2 DESCRIPTION OF THE LOCALLY PREFERRED ALTERNATIVE

2.1 OVERVIEW AND HISTORY

The Los Angeles County Metropolitan Transportation Authority (Metro) proposes extending its existing light rail transit system to the South Bay. The project is officially referred to as the C Line (Green) Extension to Torrance Project, though due to recent service changes, the project would now function as an extension of the K Line. Specifically, on June 6, 2025 (subsequent to the completion of the Draft EIR), Metro implemented service changes that redirected the C Line to terminate at the LAX/Metro Transit Center, with the K Line assuming operations along the C Line's former west segment from the Aviation/Century Station to the Redondo Beach (Marine) Station. As a result, the segment proposed for extension would be part of the K Line's operational alignment, although the project's official name remains unchanged. Importantly, this change does not alter the adequacy of how the proposed alignment options and alternatives were studied in the Draft EIR, as the project was and still is proposed to include extension of light rail transit service from the existing Redondo Beach (Marine) Metro K Line (formerly C Line) Station to the Mary K. Giordano Regional Transit Center (Torrance TC).

The Draft EIR evaluated the Proposed Project (referred to in this Final EIR as the Elevated/At-Grade Alignment), and two options north of 190th Street called the Trench Option and the Hawthorne Option. It also evaluated three alternatives under the California Environmental Quality Act (CEQA): the No Project Alternative, the High-Frequency Bus Alternative, and the 170th/182nd Grade-Separated Light Rail Transit Alternative (also referred to as the Hybrid Alternative).

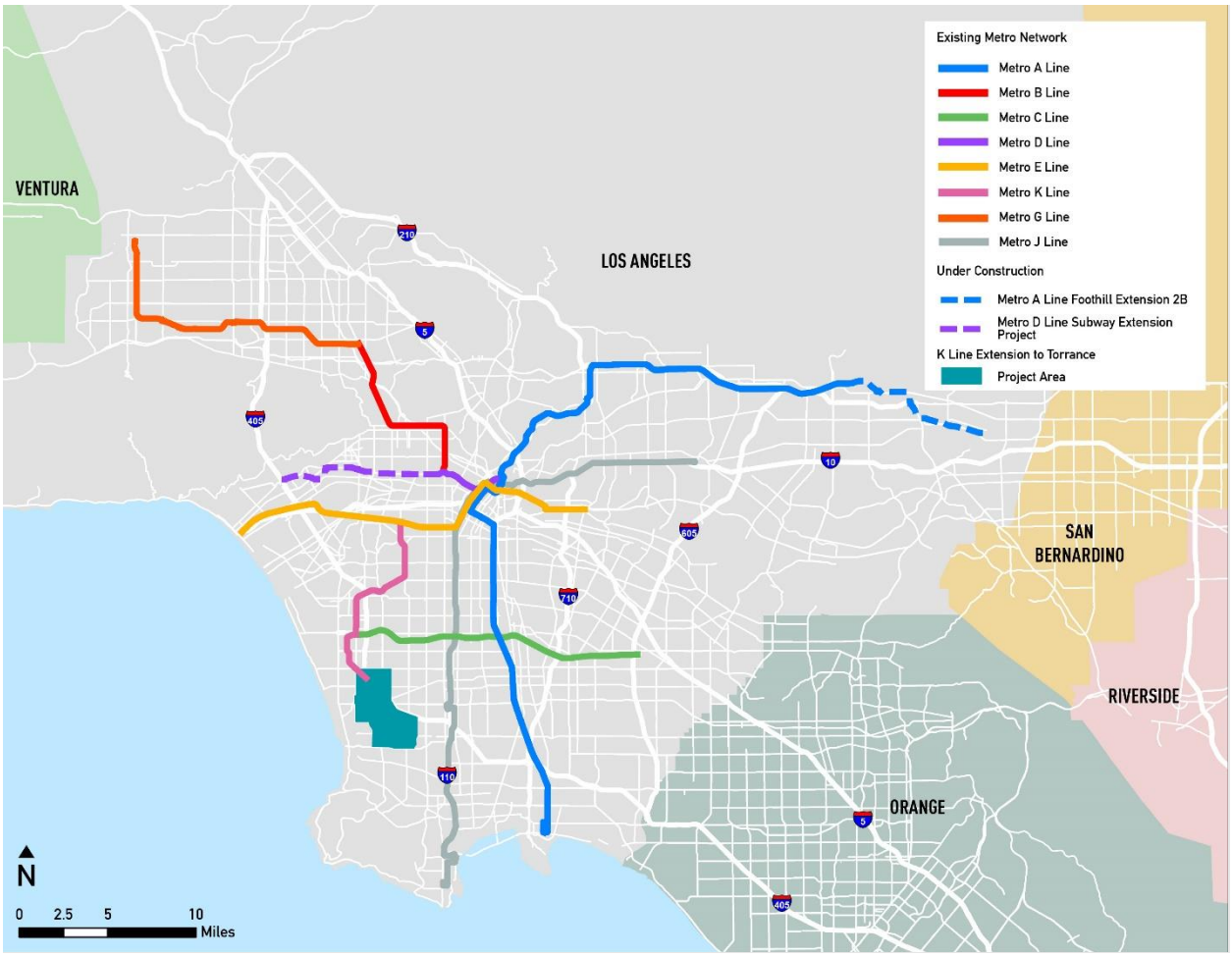
On May 23, 2024, the Metro Board of Directors (Metro Board) selected the 170th/182nd Grade-Separated Light Rail Transit Alternative (Hybrid Alternative) as the Locally Preferred Alternative (LPA). At the same meeting, the Metro Board adopted a motion to prepare the Final EIR under CEQA, complete studies to respond fully to public comments received on the Draft EIR, and refine cost estimates and the funding plan for the LPA. Since then, Metro completed studies, continued stakeholder coordination and progressed conceptual engineering on the LPA, which resulted in design refinements. This chapter provides updated details on the LPA. Refer also to Chapter 3, Design Refinements, of this Final EIR for additional information on the design refinements made during this process.

2.1-1 Project Location and Surrounding Uses

Figure 2.1-1 shows the project location within the South Bay region of Los Angeles County. Figure 2.1-2 shows the Project Area, which follows the Metro-owned railroad right-of-way (Metro ROW) along a 4.5-mile north-south corridor from the existing Redondo Beach (Marine) Metro K Line Station traveling southeast to the Torrance TC. The LPA would travel through the cities of Lawndale, Redondo Beach, and Torrance. The boundaries of the Project Area form roughly a one-mile buffer around the Metro ROW, with the borders generally following city limits and/or major roadways. A one-mile buffer is generally the area in which potential benefits and ridership of a major transportation project are likely to be focused.

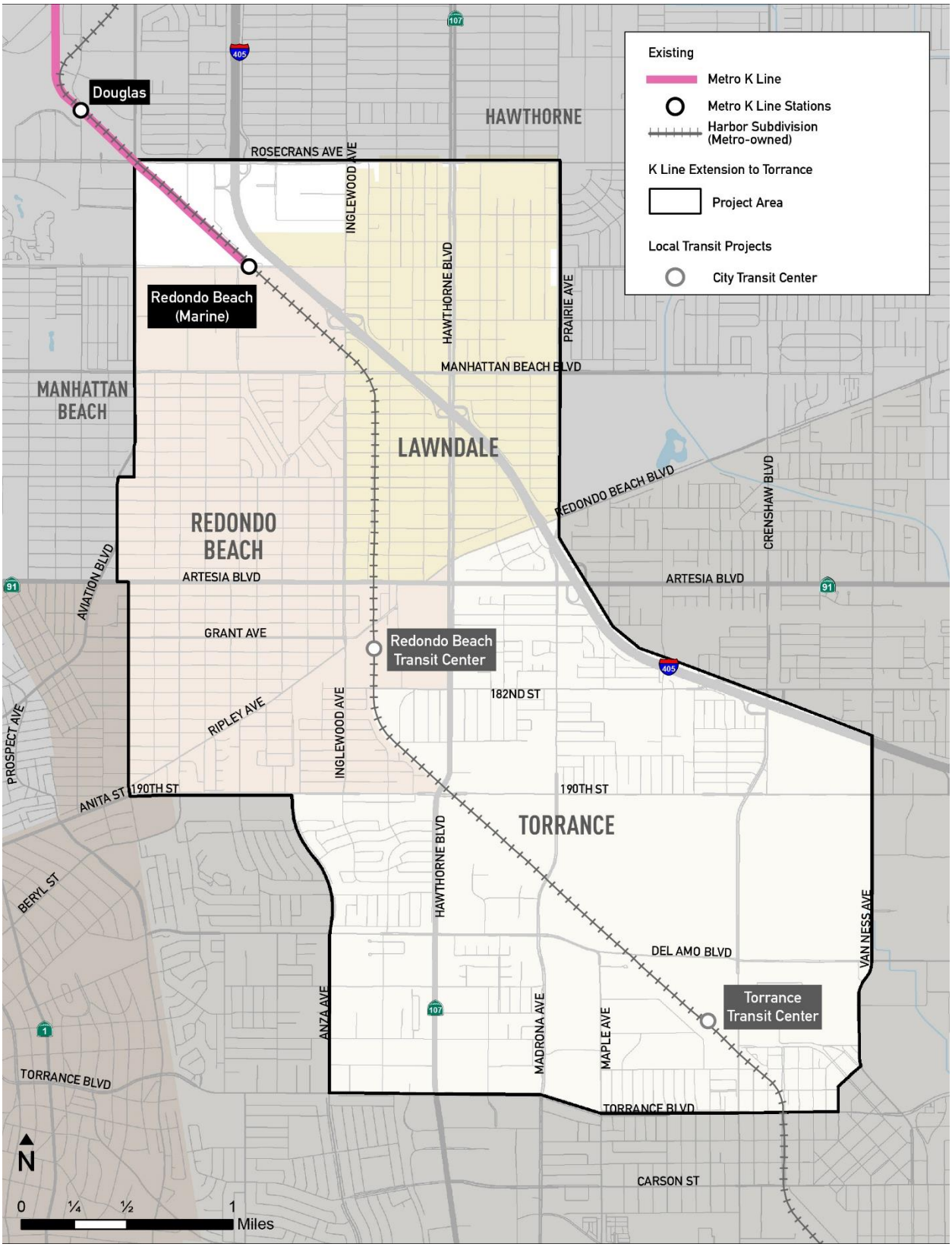
The land uses of the Project Area are comprised of single-family and multi-family residential neighborhoods, industrial and institutional uses, as well as commercial and recreational areas. The Project Area includes two high-capacity bus transit centers, the Redondo Beach Transit Center (Redondo Beach TC) and the Torrance TC.

Figure 2.1-1. Project Location and Regional Vicinity



Source: Metro, STV, 2025

Figure 2.1-2. Project Area



Source: Metro, STV, 2025

2.1-2 Project History

Metro purchased the Harbor Subdivision railroad corridor from the precursor to the BNSF Railway in the early 1990s. It currently carries limited freight traffic through the Study Area, typically one or two trains a day. A number of studies have examined the potential for transit service along all or portions of the Metro ROW, which are described below.

- **Metro Harbor Subdivision Transit Corridor Alternatives Analysis (AA) Study (2009)** – Metro completed an AA study evaluating various transit options along the Metro ROW between Downtown Los Angeles, Los Angeles International Airport (LAX), and the Ports of Los Angeles and Long Beach. The 2009 Study analyzed various transit modal options such as light rail transit, bus rapid transit, self-propelled railcar, electric multiple unit vehicles, and commuter rail transit. The segment between the Redondo Beach (Marine) Station and the Torrance TC emerged as the highest-priority project, with light rail as the preferred mode. The Freight Track Alternative was also recommended for further study. In December 2009, the Metro Board approved the preparation of a Draft Environmental Impact Statement (EIS)/EIR for the Project.
- **South Bay Metro Green Line Extension Draft EIS/EIR (2010 to 2014)** – Metro held scoping meetings for the South Bay Metro Green Line Extension EIS/EIR in 2010 and began conducting environmental analysis on the two alternatives recommended in the 2009 AA (a light rail alternative and a freight track alternative). Several alternatives and alignment options were considered during the preparation of the Draft EIS/EIR, but were removed from further study for several reasons, including poor cost effectiveness, lack of public support, and/or substantial environmental impacts. Alternatives and options removed from further study included the Freight Track Alternative, several light rail alignment options, and several maintenance facility options. After the failure of Measure J in November 2012, the Project was put on hold due to funding uncertainty.
- **Green Line Extension to Torrance Supplemental Alternatives Analysis (SAA) (2017 to 2018)** – Measure M was passed in November 2016, which provided a source of funding for the Project in addition to the previously allocated funding from Measure R, passed in 2008. In spring 2017, Metro reinitiated the Project with an SAA, which renamed the Project as the Green Line Extension to Torrance Project. With the elimination of the Freight Track Alternative in 2011, the Project Area was reduced to focus on the area potentially affected by the light rail alternative. The revised Project Area boundaries focused on the 4.5-mile segment of the Metro ROW from the existing Redondo Beach (Marine) Station to the Torrance TC. The SAA study focused on soliciting feedback from corridor cities and stakeholders to refine and update alternatives previously identified in the 2009 AA and 2010-2014 Draft EIS/EIR. Its goal was to gain consensus on revised alternatives for the Project. On September 27, 2018, the Metro Board voted to approve two alternatives to be carried forward for environmental analysis: the Metro ROW and the Hawthorne Boulevard alignment (both primarily at-grade alignments).
- **C Line (Green) Extension to Torrance Draft EIR (2018 to 2024)** – A Notice of Completion and Availability of the Draft EIR was issued on January 26, 2023, initiating a 61-day public comment period, ending March 27, 2023. During the public comment period, Metro received over 2,000 comment submissions in the form of emails, voicemails, oral comments at public hearings, comment cards, letters, surveys, and petitions. See Appendix C. These comments reflected a wide range of perspectives from community members, stakeholders, and agencies. After reviewing the extensive public input and the findings from technical studies presented in the Draft EIR, Metro staff recommended that the Metro Board select the 170th/182nd Grade-Separated Light Rail Transit Alternative (Hybrid Alternative) as the LPA. This recommendation was based on several factors,

including the Hybrid Alternative's local and regional benefits, its ability to meet the project objectives, and its responsiveness to community concerns and preferences.[1]

> **C Line (Green) Extension to Torrance Final EIR (2024 to present)** – The Final EIR provides additional details on the LPA and describes project design refinements developed in response to feedback received during the Draft EIR comment period through coordination with stakeholders, including public agencies, and as part of the ongoing advancement of the project design. Project design refinements and analysis of their potential environmental impacts are described in Chapter 3, Design Refinements, of the Final EIR. As discussed therein, the design refinements do not change the impact conclusions of the Draft EIR.

2.2 Project Objectives

The underlying purpose of the project is to provide high-capacity transit service in the South Bay. Metro has identified the following project objectives:

> Improve mobility within the South Bay and encourage mode shift by:
  - Introducing high-frequency transit service options from the current C Line terminus south to Torrance.
  - Creating direct connections between the regional transit network and local transit hubs for convenient transfers.
  - Providing an alternative mode of transportation for commuters traveling along congested arterials and I-405.
  - Providing first-last mile facilities to connect neighborhoods to station areas.

> Reduce air pollution and greenhouse gas emissions by making transit a more viable transportation choice.

> Avoid and minimize environmental impacts on environmental resources to the maximum extent feasible.

> Provide a cost-effective project.

> Provide more equitable access to regional destinations by improving connections to the Metro regional rail system.

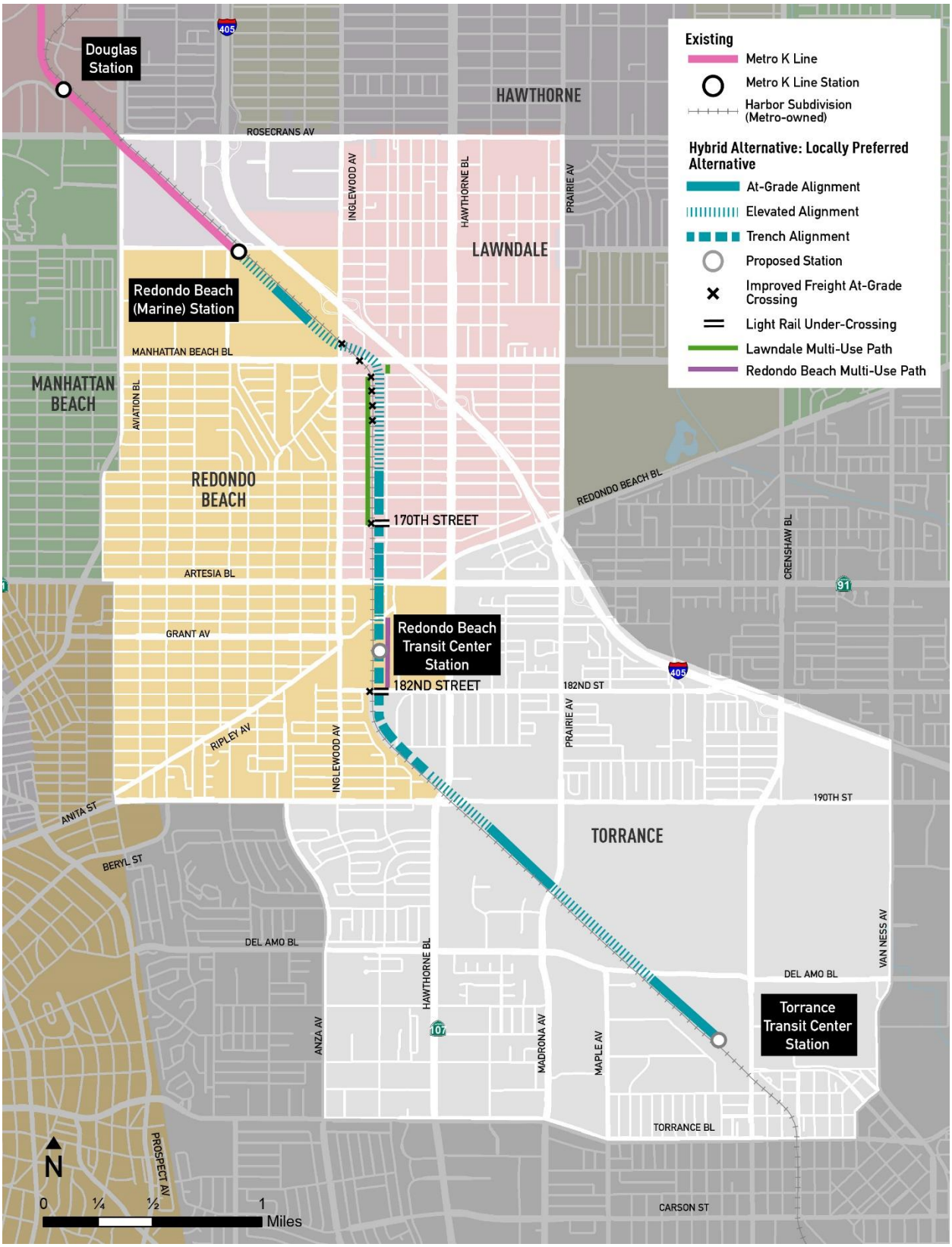
2.3 Description of the Locally Preferred Alternative

As previously discussed, the 170th/182nd Grade-Separated Light Rail Transit Alternative evaluated in Chapter 4, Evaluation of Alternatives, in the Draft EIR was selected by the Metro Board as the LPA. The LPA would extend the Metro K Line (formerly C Line) approximately 4.5 miles to the south by providing a light rail line that follows the existing Metro ROW for the length of the alignment. Two new light rail transit stations are proposed: the Redondo Beach TC Station and the Torrance TC Station. Figure 2.3-1 shows an overview of the LPA. Between the existing Redondo Beach (Marine) Station and 190th Street, within the Metro ROW, BNSF operates a single freight track. As part of the LPA, Metro proposes constructing two new light rail tracks and relocating the existing freight track in certain areas within the

[1] The Board Report for the May 23, 2024 Metro Regular Board Meeting describing the reasons supporting staff's recommendation for the LPA is available at: https://datamade-metro-pdf-merger.s3.amazonaws.com/2024-0272.pdf (as of August 26, 2025).

Metro ROW. This is discussed in greater detail below. The LPA also includes multi-use recreational paths within the Metro ROW, where there is sufficient room, as discussed further below. South of 190th Street, BNSF and Metro share ownership of the freight corridor. Metro owns a strip of land in the railroad ROW approximately 15 feet in width, and would acquire or lease additional ROW from BNSF to accommodate two new light rail tracks between 190th Street and the Torrance TC Station, while ensuring BNSF can maintain freight operations. Detailed drawings of the LPA are provided in Appendix B, Select Advanced Conceptual Engineering Drawings for the Hybrid/Locally Preferred Alternative, of this Final EIR.

Figure 2.3-1. Locally Preferred Alternative – Overview

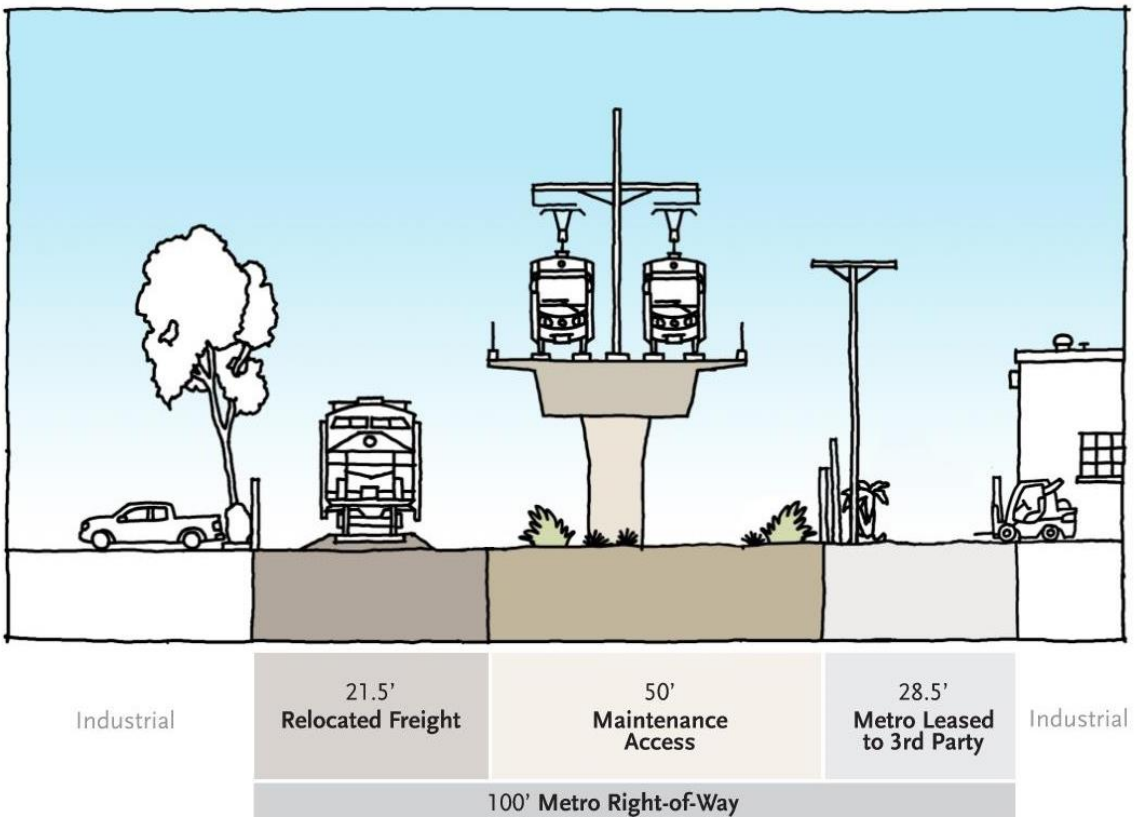


Source: STV, 2025

2.3-1 Alignment

The LPA would begin at the existing Redondo Beach (Marine) Station, where the existing light rail tracks and station are elevated above street level in a guideway supported by columns. The LPA would continue south in an elevated configuration within the existing Metro ROW, running parallel to and west of the existing freight tracks, which run at-grade (street level). Approximately 400 feet south of the station, the light rail tracks would descend and travel at-grade for approximately 800 feet to avoid overhead power lines. The light rail would then ascend back up to an elevated structure to cross over Inglewood Avenue and Manhattan Beach Boulevard into the City of Lawndale (Figure 2.3-2). Just south of Manhattan Beach Boulevard, the light rail guideway would cross over the existing freight tracks and shift to travel along the east side of the Metro ROW as it continues south. The existing freight track crossings at Inglewood Avenue and Manhattan Beach Boulevard would be rebuilt and shifted to the east within the Metro ROW while remaining at-grade.

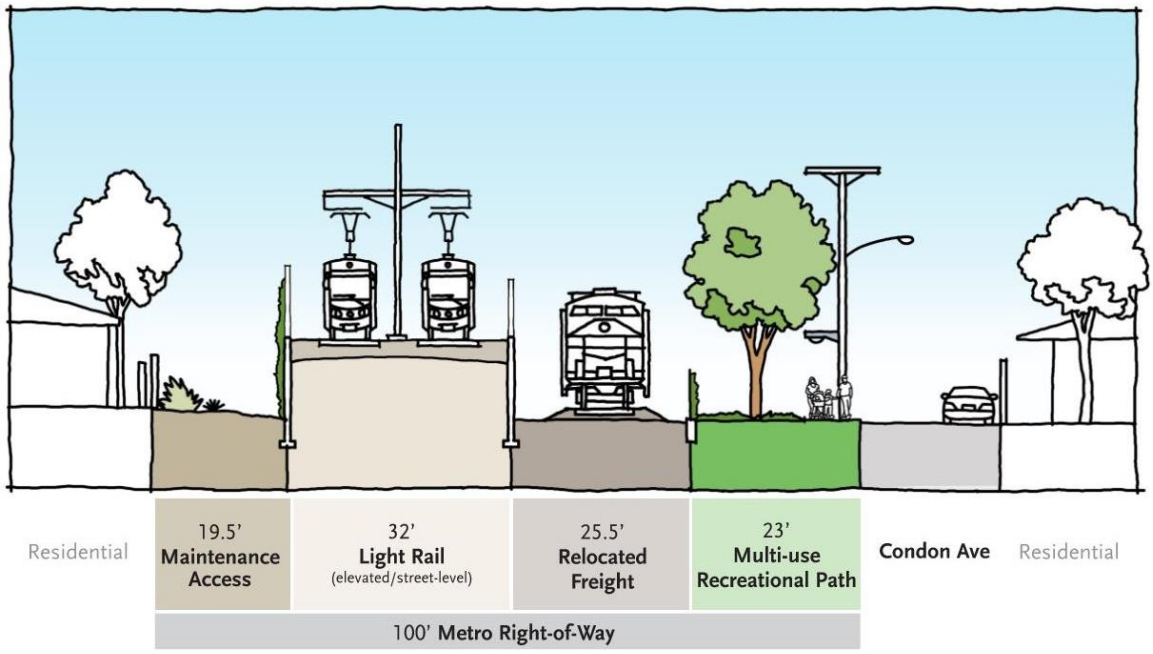
Figure 2.3-2. Locally Preferred Alternative – Looking South Between Inglewood Avenue and Manhattan Beach Boulevard



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds to Cross-Section D in Appendix B.
Area of Metro ROW leased to 3rd party varies in this area.

Continuing south, the light rail tracks would cross over 159th Street, 160th Street, 161st Street, and 162nd Street on an elevated structure supported by columns, and then would descend on retained fill[2] until it reaches street level to near 165th Street. The retained fill section is shown in Figure 2.3-3. The light rail alignment would travel at-grade from 165th to 168th Street, as shown in Figure 2.3-4. South of 168th Street, the light rail would transition into an open-air trench configuration to pass below 170th Street at a depth of up to approximately 20 feet, as shown in Figure 2.3-5.

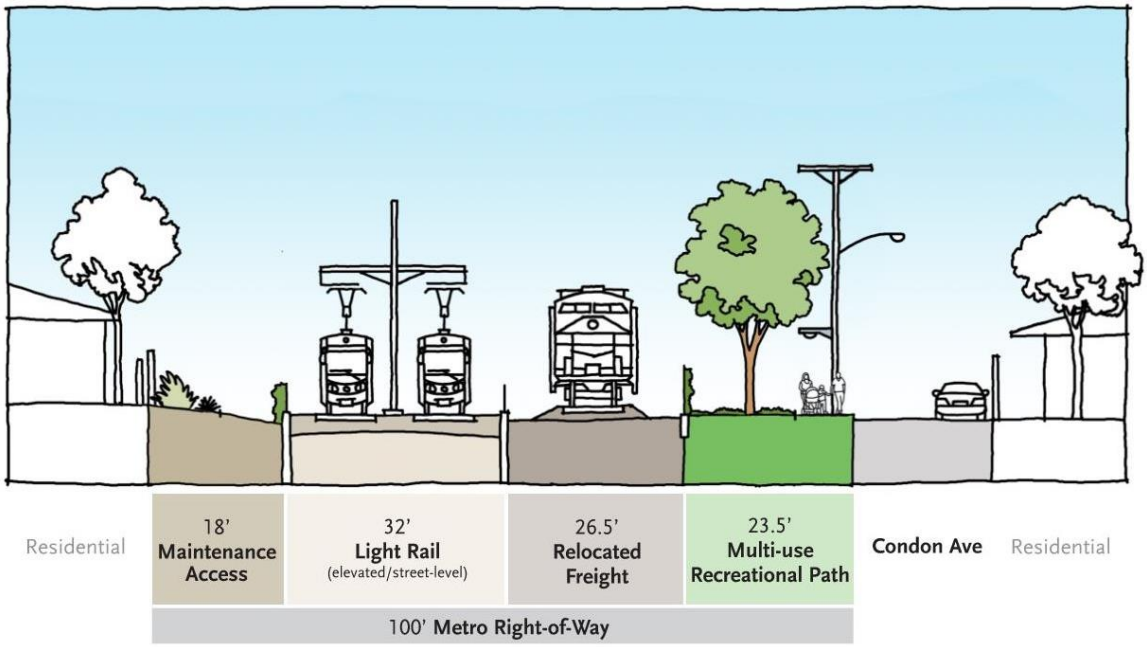
Figure 2.3-3. Locally Preferred Alternative – Looking South of 162nd Street



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds with Cross Section G in Appendix B.

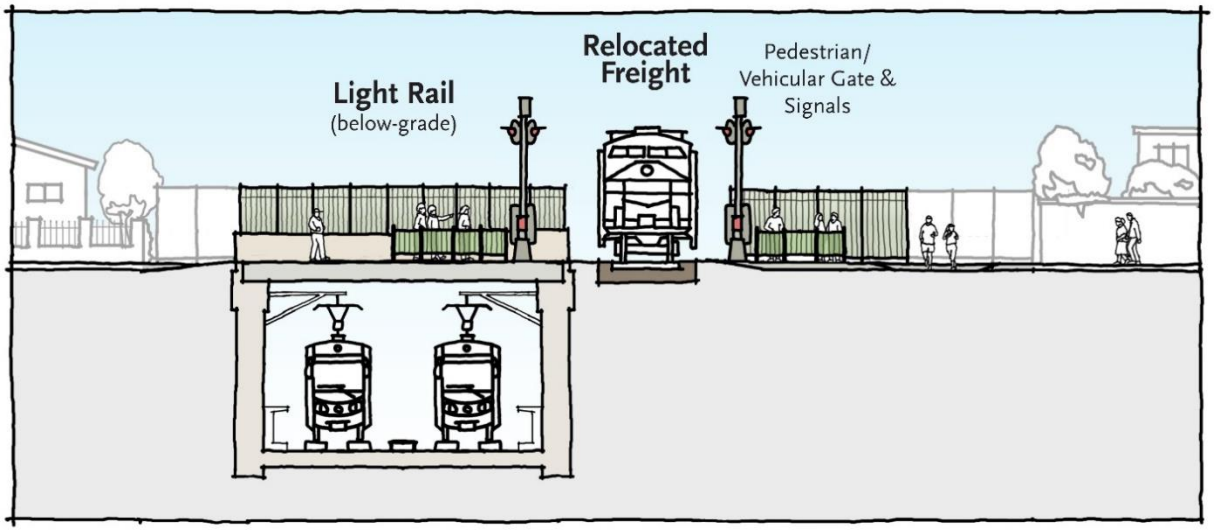
[2] The retained fill would be an elevated platform made of reinforced walls, which are filled with soil material.

Figure 2.3-4. Locally Preferred Alternative – Looking South Between 165th Street and 168th Street



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds with Cross-Section H in Appendix B.

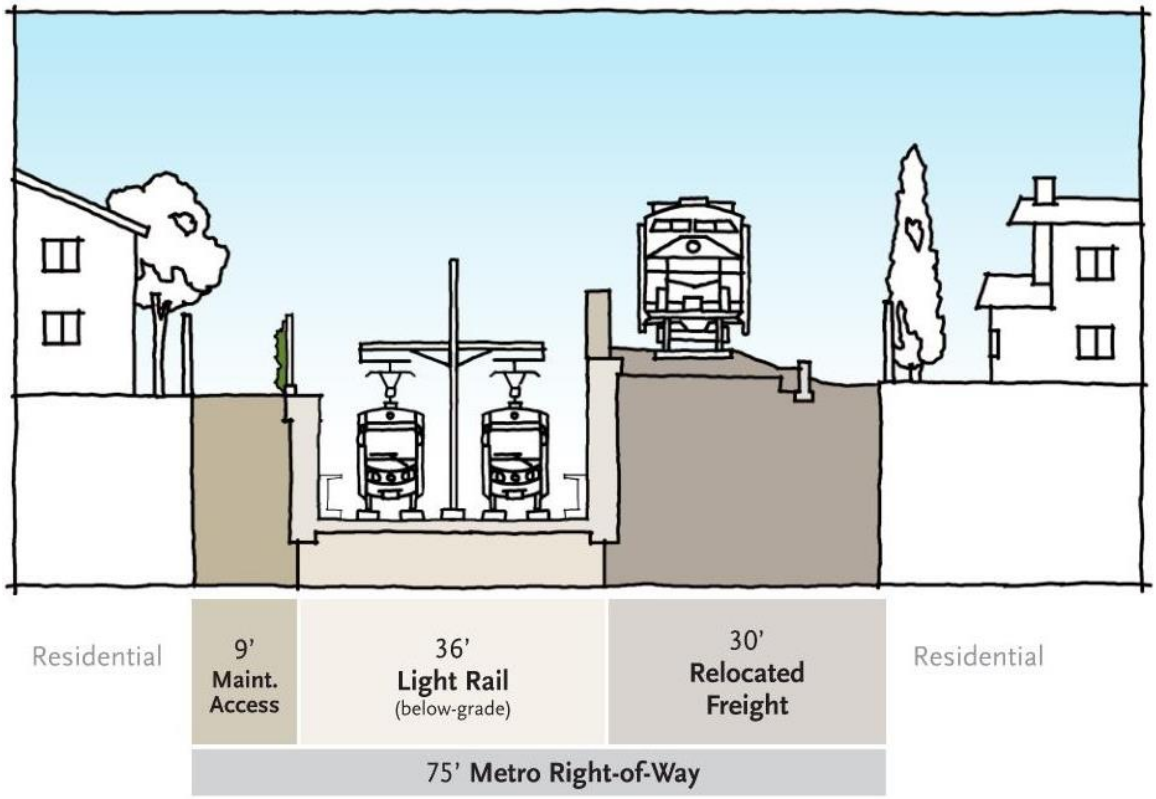
Figure 2.3-5. Locally Preferred Alternative – Looking South at 170th Street Bridge



Source: Cityworks Design, 2025
Corresponds with Cross-Section H.1 in Appendix B.

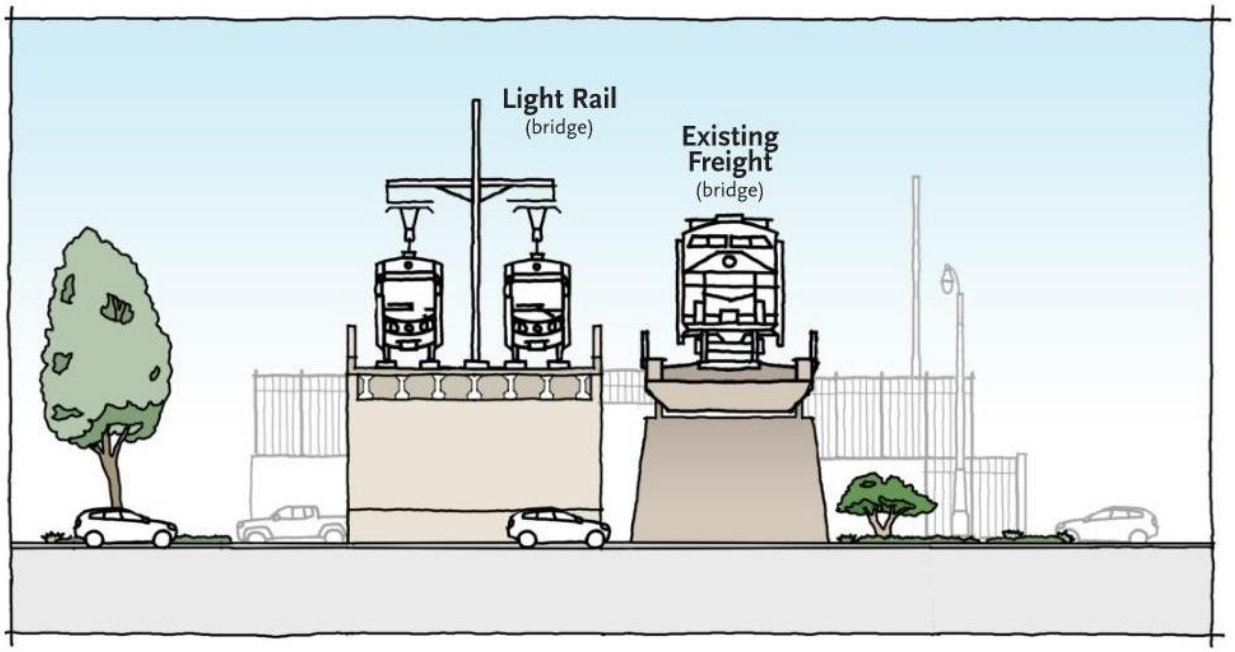
After crossing under 170th Street (Figure 2.3-6), the light rail tracks would ascend to at-grade, near 172nd Street before crossing Artesia Boulevard into the City of Redondo Beach on a new light rail bridge adjacent to the existing freight bridge (seen in Figure 2.3-7). South of 170th Street, the ROW width narrows from 100 feet to 75 feet.

Figure 2.3-6. Locally Preferred Alternative – Looking South of 170th Street



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds with Cross-Section H.2 in Appendix B.

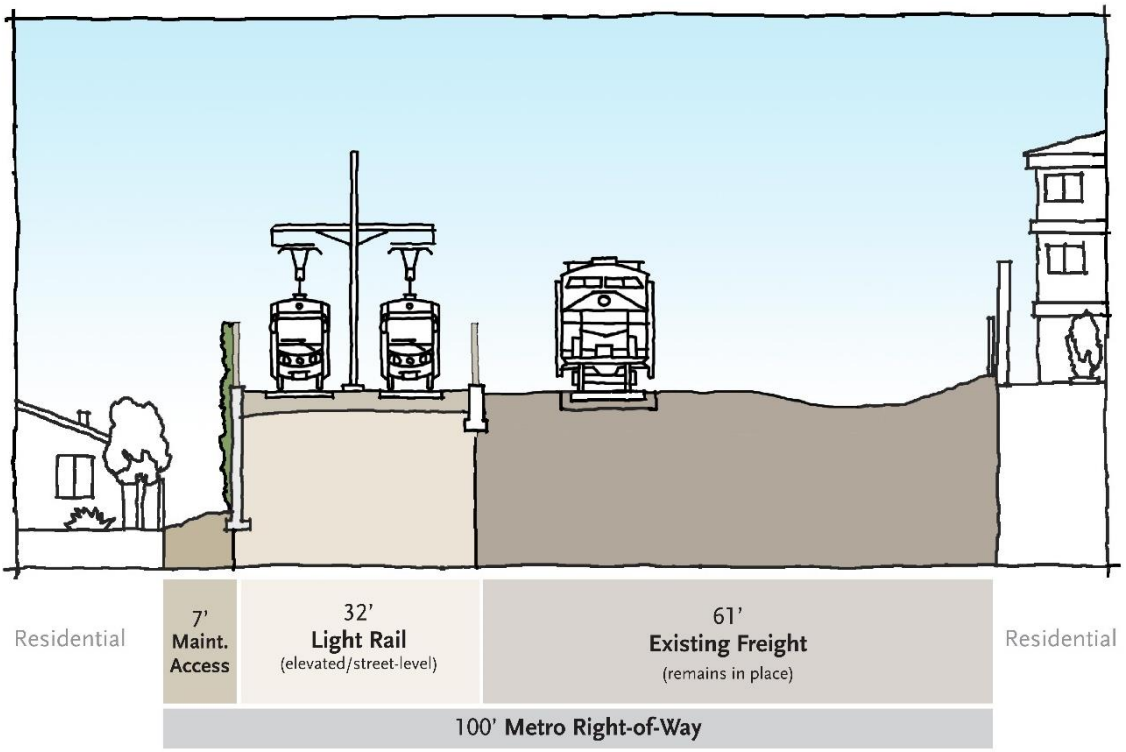
Figure 2.3-7. Locally Preferred Alternative – Looking South at Artesia Boulevard Bridge



Source: Cityworks Design, 2025
Corresponds with Cross-Section I in Appendix B.

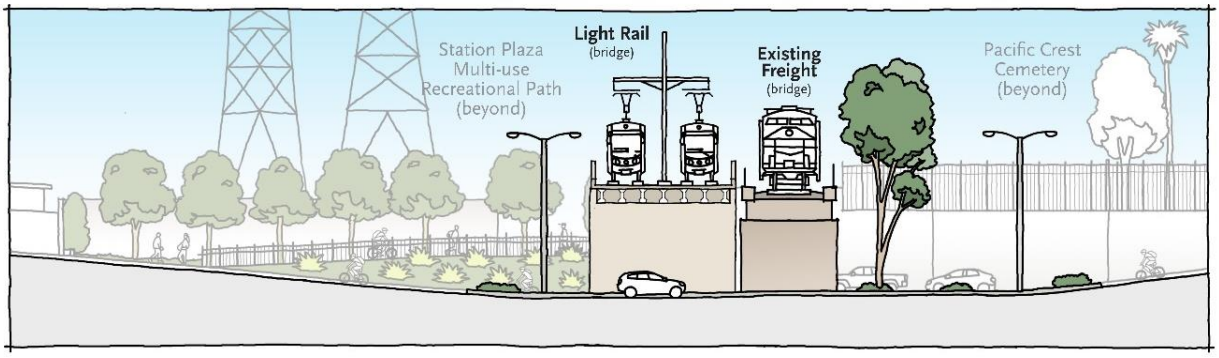
South of Artesia Boulevard, the light rail tracks would continue at-grade, as shown in Figure 2.3-8. The light rail tracks would cross over Grant Avenue on a new light rail bridge parallel to the existing freight rail bridge, as shown in Figure 2.3-9, before descending to reach the Redondo Beach TC Station.

Figure 2.3-8. Locally Preferred Alternative – Looking South between Artesia Boulevard and Grant Avenue



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds with Cross-Section J in Appendix B.

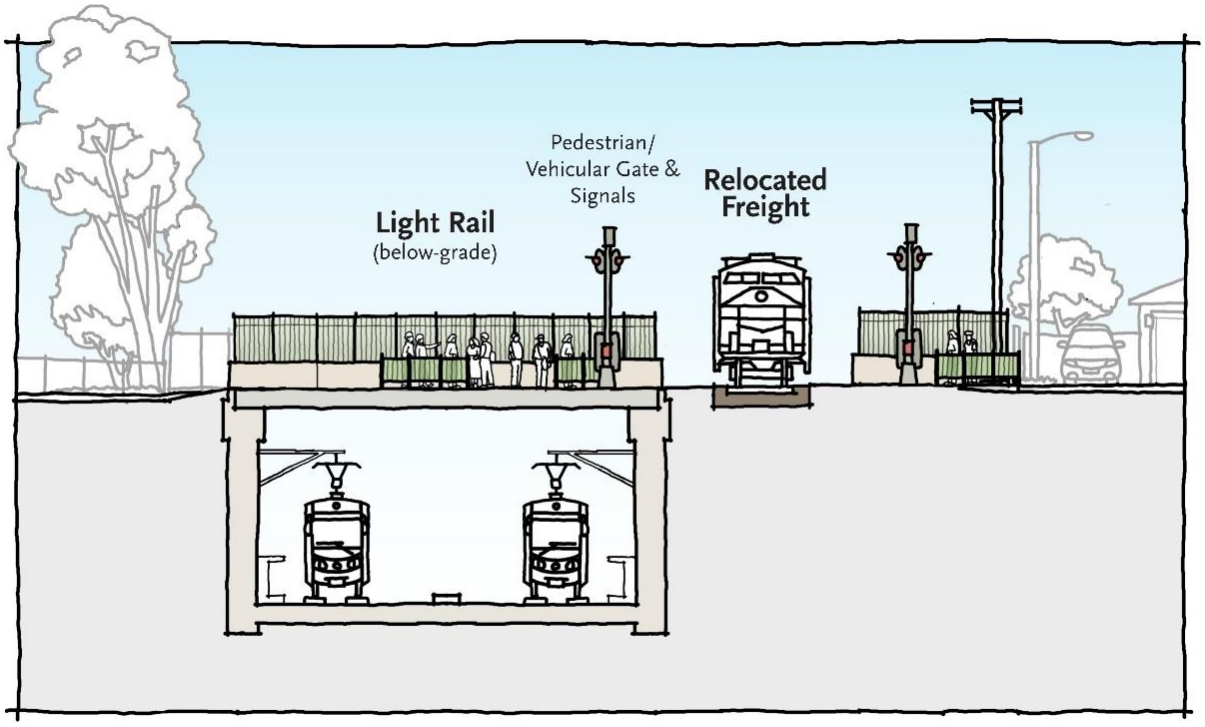
Figure 2.3-9. Locally Preferred Alternative – Looking South at Grant Avenue Bridge



Source: Cityworks Design, 2025
Corresponds with Cross-Section K in Appendix B.

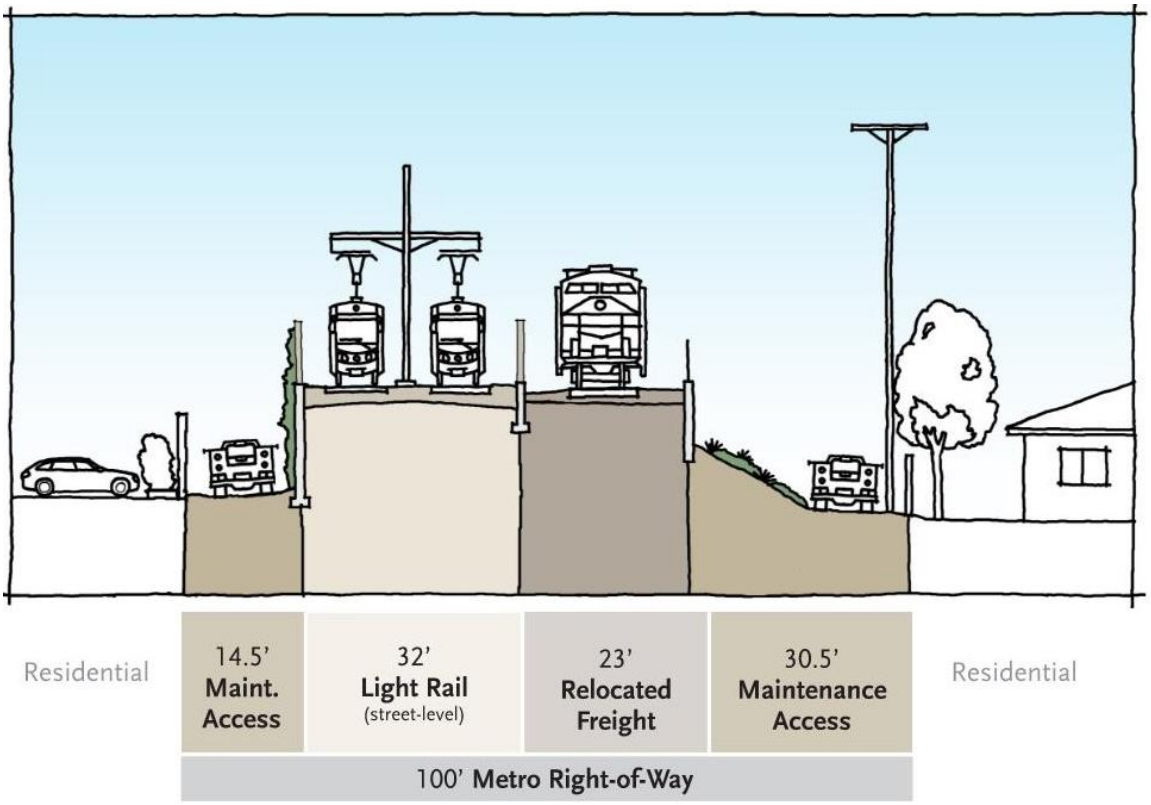
The Redondo Beach TC Station would be below street level to accommodate the light rail tracks crossing under 182nd Street, as shown in Figure 2.3-10, discussed in more detail in Section 2.3-4. From the Redondo Beach TC Station, the light rail tracks would continue descending in a trench to cross under 182nd Street. The trench would descend as low as approximately 20 feet deep at this crossing before the light rail tracks ascend back to at-grade, as shown in Figure 2.3-11.

Figure 2.3-10. Locally Preferred Alternative – Looking South at 182nd Street



Source: Cityworks Design, 2025
Corresponds with Cross-Section M in Appendix B.

Figure 2.3-11. Locally Preferred Alternative – Looking South Along ROW Between 186th Street and Hawthorne Boulevard



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds with Cross-Section P in Appendix B.

South of 182nd Street, the light rail continues south along the ROW, then crosses over Hawthorne Boulevard and 190th Street on new bridges parallel to the existing freight bridges. South of 190th Street, the light rail tracks would travel at-grade within the Metro ROW, pass under the Prairie Avenue bridge, and ascend onto an elevated structure to accommodate freight movements below. This elevated light rail structure is required to maintain freight operations, as described in more detail in Section 2.3-1.1. The tracks would then begin to descend toward grade in order to travel under Del Amo Boulevard. South of Del Amo Boulevard, the light rail tracks would continue at-grade and end at a terminus station adjacent to the Torrance TC, just west of where the Metro ROW meets Crenshaw Boulevard. Tail tracks, which can be used for train car parking, storing, or reversing the direction of the light rail trains, would extend beyond the station platform and end west of Crenshaw Boulevard.

The entire light rail guideway would be secured, either with a fence, a combination of a fence on top of a low wall, or a sound wall, in areas where noise mitigation is proposed.

Utility lines, including oil, gas, and electrical, currently run underneath the Metro ROW. The LPA would relocate these lines within the Metro ROW in several areas or protect them in place. Utilities are discussed further in Section 3.11, Utilities and Service Systems, of the Draft EIR.

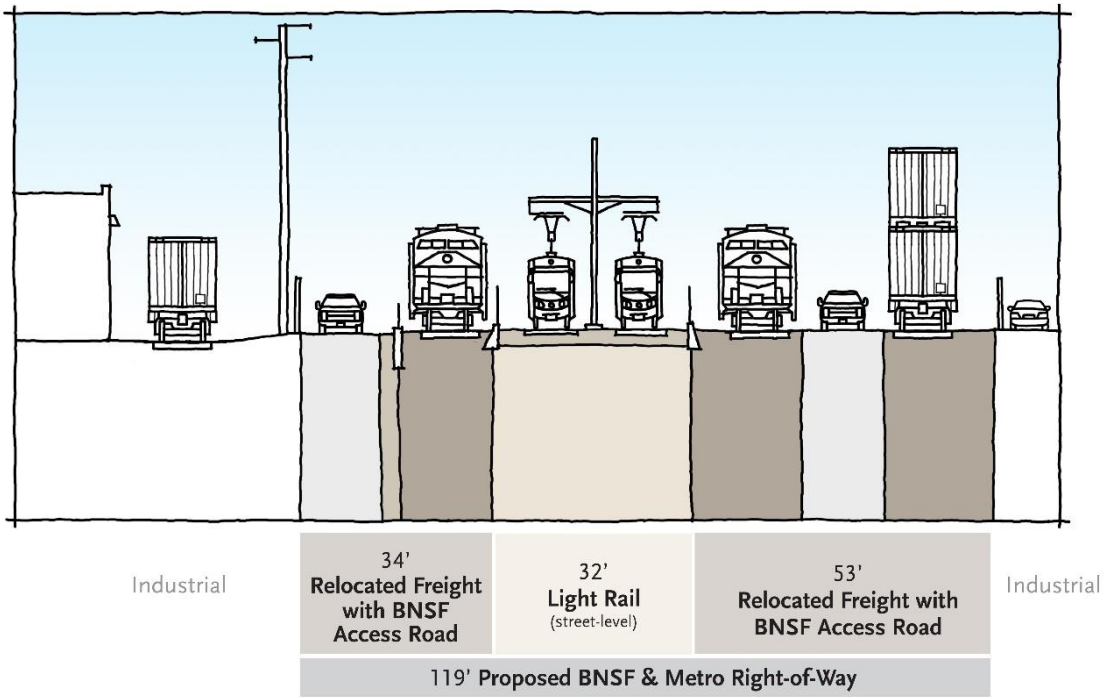
2.3-1.1 Freight Track Modifications

The width of the Metro ROW varies throughout the project area. This section discusses where the existing freight track would be shifted within the Metro ROW as part of the LPA to accommodate the light rail tracks.

Just south of the Redondo Beach (Marine) Station, the two existing freight tracks would be shifted slightly to the east within the existing Metro ROW. Two new maintenance-of-way tracks and an access road would be added to the east of the new siding tracks, within the Southern California Edison ROW where overhead power lines are located. The existing siding tracks near Inglewood Avenue would be removed to accommodate the new light rail tracks. The two mainline freight tracks would merge into a single track at Inglewood Avenue. At Manhattan Beach Boulevard, the freight track would cross the street at-grade below the elevated light rail structure and shift from the east side to the west side of the Metro ROW, running west of the light rail tracks. Between Manhattan Beach Boulevard and 170th Street, the existing freight track would be relocated to the west up to approximately 15 feet within the Metro ROW. In this segment, the freight trains would continue to cross streets at-grade as they do today. The at-grade freight crossings would be upgraded to be quiet zone ready, as discussed in the following pages. Between 173rd Street and Grant Avenue, the freight track would remain in its current general location, crossing both Artesia Boulevard and Grant Avenue on existing freight bridges. Between Grant Avenue and Hawthorne Boulevard, the freight track would be relocated to the west, shifting up to seven feet. Just north of Hawthorne Boulevard, the existing freight track would remain in its existing location to cross Hawthorne Boulevard and 190th Street on existing freight bridges as it does today.

South of 190th Street, the character of the Metro ROW changes from a single freight track to a denser network of freight tracks, storage tracks to stage cargo, and spur tracks serving adjacent properties along the Metro ROW. To accommodate the light rail, the existing freight tracks would be shifted on both sides (east and west) of the Metro ROW to allow the light rail tracks to travel in between freight tracks to cross under two bridges: Prairie Avenue and Del Amo Boulevard. In various areas throughout this segment, the BNSF ROW would be expanded on both sides of the existing corridor, to accommodate the freight tracks and new access roads. Figure 2.3-12 shows the light rail and freight track configuration in this area. To provide access for freight track maintenance, there would be crossover tracks between Prairie Avenue and Del Amo Boulevard. The light rail tracks in this section would be elevated on an aerial structure to cross over the freight tracks. There would be a structure at Prairie Avenue to accommodate the BNSF track to the west of the abutment. The Del Amo Boulevard bridge span would be demolished and reconstructed with a wider span to accommodate an additional BNSF track underneath and to allow BNSF to maintain access to adjacent properties.

Figure 2.3-12. Locally Preferred Alternative – Looking South between 190th Street and Prairie Avenue



Source: Cityworks Design, 2025
Dimensions are preliminary and subject to refinement in future phases of design.
Corresponds with Cross-Section S in Appendix B.

2.3-1.2 Multi-Use Recreational Paths

Where there is sufficient room within the Metro ROW, the LPA would provide multi-use recreational paths for walking, cycling, etc. On the east side of the light rail tracks between Manhattan Beach Boulevard and 159th Street and on the west side of the freight tracks parallel to Condon Avenue between 159th Street and 170th Street, a multi-use path would be provided. This path and its associated landscaped area would vary in width and be approximately 20 feet wide. It would allow residents and visitors to safely walk or cycle along the Metro ROW next to Condon Avenue, which does not currently have a sidewalk. A fence would be provided between this multi-use path and freight track for safety. An example cross-section of the alignment and the multi-use path is shown in Figure 2.3-3.

Between Grant Avenue and 182nd Street, a multi-use recreational path would be provided on the east side of the light rail tracks, as shown in Figure 2.3-15. This path would range between approximately 10 to 20 feet wide and provide access to the Redondo Beach TC Station, as well as enhance access within the neighborhood.

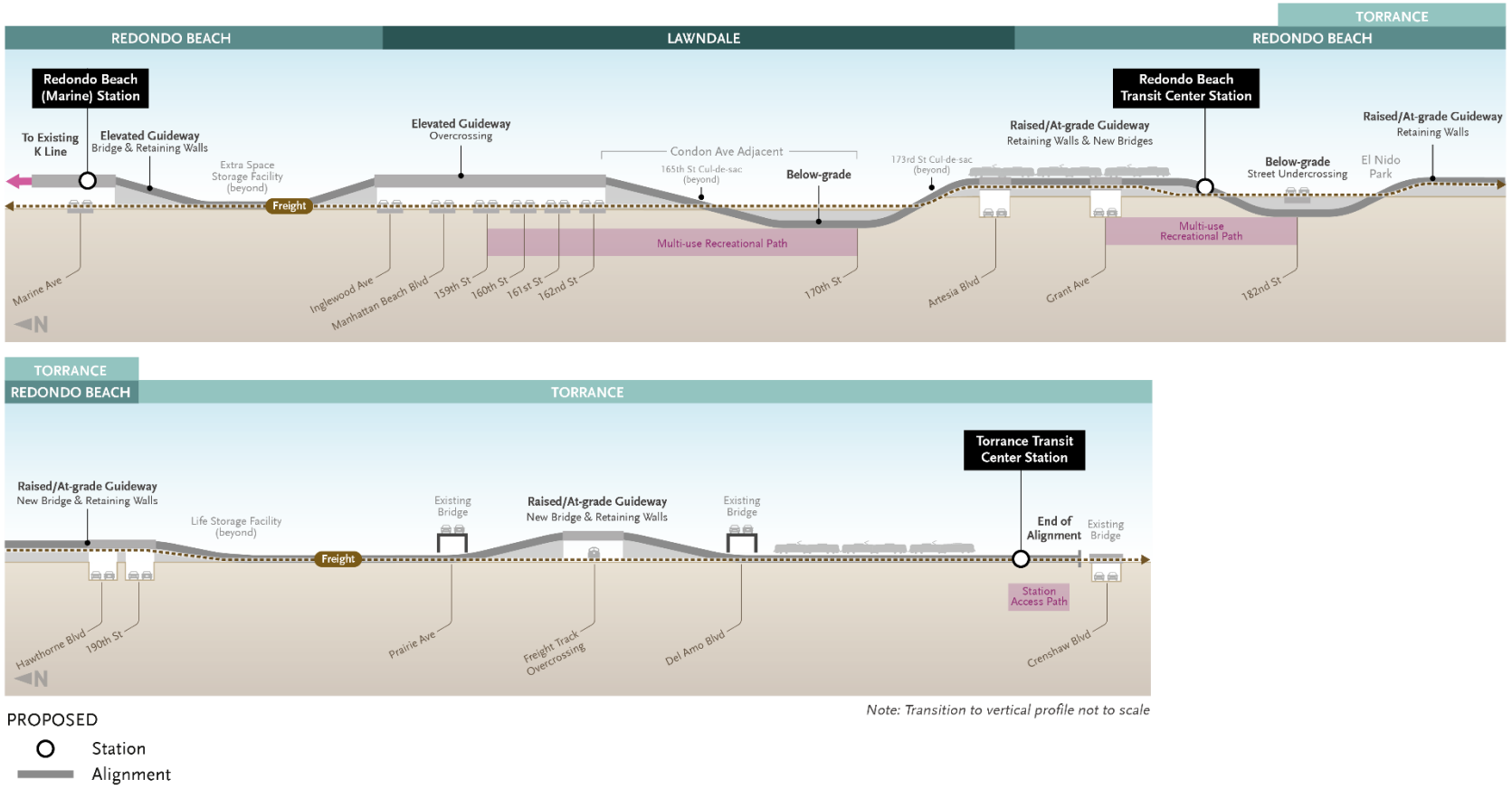
2.3-2 Roadway Modifications

Figure 2.3-13 shows the vertical profile of the LPA and all the roadways that the light rail would cross. The light rail tracks would be separated from all roadways. The freight tracks would remain at-grade throughout the length of the corridor where they are currently at-grade (see Figure 2.3-1). The roadway crossings are described below from north to south, and would include the following modifications:

> Inglewood Avenue: The roadway would cross under the elevated light rail structure, and the freight track would remain an at-grade crossing. New pedestrian gates and warning devices would be upgraded and installed on both sides of the freight track crossing. A new median and new vehicular safety gates would also be installed.

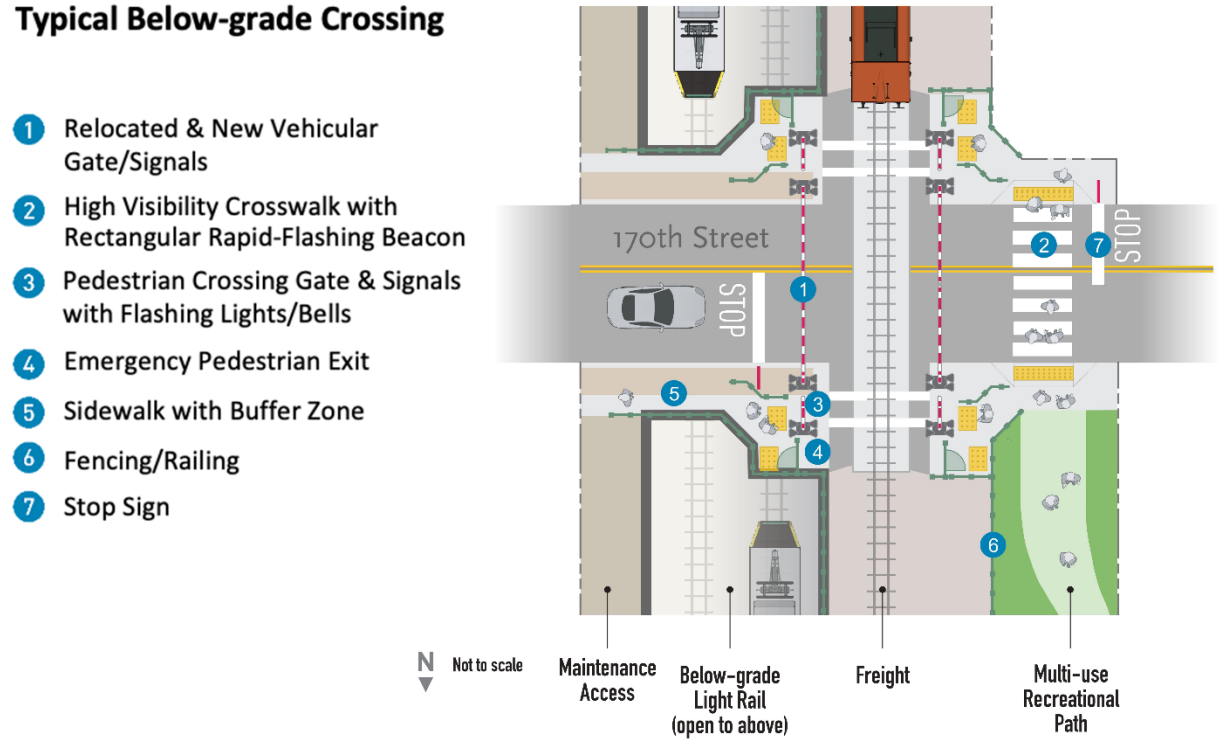
- Manhattan Beach Boulevard: The roadway would cross under the elevated light rail structure, and the freight track would remain an at-grade crossing. The pedestrian crossings would be reconfigured and include gates on both sides of the freight track crossing. The vehicular gates and signals would be relocated.
- 159th, 160th, 161st and 162nd Streets: These roadways would cross under the elevated light rail structure, and the freight track would remain as at-grade crossings. The multi-use recreational path would run at-grade parallel to the freight track, and at each roadway crossing, pedestrian gates and signals would be provided on both sides of the freight track, on both sides of each street. The multi-use path would cross each street with a signed and continental ("zebra") striped crosswalk. The vehicular gates and signals would be relocated.
- 170th Street: The roadway would be reconstructed as a bridge over the light rail trench, and the freight track would remain an at-grade crossing. The vehicular gates and signals would be relocated. Figure 2.3-14 shows the elements of a typical light rail trench crossing.
- Artesia Boulevard: Both the light rail and freight tracks would cross over the roadway on bridges. This would require minor modifications to the roadway to build new columns in the existing median to support the new light rail bridge.
- Grant Avenue: Both the light rail and freight track would cross over Grant Avenue on bridges. This would require minor modifications to the roadway to build new columns within the existing median to support the new light rail bridge. A new pedestrian crossing would be provided at Grant Avenue and Condon Avenue, to provide access to the multi-use path that connects to the Redondo Beach TC station and would include advanced pedestrian signals to warn approaching drivers.
- 182nd Street: The roadway would be reconstructed as a bridge over the light rail trench, and the freight track would remain an at-grade crossing. New pedestrian gates and warning devices would be upgraded and installed on both sides of the freight track crossing, including a continental ("zebra") striped crosswalk on the east side of the Metro ROW. New vehicular safety gates would also be installed.
- Hawthorne Boulevard and 190th Street: These roadways would cross under the new light rail and existing freight bridges. The light rail bridges would require new columns in the median of Hawthorne Boulevard and 190th Street.
- Prairie Avenue: The roadway would cross over the light rail and freight tracks on the existing roadway bridge. The south embankment would be cut back with a retaining wall to make room for the relocated freight track. A proposed box structure would be constructed south of the existing abutment to accommodate the relocated freight track and access road, but modifications to the roadway above the bridge structure are not required.
- Del Amo Boulevard: The bridge span would be reconstructed to make room for new light rail and freight tracks that travel below the roadway bridge.

Figure 2.3-13. Locally Preferred Alternative – Vertical Profile Diagram



Source: Cityworks Design, 2025

Figure 2.3-14. Typical Below Grade Crossing for Light Rail and At-Grade Freight Crossing 170th Street



Source: Cityworks Design, 2025
182nd Street has similar condition for light rail and freight crossing as 170th Street. However, the multi-use recreational path is on the east side of the rail corridor rather than the west side.

2.3-3 Quiet Zones

All at-grade roadway crossings would comply with California Public Utilities Commission (CPUC) regulations to ensure they are safely designed, constructed, and maintained. The existing at-grade freight crossings would be designed and upgraded to be "quiet zone ready", which would allow local jurisdictions to implement a quiet zone policy for the corridor in the future. A quiet zone would reduce noise along the corridor by allowing freight trains to eliminate the use of horns when approaching at-grade crossings, which would have safety gates and enhancements for trains, vehicles, and pedestrians. The quiet zone ready design includes site-specific safety infrastructure such as vehicle gates, pedestrian gates, signals such as lights and bells, and sidewalks and ramps that are all compliant with the Americans with Disabilities Act (ADA). Figure 2.3-14 shows the elements of a crossing where freight tracks are at-grade. Implementation of a quiet zone would result in the elimination of freight horns for approximately 1.7 miles, from north of Inglewood Avenue to south of 182nd Street.

2.3-4 Station Sites

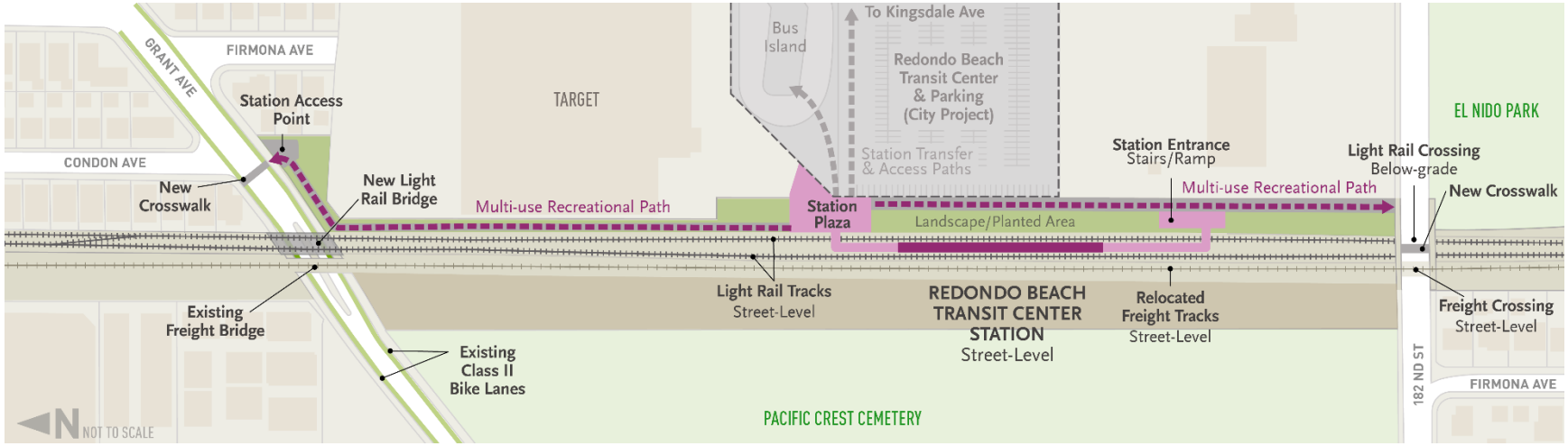
The LPA includes two new light rail stations. The stations would follow Metro's Systemwide Station Design Standards consistent with the Metro Board's Systemwide Station Design Policy. Pursuant to Metro Board Policy, stations shall be required to have a consistent canopy design, station entrance, signage, communications equipment, fare collection equipment, and safety and security systems. Metro's Systemwide Station Design Standards include elements of variability, such as landscaping and integrated site-specific artwork that connects the station within the broader community context. All the stations are proposed as a center-platform configuration, allowing passengers to access trains from

either direction from the same platform. The station platforms would be capable of accommodating three-car trains. The stations would allow level-boarding and full accessibility to comply with the ADA. Bicycle parking would be provided at all station sites.

Redondo Beach TC Station

The City of Redondo Beach's regional transit center, Redondo Beach TC, is located between Kingsdale Avenue and the Metro ROW, south of Grant Avenue and the existing Target store. The City's Redondo Beach TC is a regional hub for local and regional bus lines and includes vehicular and bike parking for transit riders. The LPA would include a one-level light rail station, with the platform located approximately 10 feet below the existing ground level (shown in Figure 2.3-15 and Figure 2.3-16). The lower station configuration allows the light rail to cross under 182nd Street. Light rail riders would arrive at the station platform, and connect to a station plaza via pedestrian pathways, ramps, and stairs to access the adjacent city's transit center. As described in Section 2.3-1, the LPA would also include a multi-use recreational path that would provide direct access to the light rail station from Grant Avenue and 182nd Street.

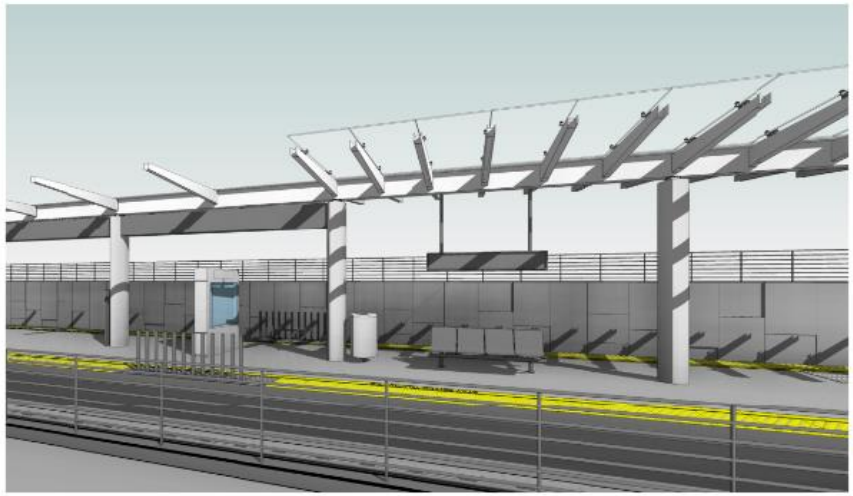
Figure 2.3-15. Locally Preferred Alternative – Redondo Beach TC Station Layout



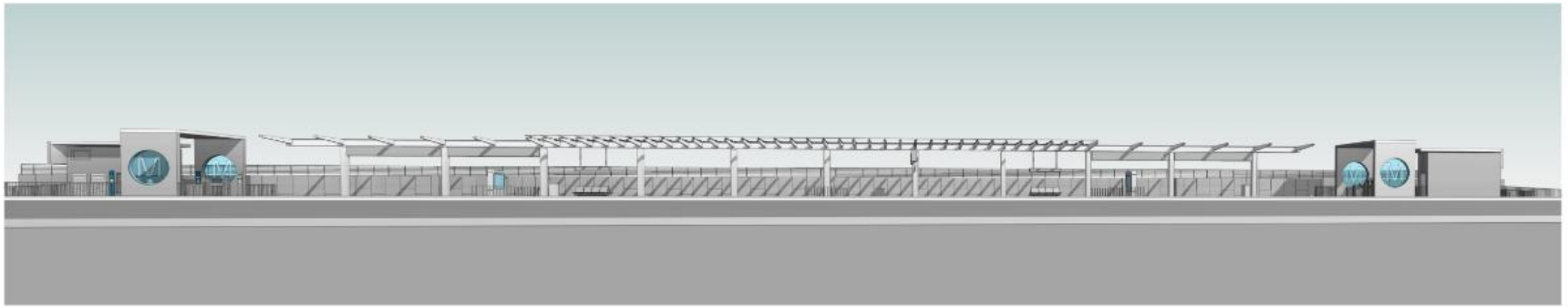
Source: Cityworks Design, 2025
Not to scale

Figure 2.3-16. Locally Preferred Alternative – Renderings of At-Grade Station at Redondo Beach TC

W FACING - TICKETING AREA



NW FACING - PLATFORM AREA



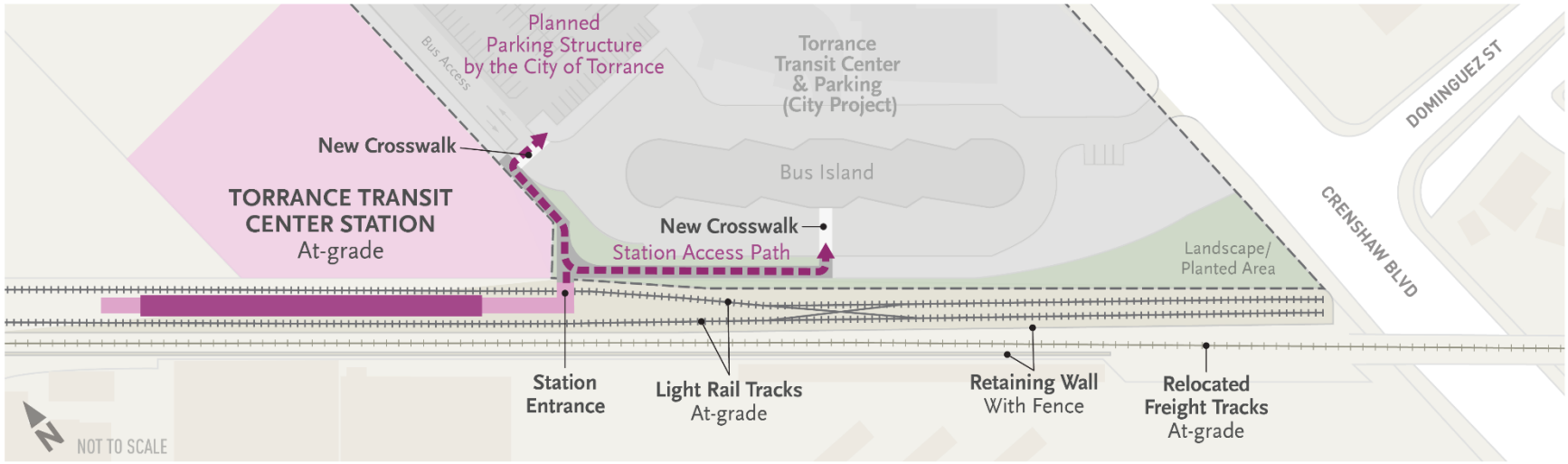
W FACING - OVERALL PLATFORM

Source: STV, 2022

Torrance TC Station

The City of Torrance's regional bus transit center is located west of Crenshaw Boulevard and east of the Metro ROW to the south of Del Amo Boulevard. The LPA would include an at-grade light rail station adjacent to the transit center, slightly north of the bus plaza (shown in Figure 2.3-17 and Figure 2.3-18). As part of the LPA terminus station, Metro would lease parking from the City of Torrance's transit center parking. The light rail station platform would be accessible by pedestrian pathways and crosswalks from the bus plaza and parking areas. This would be the southern terminus station for the LPA.

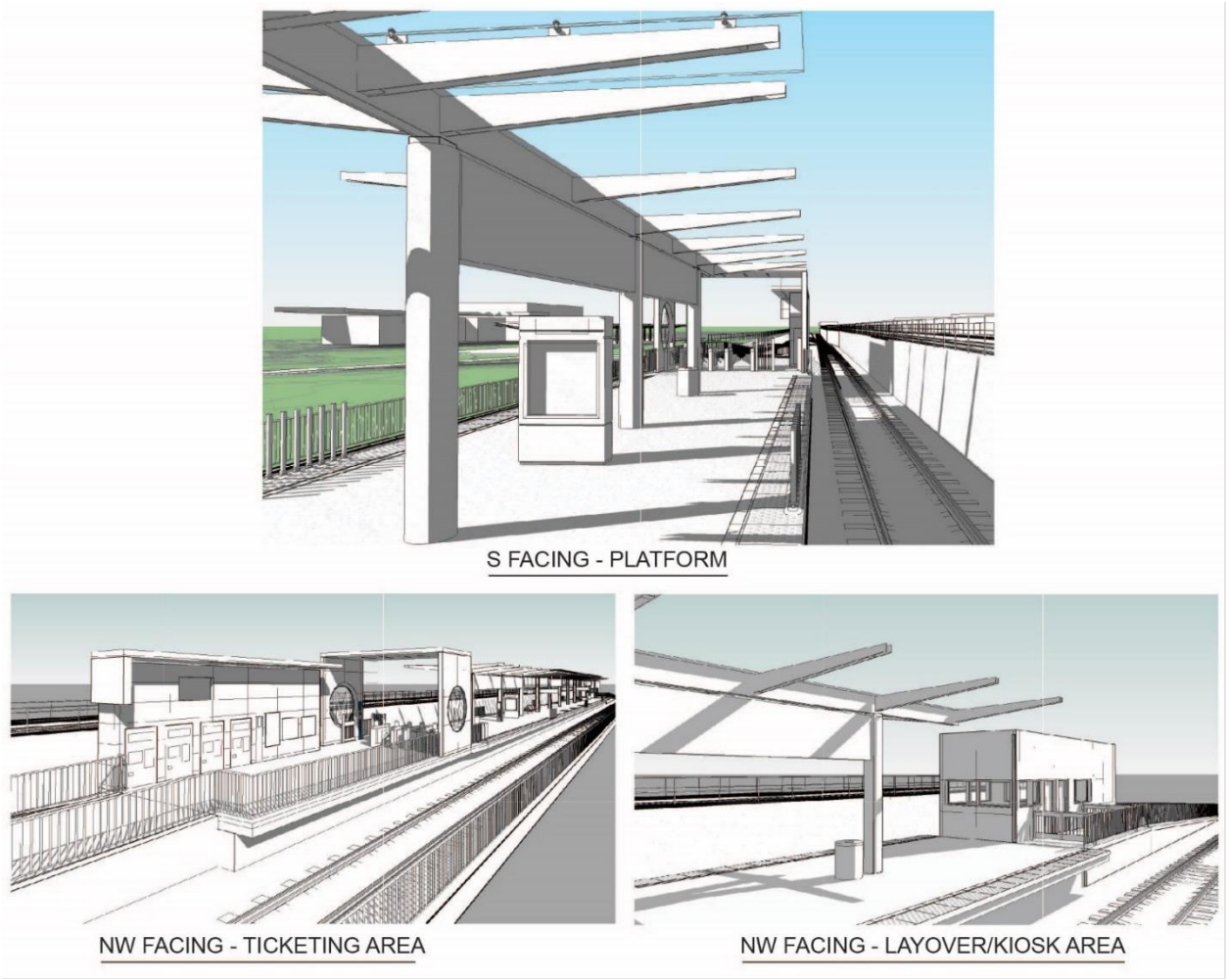
Figure 2.3-17. Locally Preferred Alternative – Torrance TC Station Layout



Source: Cityworks Design, 2025

Not to scale

Figure 2.3-18. Locally Preferred Alternative – Renderings of Torrance TC Station (Terminus)



Source: STV, 2022

2.4 System Components and Ancillary Facilities

The following section describes the required system components for the LPA. The light rail system components would adhere to the Metro Rail Design Criteria and would use a similar design as existing Metro light rail lines.

2.4-1 Light Rail Guideways

At-grade light rail guideways would run at or close to the grade of the existing ground, with some variation in heights to accommodate changes in topography. The distance between the at-grade light rail track centerlines would be a minimum of 14 feet. Figure 2.3-4 shows a typical cross-section of at-grade light rail tracks.

Elevated light rail guideways would be supported by structures including retained fill embankments, columns, or straddle bents. Retained fill guideways would be constructed where there is a transition between the at-grade and elevated guideway. They would be raised above the existing ground level on a platform made of reinforced walls.

The two under-crossings at 170th Street and 182nd Street would consist of the light rail tracks within an open trench, with depth varying based on site conditions and the location of underground utilities. Near

170th Street and 182nd Street, the trench would be up to 20 feet deep. The trench guideways would be approximately 30 feet wide to accommodate the two light rail tracks and associated infrastructure.

2.4-2 Light Rail Vehicles

It is assumed that existing Metro light rail vehicles would be used for this Project. For purposes of this analysis, the model P3010 light rail cars, manufactured by Kinkisharyo, are assumed. An example vehicle is shown in Figure 2.4-1. These vehicles are typically six-axle, double ended and articulated, and can be combined in trains up to three cars in length. The light rail vehicles would operate at speeds of up to 65 miles per hour and would carry approximately 70 seated passengers per car. The light rail vehicles are configured with a driver's cab at either end so that the train could run in either direction without the need to turn around. An additional five light rail vehicles would need to be added to Metro's fleet to operate the LPA.

Figure 2.4-1. Example Metro Light Rail Vehicle

Source: Kinkisharyo

2.4-3 Maintenance Facility

The LPA would not include a new or modified maintenance facility. The light rail vehicles would be serviced, maintained, and stored at the existing Division 16 Southwestern Yard in the City of Los Angeles or the El Segundo Yard Division 22 in the City of Hawthorne.

2.4-4 Ancillary and Support Facilities

Multiple additional elements are required to support light rail vehicle operations, including an overhead contact system (OCS), traction power substations (TPSS), and communications and signaling buildings. The light rail system components would adhere to the Metro Rail Design Criteria and would use a similar design as existing Metro light rail lines. At the Redondo Beach (Marine) Station, the project would tie into the existing systems infrastructure of the Metro C/K Lines.

2.4-4.1 Overhead Contact System

An OCS is a network of overhead wires that distributes electricity to light rail vehicles. The OCS poles for the LPA would be approximately 25 feet tall with a base of approximately 15 inches, generally located

between the two light rail tracks and spaced 90 to 170 feet apart. In some locations, the poles would be located on both sides of the tracks. Figure 2.4-2 shows an example of an OCS pole and wires.

Figure 2.4-2. Typical Overhead Contact System

Source: STV, 2022

2.4-4.2 Traction Power Substations

TPSSs supply the electricity for light rail operations by receiving high voltage power from utility companies and converting the alternating current power to direct current for distribution to the light rail vehicles. The TPSSs for the LPA would be enclosed structures spaced approximately one mile apart along the alignment and would require approximately 4,800 square feet of land. The siting and screening of TPSSs would follow principles of urban design. A representative example of a TPSS is shown in Figure 2.4-3. Six TPSSs would be needed for the LPA, with several options available for some locations. Access would be provided to each via maintenance roadways from the nearest public street and shielded with landscaping where possible. Table 2.4-1 lists the locations that have been identified as possible TPSS sites, which are also shown in Figure 2.4-4.

Figure 2.4-3. Typical TPSS Facility

Source: STV, 2012

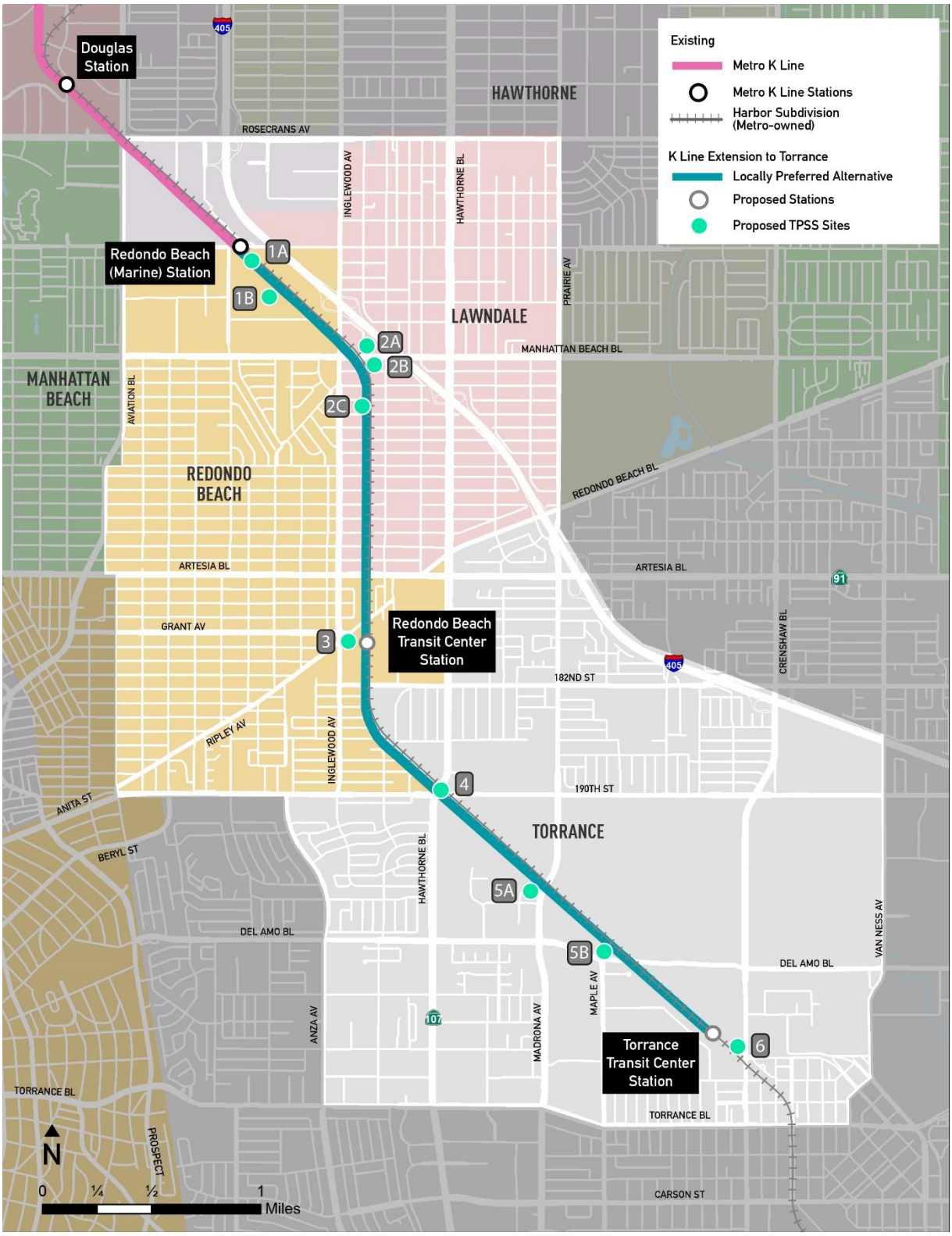
Table 2.4-1. TPSS Sites

TPSS ID[1]	Description
1A	South of the Redondo Beach (Marine) Station within Metro ROW
1B	South of the Redondo Beach (Marine) Station, north of Santa Fe Avenue, west of Metro ROW within private property
2A	North of Manhattan Beach Boulevard, west of Condon Avenue within private property
2B	Between Manhattan Beach Boulevard and 159th Street, west of the Metro ROW within private property
2C	North of 162nd Street, within Metro ROW
3	South of Grant Avenue, west of Metro ROW within private property
4	North of 190th Street, east of Hawthorne Boulevard, west of Metro ROW within private property
5A	North of Prairie Avenue, west of Metro ROW within private property
5B	North of Del Amo Boulevard, west of Metro ROW within private property
6	West of Crenshaw Boulevard, east of Metro ROW within private property

Source: STV, 2025

[1]TPSS ID number corresponds with Figure 2.4-4.

Figure 2.4-4. TPSS Locations



Source: STV, 2025
Not to scale

2.4-4.3 Communications and Signaling Buildings

Communications and signaling buildings contain train control and communications equipment. They would be located at each station of the LPA. These facilities are typically constructed as enclosures either underneath the station platforms or as small stand-alone structures along the guideway away from major pedestrian access; however, the project would not include such facilities underneath station platforms. The communications buildings would require approximately 500 square feet of area and signaling buildings would require approximately 100 square feet. Figure 2.4-5 shows an example of a train communications and signaling building.

Figure 2.4-5. Typical Train Communications and Signaling Building

Source: Metro, 2019

2.5 CONSTRUCTION SCENARIOS

Construction of the LPA would employ conventional construction techniques and equipment typically used (and permitted) in Southern California for highway, bridge, utility, transit, and railroad projects. The following section summarizes the construction assumptions and requirements for the LPA.

2.5-1 Construction Activities

Construction of the LPA is anticipated to last approximately six years, which is longer than the estimated timeframe in the Draft EIR for Elevated/At-Grade Alignment and shorter than the Trench Option. The construction schedule is longer than the Elevated/At-Grade Alignment due to the need to construct two under-crossings at 170th and 182nd Streets. However, it is shorter than the estimated timeframe required to construct the Trench Option, which would involve extensive excavation for a trench up to 30 feet deep (between Inglewood Avenue and 170th Street and near 182nd Street).

Construction would typically occur during daytime hours on weekdays. Some construction may be required to avoid congested freeways and surface streets, or due to the nature of certain construction processes, such as construction of freight track to avoid disruption to BNSF operations or construction of bridges over major arterials. Key construction elements required to construct the LPA are summarized below, generally in the order in which they would occur.

- **Clearing and Demolition of Existing Structures** – The ground would be cleared of vegetation in an early stage of the construction work. In some locations, the demolition of existing structures (or parts thereof) would be required to shift the freight track and/or to install the light rail tracks,

stations, and facilities. The debris generated from demolition would be recycled in part and disposed of in part.

- **Utility and Freight Infrastructure Relocations** – Construction would require some existing utilities to be protected in place or relocated. Utility relocation work would generally occur within the affected ROW and on adjacent and nearby streets. Affected utilities would include storm drains, sanitary sewers, power lines, gas pipelines, electrical duct banks, oil pipelines, electrical transmission lines, lighting, irrigation pipelines, water lines, fiber optic lines, telephone, and cable lines, among other things. Aboveground and underground utilities would be relocated or protected in place, if possible, to prevent damage or interruption of use of these facilities. Aboveground utilities, such as poles, would be relocated, or removed with the utility line relocated underground. Underground utilities would require soil excavation to varying depths, and disturbed ground would be backfilled with the same material or clean material. Construction activities for the relocated BNSF tracks would be coordinated with BNSF.
- **Embankment Work** – The embankment that would support the new or relocated tracks and stations would require the removal of vegetation and debris, shaping and compacting the soil, importing, or exporting soil as needed to achieve the required embankment and compacting the soil and importing crushed rock base material to support the track and structure foundations.
- **Freight Track At-Grade Street Crossings** – The existing freight track at the at-grade crossings would be relocated to accommodate the new light rail tracks. The subgrade would first be constructed and then the new track would be installed. Temporary street and lane closures would be coordinated to ensure no two adjacent streets would be closed concurrently.
- **Bridges and Elevated Structures** – Bridges and elevated structures would be constructed by first installing piles and then the columns and piers that support the superstructure. The horizontal support of the elevated guideway would then be constructed, typically using cast-in-place concrete temporarily supported by falsework. Where new light rail bridges are adjacent to existing freight track bridges, a portion of the abutment/retaining walls would be demolished before construction of the new structure.
- **Trenches** – Trenches could be constructed with different methods depending on the trench depth. Shallow guideway trenches (in the southern segment near 170th and 182nd Streets) would likely be constructed with secant piles or cast-in-drilled hole soldier piles and lagging and then excavating between them to construct a U-shaped reinforced concrete trench structure. Where necessary, ground replacement or improvement would be undertaken to strengthen the base of the trench, and any gaps between pile and trench walls would be backfilled with self-compacting material. The LPA's trenches would likely utilize drilled hole piles backfilled with concrete to form the trench walls, with alternating large and small secant piles. Existing soil would then be excavated to form the trench void and construction of the concrete base of the trench structure would follow. The deepest sections of the trench would have supporting concrete strut beams installed near the tops of the walls. The top of the pile walls would be capped by a cast-in-place longitudinal reinforced concrete beam. During excavation and construction of the trench, groundwater pumps would be used to remove excess water. All trench walls would be waterproofed and constructed with drainage systems behind the walls to adequately remove water and prevent the buildup of hydrostatic pressure. Long-term groundwater would be managed with either a gravity system or sump pumps located at the low points of the trench.
- **Retaining Walls** – Retaining walls would be constructed in different ways, depending on the location and wall type. Mechanically Stabilized Earth (MSE) walls are generally used in fill areas and would be

constructed by first building a "leveling pad" foundation, followed by placement of prefabricated concrete facing panels and steel geo-reinforcing straps as the wall is backfilled. When the walls have been built to the finished elevations, concrete caps would be placed over the top panels. Soldier pile or secant pile walls would be used in cut areas, and would be constructed by first drilling shafts, placing steel piles, and backfilling the holes. The area would be excavated from top-down, and then the cast-in-place concrete facing would be placed. Cast-in-place retaining walls may be used in some areas, which consist of first constructing the foundation, followed by cast-in-place concrete walls. All walls would be constructed with drainage systems behind the walls to adequately remove water and prevent the buildup of hydrostatic pressure.

- **Stations** – The construction approach varies according to the proposed station location and layout. The Redondo Beach TC Station would be constructed following a similar sequence as described for trenches and retaining walls, with the walls constructed first, followed by the foundation and track bed and then construction of platforms. Platforms would involve cast-in-place concrete or pre-cast panels. The at-grade Torrance TC Station would involve cast-in-place concrete or pre-cast panels to construct the station platform with ramps and stairs. For all station types, the station operational equipment and furnishings (e.g., vertical circulation elements, lighting, seating, signage, artwork, and fare vending equipment) would be added after the station platform is constructed.
- **Railroad/Light Rail Track** – Construction activities for at-grade light rail track would include preparation of the track bed and installation of the supporting base, followed by installation of the rails and ties. Rails would be flash-butt and thermite welded either on site or in a nearby staging yard. On-track regulators and tampers would be utilized to set and align the tracks, with grinders used to adjust the rail heads to match train wheel profiles. For elevated guideways, the light rail track would be installed via direct fixation (i.e., rail fastened directly to a bridge superstructure).
- **Systems Construction** – This would include the installation of wayside signals, crossing warning signals, conduits, control houses, the OCS, and TPSSs. The OCS construction would start with the foundations for the OCS poles, followed by duct banks and conduit for the electrical feeder lines from the TPSS, and then the OCS poles. TPSS construction would involve first grading the site and then installing the TPSS structure and connecting it to the utilities. Signal houses are typically prefabricated metal-clad buildings, which are placed upon a concrete foundation.
- **Property Acquisitions** – Construction would be primarily staged within the Metro ROW. The LPA would require acquisitions (full or partial) and easements (temporary or permanent) of nearby properties during construction and operation. Metro has designed the project to avoid displacement of residents. North of 190th Street, the LPA would have limited property acquisitions for non-residential properties to locate the TPSSs. South of 190th Street, the LPA would require partial property acquisitions of non-residential properties along the Metro ROW to build the light rail tracks and accommodate multiple relocated or new freight tracks, storage tracks, spurs, and access roads. For any properties that may have existing contamination, Metro would conduct a Phase II site investigation and implement remediation as needed. Additional details are provided in Section 3.9, Hazards and Hazardous Materials, of the Draft EIR and in Chapter 4, Corrections and Additions, of this Final EIR.

2.5-2 Construction Equipment

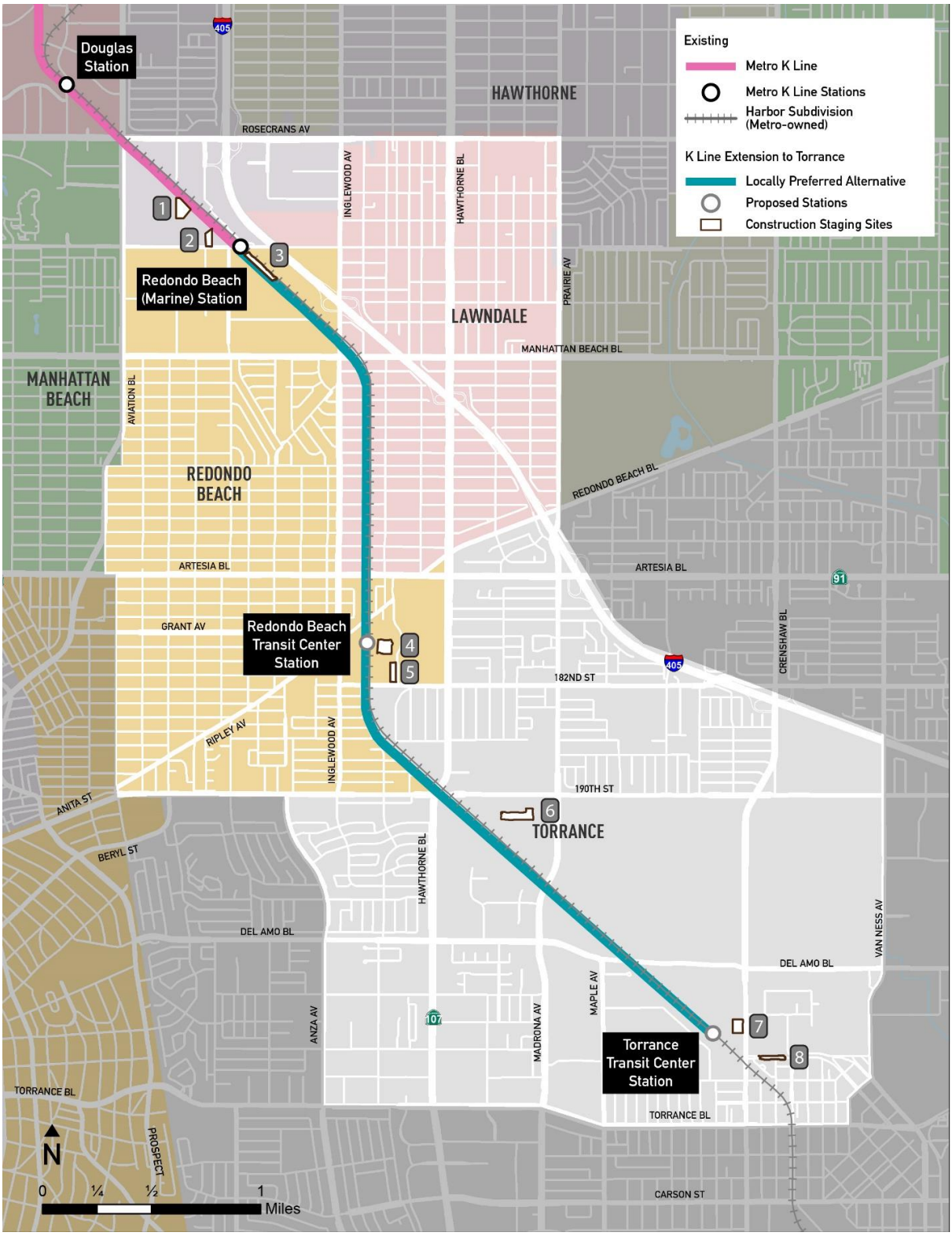
The construction equipment that would be used for the LPA is typical of that found engaged in contemporary highway, building, bridge and utility work plus some specialized railroad track and OCS construction equipment. All equipment would conform to current applicable safety and environmental

regulations. The general construction equipment (subject to final selection by the contractor) could include the following:

- Aerial Lifts
- Air Compressors
- Bore/Drill Rigs
- Cement and Mortar Mixers
- Concrete/Industrial Saws
- Cranes
- Crawler Tractors
- Crushing/Processing Equipment
- Dumpers/Tenders
- Excavators
- Forklifts & Rough Terrain Forklifts
- Generator Sets
- Graders
- Pavers & Paving Equipment
- Plate Compactors
- Pressure Washers
- Pumps
- Rollers
- Rubber Tired Dozers
- Rubber Tired & Skid Steer Loaders
- Signal Boards
- Surfacing Equipment
- Sweepers/Scrubbers
- Tractors/Loaders/Backhoes
- Trenchers
- Welders
- Support vehicles, including employee personal transportation, fuel delivery trucks, mechanics' trucks, and utility trucks used by supervisors and inspectors

The LPA would also include potential off-site locations for temporary use during construction for the laydown of tools, materials, equipment, and vehicles. A map of the potential locations is shown in Figure 2.5-1, and images of each site are included in Figure 2.5-2 and Figure 2.5-3.

Figure 2.5-1. Construction Staging Sites



Source: STV, 2025
Site numbers correspond with Figures 2.5-2 and 2.5-3.

Figure 2.5-2. Construction Staging Locations: Sites 1-5

Source: STV, 2025

Figure 2.5-3. Construction Staging Locations: Sites 6-8

SITE 6

SITE 7

SITE 8

Source: STV, 2024

2.5-3 Construction Durations

Table 2.5-1 shows the approximate construction schedules, as well as amount of soil that would be moved per construction activity for the LPA.

Table 2.5-1. LPA – Construction Durations

Phase Name	Total Duration	Activity Frequency (days/week)	Maximum Soil Import/ Export	Approx. Maximum Daily Truck Loads
Early Utility Relocation	18 months	5	13,600 CY	2
Project Start Up	6 months	5	49,800 CY	35
Utility Relocation	15 months	5	3,400 CY	2
Retaining Walls, Grading and Embankment for Freight Track Relocation	18 months	5	105,500 CY	54
Freight Railroad At-Grade Crossings	4 months	5	4,200 CY	4
Freight Trackwork (By BNSF)	25 months	5	71,100 CY	21
Stations and Access	18 months	5	15,100 CY	1
Retaining Walls, Grading and Embankment for Light Rail Guideway	8 months	5	110,000 CY	50
Light Rail Guideway Bridges	25 months	5	66,500 CY	6
Light Rail Guideway Trench	19 months	5	111,300 CY	50
Light Rail Trackwork	15 months	5	80,000 CY	21
Systems Construction	12 months	5	-	-
Contingency	15 months	-	-	-
Testing/Commissioning	9 months	5	-	-
Revenue Service	-	-	-	-

CY = cubic yard

Note: The LPA is anticipated to take approximately six years to construct, based on updated construction assumptions and parameters. Some of the construction durations listed above and their associated truck loads hauled may occur concurrently and should not be interpreted as sequential or cumulative.

2.6 PROJECT FEATURES

As a part of the LPA, several project features would be implemented during construction or included in the project design plans to ensure compliance with applicable laws, guidelines, and agency guidelines. These project features include design elements, best management practices, and other measures that are either required by law, permit conditions, or approvals from federal, state, regional or local agencies, or that reflect industry best practices in transit construction and operations. Unlike CEQA mitigation measures, which are adopted to reduce or avoid significant environmental impacts identified in the EIR, project features are incorporated into the project as standard components of its design and implementation.

The project features are listed below. They are described further in each respective section within Chapter 3 in the Draft EIR, as well as in Appendix 2-C, Project Features in the Draft EIR, and Chapter 4, Corrections and Additions, of this Final EIR.

> Transportation

- PF-T-1. Construction Traffic Management Plan

> Aesthetics

- PF-AES-1. Local Zoning Ordinances
- PF-AES-2. Metro Design Standards

> Air Quality

- PF-AQ-1. Metro Green Construction Policy Compliance
- PF-AQ-2. SCAQMD Rule 403 Compliance
- PF-AQ-3. Metro 2020 Moving Beyond Sustainability Strategic Plan Compliance
- PF-AQ-4. Metro Rail Design Guidelines

> Noise and Vibration (subject to future agency approval)

- PF-NV-1. Quiet Zone Equipment Installation

> Biological Resources

- PF-BIO-1. Metro Tree Policy

> Geology and Soils

- PF-GEO-1. Metro Geotechnical Design Standards

> Hazards and Hazardous Materials

- PF-HHM-1. Handling, Storage, and Transport of Hazardous Materials and Wastes
- PF-HHM-2. Demolition Plans
- PF-HHM-3. Property Acquisition Phase II Site Investigation
- PF-HHM-4. Soil, Soil Vapor, and Groundwater Management Plans
- PF-HHM-5. Disposal of Groundwater

> Hydrology and Water Quality

- PF-HWQ-1. SWPPP Implementation per Construction General Permit and MS4 Permit
- PF-HWQ-2. Groundwater Treatment and Discharge per RWQCB Waste Discharge Requirements for Construction Dewatering
- PF-HWQ-3. Trench Construction Groundwater Pressure Control
- PF-HWQ-4. Trench Construction Runoff Collection and Treatment
- PF-HWQ-5: Temporary Storm Drain Inflow Rerouting
- PF-HWQ-6. LID BMPs per Regional Requirements
- PF-HWQ-7. Trench Option Runoff Collection and Treatment
- PF-HWQ-8. City of Torrance Flood Zone Requirements

> Utilities and Service Systems

- PF-US-1. Utility identification and Coordination
- PF-US-2. Service Interruption Notification

> Public Services

- PF-PS-1: Coordination with Torrance Refining Company and Emergency Responders

2.7 PERMITS AND APPROVALS

This EIR may be used in connection with permits and other discretionary approvals necessary for construction implementation of the LPA. Construction and implementation of the LPA would require permits and approvals from responsible agencies such as the City of Lawndale, City of Redondo Beach, and the City of Torrance, and other departments and owners with jurisdiction over protected resources. The anticipated permits and approvals required for the LPA are listed in Table 2.7-1.

Table 2.7-1. Permits and Approvals

Agency/Jurisdiction		Permit/Approval Required
State	California Department of Transportation	Approvals for modifications to Caltrans lease agreement (Hawthorne Boulevard bridge)
	State Department of Toxic Substances Control	Hazardous materials cleanup
	State Water Resources Control Board	Construction General Permit and SWPPP
		NPDES Dewatering Permit
		LA County MS4 NPDES Package
	California Public Utilities Commission	Grade separations, crossings, state safety oversight
	California Department of Fish and Wildlife	Consultation on protected species
Regional	Metro Board	Certification of the Final EIR, adoption of CEQA Findings, a Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program, and approval of the Project
	Regional Water Quality Control Board	Construction General Permit and SWPPP
	Southern California Edison	Permits for utility relocation
	LA County Department of Public Works	Permits for utility relocation
	LA County Fire Department	Discretionary actions
	BNSF Railroad	Approval of track relocations
Local	City of Lawndale City of Redondo Beach City of Torrance	Permits (traffic, street use, lighting, landscape, building demolition)[1]
	Redondo Beach Fire Department Torrance Fire Department	Discretionary actions

[1] Necessary permits from the cities of Lawndale, Redondo Beach, and Torrance include only those related to work within the cities' rights-of-way. The project would not require local permits for activities within the Metro ROW.