



DILWORTH PARK PAVILIONS | PHILADELPHIA, PA.
Two glass pavilions serve as entries to a revitalized urban park and its below-ground transportation network.

CASE STUDY

AGI Glazier

APG International Inc.

Team

Project Manager/Civil Engineer:

Urban Engineers, Inc.

Architect: KieranTimberlake

Glass Engineers (Design):

Dewhurst Macfarlane

Glass Engineers (Construction):

Eckersley O'Callaghan

General Contractor:

Daniel J. Keating Company

Timeline

Summer 2012 - Fall 2014

Scope

Dual glass entry pavilions



Photo © James Ewing/OTTO

MONUMENTAL ENTRIES

The transformation of Dilworth Plaza from an unwelcoming granite expanse to an inviting hub of urban activity involved revitalizing nearly four acres around Philadelphia City Hall with new greenery, public gathering areas, a programmable fountain that can become a winter ice skating rink, and a cafe. The plaza's original design of stepped granite platforms, ramps, and stairs made it a challenge to traverse both visually and physically. The ideas of visibility and transparency became design touchstones.

One goal of the project was to make the new Dilworth *Park* a transit gateway. Subway, regional rail, and trolley lines are all accessible below ground. Architect KieranTimberlake's design for two transparent glass entry portals provides highly visible and accessible passage to over 300,000 daily commuters.

The gracefully arcing glass pavilions frame the Market Street portal of City Hall and enable natural light to illuminate the transit access stairs. At night, the glass portals glow from within.

SCALE AND GRANDEUR

According to KieranTimberlake's project description, the glass pavilions "suggest a grand scale" but are not themselves grand. Maybe not in scale, but certainly in execution; the effort to achieve the architectural vision was a grand task indeed.

The 20-foot-high pavilions span 17-foot-wide stair openings and were built of 5,000 square feet of laminated structural glass. With the exception of stainless steel channels into which the lowest glass panels sit, there are no metal frames or supports. The lites were sized to European jumbo (20-by-10-feet) - nearly a foot larger than American jumbo lites. Five-ply wall panels and seven-ply roof panels comprise a structure the weight of a much larger building.

Predesign coordination began in 2012, two years before the first piece of glass was installed in May 2014. Advance planning, special lamination plant setup, and collaboration among a team of glass experts garnered results that helped the team transform Dilworth Park into a lively Philadelphia destination.

TEAM EFFORT AND INNOVATION

AGI member contractor APG International of Glassboro, N.J., was responsible for the glass scope of work. APG partnered with GGI of Secaucus, N.J., who cut, edged, and tempered oversized, low-iron Pilkington glass lites for the desired ultra-clear appearance.

After GGI prepared the lites (using an edge polisher purchased from Italy for this project), APG brought the glass into its clean room laminating facility. Extremely tight tolerances under 1/8" required precision during lamination. APG constructed tables on which the glass could be rolled into the ovens for 16 hours stints. The glass was then cooled rapidly to ensure clarity, a particular challenge on the seven-ply. Lamination took nearly three months.

After lamination, all edges were buttered with structural silicone to further ensure clarity. As the glass came on site, the complex assembly began. The vertical panels angle outward on a faceted curve, so as glass was put into place, everything needed to be clamped and supported with cross bracing. Restraints prevented slippage and ensured space between each pane to keep the vertical and horizontal lines consistent on the trapezoidal walls. A special glass vacuum and counterbalance weights were used to install the largest roof pieces.

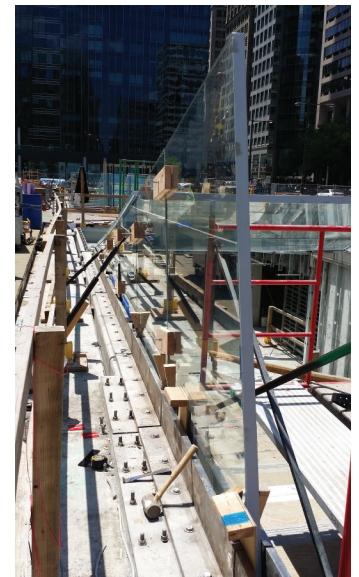
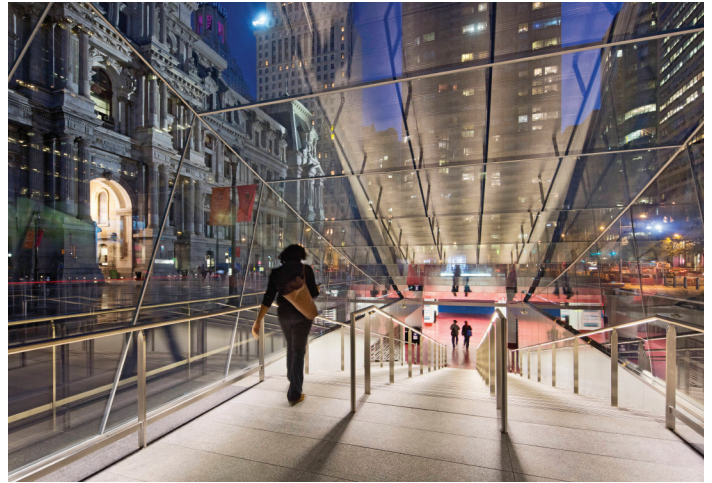
When the glass was in position, the base channel was filled with pour-grade epoxy resin. The epoxy could flow under the glass from both sides to ensure rigidity. Once the base material cured, structural silicone was applied for added reinforcement.

APG Project Executive Tony DeWitt managed the project and ran the lamination process. Construction Superintendent Sherman Hartman managed the project on-site. Vice President and Managing Director Dirk Schulte performed the original glass engineering and design. APG coordinated with design phase external glass engineers from Dewhurst Macfarlane and construction phase glass engineers from Eckersley O'Callaghan. APG CEO Ed Zaucha and President Eric Rosenberg contributed their expertise to the effort.

AWARD-WINNING

Conceived in partnership with OLIN landscape architects and Urban Engineers, Dilworth Park has received international recognition at the World Architecture Festival and the Chicago Athenaeum and awards from AIA Pennsylvania and AIA Philadelphia, which presented the project with a Silver Medal in the unbuilt category and a Gold Medal as a built project.

Rising to a height of 20 feet, the pavilions curve gently to the ground plane, accentuating the monumental scale of City Hall and creating an elegant frame for views of the building from adjacent streets.



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