



Easi-Set Precast Concrete Buildings:

Versatility - Case Studies across multiple market segments



Easi-Set Storage Buildings at secured Department of Defense facility in Indiana

What are Easi-Set Buildings?

Easi-Set and Easi-Span Precast Concrete Buildings are ideally suited for a multitude of market applications. Our licensed producers have worked all across North America installing single buildings, as well as working on design build teams to complete entire complexes. Our buildings can be customized to exacting specifications. These durable precast concrete buildings are resistant to inclement weather, vandals, fires, blasts, and UL 752 Level 5 ballistics. We can even design these low maintenance buildings to withstand corrosive environments, or for placement on piers in flood prone areas, providing years of worry free service.

FAST • VERSATILE • DURABLE • ECONOMICAL • SECURE

Case Study One – Water Treatment

Pump Station Installation: The Cost and Time Savings of Precast Concrete Buildings

When the timeframe for the project was too short for traditional construction methods to meet, the San Jacinto River Authority (SJRA) turned to a precast concrete building solution for their pump station install in Baytown, Texas.



The new transfer pump station was needed because the Chevron-constructed facility in Baytown required more water for its operations. The new station has to pull 16.5 MGD from the Coastal Water Authority canal and pump it into the SJRA canal.

The original specification was for a large concrete masonry unit (CMU) building. Houston contractor Boyer Inc. was the low bidder on the project, but its bid was still over budget. Through SJRA-initiated value engineering, Boyer offered an Easi-Span Precast Concrete Building as an alternative after determining CMU could not be constructed in time or on budget.

Nathan Davis, a project manager for Boyer, says the building was an easy aspect to quantify. “There were not only savings on the front end for cost of the structure, but there were savings on the backend with the reduced time from pouring the slab to setting the roof panels that allowed Boyer to reduce overall construction time, labor and equipment costs for the project.”

Easi-Span Buildings are unique to the industry because they utilize clear-span precast concrete roof sections from 20’ to 50’ in width. Each 10’-deep roof section is post tensioned to adjoining sections, allowing for buildings of virtually unlimited length to be manufactured.

Two Easi-Span Buildings, 40’ x 40’ x 16’ and 30’ x 60’ x 20’, were needed to house all the pump station equipment. The buildings were manufactured and installed by Lonestar Prestress Manufacturing Inc., Houston. Lonestar, a licensed producer for Easi-Set Worldwide products, works directly with customers to meet individual needs and ensure quality standards are met.

“Boyer was able to propose the use of the precast concrete buildings as a value engineering solution because it has worked with SJRA in the past and knew the building owner’s project goals,” says Leo Rowe, sales manager for Lonestar. “We were able to add our experience and expertise to Boyer’s ingenuity to meet the project schedule and budget.”

Easi-Span Buildings allowed Boyer to finish the main slab and begin installing critical electrical gear in less than two weeks. “This included prepping and pouring the slab, installing walls, setting roofs, and caulking the walls and roof panels,” Davis notes. “The offsite fabrication of the wall and roof panels was timed so that once the slab was poured and cured we could set the panels.”

If the owner had stayed with the original CMU design, Davis believes it most likely would have taken at least three months before the critical work for the pump station could have started.

The interconnected buildings have different functions and customizations. The 30’ x 60’ area houses two large pumps with an additional section for a future pump. The building was customized with two large roll-up doors and three large roof hatches so the pumps can be removed and replaced as needed in the future. The 40’ x 40’ building houses two rooms for electrical equipment.

Case Study Two – University Sports Field Multi-User Restroom

Fast Installation for New Restroom Building at Fresno State University Stadium

An Easi-Set Buildings Restroom recently made the fan-going experience more enjoyable for the Fresno State University soccer and lacrosse teams in Fresno, Calif. This fast-paced installation replaces portable toilets and is part of several amenities added to the Bulldogs' home field.



An Easi-Set Buildings licensed producer—StructureCast, Bakersfield, Calif.—served as the designer, engineer, manufacturer and installer working with architect The Vernal Group, Fresno. Susan Jones, lead project designer/project manager with The Vernal Group, was asked by the university to provide a restroom with a cost-effective and time-efficient design for a minimum of six stalls for each sex and storage that could be used for future concessions. Jones turned to a precast concrete building because it can be erected quickly and has strong materials. In her design research, she discovered specifications for an Easi-Set Buildings' Appalachian 2430 Restroom, and Larry Turpin, sales manager with StructureCast, adjusted the layout to meet the project goals.

“After some back and forth, I drew up a workable floor plan,” Turpin says. “With a few modifications, our floor plan is what was used in the plan set.” This being a school, DSA (Division of State Architects) design review was required; all schools and hospitals in California undergo this type of review.

Something that sets StructureCast and the other licensed producers of Easi-Set Buildings apart is they work with customers to customize layouts and designs to ensure each structure fully meets a project’s needs. Turpin notes that many of his projects actually begin when he sketches a design modification to show customers the capabilities of precast concrete structures.

“We pride ourselves on our abilities to take a prefabricated structure and turn it into a customized building solution,” says Moffette Tharpe, managing director of Easi-Set Worldwide. “StructureCast, like our other licensed producers, shows how the quality, strength, aesthetics and cost of precast concrete buildings make these structures a smart choice for universities across the country.”

The Appalachian series has a variety of aesthetic, finish and color choices so it can blend with any surrounding. The roof is a low-profile gabled Easi-Span roof. The 24’ X 30’ model comes standard with stainless-steel fixtures, but other fixture options can be specified. Also included with the ADA-compliant structure are 18-gauge galvanized steel insulated doors, tamper-proof hinges, dead-bolt lock, door stop and holder; a roof load capacity of 150 psf; wind load of 165 mph; floor load of 250 psf; and bullet testing to UL-752 Level 5. It meets IBC-2012, ASCE/SEI 7-10, ACI 318-11, AISC Steel Construction Manual 14th Edition, CRI Manual of Standard Practices and PCI Design Handbook 7th edition requirements.

The Fresno State building was customized from the model to a size of 24’ x 38’, and it was delivered in four modules. It is set on a compacted gravel pad; StructureCast performed post tension work and sealing. The custom design also accommodates wall pack LED lighting, timed electric lock doors and interior partitions.

A fast-pace schedule was required to ensure construction was completed before the Fresno Bulldogs’ first lacrosse game. Turpin remembers he was asked if his company could make the entire project happen in 90 days. He says: “We said yes. From there on, we were the only ones in the game.” StructureCast beat the projection, completing the project in 84 days.

The restroom building replaces portable toilets that were at the site. Other amenities recently added include new bleachers, a sound system, snack room and lights.

Case Study Three – Pump Station

Flood Conditions Impact Pump Station Design

Project Name: Kauffman Ave. Pump Station, Fairborn, Ohio

Owner: City of Fairborn, Ohio

Easi-Set Licensed Producer: Norwalk Concrete Industries

Building Use: Pump Station Equipment & Generator Building

THE CHALLENGE

The Kauffman Ave. Pump Station, in Fairborn, Ohio was two years in the making. What seemed like a straight-forward pump station equipment and generator building became more complex when the City of Fairborn confirmed that, due to its location in a flood-prone area, the building had to be designed to allow only 2 in. of water seepage in any 24-hour period. In addition, they required a 5-year warranty. Norwalk Industries (NCI), an Easi-Set licensed producer, worked with Easi-Set, Concrete Sealants and PS doors to come up with a solution that was within budget yet still met specifications and building code requirements for anchoring the building and for dry, flood-proof design. “The design itself was a challenge because we had never attempted a building with these characteristics,” says Robb Smithson, the NCI project manager and engineer. “Some products required long lead times so decisions had to be finalized early in order to meet deadlines.”

THE SOLUTION

The 77,300 lbs precast concrete building is 12-ft wide x 20-ft long x 11-ft tall. It is insulated and includes an upgraded electrical package. Not conforming to industry standards, it includes a flood-proof, water-tight door and special anchoring to withstand flood waters. Atop the roof rests a 4,100-lb generator.

“We came up with a detailed plan of action,” says Scott Kinnamon, salesman for NCI. “We collected details and ideas and put everything on paper so everyone involved understood what needed to be done and when.” Criteria changed several times throughout the project. Several components, such as the inclusion of the generator on the roof, forced mid-stream design changes. “We had to design a roof that would meet code criteria for slope and weight loads,” Smithson says. “After the roof was poured we decided to add another slab for the generator. At times we tested the limits of frustration but in the end came through with a great product for the owner.”



Photo captions: The 77,300 lbs. building was designed for flood conditions up to 5 ft 6 in. and includes a flood-proof water tight door. It supports a roof-mounted 4,100-lb generator.

Case Study Four – Middle School Classroom Building

From Portable to Precast Concrete

Replacing Portable Structures with Precast Concrete Buildings Brings Long-term, Safe Learning Spaces to Schools

Public and private schools across the country have a growing situation to solve. While increased enrollment benefits a school, filling classrooms beyond capacity is not conducive to a positive learning environment. Some schools have expanded with portable buildings placed onsite. Although functional, these buildings are not always aesthetically pleasing or safe during inclement weather, and the long-term costs from multiple replacements are a factor.

Even elite schools — like The Bolles School in Jacksonville, Fla. — have had to expand with portable buildings. Bolles added three modular trailer-type buildings to its Middle School Bartram Campus in the 1990s for needed classroom space. The campus underwent another change in 2016 when the structures were replaced with a unique custom-engineered precast concrete solution to create the new science and technology building, called Tarver Hall.



Campus Life

The college-prep school, founded in 1933, has 1,600 boarding and day students in pre-kindergarten through grade 12 on four campuses. This internationally recognized school is the only independent school in the area with a separate campus for sixth through eighth grade

students. The Middle School Bartram Campus sits on 24 acres along Pottsburg Creek. This campus originally was Bartram School for Girls, which was founded at this site in 1938 and became part of Bolles in 1991.



The new building was funded by a \$1 million anonymous donation. Project requirements included that the building be completed during summer 2016, when students were not on campus. Although 24 acres is an expansive site, the administration wanted the building to be positioned in front of the notable Pratt Library and to match the aesthetics of other campus buildings. At this location, however, stood oak trees with expansive root systems that would have been directly impacted by construction. The building was also required to meet or exceed building codes, wind loads and wind standards. Florida additionally has some of the most stringent codes in the country because buildings have to stand up to hurricanes.

Leesburg Concrete Co. Inc., of Leesburg, Fla., drew from its 30 years of experience in the education market to take on the challenging. An Easi-Set Building licensed producer, the company embraced the project as an opportunity to put its innovative and technology-driven savvy to the test.

Special Order

As facility manager for the school, ARAMARK's Melvin Morgan sees to it that the school is maintained and operating efficiently. Morgan approached Kirk Rouse, vice president of Leesburg Concrete, about replacing the portable structures with something permanent. "[Morgan] asked [Leesburg Concrete] to match the existing aesthetics on campus with high architectural finishes and features," Rouse said. "What we came up with is a highly custom-engineered building that began with a precast concrete floor and went up from there."

The new Easi-Set Building measures a comfortable 94 feet by 56 feet in size. Its classroom module includes structural concrete walls with a flat panel, post tensioned concrete roof, while the base features a specially engineered gravel pad under the precast concrete floor. This type of floor was selected because the built-up granular sub-base with the building set above left the existing oak trees unharmed.

Rouse noted that an extensive amount of site preparation had to occur to ensure the project wouldn't impact the trees. "The site was so tight, at times a crane sat 7 inches from an existing building," he adds.

Other buildings on campus feature brick exteriors with a shingle roof and ornate white columns at the entrance, and every effort was made to manufacture the new building in this distinctive style. For instance, the size of the existing brick wall was matched precisely so the precast wall panels have this same brick aesthetic. This was done using a brick form liner, and the panels were painted with a matching color. White exterior columns were made from structural steel wrapped with glass fiber reinforced concrete. The existing campus structures have three-tab shingle roofs, so Leesburg Concrete recreated them — out of concrete. The classroom module consists of 96 total precast roof, floor and wall panels.

"We bought matching shingles and laid them out in our facility, creating our own custom form. We then colored the precast to match," Rouse said. "To minimize roof deflection, we used an internal post tensioning system and applied a second series of post tension cables in the field."

Beyond aesthetics, the new building is strong and rated with withstand 175-mph winds, exceeding current wind-load requirements. Florida sets the bar for high wind standards because the state has been damaged by hurricanes in the past 20 years. To reduce devastation while recognizing that not every area of Florida faces the same hurricane risk, the wind-load requirements vary throughout the state.

Project requirements included that the building be completed during summer 2016, when students were not on campus. The building was also required to meet or exceed building codes, wind loads and wind standards, and the project could not impact existing oak trees on the site.

Precast Concepts

Schools in high-wind zones have special building considerations, but structures across the country can use precast concrete buildings to address their own environmental conditions. Easi-Set and Easi-Span precast buildings, made by Midland, Va.-based Easi-Set Worldwide, for instance, are composed of 100 percent concrete with UL-752 level 5 ballistics-resistant components, and many larger buildings are certified by third-party engineers.

Precast concrete buildings are available with a range of interior and exterior outfitting options, including HVAC, lighting, plumbing and electricity. Further customization is available throughout a building from the walls to the roof and the floor. Different textures and colors allow design goals to be achieved.

“Just like at the Bolles Middle School, aesthetics can be matched or something totally unique can be created,” said Chris Reese, an engineer with Easi-Set Worldwide. “Customization is something that Easi-Set producers do so well, and they work with each customer to ensure a building is a perfect fit for its environment.”

Compared to other structures, precast concrete buildings can be installed faster. The length of time depends of the size of the building, but a typical install takes days, not weeks. Costs are less than other building methods because precast concrete is an efficient and fast way to build, saving time and money during the manufacturing process and on a jobsite.

School officials should consider that Easi-Set Buildings are available for a wide range of campus needs, including classrooms, concessions stands, dugouts, restrooms, storage facilities and more. They also should note that not all manufacturers create structures to the same level of quality. Building owners should work with producers and their design team to compare manufacturers’ practices, testing and capabilities to ensure quality standards are met.

Lessons Learned

At Bolles, the team had 70 days to complete the entire project, so it was ready for the start of a new school year. The site prep alone took three weeks. The fully fitted and landscaped Tarver Hall met the completion date on time with the structure set in less than three weeks.

Leesburg Concrete has manufactured many precast concrete buildings, but this truly unique facility showcases the staff's level of experience and ingenuity when presented with unique circumstances.

Kirk Rouse, vice president of Leesburg Concrete explains: "We could not have turned over a completely pre-assembled structure to the school because that would not have met its needs. We took what we do well and worked with our Easi-Set team to build a strong floor base for the building, while we engineered the roof and walls to blend in with the campus and stand up to Mother Nature. This project was a learning experience for all of us, and the final outcome is a testament to our level of commitment to each customer."

Case Study 5 – Haz-Mat Storage Building

Replacement Gas Works Facility Installs Quickly in Tight Conditions

They say it's all in a day's work. For the PECO Gas Works facility in Conshohocken, Pa., it was all in 90-minutes of installation on a Saturday morning.

PECO needed to replace a 10' x 10' building to hold additional equipment and several hazardous material above-ground storage tanks, which have a 7,000-pound load when filled with product. To accommodate this, a solid floor section was cast beneath each tank to support the applied load.

The replacement structure is a 10' x 24' Easi-Set Building with 4"-thick non-insulated walls and a 12"-thick floor slab with a 6"-containment depth covered with 1 1/2"-thick fiberglass grating in the non-storage tank areas. The interior ceiling is 8'. This building was manufactured by Easton, Pa.-based Oldcastle Precast Inc., one of 70 licensed precast concrete producers in 10 countries that manufacture Easi-Set products. The concrete exterior walls have a split face block formliner finish stained with Sherwin-Williams H&C concrete stain. Stainless-steel brackets and hardware were used to assemble the wall panels because of the corrosive atmosphere.

The building was customized with an exterior stainless-steel ball valve, with a plug cap, to drain the containment area. Aluminum conduit/piping pass-thru panels were also installed over 1' x 2' wall openings at multiple locations on the perimeter.

The building was placed in very tight conditions between existing structures. Riggers from George Young & Co., Philadelphia, together with a crane from Sautter Crane Rental, Philadelphia, were utilized to set the building under the technical advice of Oldcastle Easi-Set Building Division Foreman Rick Morrison.



On May 21, the building arrived at 7 a.m. and was in place by 8:30 a.m. Of course hours of designing, planning, manufacturing, safety meetings and a little more preparation by all the team players had to happen before delivery and installation. It took all of this to make a 90-minute day of work a complete success.

PECO Gas Works facility, Conshohocken, Pa.

Easi-Set Worldwide licensed producer: Oldcastle Precast Inc., Easton, Pa.

Product: 10' x 24' x 8' Easi-Set Building

Rigging: George Young Co., Philadelphia

Crane: Sautter Crane Rental, Philadelphia

Hauling: R. T. Hankinson Trucking, Ottsville, Pa.

Building owner: PECO Energy Gas Works Division (an Exelon Company), Conshohocken

Case Study 6 – Highway Toll Lane Equipment Buildings

Securing the future of an Iconic American Beltway

In 2007, VDOT finalized an agreement with Capital Beltway Express, LLC – a consortium that would design, build, operate, finance and maintain the \$2 billion HOT lanes project on the I-405 Beltway that has encircled Washington DC since the 1960s.

The 495 Express Lanes are the first road of its kind in the region to provide HOV service on the Capital Beltway – as well as the option for travelers to pay a toll for a faster and more predictable trip using EZ-Pass.



Construction, managed by Fluor-Lane of Alexandria, VA, began in 2008 and the new lanes, two new lanes in each direction on a 14-mile stretch of I-495 from the Springfield Interchange to just north of the Dulles Toll Road.

As part of the project, Fluor-Lane contracted with the Smith-Midland Corporation to manufacture and install 10 technical shelters to securely house all the E-ZPass recognition equipment. All along the 14.5 mile corridor the Easi-Set all-precast concrete buildings are set in the median strip next to two sets of information collecting pole assemblies hanging over both

sets of opposing Express Lanes. Use of this system allows for the EZ-Pass system to collect the tolls of individual vehicle without any slowing of traffic flow.

Smith-Midland manufactured all of the 4" thick reinforced precast concrete panels at their Midland, VA plant, then shipped and erected the buildings using an on-site crane. Each of the 12' x 20' was outfitted by Smith-Midland with steel doors and matching locks, a 2.5 ton heat pump system and programmable thermostat. Each building was set and ready for final equipment outfitting in just one day. This saved valuable time for Flour-Lane, as well as keeping the work site free from weeks of on-site workers needed by traditional site built construction methods.

Opened for business in 2012, the 495 Express Lanes operate 24 hours a day, seven days a week. The lanes use dynamic pricing based on real-time traffic demand conditions to keep traffic free flowing and provide a more predictable travel option.

Fluor-Lane and its partners garnered numerous awards for the project.

The I-495 Express Lanes project is the most significant package of improvements to the Capital Beltway in a generation.

Case Study 7 – Electrical Equipment Buildings

Water and Wastewater Industry Trusts Easi-Set Buildings

Easi-Set Precast Concrete Buildings offer major water works company a durable solution to fit their renovation needs.

Missouri American Water (MAW), a regional division of the parent American Water Works Company, serves 1.5 million people in more than 150 Missouri communities. With such an expansive reach, maintaining its equipment is essential. At its Central Water Treatment Plant in Maryland Heights, outside of St. Louis, a major replacement was needed for an existing pump station constructed in the 1930s because of hydraulic limitations to operational needs.

With a focus on cost savings and a tight schedule, MAW utilized two new Easi-Span precast concrete buildings as part of the renovations at two plants—a 28' x 40' x 13' electrical building for the new pump station at the Central Plant, and a 27' x 38' x 13' switch gear building at the North Plant in Florissant, Mo. The Easi-Span Buildings are the largest clear span all-concrete buildings on the market, and the only expandable concrete building systems. These buildings feature clear-span roofs up to 50 by 250 feet and heights up to 35 feet. Smaller Easi-Set

Buildings can be delivered completely erected and pre-outfitted, ready for use once utility hookups are made.



The engineering for the Central Plant was led by Carollo Engineers, Kansas City, Mo. and North Plant was led by Ross & Baruzzini, St. Louis. The Central plant facility is a 52.5 million gallon per day (MGD) firm capacity high service pump station with a 30-foot-deep wet well. Its operation required four vertical turbine pumps, soft starters, a variable frequency drive, medium voltage switchgear, new automation controls, a 48-inch diameter discharge header and 42-inch transmission main. The pump station was constructed by Goodwin Brothers Construction, Crystal City, Mo., and it selected McCann Concrete Products Inc., Dorsey, Ill., to manufacture the precast building. McCann Concrete is one of 70 licensed producers of Easi-Set Worldwide.

The Easi-Span building, which is available with monolithic precast floors, was set on a cast-in-place concrete foundation for this application. The 12 wall panels are 5-inches thick and match existing structures at the site. “We precast the walls with the Easi-Brick system and matched the wall panel to the older brick buildings on site,” says Mark Melvin, with McCann Concrete.

The client asked for the building to have a 180-mph wind load, which McCann Concrete was able to supply by customizing the structure. For the interior, insulation was added, and the walls have a plywood finish. Any penetrations less than 2 inches in diameter were field-drilled

on site, larger ones were cast. The shell of the building was erected in just three days, and the interior finishing took an additional three.

While there were no issues with the building construction, the project team did have challenges to overcome as Jennifer Meyer, P.E., senior project engineer with MAW, explained, “The project site is located in the floodplain of the Missouri River. Due to subsurface conditions in the project area, extensive ground improvements were required to protect the new structures, as well as mitigate the construction risk associated with the groundwater table in the project area. Construction limits are surrounded by in-service 24- and 36-inch transmission mains, operating at nearly 200 psi and dating back to 1910, the 1920s and 1930s. Integrating this new pump station with the existing 217 MGD treatment plant and distribution facilities was a complex task.”



When reviewing materials for water and wastewater applications, Melvin suggests pre-cast concrete simply because buildings can be adapted to meet the specifications of a project—and because it will last. “It is very durable and provides the owner with a long-lasting building. We can customize our solutions, as well. In this case, we were able to design to wind loads of 180 mph, which provides protection for the expensive equipment inside the building.”

Case Study 8 – Multiple Custom Restroom Facilities

Army Corp Recreational Lake Project completed in tight timeframe and on budget

Aiming for a Labor Day opening, the U.S. Army Corps of Engineers contracts precast concrete manufacturer Smith-Midland Corp., to complete a time-sensitive, 750-panel restroom project.

Smith-Midland Corp., has completed a restroom project at Wappapello Lake that truly showcases the beauty and adaptability of precast concrete. The \$865,000 U.S. Army Corps of Engineers project in Wappapello, Mo., encompassed 750 architectural precast panels, multi-colored fieldstone, and batten board siding.



Nestled in the foothills of the Ozark Mountains on the St. Francis River in Southeast Missouri, Wappapello Lake offers activities for all walks of life. Completed in 1941, Wappapello Lake annually provides an estimated \$3.9 million in flood protection to agricultural lands and developed areas along the St. Francis River.

The Wappapello Lake restroom project was fairly routine for Smith-Midland with one exception: all 15 restroom buildings had to be finished within 60 days or less due to the looming Labor Day holiday. “It was a pretty tight timeframe for the number of pieces and structural intricacies involved,” said Scott Fiore, the Smith-Midland sales associate who initiated and managed the U.S. General Services Administration (GSA) contract.

Up to the challenge, Smith-Midland developed five different floor plans and then began making the 750 24-foot by 20-foot precast panels in accordance with the project owners' custom exterior finish requests. Fiore said Smith-Midland was selected for the Wappapello Lake project based on the company's 50-year reputation in the precast business, commitment to quality, and reasonable pricing. "We have experience with these types of buildings," Fiore added, "so the project owners knew that they were going to get exactly what they asked for."



Sequoia Britton, Smith-Midland's buildings installation manager, said the panels were installed by a local general contractor who was able to accommodate the short completion schedule laid out by the U.S. Army Corps of Engineers. Part of the challenge, said Britton, involved transporting the huge precast pieces from Virginia to Missouri. "There were a lot of unknowns and possible roadblocks that could have come up during the trip," remarked Britton. "To make sure there were no kinks, we put a lot of time and effort into the scheduling and transportation arrangements."

Once onsite at Wappapello Lake, the 750 precast panels were installed in three phases with most of the heavy rigging and lifting managed by a local crane operator. "One of our foremen and I went to the jobsite and oversaw the entire process," said Britton. "Everything went very smoothly and the customer is pleased with the results."

Case Study 9 – High School Field House

Easi-Span and Easi-Set buildings now in use for Essex Agricultural and Technical High School



Shea Concrete Products recently manufactured and installed its largest Easi-Span precast building, a 40'x80'x10' locker room, for Essex Agricultural and Technical High School. Simultaneously, a 24'x62'x9' Easi-Set restroom and concession building was also constructed on the same site. Both structures are to be used for the school's athletic program.

Shea Concrete received the basic floor plan from Boston-based architect, Design Partnership of Cambridge. The architect weighed the options for other applications such as wood or masonry, but felt precast concrete was the best solution due to its cost effectiveness and ease of installation.

"It's a big deal because this project was the biggest Easi-Span building we've ever produced," said Shea Concrete Designer/Estimator Mark Finochiaro. "We typically ship precast buildings all in one piece, but this one was put together on site."

Finochiaro was in charge of the design for both precast concrete buildings, but it also marked his first attempt at designing an Easi-Span structure. The Easi-Span featured a poured-in-place concrete floor with customized designs for wall panels, wall connections, floor penetrations and doorway dimensions. Precast concrete manufacturer Smith-Midland, provided eight Clear-Span roof sections for the project.

The main challenge for Finochiaro centered around the six-module Easi-Set structure. Figuring out where the crane rigging system could be implemented across the modules without disrupting the integrity of the walls was an obstacle not originally anticipated. The inserts had to be aligned and coordinated in spots that kept each module balanced during the lift.

“At the very start, on the Easi-Set building, we had to figure out a way to have no crane rigging that stuck out at the bottom,” Finochiaro explained. “So we implemented a crane rigging system to be located on top of the walls.”

“You can always look back and say you could have done some things differently, but I’d say this project installation went about as smooth as it could,” said Shea Concrete’s Easi-Set Sales Manager Frank Dimando. “A project this size says a lot about what Easi-Set and Easi-Span buildings can accomplish.”

An Easi-Set licensee for the past eight years, Shea Concrete primarily manufactures the precast buildings out of its Rochester, MA plant. Each structure features a fabricated, patented, post-tensioning system in the roof and floor panels. This guarantees zero water migration into the precast building along the bottom of all wall panels. Shea Concrete also offers Easi-Set customers flexibility when it comes to aesthetically-pleasing features. A number of colors are available, and its wide variety of finishes will fit nicely with any surrounding environment.



“To complete a project this big says a lot about our engineers and the precasters putting the forms together,” said Shea Concrete Manager Greg Stratis. “It’s exciting to see an Easi-Span building of that size be installed as smoothly as it was. These precast buildings carry so much flexibility and can cover so many applications, so it’s always great to see what comes next for any given project.”

“It’s great to say I had a hand in something like this for a trade school,” said Finochiaro. “It’s a good investment for them and it’s a way to give back to student athletes and their families and coaches.”

Case Study 10 – Gas Pipeline Building

Easi-Set Building Producer Delivers for Major East Coast Utility

Public Service Electric & Gas (PSE&G), New Jersey's oldest and largest regulated gas and electric delivery utility, set out to upgrade and enclose its metering and regulating station in Sayreville, N.J. Because the facility is located in a residential neighborhood, it was important to create a strong, low-maintenance building with visual appeal. An Easi-Set precast concrete building was recommended by HMI Technical Solutions LLC, a Henkels & McCoy Group Inc. company based in Charlotte, N.C.

Henkels & McCoy's Technical Services Group brought the PSE&G representatives to OldCastle Precast Inc.'s Easton, Pa., facility to see current buildings in production and discuss their requirements. Oldcastle Precast, one of nearly 70 Easi-Set licensed producers, is an industry leader that focuses on supplying precast concrete products to various markets. From that meeting, the plans began to upgrade Sayreville's station.

The design centered around providing a 30' x 80' x 15' Easi-Set Building. The building consists of twenty-two 10' wide x 15' high concrete wall panels and eight 10' wide x 31' long tapered concrete roof panels. Oldcastle poured panels every other day from April 26, 2017, to July 10, 2017, to ensure the building was shipped on time.



“This building obviously could not be shipped in one assembly because of its size,” says Eric Bocich, a project manager for Oldcastle Precast. “We nonetheless ensure the integrity of every building with our quality control measures. In this case, each panel was poured and prepared in our facility to eliminate the possibility of panel damage or deterioration that can happen in the field.”

An advantage of selecting an Easi-Set precast concrete building is that buildings are fully customizable to meet each customer’s needs. The buildings, either pre-assembled or panelized, are manufactured in a controlled environment that provides greater quality control. Even for a building this large, the panels were shipped with the glass in the windows and louvers installed.

An AP Thermoforming Wire-Cut Utility Brick form liner was used on the wall panels to simulate a brick finish, and then Sherwin-Williams H&C Concrete Stain in Tile Red was applied to accentuate the effect. The roof is finished with Sherwin-Williams H&C Concrete Stain in Patio Green. The roof slabs have a slight taper from the center ridge. The interior has a smooth steel trowel finish, painted with Sherwin-William White Tred-Plex paint.

At the jobsite, the foundation was prepared with cast-in-place 12" x 12" steel embeds, and the foundation wall is 24" wide to support both the building and columns for the 5-ton interior bridge crane.

When the team was ready, an impressive 10-day delivery and install began. First, the site had to be prepped with crane timber matting because of unstable soil conditions. Four 6" thick wall panels were shipped flat on each trailer and one 50,000-pound roof panel was shipped per trailer. To lift the panels in place, two cranes were needed. A 120-ton hydraulic crane was onsite for three days to set the 22 wall panels, and a 250-ton hydraulic crane was onsite for two days to set the eight roof panels.

The 10-day installation schedule went like this:

Day 1: The wall panels were loaded on five trailers and the 120-ton crane was mobilized.

Day 2: Two trailers with eight wall panels were delivered, an additional three trailers were loaded and the panels were tack welded together.

Day 3: Three trailers with 11 wall panels were delivered, and additional wall panels were tack welded together.

Day 4: A trailer with three wall panels was delivered, full welded connections began and touch-up of the interior wall paint was started.

Day 5: Full welded connections continued and touch up of the exterior wall stain began.

Day 6: A 250-ton crane was mobilized, and six roof panels were delivered. The welded connections on the walls were patched with Speed-Crete.

Day 7: The final two roof panels were installed, the 250-ton crane was broken down and removed from the site, the interior roof paint was touched up and the roof panel connections were fully welded.

Day 8: All the welds were finished, and the connections were patched and painted.

Day 9: The interior joints were caulked and painting continued.

Day 10: The exterior joints were caulked, and the windows were cleaned.

On day 11, the building was turned over to PSE&G. “I can only begin to tell you how impressed I am with Oldcastle Precast,” says Moffette Tharpe, managing director of Easi-Set Worldwide. “Their craftsmanship and attention to detail—from initial meetings through install—ensured PSE&G’s requirements were met with a quality precast concrete building unlike any other.”

The Oldcastle Precast crew came back in September to install man-doors and a coiling insulated door after the PSE&G contractors installed large diameter gas piping and meter/regulating equipment (some of the piping was installed in the foundation prior to the building install). The station was fully operational and serving its customers by late 2017.

Case Study 11 – Airport Runway Equipment Building

A Strong Building Solution for a Secure Military Base

The open airfield at Grissom Air Reserve Base in Kokomo, Ind., leaves vital Air Force equipment vulnerable to potentially damaging winds. The area has historically been subjected to straight line winds over 100 mph and strong Midwest tornados reaching 150 mph.

When the base recently needed a Ground-Air Transmit-Receive (GATR) building to house new communication equipment, a rugged solution was the only option to withstand such weather conditions. The remedy was found with an all precast concrete building from Easi-Set Buildings.

“The flight line in which the building is placed is wide open, allowing for exceptionally strong winds,” says Richard Sparks, a project manager with Federal Construction Group. “Since the structure houses sensitive communications equipment, something extremely solid was needed to fit the bill, and precast concrete was the perfect answer.”

McCann Concrete Products Inc., Dorsey, Ill., is the Easi-Set Buildings licensed producer that worked directly with the Federal Construction Group to manufacture an Easi-Span Building. Easi-Span Buildings are the largest clear span all-concrete building system on the market, in addition to being the only expandable concrete building system. The buildings can be installed in hours, depending on the size and complexity of the structure, and also feature Easi-Set's patented post-tensioned and pre-stressed roof and floor system.



The 24' x 40' x 12' Easi-Span Building installed at the base has insulated wall panels in Shoji White with the doors and roof in Tricorn Black. Insulated walls were necessary to help control the temperature in the building, but they also reduced jobsite working hours.

“Placing the insulation inside the concrete allowed more work to be done away from the site in a controlled environment and eliminated many man hours had the work been done onsite,” notes Matt McCann, project manager for McCann Concrete.

The building was customized with doors, openings for electrical and mechanical penetrations, and integral insulation. Every building offered by Easi-Set Buildings is customizable, and the network of licensed producers located throughout North America work directly with customers to create endless customized solutions.

“Each client has specific needs, and the military in particular works with very detailed plans, often in highly restricted areas,” says Moffette Tharpe, managing director of Easi-Set Worldwide. “The licensed producers focus on supplying precast concrete products to various markets no matter the limitations.”

The GATR building was delivered to the base and erected in two days by Ben Hur Construction on a cast-in-place slab. The McCann Concrete trucks were escorted onto the airfield in groups of two and staged until Ben Hur Construction was ready to erect the structure. Once the load truck was in place, it was just like any other Easi-Span project with a fast and smooth execution. The wall panels were set and braced, followed by the roof sections. The connections were made, and the joints were sealed.

Security and costs were also top priorities. A quick turnaround with minimal disruption to the secure site led military personnel to the choice of a precast concrete building.

“This building is placed right out on the airfield tarmac, just a few hundred yards away from an operating runway. Security was tight, and getting construction crews cleared to enter the base—and even the daily in-and-out through security—adds costs for everyone and complexity for the construction manager. Our precast building minimized the amount of work done onsite and created less congestion for the air base,” McCann says.

Case Study 12 – Custom Engineered Park Facility

All-Precast Custom Roof Design Challenge



St. Catharines, Ontario: What happens when a block-and-wood washroom in a public park looks woefully outdated next to the modern additions around it, including a new \$20 million aquatic center? It's replaced by a durable, visually-appealing custom precast concrete washroom. Situated in the heart of St. Catharines, Ontario, Lester B. Pearson Park is a community focal point. With a revitalization project breathing new life into the 27-acre park, visitor numbers spiked and the local Recreation Department wanted to continue the rehabilitation by replacing dated restroom facilities with a modern new structure. Looking to neighboring communities, city officials noticed that several municipalities had replaced old block-and-wood washrooms with precast buildings, so the city approached Hy-Grade Precast Concrete requesting a signature design.

Hy-Grade's team worked with the city on several concepts and landed on a challenging but dynamic design that included an unconventional footprint with a pitched roof featuring compound joints. Using 3-D modeling, the precaster ensured the compound angles at the roof joints would precisely match. Hy-Grade, and Easi-Set licensed producer, also worked closely with the plumber and electrician to pre-form openings and penetrations for the fixtures, eliminating the need to drill core holes onsite.

Each panel of the Easi-Set Building has four different finishes and includes fine details around openings. After curing, all panels received a stain finish to match the city's desired color scheme. Hy-Grade also designed and supplied custom columns and a steel structure to support the large roof overhang. Installers completed assembly of the seven exterior wall panels, eight interior partitions and four roof slabs in just five days. Hy-Grade's innovative design and precision production emphasizes the amazing versatility of precast concrete in a building that will serve the community for many years to come.

To Learn More:



1 (866) 252-8210 www.EasiSetBuildings.com

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