



Highmark Data Center Wins TWO PCI Design Awards

When Highmark, Inc. decided to move their existing data center to Harrisburg, Pennsylvania, they required a modern structure that would offer security, dependability, and accommodate their high technology into the design. The result is an 81,854 SF elevated precast superstructure that has won numerous design awards, including Best-In-Class and Best All Precast and Sustainable Design awards from the 2006 PCI Design Awards Program.

The core of the building houses the data center floor space. This is enveloped on two sides by MEP equipment rooms, offices, and other support areas. According to an article by RTKL Associates, architect and engineer for the project, more than 500,000 insurance claims a day are processed at the center and more than 15,000 medical providers are connected through the center.

The data center was initially

designed as a structural steel frame. However, due to considerable cost savings and an expedited construction schedule, the owners decided that a precast structural framing system was the best option for the job. The Shockley Precast Group was ultimately chosen as manufacturer and erector of the project.

CEG, working closely with SPG and the design team, had only three months to design



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and detail all 389 pieces of the structure. This was especially challenging due to the many special requirements that were called for. Because of its critical operations, the facility needed to be designed for 72 PSF dead load, 150 PSF live load, and 600 PLF line live loads for the double tees, beams, and column corbels on the data center floor. CEG also designed the exterior load-bearing wall panels and load-bearing spandrels to withstand a wind speed 110 MPH.

In addition to the special loading, CEG incorporated numerous prominent architectural features into the design. The exterior insulated walls that house the data center floor space are an architectural mix with geometric patterns of sandblast. The entrance to the offices boasts of a

prominent architectural feature wall that extends beyond the main structure. CEG allowed for brick cladding and curtain wall systems in the south and west elevations and for horizontal louvers on the north elevation. These horizontal louvers serve as a "screen wall" for the mechanical equipment yard. On the northwest corner of the building, CEG designed two precast frames that cantilever over fifteen feet to support curtain walls and metal panels that are skewed in two directions. The facility is also configured to accommodate future expansion to the east.

CEG, as the precast specialty engineer, played a vital role on the construction team, helping to ensure the success of the Highmark Data Center. Our goal as always, is to work with our clients to ensure that all the needs of the owner and end users of the structure are met.

Super Bowl 2007

The Super Bowl is headed to Miami in 2007. As a result, Dolphin Stadium is undergoing an historic transformation for the big event. Stiles Construction, the general contractor for the project, realized early on that the only way to fast track precast construction of 360,000 square feet of concourse on three levels on both sides of the stadium into a 6 month schedule was to bring in a precast consultant to work concurrently with the design team. The development of the precast shop drawings would need to parallel the A/E drawing development. The schedule dictated that erection of the 1,044 precast pieces would start at the beginning of June and be completed by the end of July. With this short duration of erection, production had to be substantially complete by the time the erection started. The original idea was to have CEG develop precast shop drawings for a precaster to be chosen at a later date. Fortunately, Stiles Construction was able to bring Coreslab Miami on board in early February, thus the desired break-up of pieces could be established at an early stage of the project. With the robust precast market in Florida, this was critical in determining the production time slots available to make this fast track project work. Precast components were produced in both Coreslab Miami and Coreslab Tampa plants.

CEG began work on January 23, 2006 at a kick-off meeting with the design team at HOK's



office in Kansas City. The design team, consisting of HOK (Architect) and Bliss and Nyitray (Structural Engineer), was at the infancy stage of drawing development at that point. However, they showed immediately their willingness to supply the information necessary to develop the precast layout in such a short time frame. Cooperation and communication between CEG and the design team was exceptional, and fun! Additional coordination meetings occurred at CEG's Illinois office and in Miami at Bliss & Nyitray's office, culminating in a March 3, 2006 submittal for approval of the precast layout. Approval occurred within one week and the first production drawings were issued March 9, 2006. The final production drawings were completed on April 18, 2006. Erection by Pre-Con Construction began on June 5, 2006 and was completed on July 19, 2006.

UNIQUE FEATURES:

In order to accommodate code requirements for wind loading to an expansion of an existing structure, the lateral system became a combination of three elements:

- 1). Existing lateral bracing system in the original structure.
- 2). New precast concrete shear walls at the stair and elevator towers.
- 3). Precast bents braced with compact steel trusses in order to keep open bays. (Photo page 2, lower left).

The precast structure was also designed to accommodate future Suite levels which will extend well above the top of the stadium and be supported entirely off the new precast structure.

Also, in order to minimize the use of steel brackets required to support new precast beams from existing concrete stadium structures, it was decided to drop new precast columns into the existing Club/Suite level for support of upper concourse beam framing. (Photo upper right)

You'll be able to check out this project first hand come January as you're watching Super Bowl 2007.



Precast Piece Data			
Product	# of Pieces	# of Piece Marks	Piece/Mark Ratio
Double Tees	532	187	2.84/1
Beams	252	73	3.45/1
Columns	176	51	3.45/1
Shear Walls	58	42	1.38/1
Slabs	26	10	2.60/1
Totals	1,044	363	2.88/1

CEG at the Beach

The Daytona Beach, Florida region is one the few places where vehicles can actually park on the beach. Under the management of Volusia County, this unique attraction draws thousands to the ocean each day. The County, however, also provides convenient off-beach parking at 42 different lots ranging in size from 3 to 202 spaces. Currently, there is no fee for parking on the off-beach lots. To determine the feasibility of operating the lots as paid facilities, the County hired CEG.

Unlike a typical downtown parking study, there was no model or textbook approach to perform this analysis. There were seasonal variations of patronage, impact of season

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News Bites

CEG

The Consulting Engineers Group Inc.

- CEG wishes God's speed to our own **Captain Scott Winch** who has been deployed to Kuwait as a member of the 1st Battalion of the 121st Field Artillery. Although stationed in Kuwait, Scott's unit provides convoy security escorts throughout Iraq.
- CEG is pleased to welcome **Michelle Charapata, Ryanne Romero, Mia De Guzman, Bridget Joseph,** and **Mea Naraval** to our Illinois office and **Blanca deLuna** and **Amanda Greening** to our Texas office. We would also like to welcome back **Ray Hernandez** to our Texas office.
- *We look forward to seeing you in Grapevine, Texas for the PCI Convention.*

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parking permits, and even tide conditions to consider. The parking planners of CEG, headed by Chuck Cullen, Director of Parking Consulting Services, produced a customized template for this project.

Their work began with recording utilization of the lots both on a weekday and weekend. By examining the occupancy of the lots, the number of vehicles parked, and the time each vehicle actually parked, they were able to create a user profile for the lots and eliminate some lots for consideration due to their low probability of net revenue-generation.

The next step was comparing our user profile for the off-beach lots to the records of on-beach lot activity. This allowed the CEG Team to estimate the number of lot customers over a twelve-month period.

The Team then applied our estimated number of customers to 48 different rate structures, some with fixed fees and others with variable fees. To the gross revenue calculations, they made adjustments for revenue-sharing obligations and the use of season permit holders.

The next objective was to determine the cost of providing the parking service. Based upon their experience as former parking operators, Chuck Cullen and Greg Leean, Director of Airport Parking and Transportation Consulting, developed an expense budget for the management of the County's off-beach lots. Since the recommended mode of managing the lots involved the use of meters (single-space and pay-and-display units), they had to determine the revenue to be generated by parking fines and add this amount to the previous revenue totals.

After completing their analysis, the CEG Team prepared a final report listing the findings and recommending a strategy for the County.

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