
Cover Story

Cira Centre Named Delaware Valley's 2006 Outstanding Engineering Achievement

It is safe to say that the skyline of Philadelphia will never be the same. Completed in November 2005, the visionary design and striking location of Philadelphia's newest skyscraper has already made the Cira Centre a landmark for the City. As the first new office tower completed in area in almost 15 years, the Cira Centre represents the future of the City of Philadelphia and a revival for several surrounding sections of the City.

Pennoni Associates Inc., working for client Brandywine Realty Trust, provided site/civil engineering, survey, environmental, geotechnical, and construction inspection services for the design of the Cira Centre. While building a structure the size of Cira on any site would pose challenges, the site chosen for Cira was especially challenging for a number of reasons. Pennoni's innovative and forward-thinking engineering work enabled the

design and construction of Cira to become a reality, and led to the Cira Centre's selection as the 2006 Outstanding Engineering Achievement award by the Delaware Valley Engineers' Week Council.

World-renowned architects Cesar Pelli & Associates (now known as Pelli Clarke Pelli Architects) were the Design Architects for the Cira Centre, and created a building like no other the City has seen. Cira expands downtown Philadelphia across the Schuylkill River into a new region occupied by 30th Street Station, the University of Pennsylvania, and Drexel University, linking business to the research, education, and culture offered by these two fine universities. Located at 2929 Arch Street, Cira was constructed in a portion of Amtrak's North Parking Deck within the former Amtrak Rail yard. It is directly connected to 30th Street Station via a pedestrian bridge across Arch Street through the upper level, and is



adjacent to the new Amtrak parking facility. While this site made the building accessible from all modes of transportation, including rail, car, subway, trolley, bus, and taxi, it presented significant civil engineering challenges.

The Amtrak Rail yard site was the proposed site for several large building projects over the last 40 years. In the late 1960s, it was looked at and ruled out as a potential site for Veteran's Stadium, and in the 1980s it was proposed as a location for the Pennsylvania Convention Center. While both of these large facilities were eventually built on other sites, close examination began of the air rights above the tracks to determine the potential for future development. In 2002, when Brandywine was awarded the development rights for the parcel north of the station, Pennoni began the huge



undertaking of designing a site plan to accommodate a major office building on this long-neglected site.

Looking at the site from street level can be deceiving: the site may look routine, but in actuality it is not. Arch Street is located on an elevated deck about 20 feet above the Amtrak Rail Yard. The yard is filled with trains coming and going from 30th Street Station. These lines provide enough electricity for the trains, but were of little use in powering a 29-story skyscraper. In addition, the rail yard did not have adequate utility infrastructure for telecommunications, water, or sewer. On a normal City site, those necessary utilities could be pulled from public services within the street, but Arch Street did not contain the necessary utility infrastructure. Pennoni discovered that sufficient utilities were located on Market Street, about 900 feet away from the site.

Pennoni devised several possible alternatives to get utilities to the site. The goal was to provide the site with the most reliable services possible while maintaining cost effectiveness. Pennoni decided that bringing utilities from several different locations would provide the most dependable services, with a large percentage of the necessary utilities coming through the existing infrastructure running beneath

30th Street Station. Pennoni reused this old infrastructure and designed a concept for primary services that ran domestic water, fire, sewer, electric, and telecommunications through these tunnels, bringing them 900 feet from Market Street to the site.

In order to bring Brandywine's concept of a top-of-the-line, cutting-edge space to life, Pennoni needed to provide the site with redundant utility services. To do so, limited secondary utilities were drawn from Amtrak's existing usable facilities.

Successfully bringing utilities to the site was accomplished in spite of several other engineering challenges that the selected property posed. These challenges included very limited construction and loading access due to the positioning of the site between active rails, a newly constructed parking garage, and a highly trafficked city street, as well as configuring the necessary relocated utilities within the limited amount of bordering space surrounding the footprint of the proposed building.

When looking at the Cira Centre's bold and dramatic architectural design, it is easy to forget about all of the engineering work required to bring such a building to fruition. The work performed on the Cira Centre clearly demonstrates the importance of engineering in shaping the future of today's

society. While all aspects of the selected site were appealing to the client, the location created a utility nightmare for the Civil Engineer. By stepping away from the problem and looking at the project as a complete system with the surrounding area, Pennoni was able to solve the challenge and enable the project to move forward at the preferred site. Without the adaptive reuse application for some of the existing rail yard infrastructure designed by Pennoni Associates, the Cira Centre would not have been possible.

Thanks to the talents and diligence of the project team, the Philadelphia skyline has been redefined. Brandywine has taken a once unproductive site and turned it into an investment that will pay dividends long into the city's future. The design and construction of Cira also marks a return to the growth of business in the City, as most of the multi-story construction taking place in the city over the last few years has been for residential projects.

The potential for office space that is easily accessible from anywhere in the northeastern United States will help to draw people from outside the city, increasing revenues for the Delaware Valley. Cira is a landmark that all who live and work here can be proud of. ■



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