

STCA Update

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Stronger Pentagon Rises from the Ashes by Dave Goodwin



On September 11, 2001, the first of five Pentagon building sections or “wedges” to be renovated under a 14-year plan was five days away from completion. That morning, a Boeing 757, hijacked by terrorists, went through a corner of that wedge before ending up in a second, unrenovated building wedge. More than 2,600 workers were in the disaster area, but there were only 125 casualties, thanks in large part to just-completed structural renovations. In all, a million-square-foot area was damaged and about 400,000 square feet of space had to be demolished after the 9-11 attack.

Now, like the fabled phoenix bird that rose from the ashes of its destruction, the Pentagon is rising stronger and safer from the destruction of 9-11. Contractors working on Project Phoenix, as the rebuild of the terrorist-damaged section was named, are working at an extraordinary pace to meet a September 11, 2002 deadline to have the damaged wedge of the outer “E” ring of offices rebuilt and ready for occupancy.

Part of the Pentagon’s new strength comes from its new roof system. More than 250 pre-engineered cold-formed steel trusses, manufactured by Panel Systems, Inc. of Lorton,





VA, support 25,000 SF of interlocking Steeledge Creteplank concrete deck units supplied by Martin Fireproofing, Inc., Tonawanda, NY. In June, Facchina Construction Company of LaPlata, MD completed installation of the trusses and deck units. The trusses and decking, as well as the slate roofing, provide a strong, tough, fire-resistant roof system—just what the project design team, led by Allyn Kilsheimer of KCE Engineers, Washington, DC, and Keith Davis of Law Engineers were seeking.

Perhaps the biggest challenge facing all those working on Project Phoenix is the fast pace of construction. According to Nick McIntosh, Assistant Project Manager for Facchina, “I would call Phoenix a super fast track project.” Facchina is the contractor on Phoenix responsible for the concrete work and the roof system. “From the beginning, we needed to pick our vendors and subs very carefully. Facchina interviewed several truss vendors, but Barry Unger of Panel Systems made a significant commitment to service and bought into the fast track project requirements. Throughout the project, they made good their commitments. Panel Systems and the CFS material supplier met with us several times on the roof to examine existing conditions and take field measurements. Their careful engineering efforts paid off—the trusses fit like a glove, with no fieldwork necessary. Working with Panel Systems was a breeze.”

In order to deliver this roof system on time, Barry Unger, manager of truss manufacturer Panel Systems, Inc. worked with a team composed of his manufacturing staff as well as truss designers Atlantic Framing Design, Cockeysville, MD, the engineered truss technology provider, and roof panel manufacturer Martin Fireproofing, Tonawanda, NY. Unimast, Inc. of Schiller Park, IL, provided additional engineering. Brian Mucha with Atlantic Framing Design provided truss designs for the project. "We were honored to work on this project, not only because it was the rebuild of the Pentagon, but also because Panel Systems and Facchina would consider us to be a part of their team," said Mucha. "When we discovered the complexity of the project, we knew that we would have to lean on the CFS truss material supplier for some in-depth engineering analysis and design."

"Several elements of the roof design made this project even more interesting. First, an advanced fall protection system (from Hy-Safe Technology, Union Grove, WI) required that man-harness stanchions be attached to the top of many of the trusses. The trusses had to be designed to take the impact load of a falling worker, caught by the harness. This safety system also necessitated an innovative connection to anchor the stanchions to the trusses. Second, some fairly complex calculations were required to account for the differences in thermal expansion between the CFS trusses and the supporting

concrete. Engineers from the CFS material supplier came through with all the required calculations in a timely manner and helped us all stay on the project timeline. Our engineers designed an interesting slotted base connection for the trusses to make it all work."

"Working with the Martin Fireproofing concrete plank roofing system was a cakewalk," commented Facchina's McIntosh. "It really is a beautiful material, the way it interlocks so easily. You can't beat concrete panels for fire safety." Atlantic Framing Design's Mucha added, "With the Martin Fireproofing roof deck system, and the stability of the CFS trusses, the truss permanent bracing required on the project was really minimal."

Barry Unger recalls his feelings the day he found out that his company had won the bid to provide cold-formed steel roof trusses on the rebuild of the Pentagon. "I felt honored to be selected to work on the Phoenix project, to work along with such an all-star team. I also knew that we were going to have to really work hard and smart to meet the tight time schedule and the demands of the design." Unger said recently, "I am very excited to be involved in the project, working with the highest level of people on this historic renovation. I know all of our employees are also very proud to be a part of this project, especially since it is right in our backyard. I believe any one of us would do anything to help restore the Pentagon. As you can imagine, this project has

been the number one priority at Panel Systems since it began. At times, some of our other jobs had to be put on the back burner because of the urgency of Project Phoenix, but all of our customers have expressed their agreement and understanding of our priorities.”

Nick McIntosh has similar feelings about working on Project Phoenix.

“There will be pressures on any super fast track job. But, I would not trade the privilege of working on this project for any other project, regardless. At Facchina, we feel that working here is an honor, and it is a privilege to be able to make a contribution. At times, we had to put our family lives on hold—many families made sacrifices just as did the workers. Let’s just say we worked a few weekends.” Nick is modest. At the project topping out ceremony, he received a trophy from the Deputy Secretary of Defense for his work on site logistics and maintaining the tight project schedule.

“Since 9-11, virtually every American has wished that he or she could have a part in the healing and rebuilding,” says Panel Systems’ Barry Unger. “Project Phoenix has been a challenge for us, and a way for Panel Systems to play a part in this great effort. As a company, we will never forget the ‘Let’s Roll’ motto for the project and how it inspired us to work harder than usual to get the job done.”

Facchina’s McIntosh agrees, “Everyone on this project is proud of our work here. We all share a common interest

—to erase the ugliness
created by the terrorist
attack.”

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