Restoration Junction

Newark's Broad Street Station Starts a New Life

by Diane Greer

Newark's Broad Street Station has long served as a through-hub for commuters on New Jersey Transit rail lines. A new $51 million restoration and expansion project is preparing the building for an even busier future as an intermodal hub where commuter rail, light rail, and buses will meet, all while restoring many historic features of the 103-year-old structure.

Newark's historic Broad Street Station, built by the Delaware, Lackawanna and Western Railroad between 1901 and 1903, has served its purpose for many decades and even landed on the National Register of Historic Places.

Now, a $51 million project is restoring many historic station features and details, renovating spaces to expand passenger capacity, adding full accessibility for the disabled, and upgrading systems. The effort, overseen by New Jersey Transit, is slated for completion in January 2008.

The project is part of a revitalization effort in New Jersey's largest city, including the completion this spring of a light rail terminal just outside the historic station. The new light rail service, which runs 1 mi. to Newark's other major transit hub, Pennsylvania Station, is expected to boost activity at Broad Street Station and make it a significant intermodal transfer point, said John di Domenico, principal at di Domenico + Partners of New York, the renovation project's architect.

The primary task of the Broad Street renovation is to reconfigure tracks and platforms to allow passenger boarding on the center track, an effort that will facilitate transfers and expand capacity. Currently, three elevated tracks run parallel to one another through the station, with platforms located on the north and south ends offering access to only the two outermost tracks.

The project also involves extensive restoration work, with many details recreated with research that included analysis of old photographs. The building's landmark status required extensive design reviews and construction monitoring by New Jersey's State Historic Preservation Office, said Edward Fang, assistant program manager for NJ Transit.

"They are requiring any new station elements be sympathetic to the historic station," he added.

The work is governed by an 11-phase plan devised to maintain full passenger services by only removing one track from service at a time. The plan requires reconstruction and replacement of the bridge spans, abutments, track, platform, >>

and stairs for each track to be completed and ready for service before work begins on the next track.

While passengers now walk up steps to board a train, the project will add platforms that are level with train doors. The effort requires demolishing the eastbound platform and replacing it with a platform 3 ft. higher, said Mike Garofalo, project manager for Conti Group of South Plainfield, N.J., the general contractor.

The team is also demolishing a platform and shelter structure on the westbound side in order to realign the middle and westbound tracks in the station. The team will build a new elevated island platform in between the two tracks, finally offering rider access to the center track.

The tightly scheduled project's first milestone was completion of work on the front of the station to coincide with the opening of the light-rail terminal, Garofalo said. In the current phase, the team has 520 days to take Track 3, the eastbound side, out of service and rebuild it along with its associated bridge spans, stairs, and platform.

"Track 3 on the north side will also be realigned 26 ft. farther north," Fang said.

Another major part of the project is the rebuilding or rehabilitation of three bridges, each with separate spans carrying elevated tracks over adjacent streets, said Dennis Fordham, project manager for the Bloomfield, N.J., office of France-based SYSTRA Consulting, which is serving as lead engineer.

To accommodate a realignment of the eastbound side, the team will replace spans for that track on two railroad bridges that cross University Avenue and Broad Street east of the station. For the other two tracks crossing those bridges, team will rehabilitate the spans rather than replace them, Fordham said.

The team will also replace a railroad bridge that crosses Martin Luther King Boulevard to the west of the station. The new bridge will widen the span and increase roadway clearance to 13 ft. 9 in.

"It is currently a substandard bridge in terms of highway clearance," Fordham said.

Upgrades and a Careful Restoration

In addition to the extensive infrastructure work, the project entails significant tasks to carefully retrofit existing spaces with new technology, such as putting two new elevators within the historic structure.

"We needed to select an interior location where we could thread the elevator shaft without having it pop through the roof and disturb the historic profile of the building," di Domenico said.

Other new features such as platform shelter structures, canopies, stairs, and elevators have been designed in a manner complementary to the existing building, di Domenico said.

The Broad Street Station project combines significant upgrades to bring the building up to modern standards and extensive restoration or duplication of historic elements.

"The greatest challenge was restoring the spaces to their architectural magnificence while meeting the need to incorporate the systems, such as real-time information monitors, ticket vending machines, and other amenities necessary to support contemporary transportation spaces," di Domenico said.

In addition, the design calls for enhanced lighting levels as well as an effort to make the station compliant with the federal Americans with Disabilities Act, Fang said.

"The ADA effort will be accomplished by adding elevators and building new high-level platforms and associated ramps," Fang added.

Examination of old photographs of the original station revealed historic details that the team was able to incorporate into the renovation design. For instance, the team found a Western Union storefront, which had been bricked over, adjacent to the current entrance.

Restoring the storefront provided an opportunity to incorporate a wider ADA-compliant entrance and a large glazed structure, which opens the building >>

Key Players

Owner: New Jersey Transit, Newark, N.J.

Lead Engineer: SYSTRA Consulting, Bloomfield, N.J.

General Contractor: Conti Group, South Plainfield, N.J.

Engineer: Ceacon Group, Hackettstown, N.J.

Architect: di Domenico + Partners, New York

Mechanical-Plumbing: WJ Post, Riverdale, N.J.

Demolition: Nacerima Environmental, Bayonne, N.J.

Electrical: Barrier Electric, Bayonne, N.J.

Masonry-Restoration: Watertrol, Cranford, N.J.

Plaster: Evergreene Painting Studios, New York

Glazing: Stealth Architectural Windows, Brooklyn

Architectural Conservator: Jablonski Berkowitz, New York

Concrete Pavers-Flatwork: A-Tech Concrete, Edison, N.J.

Terrazzo Flooring: Specialty Flooring, South Amboy, N.J.

into the plaza, di Domenico said.

The old photographs also showed a 300-ft. canopy between the station and University Avenue. The team will build a replica, providing a covered walkway for people transferring from buses and a waiting area for the light-rail terminal.

The main waiting room of the station, reduced in size over the years to accommodate NJ Transit and police offices, will be restored to its original size and glory, Fordham said. The project team will replace terrazzo floors throughout the station and restore glazed brick, marble facing, and decorative plasterwork.

The team will also restore the original color scheme for the station, based on details gleaned from paint chip samplings and the historic photos. Similarly, the team is procuring materials such as bricks to match the station's original ones.

"A lot of these materials need to be specifically manufactured," di Domenico said. "You cannot get them off the shelf."

A notable aspect of the project was a State Historic Preservation Office requirement to save and reuse materials, Conti Group's Garofalo said. The team reused glazed bricks from the pedestrian tunnel, old radiators, and benches.

"We saved 5,000 bricks from the shelter building to reuse when we restore the exterior façade of the main building," he added.

NJ Transit is also saving some materials not reused on the project for other construction efforts in its portfolio or is giving them to local historic societies.

As with any historic renovation, the project had surprises, such as the team's simpler-than-planned effort to demolish bridge abutments in the structure. The team found that the abutments were made from 6- to 8-ft.-deep concrete pours that had no reinforcing steel.

"It makes our demolition easy," Garofalo said.

In other areas, such walks and ramps, demolition crews are finding evidence that the original project team was resourceful in its use of extra track – installing it into the walls as reinforcement instead of rebar, Garofalo said.

"You find pieces of rail poured into the walls all over the place," he added. <<

Quick Stats: Newark Renewal

The reconstruction and restoration of Broad Street Station will use:

- 6,500 cu. yd. of concrete
- 561 tons of structural steel
- 950,000 lb. of steel reinforcement