



## Connecting Worlds

DLR Group creates a community-centric design for the Chinatown station of San Francisco's Central Subway.

 **DLRGROUP**

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The new Central Subway Chinatown station has a rooftop plaza and stadium seating where the community can gather. [Image: DLR Group]

# Introduction

The Central Subway is San Francisco's first subway line to be constructed in the last 50 years, and one of a small handful of recent subway projects in the U.S. The \$1.6 billion project runs through the city's hilly terrain and distinctive neighborhoods. When it opens in 2022, the subway extension is anticipated to carry an additional 35,000 passengers a day.

Public transit projects are typically led by engineering firms, but DLR Group architects played a key role in the critical planning stages of the 1.7-mile route. They worked closely with engineering firm WSP – formerly Parsons Brinckerhoff – to determine the route alignment and the location of the four stations, and to create concept designs for the stations. DLR Group was also responsible for the final design of the Chinatown station, which was a challenging project on multiple fronts. Located on a tight footprint of 10,000 SF, the station had to provide all the necessary functionality while reflecting the unique culture of San Francisco's Chinatown, an internationally famous tourist attraction that is home to 15,000 Chinese Americans and serves the greater Chinese American community in the Bay Area.

To produce a transportation hub of which the community could be proud, the design team leveraged the site's inherent strengths and assets. Riders will experience the dramatic mined space that provides access to the subway tunnels. Public artwork is also fully integrated into the station architecture for maximum impact. And the station's rooftop plaza provides valuable open space for the city's densest neighborhood.

"Aside from the technical challenge, what I really like about doing public transit projects is how they connect communities," says Principal Denis Henmi, who leads the transportation practice at DLR Group and worked on the project over the course of a decade. "These type of public spaces are about equity and social justice, and providing access to people who can't always afford a car. In addition to integrating public transportation into the community, we try to take advantage of the opportunity to create a community hub."



# History in the Making

Slated to open in the spring of 2022, the Central Subway significantly expands public transit for the city's most underserved neighborhoods. Municipal buses, contending with intense congestion, are frequently overcrowded during peak times and suffer from delays. The 1.5 mile extension of the existing T-Third Metro light rail will connect downtown San Francisco with neighborhoods at the southern edge including the

historically Black community of Bayview/Hunters Point and a growing Asian American population both there and in Visitacion Valley. The subway line also picks up where Caltrain, the local commuter rail service, ends – thus providing fast, convenient transportation to and from Silicon Valley. In potential future phases, the line would extend north and westward to reach additional neighborhoods.



The Central Subway provides fast and reliable public transit to key destinations downtown, bypassing congested roadways. [Image: SFMTA, via [Hoodline story](#).]





San Francisco's Chinatown, the oldest such community in the U.S., serves as a gateway community for Chinese immigrants.  
 [Photo: "San Francisco Chinatown" by US Department of State is licensed under CC BY-SA 2.0]

## Established in 1849 and the oldest Chinatown in the United States, the 22 square blocks constitute the densest neighborhood in San Francisco.

For the foreseeable future, the subway's northern terminus is in Chinatown. Established in 1849 and the oldest Chinatown in the United States, the 22 square blocks constitute the densest neighborhood in San Francisco. The immigrant gateway community also has the second-lowest median household income among all San Francisco neighborhoods, and more than 70 percent of residents do not own a car. While 40 percent of the population are seniors, more families have been staying put due to the city's housing crisis over the last two decades. The neighborhood is also home to roughly 1,000 small businesses. Chinatown thus has the "diversity of uses" that urbanist Jane Jacobs cites as the basis for vibrant city life in her seminal book, *The Death and Life of American Cities*.

Plans for the Central Subway and its associated stations gathered momentum after the 1989 Loma Prieta earthquake. The damaged Embarcadero freeway along the eastern waterfront, which provided a direct route into Chinatown, was subsequently demolished. Rose Pak, a Chinese Chamber of Commerce consultant who had lobbied to save the Embarcadero on behalf of Chinatown merchants, used her considerable political influence to advocate for the Central Subway. Her concerns were later borne out by a 2007 study at UC Berkeley, which found that employment in Chinatown fell by one-third in the years after the freeway removal. In 2019, the San Francisco Metropolitan Transportation Assembly voted to give the station the name "Chinatown Rose Pak Station."



# A Team Effort

In 2002, the SFMTA received federal approval for the project, allowing it to move forward with a preliminary engineering study. As in many jurisdictions, San Francisco agencies are required to award a certain percentage of their contracts to small businesses. Kwan Henmi, a San Francisco architecture firm that merged in 2017 with DLR Group, partnered with Parsons Brinkerhoff, later WSP, and won the contract for the preliminary engineering. The architecture firm's prior experience with public transit was also with Parsons Brinkerhoff: The two designed the stations for AirTrain, the San Francisco International Airport's terminal light rail system.

In the years to come, DLR Group gained invaluable expertise in the start-and-stop process of designing enormous public transit projects, as well as the prolonged approvals process. The combined team numbered about 70 people, and for three years, the DLR Group architects worked in a co-located office with the Parsons Brinkerhoff's engineers and transportation architects, along with SFMTA staff. The project took several years to gain city approval and make it through the state's environmental review. As part of the environmental impact report process, SFMTA held more than 100 public meetings.

During the preliminary engineering phase, the team figured out potential route alignments along Third Street and Fourth Street and where the subway portal leading underground could be placed. They also identified sites where the subway stations could be built, given the structural requirements. By their nature, public transit

projects are engineering-driven, but the architects played an important supporting role. "We were there at the table, helping to piece together the puzzle," says architect Mona Tamari, who was formerly with Kwan Henmi and now consults for DLR Group. "We did lots of rapid studies to inform decisions."

The three underground stations had very challenging functional requirements that needed to be incorporated into the schematic designs; ventilation shafts in particular took a lot of time to figure out. In the push-and-pull between engineering and design, the architects strove for the eloquence of simplicity. Located at the Moscone Center conference venue, the Union Square shopping district, and Chinatown, the three stations were each constructed very differently.

Finding a location for the Chinatown station was particularly challenging because the historic district was densely packed with narrow, congested streets and relatively fragile structures. Most of the lots were very small, and the design team briefly considered retrofitting a group of historic buildings and transforming their interiors into a station. Ultimately, the team settled on a corner site, which had a two-story brick office building that was not a historic landmark. It had a large enough footprint – roughly 10,000 SF – to accommodate the station's head house. And it was located on Stockton Street, the community's main shopping and business thoroughfare.

*To connect the station head house with the train tunnels, another tunnel was excavated. Running perpendicular to the train tunnels, the arched cavern leads to the train platform. Three flights of escalators bring riders 100 feet down to the bottom level.*

*[Image: DLR Group]*

- > CONVENTIONAL TUNNELING (SEM OR NATM)
- > PLATFORM AND CROSS OVER CAVERNS 630 F LONG X 55 F WIDE X 43 F HIGH
- > EXCAVATED CROSS SECTION 2,174 SF
- > OFF STREET ENTRANCE WITH CROSS CUT CAVERN CONNECTION





Users would descend 100 feet below the surface – the rough equivalent of a 10-story building

The cavern as it appeared during construction. [Photo: DLR Group/Peter Hess]

Ultimately, the Stockton Street location used mining and tunneling to create the Chinatown station 100 feet below the surface.

“The geological conditions were impacting the geometry of the station and the experience of it,” says Tamari. “We wanted to make sure that each form reflected and celebrated this geometry. The design process was about protecting and expressing the form, and figuring out how to keep it from being obscured.”

The Chinatown station, the deepest of the three new stations along the extended line, was mined in order to minimize the impact on the community. The station cavern, where the train platforms provide access to the north- and south-bound train tunnels, was created using the New Austrian Tunnel Method, also known as sequential excavation, which is good for short tunnels

in variable soil conditions. Its “beautiful egg-shaped curves,” as Tamari describes it, became a focus of the design. Since the station was so deep, the architects created a high-ceilinged ticketing hall that showcases the arched cavern opening at one end.

Since users would descend 100 feet below the surface – the rough equivalent of a 10-story building – the architects looked for ways to make the experience more appealing. “The important part was to create a sense of progression of moving through the space,” Henmi says. “It’s a long way down, so you want to create different points of interest.” To bring natural light into the station, the architects designed a glass canopy that stretches over the entire first flight of escalators.





The transition from the street level into the station depths is modulated by a glass canopy that allows natural light to permeate below. Exposed to the elements, the structural glass has a frosted pattern for bird safety and reduced maintenance requirements. [Image: DLR Group]

## A Sense of Place

After the project cleared environmental review, the SFMTA put out a request for proposals to complete the station designs, based on the approved conceptual designs.

Though the team was thoroughly familiar with the site by then, designing the station was still a sensitive process. Chinatown certainly had prominent architectural elements to serve as a reference point. But the team quickly realized that the community didn't want to be bound by the past. "A lot of assumptions were verbalized in the beginning – that Chinatown was about dragons and red lanterns," says Tamari. "But when you're building in this kind of community, it's important to listen."

To help the design team understand their goals for the station, two local nonprofit organizations, Asian Neighborhood Design and Chinatown Community Development Center, held design workshops for the community in late 2008 and compiled a set of guidelines. Safety was a big concern for workshop participants, who reiterated the need for a "safe entrance," "safe gathering spaces," and that the station area should be "safe, clean, and well-lit, with stores that are open late." Having retail establishments was seen as an important safety measure since there would be more "eyes on the street," in the Jacobs' sense of community activity, vibrance, and safety. Easy access to the bus network and public restrooms were among other priorities.





To create a welcoming place to gather, the station offers stadium seating on one side of the plaza stairs, in addition to seating on the plaza itself. At the top of the stairs, there is a poem by a local senior that was inscribed by a well-known calligrapher. [Images: DLR Group]

In terms of aesthetics, the community hoped for a station that represented their future, as well as their culture and history, and followed feng shui design principles. The Olympics had just been held in Beijing that summer, and local stakeholders were inspired by the exciting new architecture there, including the Bird's Nest stadium. Community members weren't interested in a traditional pagoda roof, but they also didn't want a generic modern structure that could have equally been at home in Dubai or Barcelona.

Because square footage is so precious in Chinatown and the housing need so acute, the original concept outlined a new multistory building with affordable housing above the station. However, as the plans progressed, building on the limited footprint turned out to be infeasible, and the community voiced a preference for a rooftop plaza above the station. The DLR Group architects then took conceptual plans for a 2,500-SF plaza with stairs and stadium seating, and collaborated with landscape architecture firm RHAA to create the final design.

**The community hoped for a station that represented their future, as well as their culture and history.**





*DLR Group sought out architectural solutions to preserve the station cavern's excavated form. [Image: DLR Group]*

The architects choreographed the procession down to the train platforms, taking advantage of the natural breaks along the way. Riders begin the journey bathed in natural light under a canopy of structural glass that covers the first flight of escalators. At the landing, riders are greeted by a large artwork on the wall. A second, longer flight of escalators brings them into the voluminous ticketing hall, where an artwork covers an entire wall, creating a sense of arrival. Then they enter the cavern to the train platform.

To celebrate the cavern's curved form, DLR Group worked hard to find alternatives to putting in a dropped ceiling or columns to contain the necessary ductwork and utilities, calling for the wall to be thickened rather than mar the cavern's clean lines. They lined the arch with white cement fiberboard panels that conceal utility lines and bring a slight luminescence to the space.

The architects also brought in a feng shui consultant to advise them on how to avoid creating negative energy in their architectural choices. They were relieved to learn that the upwards-sloping building site had a good flow of energy to begin with. They also learned that they shouldn't include any spiky elements, because they would have the sense of a weapon. While the design team wasn't able to incorporate the natural materials recommended by the consultant, they tried to imbue a sense of nature in the concrete, steel, and glass building by using a color palette of soft greens and blues.



# Art for the People

To help the station symbolize Chinatown, the 2008 community design guidelines called for public art on the exterior and its open space, instead of simply within the station. They also advocated for the art to reflect the history of Chinatown and Chinese immigration in the city. Thanks to San Francisco's "2-percent-for-art" program, which requires that two percent of the construction budget for city projects is allocated to public art, the SFMTA was able to commission significant artwork

for the station. DLR Group worked with the city's Arts Commission to identify opportunities for artwork and fully integrate it into the station architecture. "We were always thinking about the art," says Tamari. "From a practical point of view, your eye gets drawn to beautiful, bright work. The artwork provides a sense of orientation and becomes a through line, connecting you to the surface with lightness and color."



One of the highlights of the station is the artwork by local artist Yumei Hou. Magnified and laser-cut, the pieces are mounted slightly off the wall to cast a shadow so they can "read" as paper cuttings. [Image: DLR Group]



A 100-foot-long artwork by NYC-based artist Tomie Arai wraps around the corner at the intersection of Stockton and Washington Streets. [Image: DLR Group]

The facade features a 100-foot-long artwork by NYC-based artist Tomie Arai that wraps around the corner at the intersection of Stockton and Washington Streets. Arai, a printmaker, incorporates historical imagery such as photographs in her work; and *Urban Archaeology*, rendered on architectural glass panels, will show the history of the area surrounding the station, from its origins to the present. Historical objects discovered during the excavation, including an antique sewing machine, will be displayed in the station in a museum-style wall case.

The Chinatown community also advocated for local artists, who didn't have experience applying for public art commissions and struggled with the language barrier, by helping them with their applications. Arguably the station's signature works are by artist Yumei Hou, a senior living in a single-residence-occupancy building

in downtown San Francisco. Hou, who specializes in traditional Chinese paper cutting, designed two works depicting a folk dance from her native Manchuria. The architects and the San Francisco Arts Commission worked with Hou to translate her paper cuttings into a large permanent installation. As riders enter and exit the train platform, the first thing they will see is Hou's paper cutting, laser-cut into metal and scaled up to 30 feet high by 35 feet wide, in bold red.

"It's really the artwork that makes this station stand out," says Neil Peralta, project manager and senior associate at DLR Group, who worked on the design development phase of the project. "That's something I'm really proud of: how to use public art and educate the public about cultural diversity."

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Denis Henmi, FAIA, LEED AP  
Principal, DLR Group