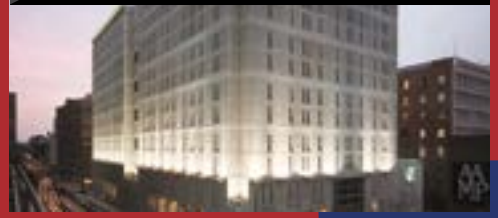
Notable Concrete in Philadelphia, PA

Examples of concrete construction projects in the vicinity

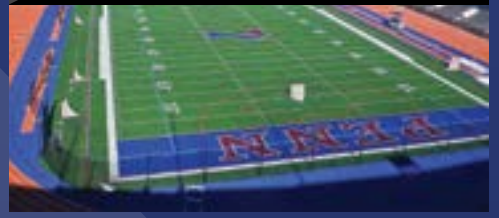
Concord Health Center

Federal Metropolitan Detention Center



Fonthill

Franklin Field, University of Pennsylvania



Philadelphia Skating Club and Humane Society

Walnut 32 Parking Garage, University of Pennsylvania

Walnut Lane Bridge

Walnut Lane Memorial Bridge

Map

Thanks to Michael Paul of ACI Committee 124, Concrete Aesthetics, and the Eastern Pennsylvania and Delaware Chapter – ACI for compiling this information.
As ACI prepares to meet for The Concrete Convention and Exposition, October 23-27, 2016, at the Philadelphia Marriott Downtown, in Philadelphia, PA, here are several nearby projects of interest:

Concord Health Center – Linear Accelerator Addition, Christiana Care Health System

161 Wilmington-West Chester Pike,
Chadds Ford, PA 19317

The base of the Linear Accelerator (LINAC) enclosure, consisting of 220 yd^3 (168 m^3) of concrete, was placed and finished as a single operation, self-performed by Wohlsen. The concrete walls and roof are 5 ft (1.5 m) thick around the perimeter, increasing to 7 ft (2 m) thick at the location of the LINAC machine. They included 17 tons (15 tonnes) of reinforcing bars and 390 yd^3 (298 m^3) of concrete. Wohlsen also self-performed the reinforced concrete roof construction.

This high-profile, innovative project, minimized costs and maintained a safe and clean site, resulting in an advanced technology medical facility.

Project credits: Wohlsen Construction Company, General Contractor; Bernardon Haber Holloway, Architect; Baker, Ingram & Associates, Structural Engineer; and PERI International, Formwork Supplier.

Submitted by Traci Althouse, Marketing and Proposal Manager, Wohlsen Construction Company, Media, PA, +1.610.616.5615, talthouse@wohlsen.com.

Concord Health Center
Federal Metropolitan Detention Center
Fonthill
Franklin Field, University of Pennsylvania
Philadelphia Skating Club and Humane Society
Walnut 32 Parking Garage, University of Pennsylvania
Walnut Lane Bridge
Walnut Lane Memorial Bridge
Map

Federal Metropolitan Detention Center

700 Arch Street, Philadelphia, PA 19106

Visitors to historic downtown Philadelphia might think they are looking at an elegant hotel or a high-tech office building instead of a detention center. That was the designers' objective in cladding the 11-story building in 320,000 ft² (29,700 m²) of architectural precast panels.

The 800 concrete panels were made with white cement. The building features a 3 ft (0.9 m) band of panels resembling terrazzo at the base. Panels above the base have a texture imitating natural stone, created using scoring and sandblasting. Each of the 628 housing cells includes a slit window, beveled on the exterior for prominence.

The efficient and affordable precast façades provide required security while still creating visual interest, avoiding a bunker-like appearance and blending in with the surrounding city.

Project credits: Ewing Cole Cherry Brott, Architect; High Concrete Structures, Inc., Precast Concrete Manufacturer; Lehigh White Cement Company, Cement Supplier; and Jeffrey Totaro, Photographer.

Submitted by Larry Rowland, Marketing & Technical Manager, Lehigh White Cement Company, Allentown, PA, +1.610.366.4645, lrowland@lehighcement.com.

Concord Health Center
Federal Metropolitan Detention Center
Fonthill
Franklin Field, University of Pennsylvania
Philadelphia Skating Club and Humane Society
Walnut 32 Parking Garage, University of Pennsylvania
Walnut Lane Bridge
Walnut Lane Memorial Bridge
Map

Fonthill

525 East Court Street,
Doylestown, PA 18901

Henry Chapman Mercer's "Castle for the New World" is an early example of cast-in-place reinforced concrete, built from 1908-1912, to serve as his home and as a showplace for his collection of tiles and prints. In this blend of Medieval, Gothic, and Byzantine architectural styles, familiar design elements were fashioned as molded forms in a new material. Mercer (1856-1930) served as his own architect, engineer, and construction supervisor. (For more information, refer to ACI 124.2R-94, "The Mercer Mile Buildings.")

Submitted by Theodore J. Smulski, Structural Engineer, DEDC, Newark, DE, +1.302.738.7172, tsmulski@dedc-eng.com.

Concord Health Center
Federal Metropolitan Detention Center
Fonthill
Franklin Field, University of Pennsylvania
Philadelphia Skating Club and Humane Society
Walnut 32 Parking Garage, University of Pennsylvania
Walnut Lane Bridge
Walnut Lane Memorial Bridge
Map

Franklin Field, University of Pennsylvania

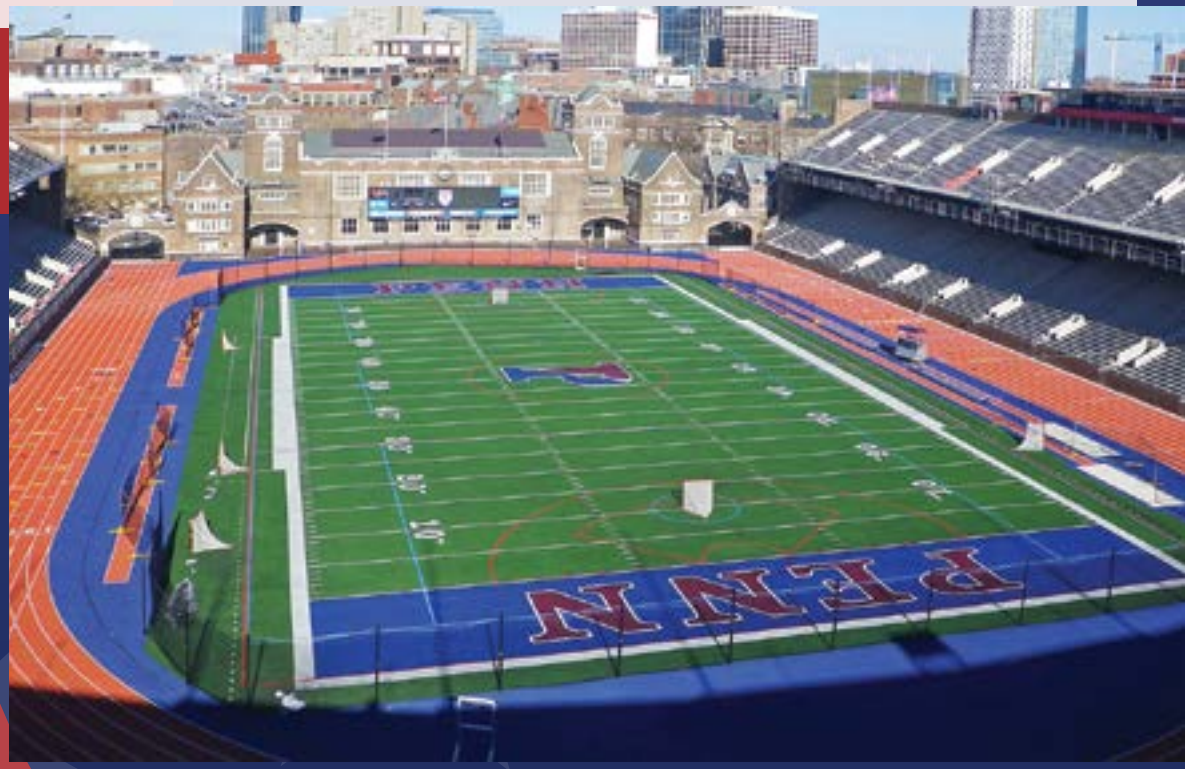
235 South 33rd Street, Philadelphia, PA 19104

Built in 1895, Franklin Field is one of the oldest collegiate football stadiums in the United States. In addition to hosting the Quakers and their Ivy League-record 13 titles, Franklin Field has also been the home of the NFL Philadelphia Eagles (1958-1970), numerous Army-Navy games, and several NCAA championships. Every April, more than 100,000 fans and athletes from all over the world pass through the stadium's historic gates for the Penn Relays.

An engineering and preservation program is underway to restore the reinforced concrete elements that have experienced significant degradation as a result of reinforcing steel corrosion and long-term exposure. The north grandstand restoration, the first phase in this 5-year program, is being completed between January and October 2016; work was paused to accommodate the Penn Relays in late April and commencement in late May.

Project credits: CVM, Structural Engineer; Hunter Roberts Construction Group, Construction Manager; and Restoration Solutions, Concrete Repair Contractor.

Submitted by David A. VanOcker, PE, FACI, Principal, CVM, King of Prussia, PA, +1.610.989.3800, dvanocker@cvmprofessional.com.



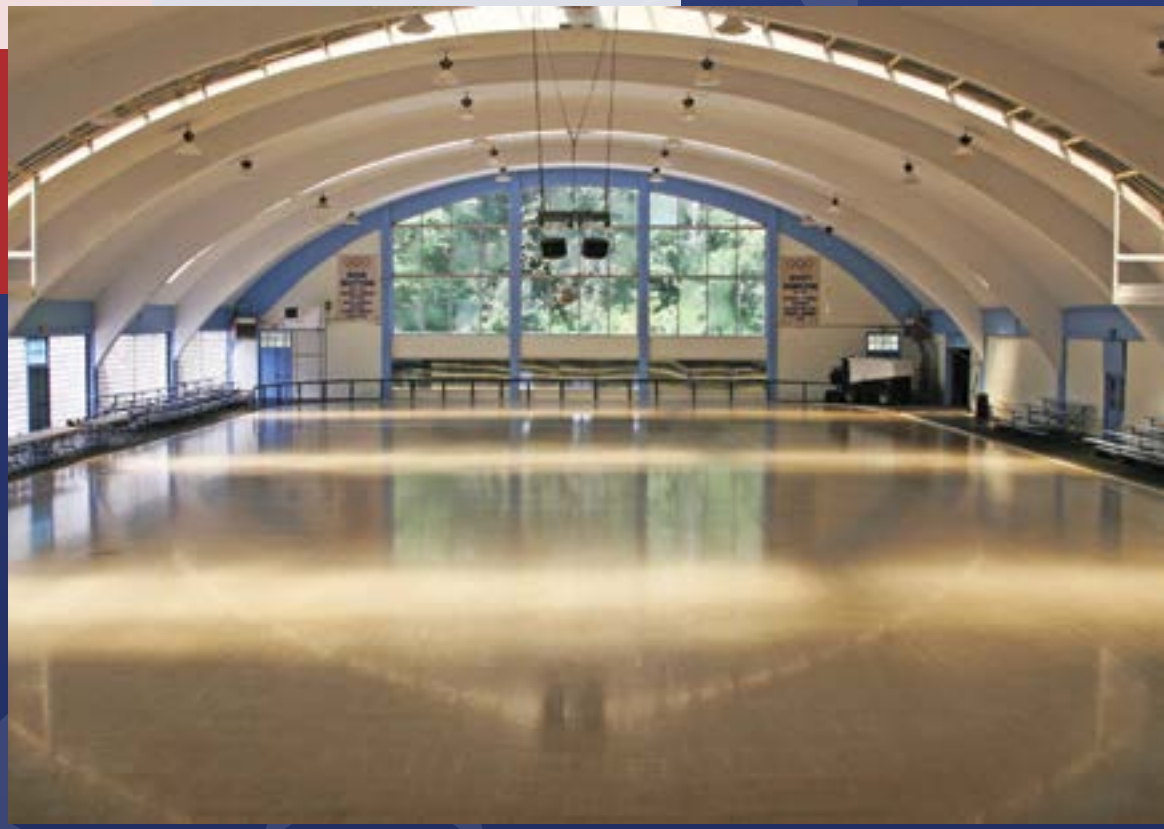
Concord Health Center
Federal Metropolitan Detention Center
Fonthill
Franklin Field, University of Pennsylvania
Philadelphia Skating Club and Humane Society
Walnut 32 Parking Garage, University of Pennsylvania
Walnut Lane Bridge
Walnut Lane Memorial Bridge
Map

Philadelphia Skating Club and Humane Society

229 Holland Avenue, Ardmore, PA 19003

Stolen skates and thin ice prompted Philadelphia's ice skaters to join forces with the Humane Society, established in 1770 to rescue drowning victims. The Philadelphia Skating Club and Humane Society was incorporated in 1861. As a refinement of his Hershey Arena, Anton Tedesko (1903-1994) designed the Society's club in 1937. The ribbed barrel vault spans 35.4 m (116 ft), with 66 mm (2.6 in.) thickness at the top, gradually increasing to 114 mm (4.5 in.) at the springing point. Increased curvature approaching the lower edge naturally stiffens the shell. This important work is an elegant example of the efficiency and durability of a concrete thin-shell structure. The architect was E. Nelson Edwards (1888-1969).

Submitted by Debra R. Smulski, Executive Director, Eastern Pennsylvania and Delaware Chapter – ACI, Wilmington, DE, +1.302.765.3732, mail@epdaci.org.



Concord Health Center
Federal Metropolitan Detention Center
Fonthill
Franklin Field, University of Pennsylvania
Philadelphia Skating Club and Humane Society
Walnut 32 Parking Garage, University of Pennsylvania
Walnut Lane Bridge
Walnut Lane Memorial Bridge
Map

Walnut 32 Parking Garage, University of Pennsylvania

3201 Walnut Street, Philadelphia, PA 19104

Designed by noted Philadelphia architects Mitchell/Giurgola Associates (MGA) in 1961, the Walnut 32 Garage is designated top-level “Distinguished 1” by the University’s ranking system of significant campus buildings. The completed structure, an exemplification of mid-century modern design, displays the influence of Louis Kahn and Robert Le Ricolais within MGA, winning the firm widespread acclaim, including a gold medal from the American Institute of Architects (AIA) Philadelphia Chapter in 1964.

Keast & Hood addressed the cast-in-place concrete structure’s various levels of deterioration from moisture intrusion, aging, and other environmental factors, while respectfully restoring the garage in concert with the architect’s original design intent.

Project credits: Keast & Hood, Structural Engineers; Paul Steege & Associates, Consulting Architect; International Consultants, Inc., Cost Estimator; Andrew Thomas, Mara Restoration Inc., Contractor; Schnabel Conservation, LLC, Paint Analysis/Architectural Conservator; and Knapp Masonry, Contractor Assistance.

Submitted by Constantine Doukakis, PE, Principal, Keast & Hood Structural Engineers, Philadelphia, PA, +1.215.625.0099, ddoukakis@keasthood.com.

Concord Health Center
Federal Metropolitan Detention Center
Fonthill
Franklin Field, University of Pennsylvania
Philadelphia Skating Club and Humane Society
Walnut 32 Parking Garage, University of Pennsylvania
Walnut Lane Bridge
Walnut Lane Memorial Bridge
Map

Walnut Lane Bridge

Wissahickon Creek at Walnut Lane,
Philadelphia, PA 19144

When completed in 1908, the bridge was the world's longest concrete arch bridge. Taking inspiration from a 1904 masonry arch bridge in Luxembourg, the two-rib, open-spandrel design uses a minimum of reinforcing steel.

Construction began on July 5, 1906, and was completed on October 14, 1908. Over 40,000 tons (36,300 tonnes) of "rubble" concrete were placed into falsework built from steel bents 20 ft (6.1 m) high and using 370,000 board ft (113,000 m) of timber facing. The bridge's six spans total 585 ft (178 m) in length. The roadway is 40 ft (12 m) wide, flanked by 10 ft (3 m) reinforced concrete sidewalks and precast concrete balustrades.

The bridge was a direct product of the City Beautiful Movement in Philadelphia in the early years of the twentieth century. Seeking to provide community harmony and cooperation through improved public spaces, the bridge was viewed as an achievement that could unite the communities and cultures of Roxborough and Germantown in addition to inspiring a greater civic engagement.

The bridge was formally dedicated on December 16, 1908, with students from nearby schools marching toward the middle of the bridge singing "Hail Philadelphia." The ceremony ended with a reception at a local inn with the traditional Wissahickon meal of catfish and waffles.

The bridge has been closed since early April but is expected to reopen in October. The closure was required to allow the replacement of the concrete deck, sidewalk, and railings of the 108-year-old bridge.

Project credits: George S. Webster and Henry Quimby, Philadelphia Department of Public Works, Engineers; and Reilly and Riddle, Contractor. (Opening paragraph and photographs courtesy of HAER; balance of description courtesy of Wikipedia.)

Concord Health Center

Federal Metropolitan Detention Center

Fonthill

Franklin Field, University of Pennsylvania

Philadelphia Skating Club and Humane Society

Walnut 32 Parking Garage, University of Pennsylvania

Walnut Lane Bridge

Walnut Lane Memorial Bridge

Map

Walnut Lane Memorial Bridge

Lincoln Drive and Monoshone Creek at Walnut Lane,
Philadelphia, PA 19144

The Walnut Lane Memorial Bridge, completed in 1950, was the first prestressed concrete beam bridge in the United States. It was the design of Gustave Magnel (1889-1955), who is regarded as one of the world's leading authorities on concrete prestressing. The bridge deck was supported by 13 concrete girders, each spanning 160 ft (49 m), which were prestressed longitudinally and transversely. The original bridge was replaced in 1990 with a precast, prestressed concrete structure designed to respect the original design.

Although prestressing had been used in Europe for quite some time, the Walnut Lane Memorial Bridge was innovative in the United States and led to the successful application of this technology throughout the country. The material-saving bridge cost about $700,000 to construct, roughly 30% less expensive than a regular concrete arch design.

The construction contract included the requirement for "testing to destruction of a full-sized girder, [which] was conducted on October 25, 1949, adjacent to the site of the bridge. The test demonstration attracted some 300 engineers, building officials, as well as representatives from the news media, from 17 states and five countries." (from "The Legacy of the Walnut Lane Memorial Bridge," George D. Nasser, *Structure Magazine*, Oct. 2008.)

Project credits: Gustave Magnel, University of Ghent, Engineer; Henry W. Horst Co., General Contractor; and The Preload Corp., Beam Subcontractor. (Opening paragraph and photographs courtesy of HAER; last paragraph as noted; balance courtesy of Wikipedia.)

Concord Health Center

Federal Metropolitan Detention Center

Fonthill

Franklin Field, University of Pennsylvania

Philadelphia Skating Club and Humane Society

Walnut 32 Parking Garage, University of Pennsylvania

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Walnut Lane Memorial Bridge

Map

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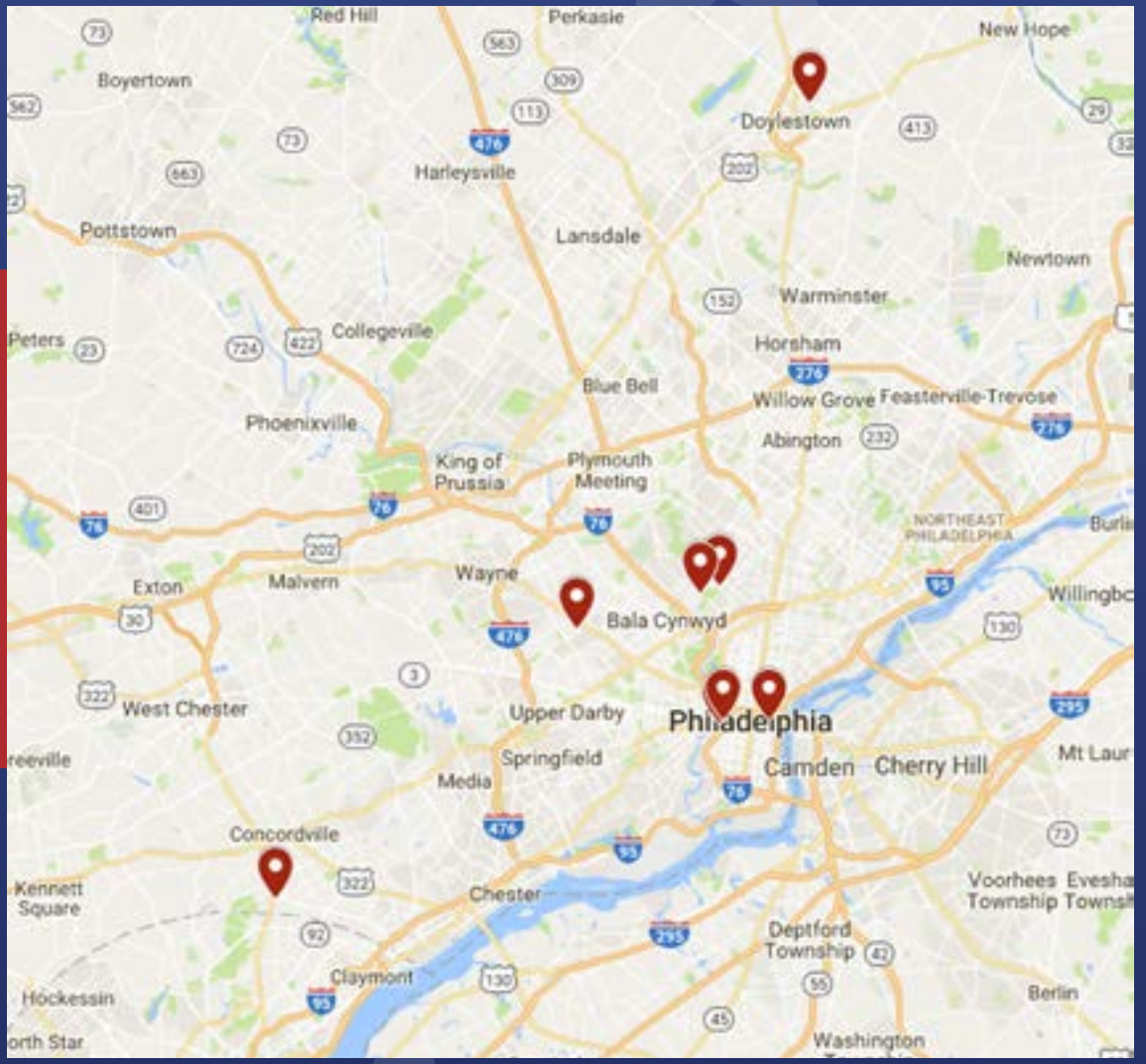

Concord Health Center	**Philadelphia Skating Club and Humane Society**
Federal Metropolitan Detention Center	**Walnut 32 Parking Garage, University of Pennsylvania**
Fonthill	**Walnut Lane Bridge**
Franklin Field, University of Pennsylvania	**Walnut Lane Memorial Bridge**

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