

We're planning rail to
bridge divides.

K LINE NORTHERN EXTENSION





Welcome

Thank you for joining us.

Agenda

- | | |
|---------|----------------------------------|
| 9am | Open House |
| 9:30am | Welcome |
| 9:40am | Presentation, followed by Q&A |
| 10:30am | Open House Resumes |
| 11am | Tour (pre-registration required) |

Public Meeting Guidelines

We want your feedback and input. To provide a safe and equitable process during the public meeting, we are asking for your help.

During the public meeting please:

- > Turn cell phones off or set them to vibrate
- > Respect the format of the meeting and allow everyone an opportunity to speak with project planners and Metro staff
- > Listen respectfully, allow others to speak and do not interrupt them
- > Treat fellow community members, agency representatives, Metro staff and others with respect both during and after the meeting
- > Address your comments to Metro staff and consultants—not to other attendees
- > Do not block the view of other participants
- > Do not display large signs with sticks attached or banners or other promotional materials; signs must be no larger than 8½" x 11"
- > Do not use speakers, bullhorns or devices with sound amplification

How to Provide Feedback

- > Submit comment cards during the meeting
- > Email comments
- > Call project hotline

 klinenorth@metro.net

 213.418.3093



www.metro.net/projects/kline-northern-extension

Metro is committed to ensuring that all participants can fairly and clearly ask questions, and share ideas, comments, and concerns about this project.

We reserve the right to end this public meeting at any point if we are unable to conduct the public meeting consistent with these guidelines.

Metro will continue to engage the community and receive input throughout the life of the project to share with the Metro Board.

Provide public comments using a comment card. All comments should be written (or recorded) and submitted via one of the methods described, above.

About the KNE Project: Objectives

1

Leverage the high-volume east-west rail network to provide new north-south connections and **close a regional network gap** between the Metro K, E, D, and B Lines.

2

Increase the efficiency and convenience of transit trips by providing **faster and more direct service**, in turn creating more connections and mobility options.

3

Reduce vehicle miles traveled and greenhouse gas emissions by providing an alternative to congested roadways by offering high-capacity, grade-separated transit to meet existing and growing demand.

4

Maximize access to jobs, housing, and opportunity through the implementation of frequent and reliable rail service.

5

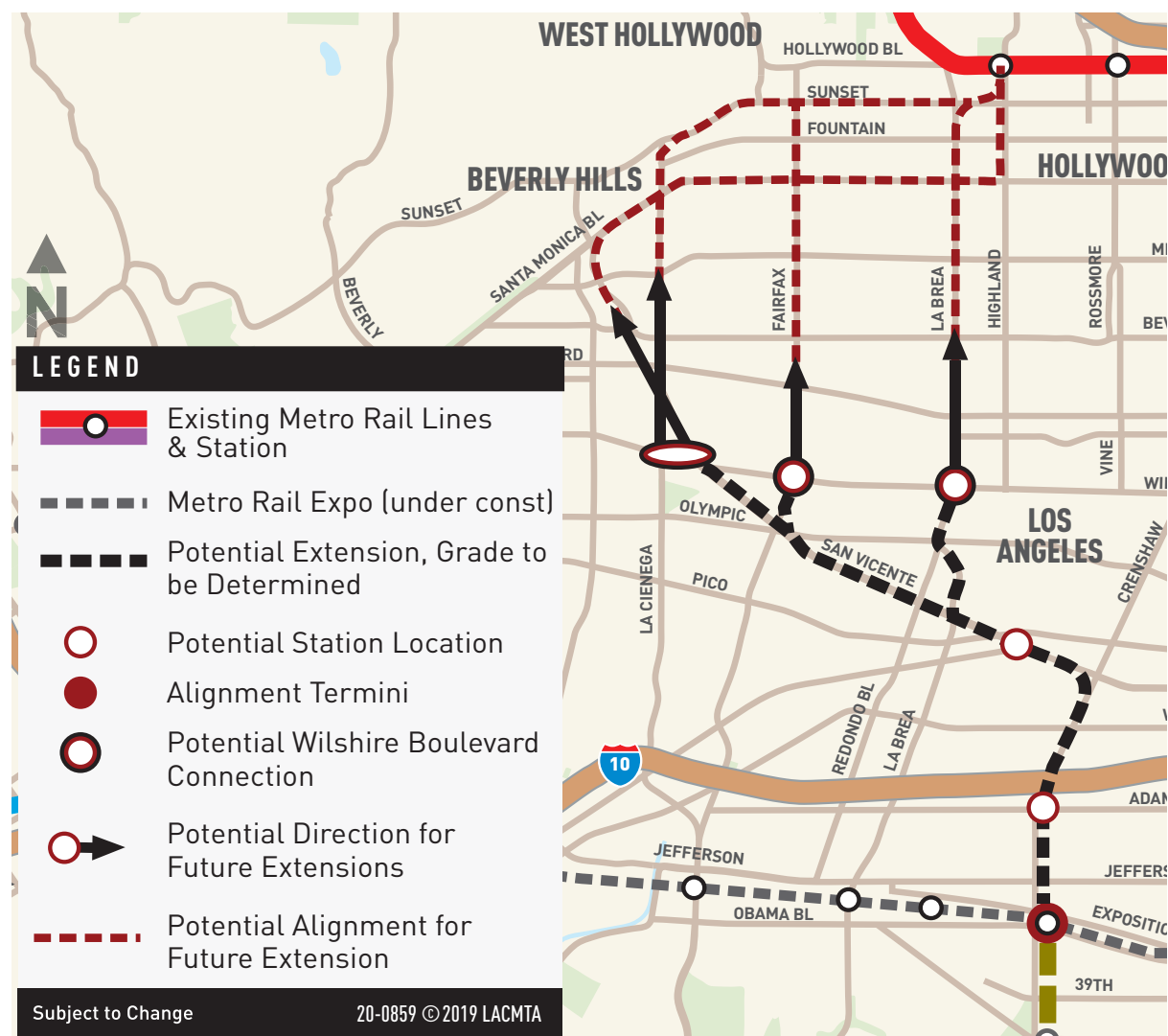
Improve mobility for transit-dependent residents by providing alternatives to congestion with efficient transit service and a cohesive high-capacity and high-speed transit network.



NOTE: Diagram illustrates potential future rail connections with implementation of K Line Northern Extension Project.

About the KNE Project: History of Alignments Studied

2009 Wilshire/La Brea Light Rail Transit Study



2018 Alternatives Analysis Study



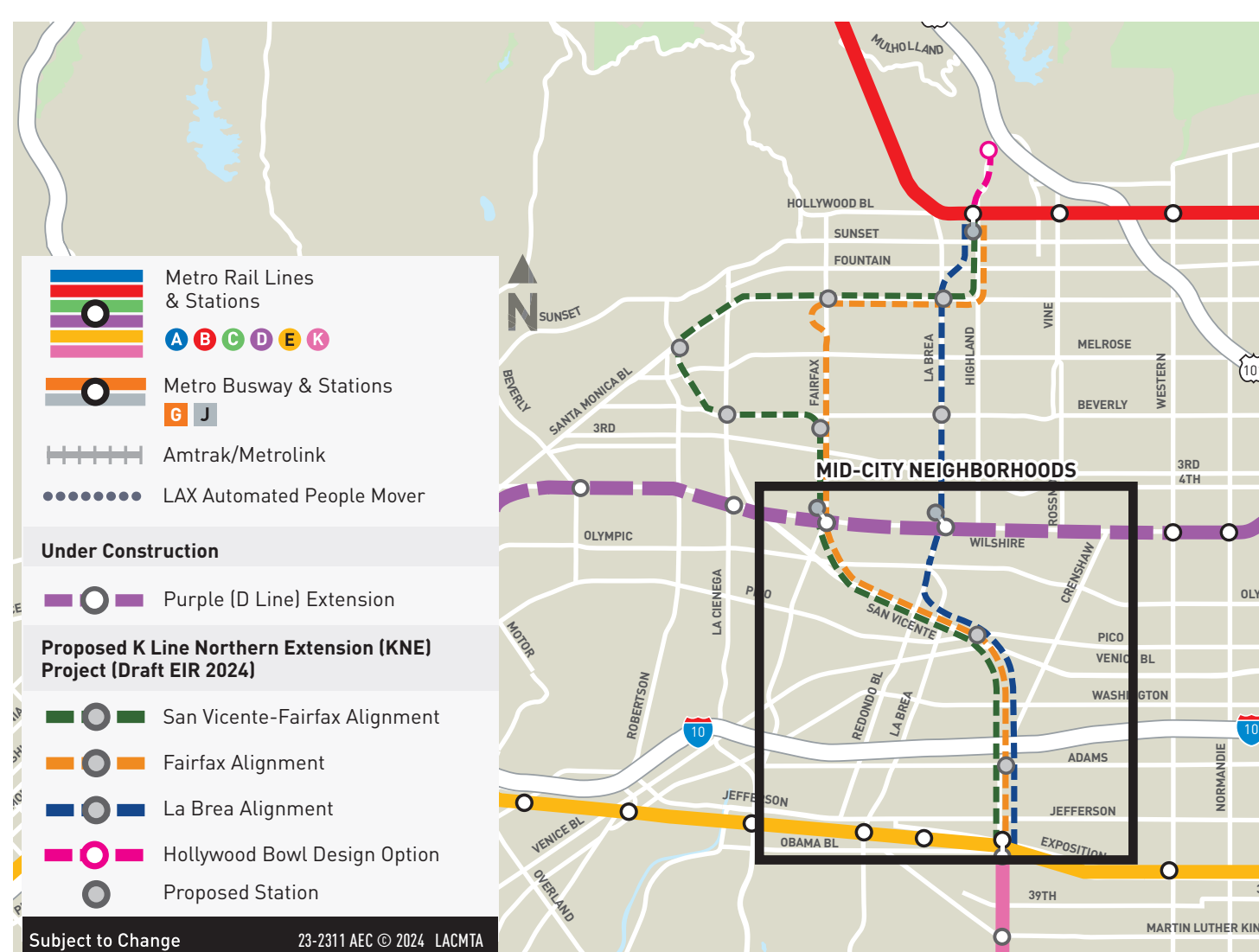
2020 Advanced Alternatives Analysis Study



2021 Public Scoping



2024 Draft EIR



- Released Draft EIR in July 2024
- Gathered public input over 60-day public comment period
- Hosted three public hearings and community meeting in Summer 2024

2024 Public Comments, Board Action & Additional Analysis

- Received a disproportionate number of comments and concerns from residents of historic Mid-City neighborhoods on the Draft EIR regarding:
 - Mid-City tunnel alignment
 - Tunnel safety and potential damage to older homes
 - Impacts to property rights and values
- Metro Board directed staff to prepare additional analysis, research, and engagement in response to concerns.

2025 Gathering Input from the Community

- Hosting community events and briefings to gather feedback on additional research and studies.
- Community input will be used to help inform project development and staff recommendation on a preferred route.
- Metro Board will consider multiple factors in the selection of a preferred route (called the Locally Preferred Alternative) and vote at a public meeting.

We Are Here

About the KNE Project: Regional Benefits

Many communities in LA County would benefit from travel time savings as a result of the project.



- The Project would expand mobility with a fast and reliable rail option, providing benefits across the region. It would:
- Close a gap in the regional and local rail network by connecting the K Line to east/west rail lines (C, E, D, and B).
 - Serve and benefit regional trips spanning LA County from the South Bay, South LA to Central LA, Mid-City, the Westside and San Fernando Valley.
 - Link dense residential communities to major job centers and destinations with fast and reliable rail service.

PROJECT BENEFITS	
Increase Daily Project Trips (by 2045)	47,000 to 60,000 trips daily
Attract New Daily Riders	11,000 to 15,000 riders daily
Travel Time Savings	14,000 to 19,000 hours saved per day
Serve Equity Focus Communities (EFCs)	Over 55% of daily "travel time savings" would benefit trips to/from EFCs
Reduce Auto Use	128,000-136,000 less vehicle miles traveled daily
Create Jobs	8,000 to 10,000 jobs during construction

* Fairfax Alignment used to calculate benefit.

About the KNE Project: Construction Approach

The KNE Project would:

- Build six to ten miles of underground rail tunnels (depending on the selected alignment)
- Be constructed in two or three sections (depending on the selected alignment)
- Use Tunnel Boring Machines (TBMs) to excavate tunnels
- Connect the Metro E Line to the D Line at Wilshire/Fairfax or Wilshire/La Brea, as the first phase (Section 1)
- Take approximately 8 to 12 years to construct each section.



Note: If included in the Locally Preferred Alternative by the Metro Board, the Hollywood Bowl Design Option would be included in Section 3 of the KNE San Vicente-Fairfax Alignment or Section 2 of the KNE Fairfax Alignment and La Brea Alignment.

Mid-City Community Concerns

In Fall 2024, the Metro Board directed staff to conduct additional research and outreach to address the Mid-City community concerns.

COMMUNITY CONCERN

METRO ACTION TAKEN

Tunneling Safety



- Conducted research on the construction and operations of existing transit tunnels locally, in the US, and abroad.
- Documented procedures taken by Metro to minimize risk of vibration, settlement, and groundwater intrusion and other tunnel safety concerns.
- Surveyed ages of homes in historic Mid-City neighborhoods to inform tunnel safety research.

Mid-City Additional Alignment Analysis

- Evaluated additional alignment options in Mid-City based on community input to identify options that could minimize subsurface easements below homes and historic residential neighborhoods.

Property Considerations

- Conducted literature review of correlation between property values and transit access.
- Compared property values in Westwood for properties with and without tunnels below them, to determine whether home values were impacted by tunneling.
- Prepared information regarding property rights related to subsurface easements

Mid-City Additional Alignment Analysis

Key Criteria

Evaluated 19 potential TBM sites for construction

- Located between Metro E and D Line
- Ideally 3 to 4 acres and contiguous parcels
- Accessible for construction equipment
- Avoid residential properties

Finding: Midtown Crossing is the only viable site in Mid-City that avoids demolition of homes and displacement of residents



Aerial image of the Wilshire/La Brea construction staging site for TBM and future station.



Potential locations considered for the KNE TBM launch site for Section 1 (Metro E Line to D Line).

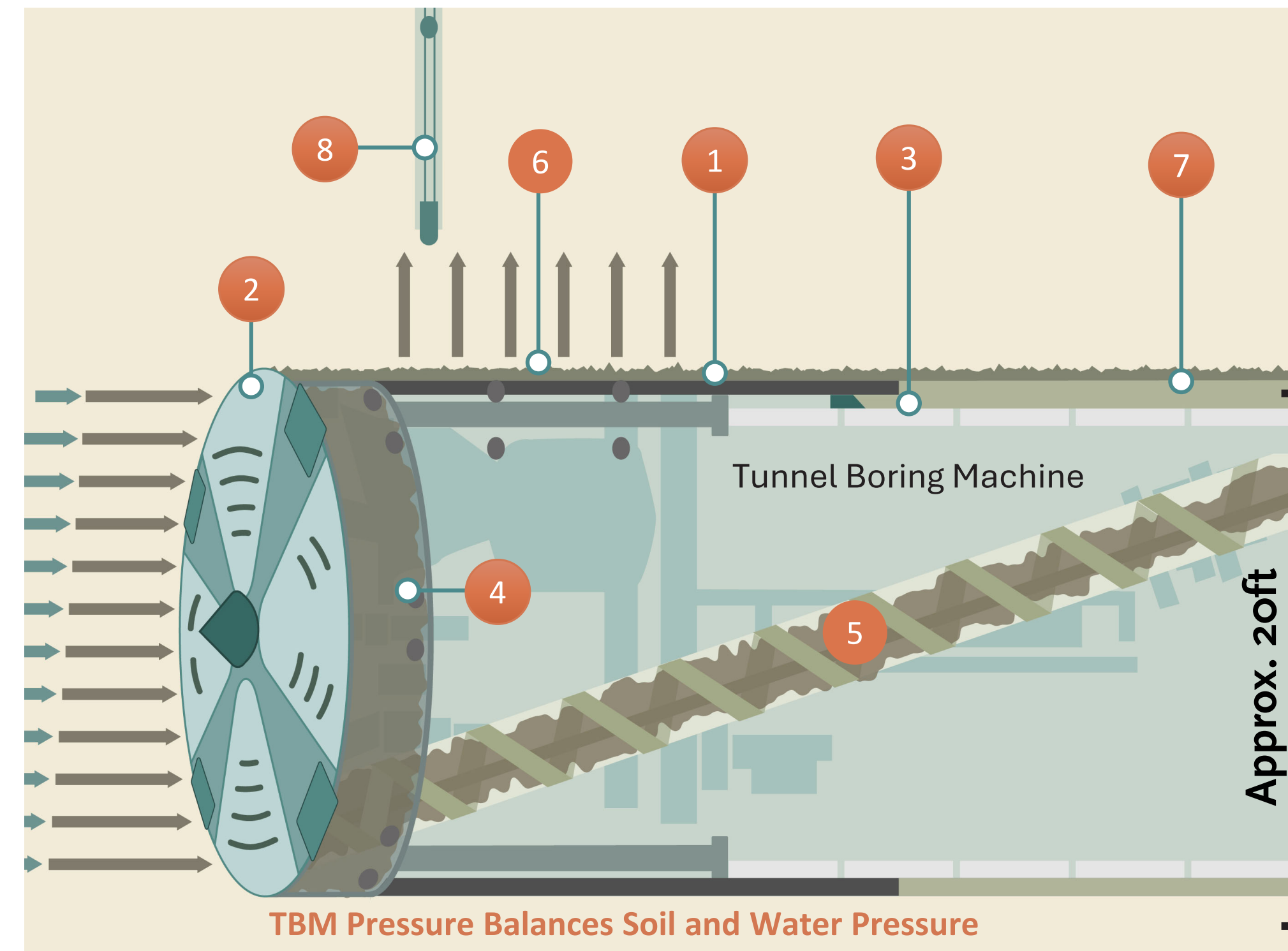
How Tunneling Works

Metro uses pressurized Tunnel Boring Machines (TBMs)

- Advanced to monitor soils and pressure during excavation with pressurized TBM
- Designed for the specific ground conditions
- Balance water and ground pressure ahead of the machine to reduce settlement
- Monitored continuously at the surface and around TBM

Metro works with Tunnel Advisory Panel (TAP)

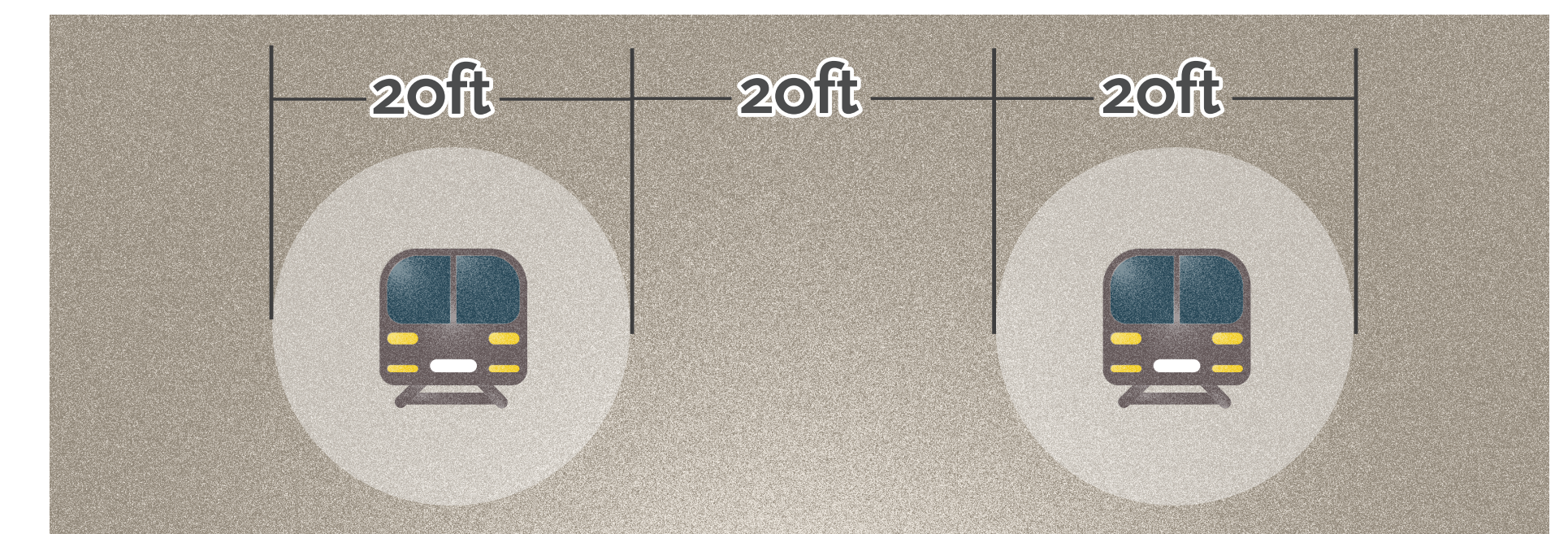
- Established in 1995 to review tunnel construction methods in Los Angeles
- Independent group of globally recognized experts
- Support Metro on all tunnel projects



- 1 Steel Shield**
The shield supports the ground, prior to installation of concrete segments.
- 2 Pressurized Face**
Balances soil and groundwater pressure using treated excavated soil.
- 3 Reinforced Concrete Segments**
Precast concrete segments are bolted together and form the permanent tunnel walls.
- 4 Pressurized Excavation Chamber**
Excavated soil enters the chamber as the TBM advances
- 5 Screw Conveyor**
Conveyor extracts soil, which is moved to the surface. Pressure in chamber is controlled by the speed of the conveyor.
- 6 Pressurized Shield Gap Filling Material**
Bentonite (clay) grout is injected into small gap between ground and shield to prevent settlement.
- 7 Backfill Grouting**
Fast setting grout fills remaining gap between the ground and the concrete segments.
- 8 In-Ground Monitor**
Measures ground movement above TBM.



Metro's TBM used on the Regional Connector.



Twin, side-by-side tunnels.

Metro's Tunnel Experience Across the Region

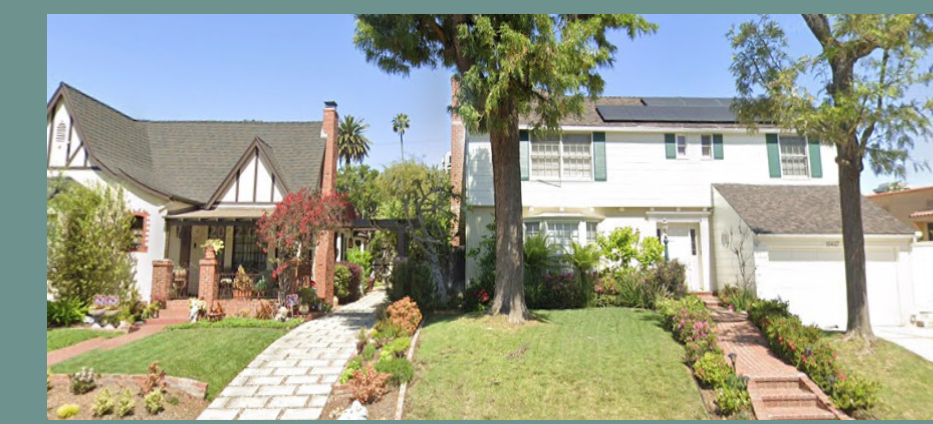
Metro has constructed over 30 miles of tunnels and safely operates below sensitive uses.



Existing Metro tunnels under private properties.

Westwood

D Line tunnel depth: 60-115 ft



Wilshire/Vermont

D Line tunnel depth: 50 ft



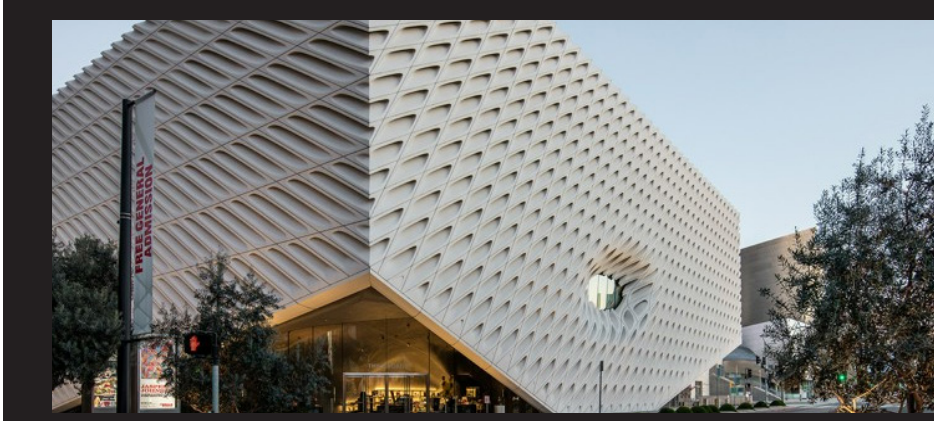
Beverly Hills (High School)

D Line tunnel depth: 60-70 ft



Downtown LA (Broad)

A/E Line tunnel depth: 100-130 ft



Beverly Hills (Residential)

D Line tunnel depth: 50-80 ft



Downtown LA (Historic Japanese Village Plaza)

A/E Line tunnel depth: 25-60 ft



Hollywood

B Line tunnel depth: 40-55 ft



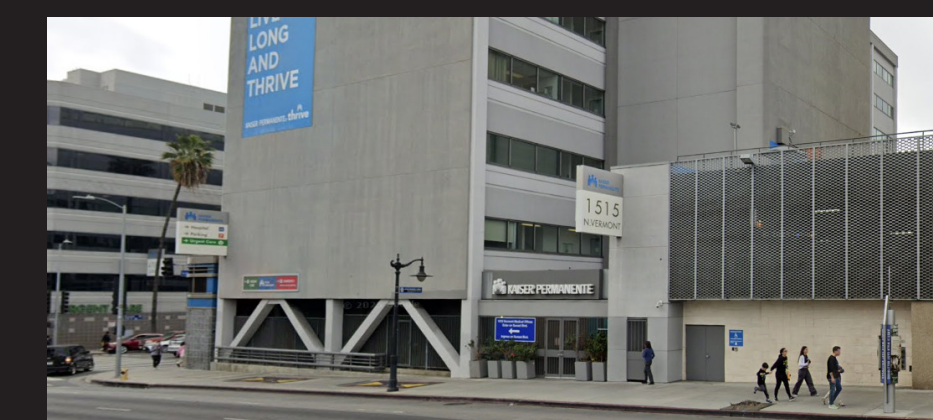
Historic Gaylord Hotel

D Line tunnel depth: 55 ft



Vermont/Sunset

B Line tunnel depth: 70-80 ft



Tunnels Constructed in Other Cities

Case studies of tunnels that were successfully constructed and operate under and adjacent to historic properties without damage.

Line 6 (Naples, Italy)

Opened 2007
Tunnel depth: 30 ft
Tunnels below a historic church built in 1572



Broadway Subway (Vancouver, BC)

Opening 2027
Tunnel depth: 30-60 ft
Travels below homes built between 1908 - 1913



SR 99 Tunnel Under Pioneer Square (Seattle)

Opened 2019
Tunnel Depth: 30-200 ft
Travels below commercial buildings built in the late 1800s to 1920s



Eglinton Crosstown (Toronto, ON)

Opened 2024
Tunnel depth: 40-60 ft
Travels below homes built in 1910 - 1920s



Metro City & Southwest (Sydney, Australia)

Opened 2024
Tunnel depth: 55-72 ft
Travels below homes built between 1860 - 1938



Line 2/ Line 5 (Barcelona, Spain)

Opened 1995
Tunnel depth: 100 ft
Adjacent to Basilica de la Sagrada Familia built in the 1880s



Crossrail - Elizabeth Line (London, England)

Opened 2022
Tunnel depth: 131 ft
Travels under Novelty Automation at the Tudor House, built in the 17th Century



Seattle Sound Transit U-Link (Seattle)

Opened 2016
Tunnel depth: 300 ft
Travels below homes built between 1902 - 1914



Seismic Activity

All Metro tunnels are designed to resist any ground movements during an earthquake.

- Los Angeles County falls within a seismic activity zone, where Metro tunnels currently operate.
- Mid-City is not located within fault zone.
- Tunnels are stable and are designed to avoid damage during earthquakes.
- Buildings above the tunnel would not be affected by the presence of the tunnel during earthquakes.
- During earthquakes, tunnels move very slightly compared to tall buildings swaying above the ground.
- The tunnel structure replaces the excavated ground – and ground response during an earthquake around the tunnel is the same as without the tunnel.



Kobe, Japan



Mexico City, Mexico



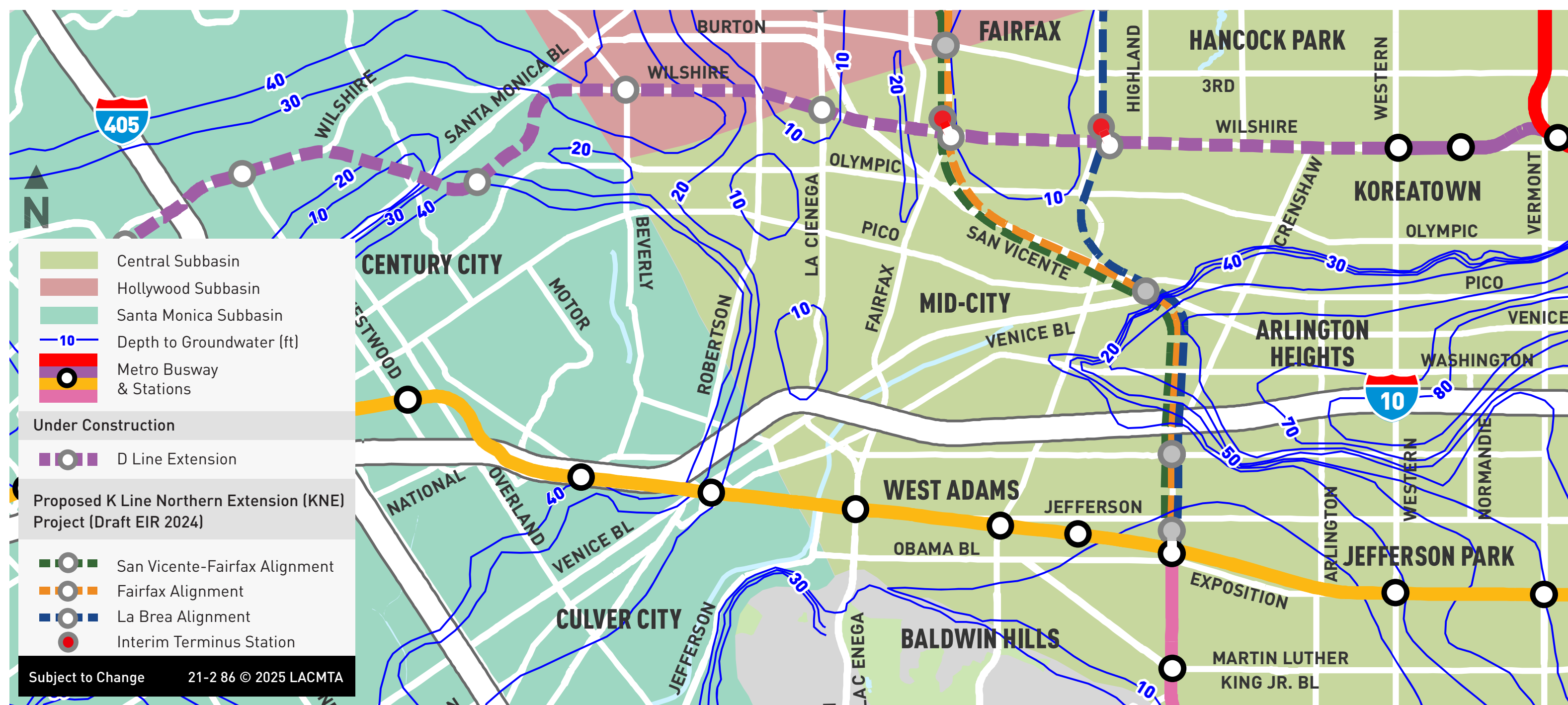
Taipei, Taiwan

Earthquake	Date	Magnitude	Impact on Subway
Mexico City, Mexico	1985	8.1	No damage to tunnels. Some power disruption. Patrons evacuated safely. Used to transport rescue personnel.
Loma Prieta, California	1989	6.9	No damage to tunnels.
Northridge, California	1994	6.7	No damage to tunnels
Kobe, Japan	1995	7.2	No damage to tunnels. Damage to station and sewer pipes - attributed to 1962 design with inadequate seismic provision.
Taipei, Taiwan	2002	6.8	No damage to tunnels
Pelluhue (off coast), Chile	2010	8.8	Running next day. Some damage at entrance to stations.
Mexico City, Mexico	2017	7.1	No damage to tunnels.

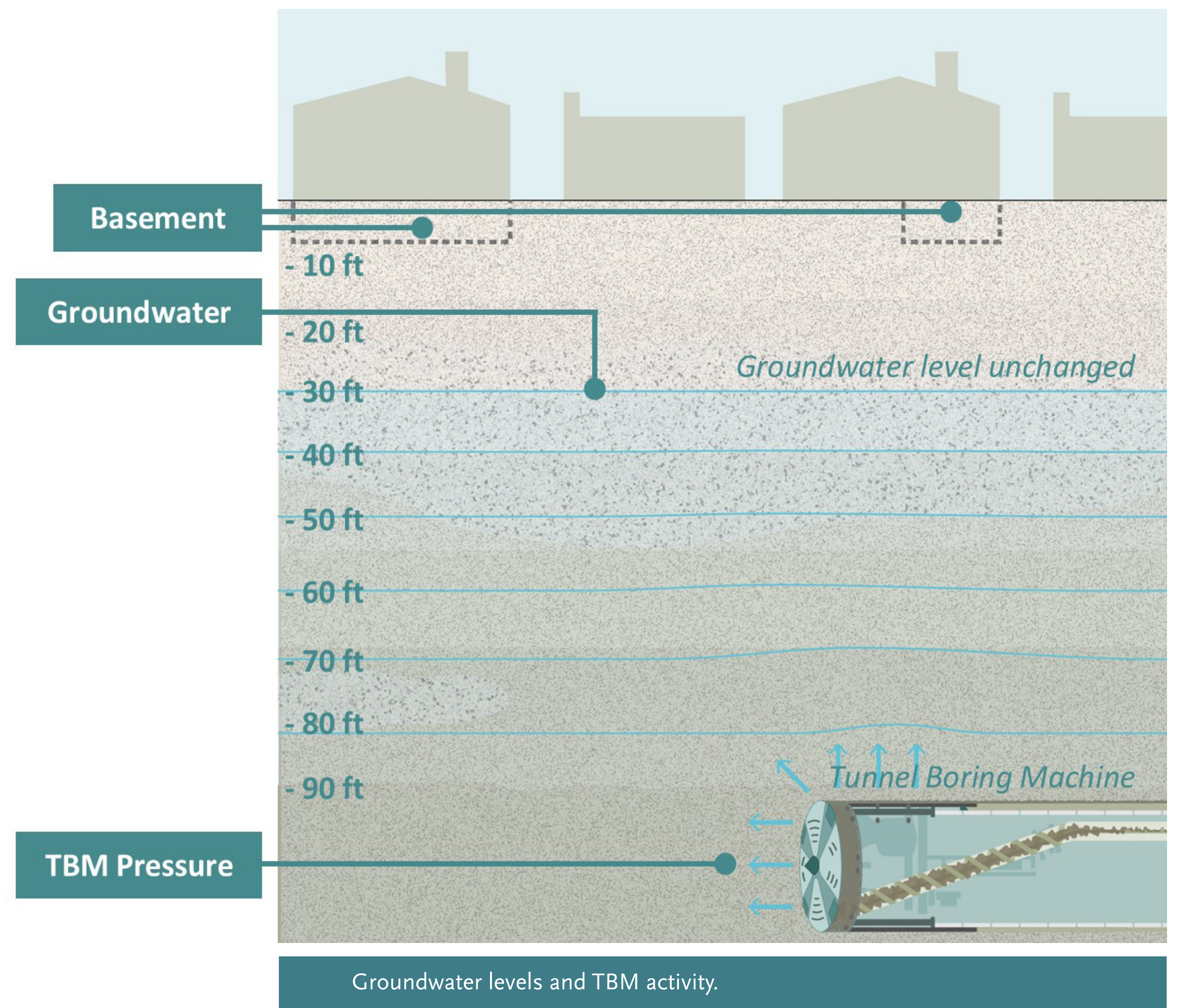
Groundwater Levels

Groundwater levels do not change during or after tunneling. Water pressure around the TBM varies slightly, but the pressure dissipates before it reaches the ground.

- Groundwater is 10-80 feet below ground in the LA Basin.
- Groundwater is 20-60 feet below the Mid-City neighborhoods of Wellington and Lafayette Squares.

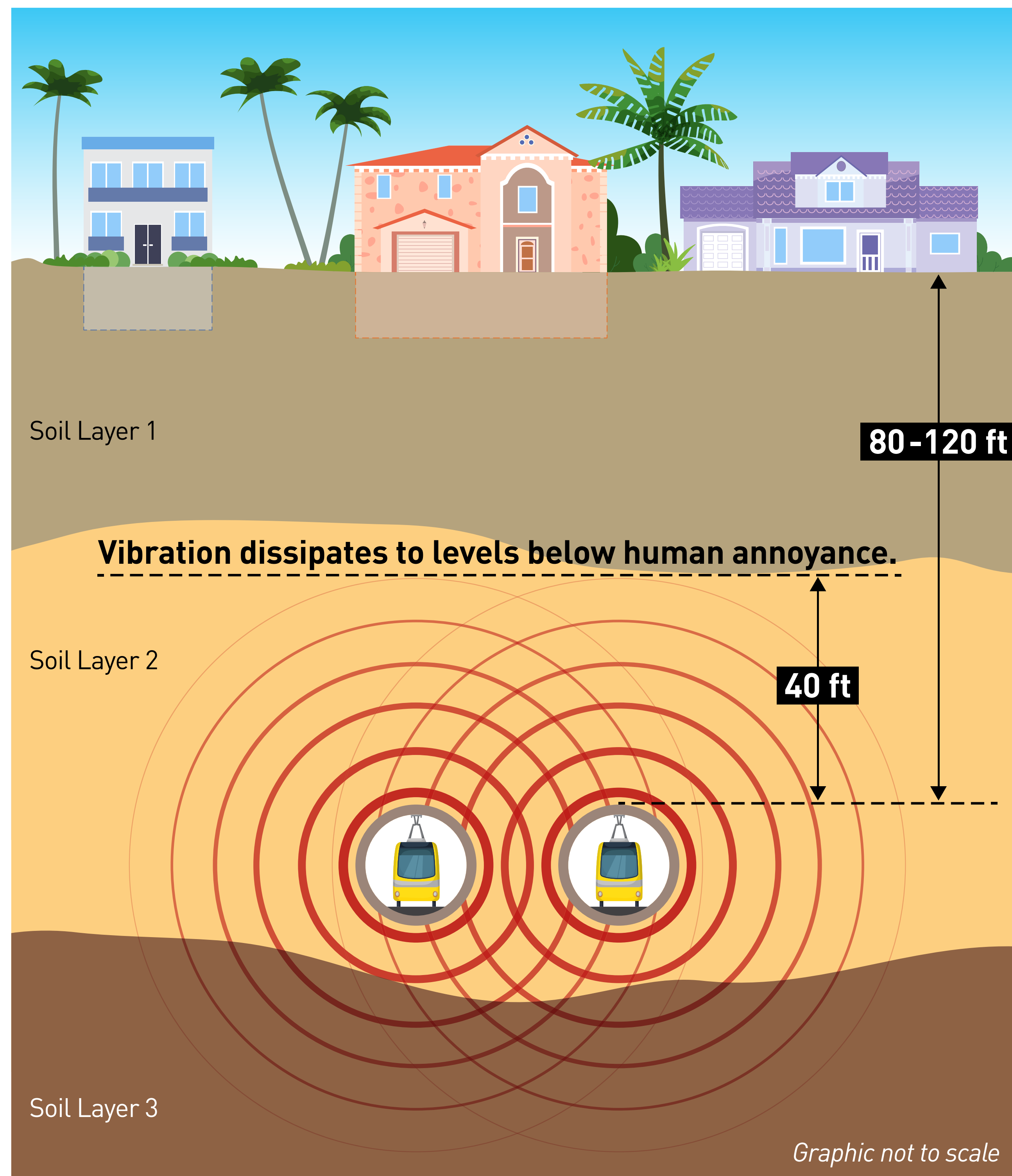


Groundwater basins.

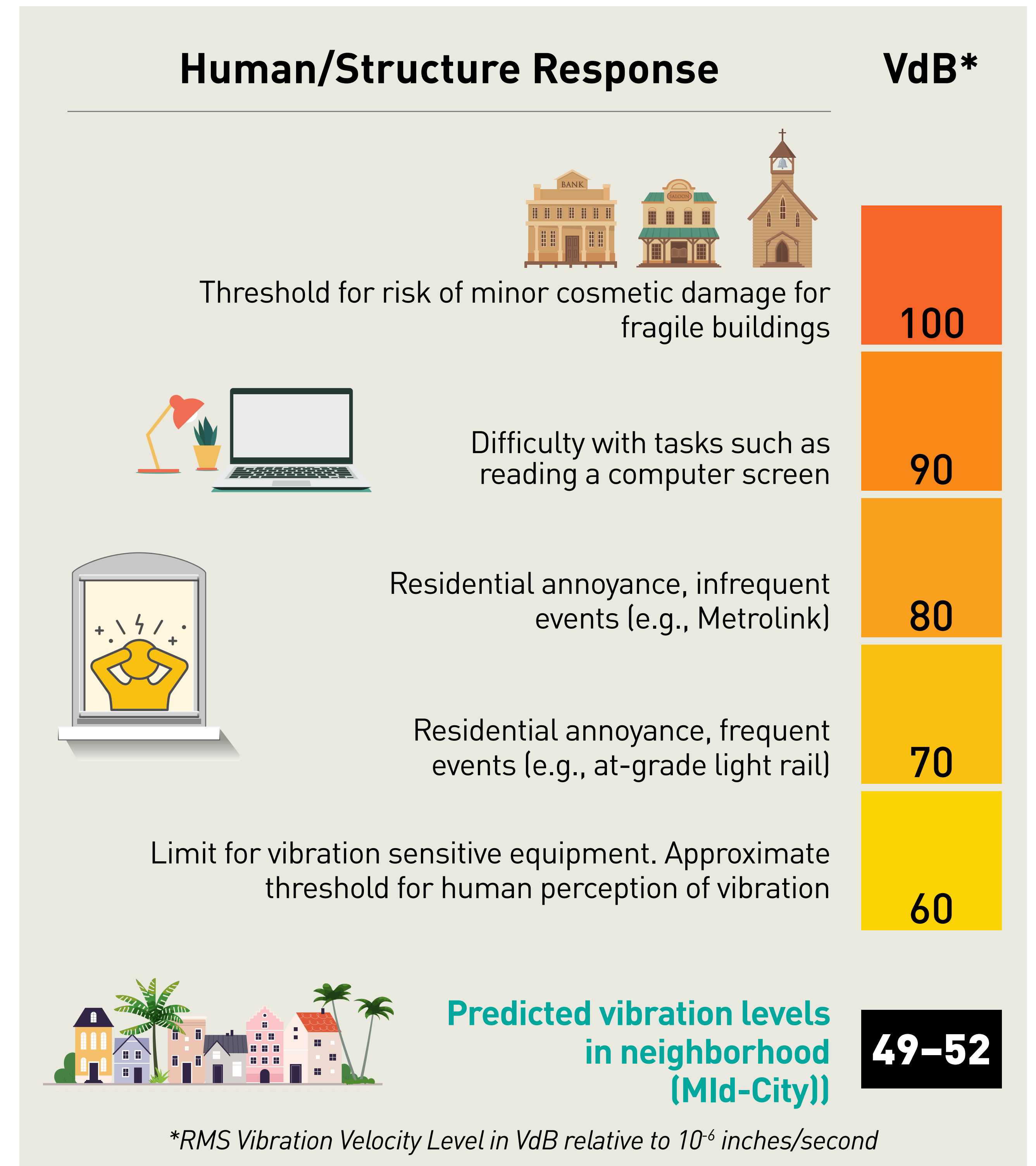


Noise & Vibration

TBM vibration and noise levels from similar locations have been shown to be below the human perception threshold.



Tunnel operations is predicted to operate at levels less than human perception.



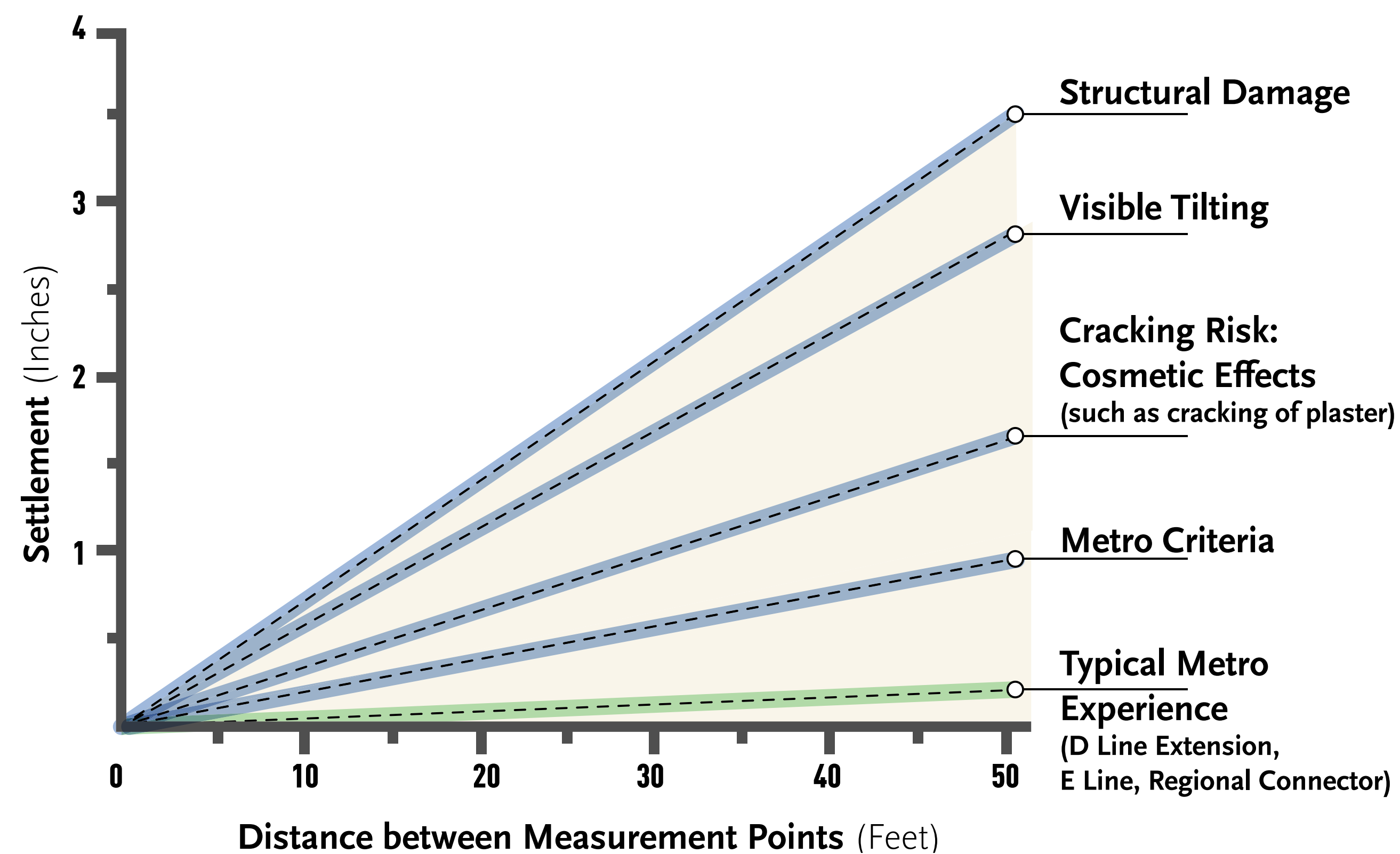
Settlement

Metro uses pressurized TBMs, which greatly minimizes ground settlement risk.

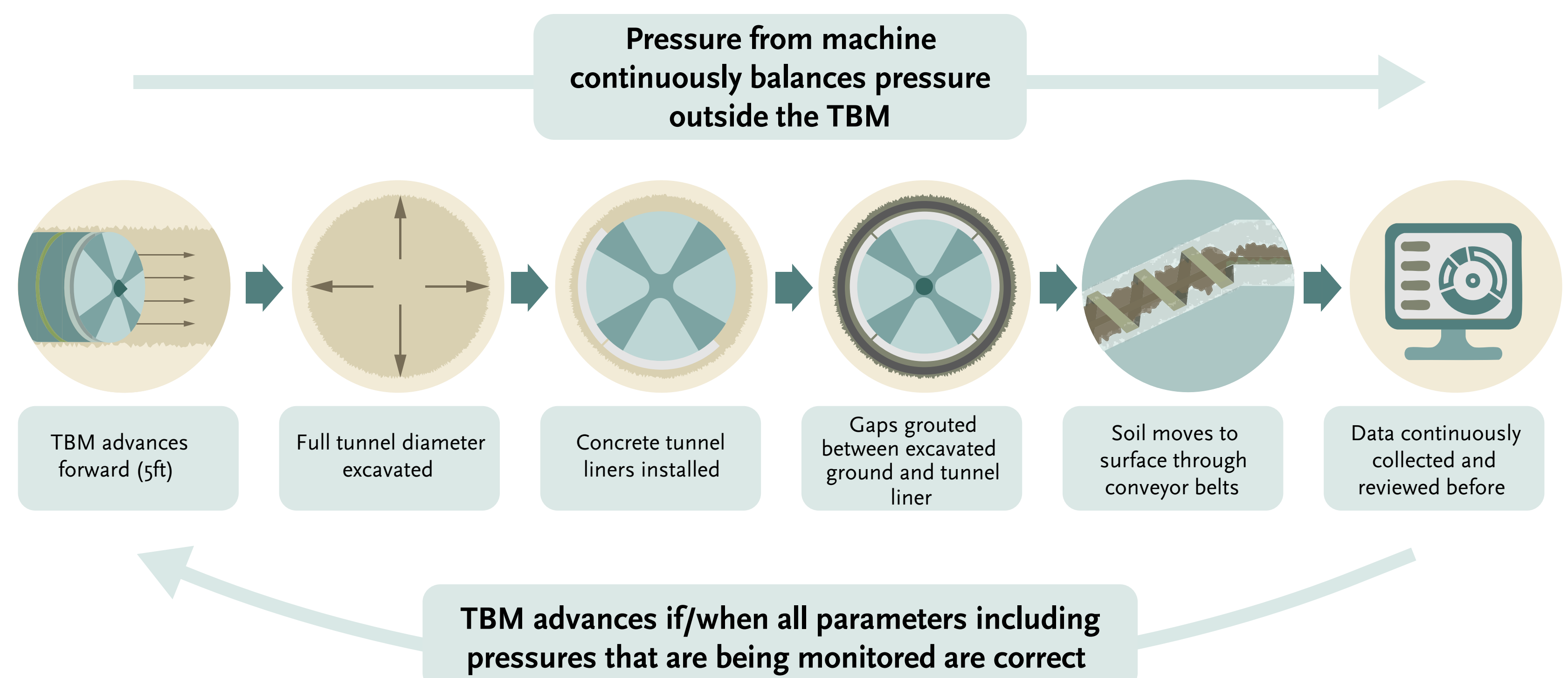
- Metro has successfully tunneled with settlement far below threshold for building damage.
- Settlement refers to the downward movement of the ground.
- Occurs naturally in a seismically active areas such as LA.
- Metro carries out design and pre-construction assessment and ongoing monitoring.
- Data is recorded continuously for even the smallest amount of movement.



Typical sensor placement.



Relationship of settlement to building damage.



TBM process.

Investigations, Surveys, & Monitoring

Analysis and monitoring occur throughout the project to ensure that the process adheres to the highest safety standards. As project development progresses, Metro performs more detailed investigations and studies to inform final design, construction approach and monitoring.

WE ARE
HERE



Early Planning

Alternatives analysis



Environmental

Environmental study and advanced conceptual engineering

Identify preferred alignment

Investigate impacts and commit to mitigations

Design

Preliminary engineering and finalized design

Field investigation including geotechnical borings to confirm soil conditions and depths, depth to groundwater, and vibration transmission characteristics

Complete detailed Noise and Vibration Analysis

Additional research and coordination with oil well owners

Procurement

Initiate competitive procurement process to select contractor(s) for construction

Pre-Construction

Conduct building surveys to confirm building conditions before construction

Identify appropriate monitoring placement locations for use during TBM operations

Identify needed areas for ground improvement, if needed

Construction

Continuous monitoring to ensure no damage to structures at the surface



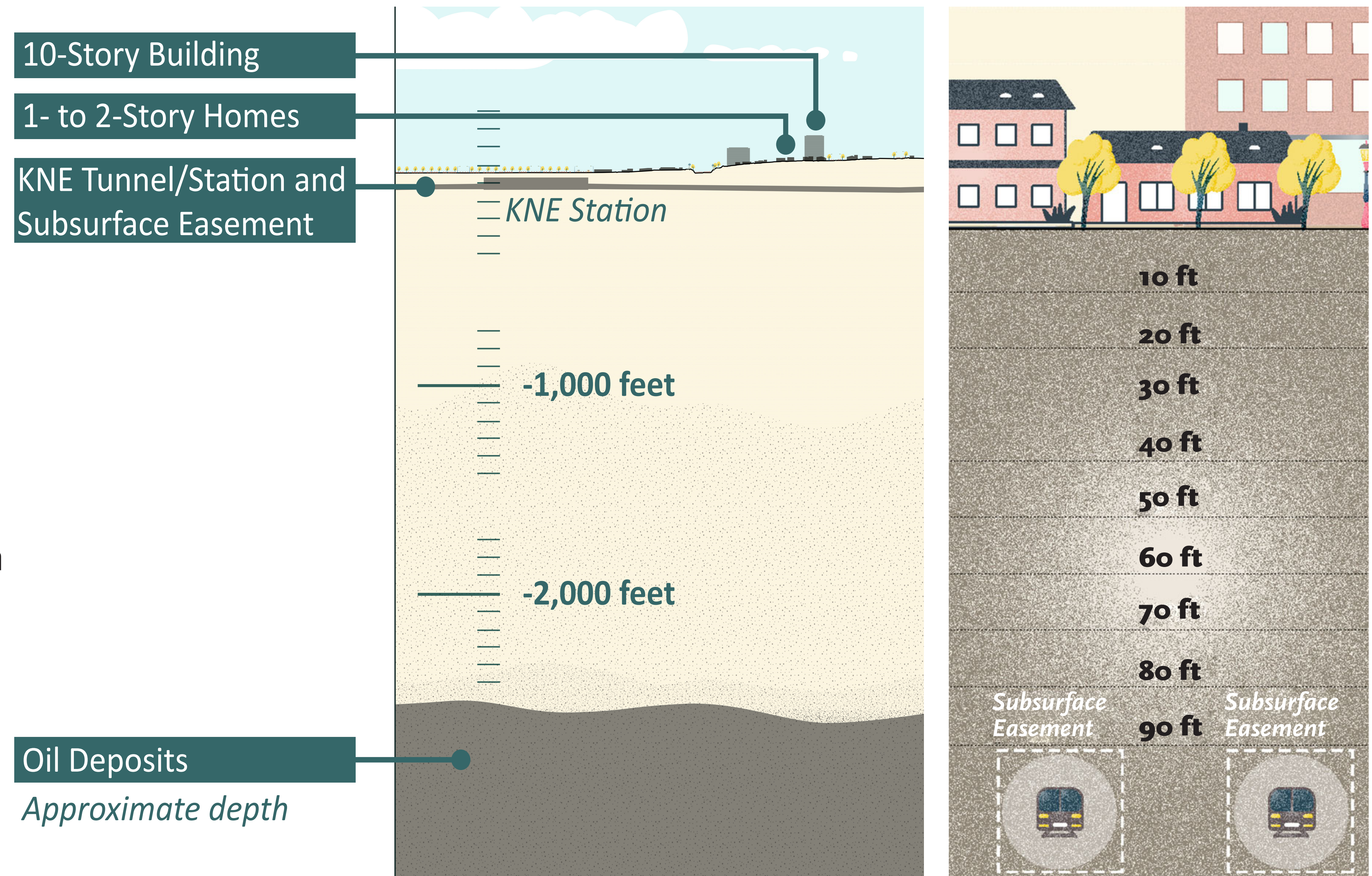
Property Rights & Tunnel Easements

Subsurface easements (SSEs) would not interfere with property rights.

- SSEs would not impact:
 - Property and structures above
 - Ability to remodel or develop land
 - Historic designation or zoning
 - Underground oil and mineral rights

Real estate needs would be finalized after environmental review process is complete and the project has received funding and approval from Metro Board to advance into pre-construction activities.

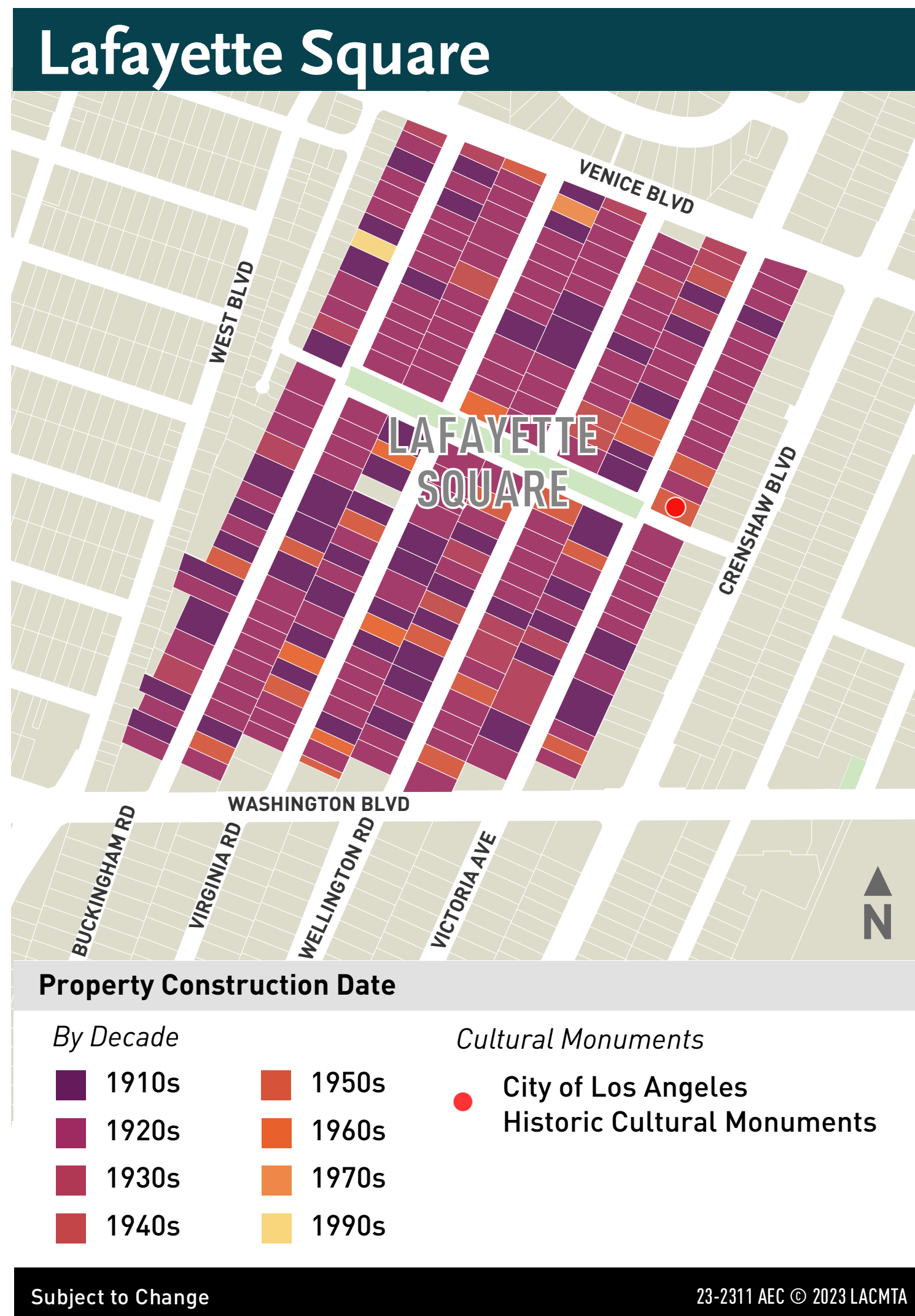
Metro would compensate property owners for SSEs based on fair market value.



SSEs give Metro the right to use a property owner's land only underground around the tunnel.

Researching Age of Mid-City Homes

Metro conducted a study of the ages of homes in historic Mid-City neighborhoods.



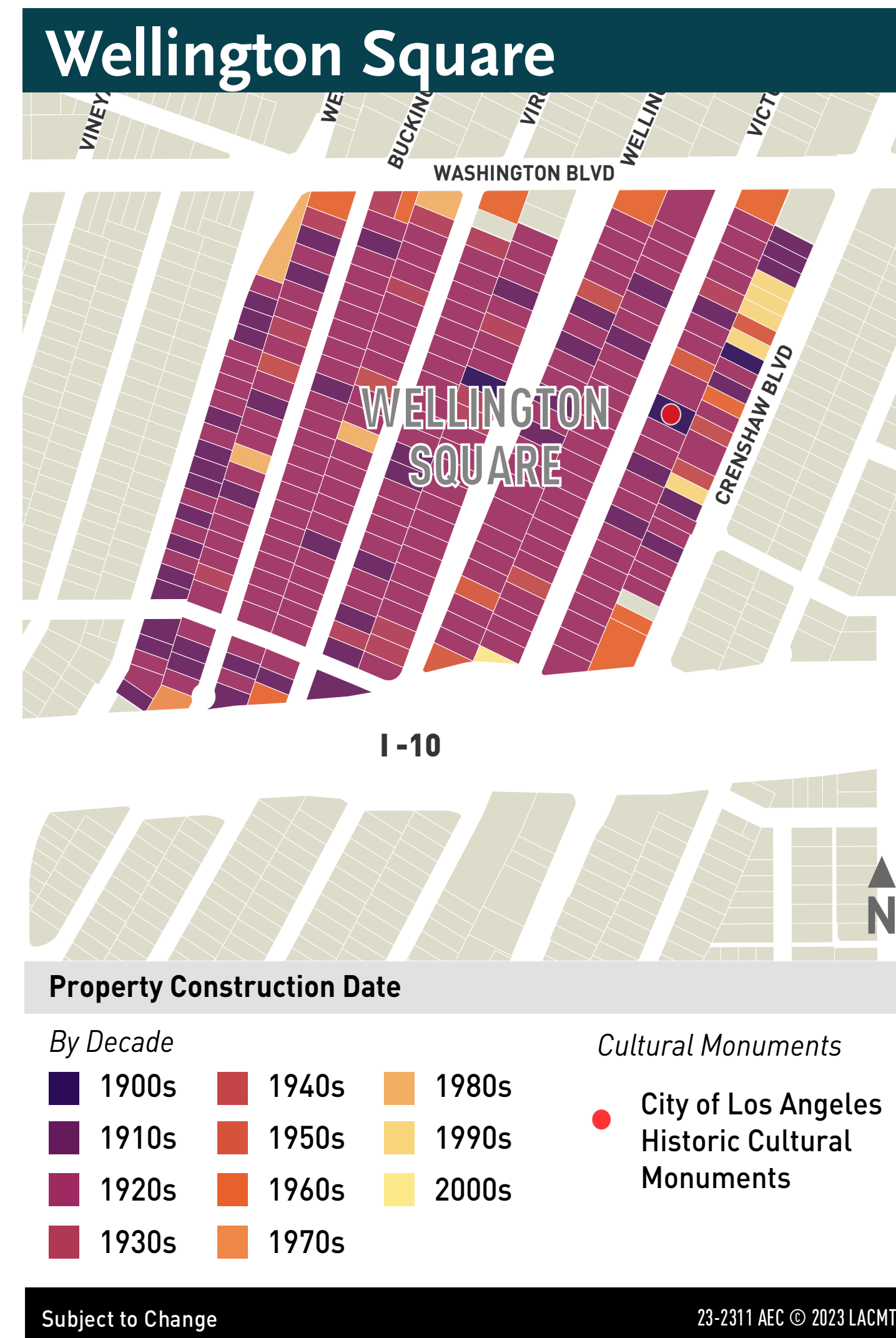
- 56% constructed in 1920s.
- 24% constructed in 1910s.
- No properties constructed before 1910.



Built in 1916.



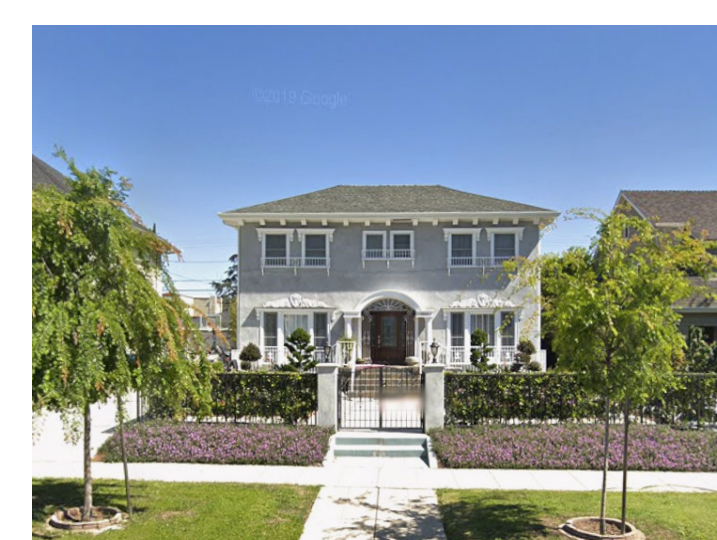
Built in 1925.



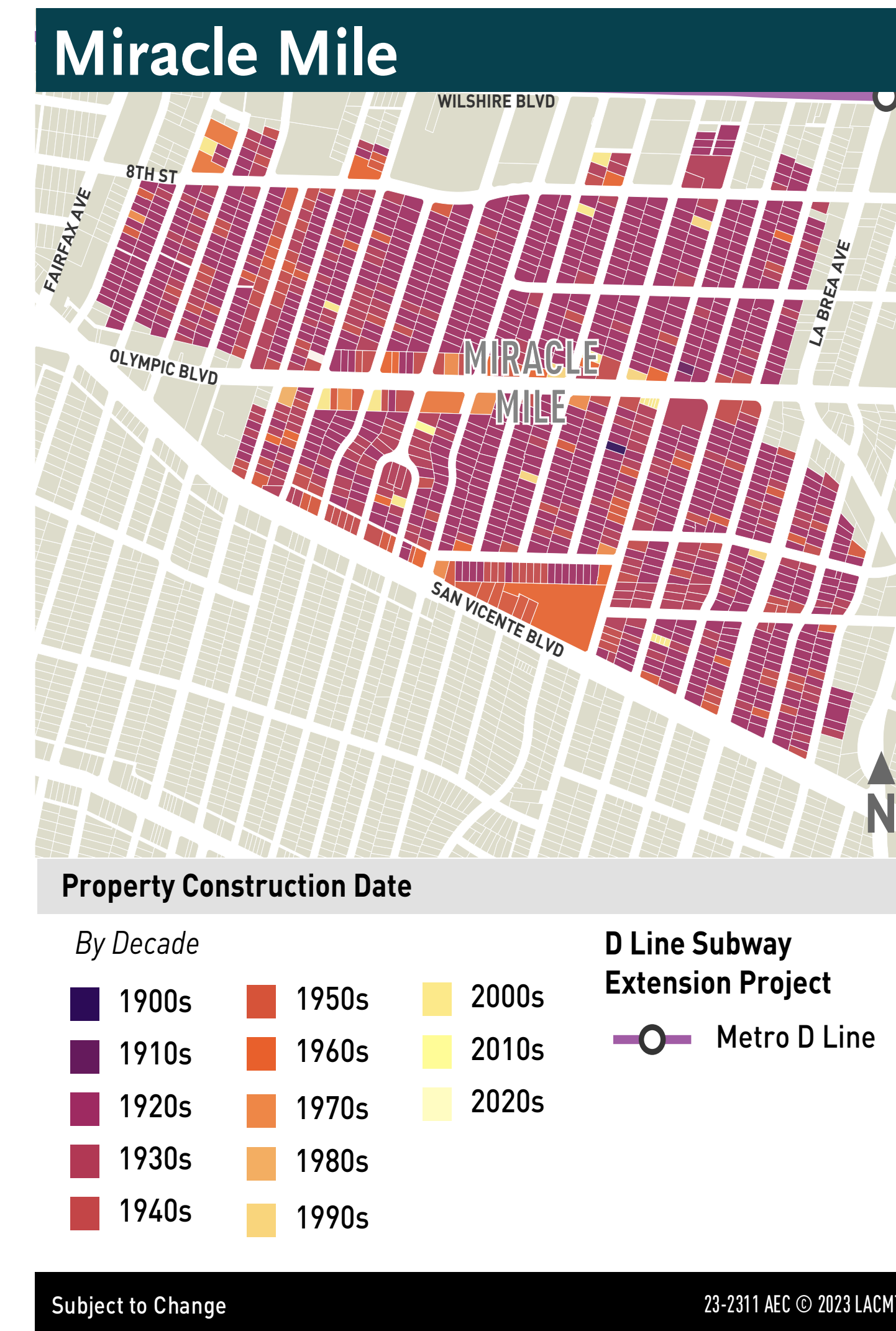
- 64% constructed in 1920s.
- 18% constructed in 1910s.
- Three properties constructed between 1900 and 1910.



Built in 1909.



Built in 1923.



- 68% constructed in 1920s.
- 16% constructed in 1930s.
- Two properties constructed before 1920.

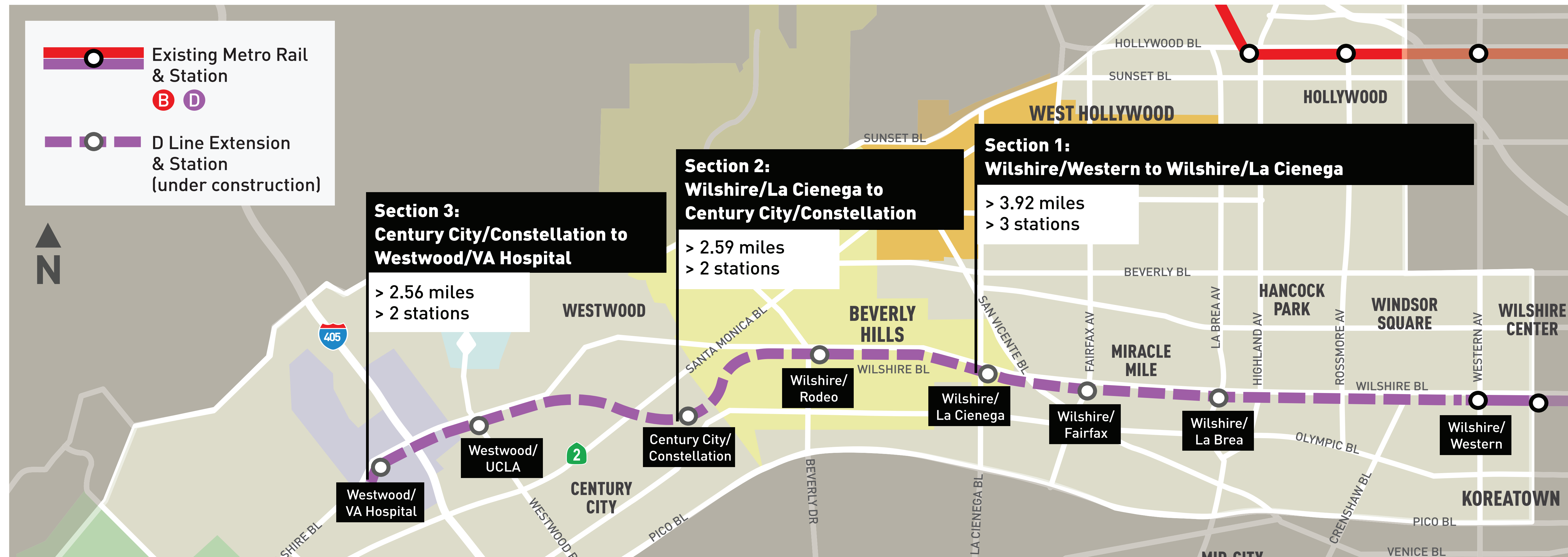


Built in 1910.



Built in 1927.

Wilshire/Crenshaw Station Elimination



Station evaluated and dismissed from further study during environmental review process for the D (Purple) Line Extension Draft EIR/EIS based on:

- **Low density and limited planned growth** in station area
- **Low projected ridership** compared to other stations
- **Close proximity** to existing Wilshire/Western Station
- **Limited north-south transfer opportunities**, since Crenshaw Blvd terminates at Wilshire Blvd.

Wilshire/Crenshaw Option

