

CASE STUDY / **WASHINGTON/WABASH CTA ELEVATED STATION**

A SUBWAY STATION IN TRANSIT

When upgrading the nation's second-busiest public transportation system, extended outages in service weren't an option. So when the Chicago Department of Transportation (CDOT) and the Chicago Transit Authority (CTA) called for one new station to replace two older ones, the design and construction team had to find a way to work while minimizing disruptions to riders, drivers, pedestrians and nearby businesses.



THE NEW STATION ALONG CHICAGO'S POPULAR LOOP WILL BETTER SERVE A MODERN WORLD

Project engineers worked to minimize track outages and reduce disruption to the city.

PROJECT STATS

CLIENT

Chicago Transit Authority

LOCATION

Chicago, Illinois

START DATE

March 2015

COMPLETION DATE

August 2017

TOTAL PROJECT COST

Design services (EXP):
\$4.7 million

Construction management
(Burns & McDonnell):
\$4.8 million

Construction cost (FHP):
\$85 million

CHALLENGE

It's estimated that the CTA provides residents and visitors 1.6 million rides on an average weekday, whether it's by train or bus. One of the most popular destinations in Chicago is known as the Loop, the central business district in the heart of the city, connecting travelers to Millennium and Grant parks.

But the CTA's stations along the line could no longer handle the demands of a modern world. A new station was needed that would meet ADA requirements and be better positioned to meet Chicago's needs.

SOLUTION

The city, which began its improvement plans about 11 years ago, decided to decommission two existing stations within four blocks of each other. The new station's location landed in a popular area known as Jewelers Row to better serve commuters traveling to work, hotels, City Hall, numerous restaurants and bars, and popular tourist areas. But the jeweler community didn't take too well to news of the new station location. It took extensive public outreach from the team to inform the group — whose members were against this project from the start — about the benefits of one new station.

For this massive transit shift, Burns & McDonnell provided engineering and construction management services for the project and set out to find a way to minimize shutdowns to the route, and other surrounding routes, while still delivering an innovative new station.

The first phase of this project was to demolish the Madison/Wabash Station to make room for construction of the new facility, keeping the second station, known as the Randolph/Wabash Station, open during this time to continue serving commuters.

While the Madison/Wabash Station was no longer able to optimally serve the city, the 100-year-old station had acquired historic significance. To preserve its role in the city's past, the construction team worked to carefully remove a portion of the building's facade to send to a railway museum.

Though a long-standing icon, the station also posed challenges for project designers, as the track system, structural supports and foundations were all more than 100 years old. Building a new station that integrated with the existing structures would take careful coordination.

The plan was to reconstruct foundations at every track support structure and put in a flat and straight rail alignment for the new Washington/Wabash CTA Station. But before construction could begin, underground conflicts had to be resolved. Because of an already congested underground utility corridor with historical drawings, members of the design and construction team didn't know exactly what they'd find until excavation began.

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LARGEST ELEVATED RAIL STATION IN CHICAGO

4

PROPERTIES RECEIVED STRUCTURAL WORK

300K

WEEKLY RIDERS



To resolve the conflicts in a timely fashion, advanced vacuum excavation was required at each of the eight support structures to survey the land and pinpoint exact locations of utilities. Because most lines couldn't be relocated without greatly affecting the schedule, foundations were redesigned, which required extensive coordination between designers and the utility companies to promptly come up with a solution.

Our team then moved its attention to the sub-basements of four high-rise buildings. This phase consisted of constructing an elevator in two sub-basements of one building; building a 500-square-foot rail facilities office in another; and modifying two foundation wall corners in two other buildings to allow for more robust column foundations.

When it came time to attach new steel to the existing structure, making clean and consistent connections was key. For seamless assembly, it took constant communication and coordination from the entire team to strategically execute working drawings, as well as revise design connections as needed on the spot for a consistent final product.

Throughout the construction phase, the team maintained safe traffic conditions for vehicles and pedestrians; created detailed staging plans for approval by city officials and adjacent businesses; procured materials and delivered them to a site with limited space; and removed demolition debris daily.

To minimize disruption to daily activities in the city, the team scheduled track outages on weekends and many construction activities overnight, resulting in a large portion of the project scope being completed within a compressed time frame. Our team continued to keep an open line of communication with area residents, businesses and travelers through the project, keeping them informed of construction progress, as well as road and pedestrian-way closures.

RESULTS

Featuring a unique wave-patterned glass-and-steel canopy, the new innovative, ADA-compliant station opened on Aug. 31, 2017, and accommodates roughly 300,000 riders and visitors each week. Blending with the open structure of the nearby Jay Pritzker Pavilion, its eccentric steel look is designed to draw visitors in and serve as another unique architectural landmark within the city's eclectic landscape. A few finishing touches include LED lighting upgrades and private artwork installations, as well as advertising and video messaging boards.

The final phase of the project included decommissioning and demolishing the existing Randolph/Wabash station, which was closed soon after the opening of the new Washington/Wabash station.

SPECIALIZED SERVICES

- Agency coordination
- Architectural installation
- Construction staging
- Demolition
- Foundation installation
- Lighting procurement and installation
- Major structural retrofit
- Pedestrian and vehicular safety
- Sidewalk paving and construction
- Stakeholder management
- Traffic maintenance



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