and night," said Stoltzfus.

"The only time we could lift—Midnight to 4 am—presented low visibility issues," said Fisher. Steel Fab met with their United Rentals representative to recommend the type and quantity of lights needed.

"Greiner Industries, the crane supplier, was a key team player on the project," said Stoltzfus. Greiner used 3D Lift Plan to demonstrate crane setup and lifting routes for each of the 15 assemblies. Even though the power lines were de-energized for the lifts that took place at night, they still presented an obstruction to



Coordination with Amtrak officials was very important. Train signal training was provided to all personnel.



the lifting path. "I'm a big fan of 3D Lift Plan because it makes it very clear to the customer, and is requested more and more by the contractor," said Stoltzfus. Greiner used a 600-ton Demag all-terrain crane for the lifts.



Belt trusses on levels 36 to 38 were made of rigid horizontal and diagonal beams at the mid-span of

ing belt trusses from level 36 to 38 and the construction method which provide lateral load resistance in high rise buildings. The belt truss is the horizontal beam that ties together perimeter columns. Jeff Justice, General Superintendent for Hodges Erectors, describes them as a truss wrapped in rebar and encased in concrete. For this project, the belt trusses were made of rigid horizontal and diagonal beams at the mid-span of the building. The roof crown truss featured light gauge framing and metal panels.

the building.

Structural Class I Honorable

Hodges Erectors is no stranger to high rise projects. For the second year in a row, the

South Florida erector has received recognition for a multi-story condo project from SEAA.

The Missoni Baia in Miami, Fla., is a 57-story

condominium above Biscayne Bay and a prom-

Hodges Erectors was responsible for erect-

inent marker on the Miami skyline.

Mention: Crowning

Achievement

"We fit up and aligned the belt and crown trusses. Since the belt truss framing was encased by vertical and diagonal #20 rebar, we had very limited access and tight tolerances, which required precision for fit up and welding," said Jorge Amador, President. He continues: "The roof crown also had very

tight tolerances since framing was connected at either end to cast-in-place concrete mega columns at the four corners of the building."

Wind and rain

One of the major challenges was the weather. "Rain in South Florida comes at any time and without notice. Our welders monitored the weather radar for rain and covered weld locations in order to prevent weld cracks," he said.

However, it was the wind that caused bigger problems for the schedule. The tower cranes on site were equipped with wind gauges and the operator would notify the crews when winds reached 26 mph. Not only did this affect crane operations, which shut down at 30 mph, but it also affected Hodges Erectors' crews working from scissor lifts, which were rated for up to 28 mph when extended. "We ended up using a larger scissor lift and working at only half extension," said Justice.

"When winds exceeded 30 mph, our crews would have to demobilize and walk down 36 levels of stairs in order to get to the ground floor," said Amador. Hodges Erectors is used to working in these kinds of conditions, but it was unusual for sustained winds to continue for so many days in a row. This put pressure on the schedule, ultimately causing about a three-week delay.

Working high above Biscayne Bay, crews would have to demobilize and walk down 36 levels when winds exceeded 30 mph.

Tandem tower cranes

In addition, the crew had to get creative when tower crane capacity and reach was insufficient for lifting many of the trusses. "Two of the belt trusses on level 36 weighed more than 30,000 lbs, which exceeded the crane's capacity of 28,000," said Amador. The solution was tandem tower crane picks. While not unheard of, tandem tower crane picks require careful load planning, precise communication, and coordination. Justice explains



Two of the belt trusses exceeded the tower crane's capacity. The solution was tandem tower crane picks.

There would be no Project of the Year without the Judges

Judges of the annual Project of the Year submissions are third-party experts, their identity known only to the SEAA Awards Committee. From 2009 to 2021, a dedicated team of four have volunteered their time for little more than the personal satisfaction. SEAA is very thankful for their friendship and dedication.

- Tom Shelmerdine, Structural Solutions
- Eric Bradley, Bradley & Ball Architects
- Rick Ball, Bradley & Ball Architects
- Mark Turman, Atlantic Architectural Metalworks

baton has been passed to a new group Shelmerdine, President, Structural Solutions of judges.



For the 2022 Projects of the Year, the Alan Sears, former Awards Committee chairman, and Tom

that the cranes were 40 feet apart, and one was erected at a higher elevation than the other.

In addition, the cranes were not installed at a location that could reach the final placement location of one of the trusses. One tower crane picked the truss and set it on temporary shoring on level 37. Then the second tower crane picked it from there to set it in position.

Hodges Erectors was brought into the project fairly late in the schedule, which did not allow a lot of time to plan for contingencies. Hodges Erectors' scope was in the critical path. Given the challenges faced, successful



Miscellaneous Metals Class II: Rebar for Roads and Bridges

Coordinating schedules and labor was one of the biggest challenges for Shelby Erectors on the Wekiva 6 project in Central Florida. Spanning 5.5 miles, the company's crews simultaneously worked on three separate locations for two General Contractors. The job provided non-stop work for Shelby Erectors' crews for more than 2.5 years.

Wekiva 6 included four bridges that featured long decks and complex cast-in-place box girders. The box segment creates a hollow beam under the deck as the form travels along the spanning bridge, explained Jackson Nix, Chief Estimator. The job required tying 16 million lbs of rebar and installing nearly 1 million sq ft of Stay-in-Place deck forms over 18 structures. "With long decks comes lots of piers. Lots of piers means lots of steel. Lots of railing. And lots of metal decking," said Jackson Nix.

"In addition, we were working in an environmentally sensitive area," said Vince Rankin, Superintendent. "One of the three types of bridges we were building was Wild Life Bridges, manufactured crossings designed to keep animals off the roads," he said. The other two types were segmental and conventional bridges.

When asked about risk mitigation for this project, Rankin said the most unusual concern was the wildlife. "We were working in the habitat of venomous snakes, alligators,





The job featured complex cast-in-place box girders. The box segment creates a hollow beam under the deck as the form travels along the spanning bridge.

and black bears. The General Contractor provided an orientation for workers about maintaining situational awareness of these animals, including how to respond to an encounter with a bear," said Rankin.

Labor of Love

Shelby Erectors hires crews to work within a 50-mile radius of home base. "This philosophy allows us to keep them busy, managing our people according to peak need, shifting crews from one area to another as required," explained Jack Nix, COO. In addition, the company recently changed its hiring practices to more effectively screen new hires, which reduces turnover. On this job, one of the crews had 10 people on it, the other two were five to six strong.

To maximize labor supply, the company pre-tied as many structures as possible. "These structures were built on site within crane's reach of the placement point," said Rankin. "We also used tie guns with newer battery technology and used slide hook chokers for handling bundles of steel—something we learned about at a past SEAA Convention," he said.

But the biggest contribution to productivity was the use of a rod tying robot. "This was the first project we had tried TyBot on. Long repetitive decks provided the perfect trial and error to test the new technology," said Jack Nix. TyBot is a rebar tying robot that ties up to 1,100 intersections per hour. According to the company website, it self-locates, self-positions and self-ties. It can also tie in 100% or 50% patterns on bottom and top mats with rebar sizes up to #8 and #9.

Shelby Erectors has performed a series of projects of Florida Department of Transportation. "When bidding a project of this scale it is critical to know your costs and labor needs at peak performance," said Jack Nix.



To maximize labor supply, the company pre-tied as many structures as possible, built within crane's reach.

6 | THE STEEL ERECTORS ASSOCIATION OF AMERICA

INVESTING IN PEOPLE, EQUIPMENT, AND COMMUNITY



Join the Steel Construction Team that is Guided by the Golden Rule



We can Build Anything with Steel

Steel Fab Enterprises is a third-generation family business that has grown from modest beginnings building fire escapes in a two-car garage in 1962 to having the capability to fabricate and erect a wide variety of steel structures—more than 4,000 diverse projects in the Mid-Atlantic region.

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I love the team effort of working at Steel Fab. Seeing the final outcome of a project is a lot like completing a work of art." — Dylan

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I've been privileged to learn how to use some of the most cutting-edge CNC equipment. Working at Steel Fab has allowed me to grow as a welder both in the shop and in the field." — Robert

boom lifts, scissor lifts, telehandlers, trucks and trailers are operated by our highly trained employees.



Giving Back

We are proud to be a part of the Lancaster, PA community. 10% of our profits are used to support local charities and non-profit organizations. We also are committed to sustainability, with our own solar power supplying half of our electricity needs.

Join the Team with Room to Grow

Steel Fab Enterprises is currently operating at 30% capacity. That means we have room to grow! If you are looking to join an award-winning team that gives mutual respect and works on a wide variety of interesting projects, look no further.

Steel Fab employees are friendly and willing to help each other. I enjoy being a part of this growing team." — Laza ro



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