Chapter 2. **Project Alternatives**

According to Section 15126.6 of the State CEQA Guidelines, "An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project...." Accordingly, alternatives that do not avoid or substantially lessen significant impacts of a project do not need to be analyzed in an EIR. Additionally, the State CEQA Guidelines require analysis of the No Project Alternative to allow decision makers to compare the impacts of project approval with the impacts of not approving the project.

CCJPA considered five primary project alternatives, Alternatives A through E. After assessing the potential for environmental effects, CCJPA has selected Alternative E as the proposed Project. No other action alternatives are included in this EIR, as all were rejected from further consideration.

This chapter describes the alternatives screening process CCJPA used in determining which alternatives to include in the CEQA EIR, provides descriptions of the No Project Alternative and the proposed Project, and gives brief descriptions of alternatives considered but not carried through the environmental review process. Section 2.2.1 also provides definitions of terms used in the EIR to describe areas of permanent and temporary physical disturbance during construction, and broader "buffer" areas with the potential for associated effects.

2.1. Alternatives Screening and Selection Process

As noted above, an EIR is not required to consider every conceivable alternative to a project. "Rather, an EIR must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation" (CEQA Guidelines Section 15126.6(a)). An EIR need not consider an alternative:

- Whose implementation lacks sufficient definition so that effects cannot be reasonably identified and evaluated,
- Whose implementation is based on broad assumptions rather than supported by facts and details,
- Whose implementation relies on unobtainable agency approvals or permits, or
- That would not achieve the basic project objectives.

A range of potential alternatives was subjected to screening criteria to eliminate those potential alternatives that do not qualify as alternatives under CEQA. As discussed above, there was no attempt to include every conceivable alternative in this range. Rather, CCJPA selected a number of representative alternatives to consider. The screening criteria for the potential alternatives are relatively simple:

- Does the alternative meet most or all of the project objectives?
- Is the alternative potentially feasible?

- Would the alternative substantially reduce one or more of the significant effects associated with the proposed Project?

2.1.1. Alignment with Project Goal and Objectives

As described in Section 1.2, Project Goals and Objectives, the proposed Project's overlying goal is to improve Northern California's transportation mobility and enhance Capitol Corridor's operational efficiency. The proposed Project would do this by relocating Capitol Corridor service onto a more direct and efficient rail route, reducing passenger rail travel time and potential delays between Oakland and San Jose, and by facilitating more auto-competitive travel times for intercity passenger rail trips throughout Northern California.

Six proposed Project objectives in support of the project goals are discussed in Section 1.2. Multiple alternatives were identified that could meet most of the Project objectives. However, there is one objective that is not met by Alternatives A through D:

- Advance a Project that is consistent with current and projected freight and passenger operational needs and timeframes for existing operators and owners, with no change to existing freight operations.

The action alternatives considered and described in Section 2.3, Alternatives Considered but Rejected, assume a shift in Capitol Corridor passenger service from the Niles Subdivision to the Coast Subdivision, as does the proposed Project, but also assume a shift in freight rail service from the Coast Subdivision to the Niles and Oakland Subdivisions in order to justify structural upgrades to the latter subdivisions. Therefore, it was determined that this objective would only be achievable by the proposed Project (Alternative E). More discussion about meeting project objectives as a screening criterion is included in Section 2.3.

"Feasible" is defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (CEQA Guidelines Section 15364). CEQA does not require that an EIR determine the ultimate feasibility of a selected alternative but rather that it is probably feasible. The rule of reason requires the EIR to set forth only those alternatives necessary to permit a reasoned choice and to "examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project" (CEQA Guidelines Section 15126.6).

2.1.2. Reduction of Significant Impacts

Following an assessment of the proposed Project, CCJPA found no significant impacts that could not be avoided or reduced to a less-than-significant level with mitigation incorporated for the proposed Project (Alternative E). As such, based on the analyses included in this EIR, the proposed Project would not result in any significant and unavoidable impacts as a result of implementation (see resources analyses in Chapter 3).

2.2. Description of Alternatives Evaluated in EIR

Based on extensive planning CCJPA conducted, and the results of the *Alternatives Screening and Selection Process* outlined in Section 2.1, the proposed Project is the only build alternative evaluated

in this EIR. The *No Project* Alternative is also analyzed in this EIR in accordance with CEQA, to evaluate potential benefits and impacts associated with the proposed Project in comparison to taking no action. Definition of the areas used in evaluating effects, and descriptions of the No Project Alternative and proposed Project are described below.

2.2.1. Project Footprint and Project Study Area

The proposed Project is in southwestern Alameda County, east of the San Francisco Bay, between the Union Pacific Railroad (UPRR) rail junction at Elmhurst to the north and the junction at Newark to the south. The *Project footprint* (also referred to as the footprint of disturbance) includes those areas of permanent and temporary physical disturbance. The *Project Study Area*, broader than the *Project footprint*, also includes an approximate 2-mile buffer around the Project footprint to recognize and assess the potential for adjacent environmental resources to also be impacted by the proposed Project, such as the broader impacts of dust or noise during construction (Figure 2-1).

Generally speaking, the *Project Study Area* has been used to assess the potential for environmental effects of the proposed Project on each environmental resource assessed in Chapter 3, except for where a resource-specific study area has been defined and described in the relevant resource subsection. *Resource Study Areas (RSA)* are specific to an individual resource being analyzed in Chapter 3 (such as the Air Quality RSA including the full proposed Project airshed), and are introduced in Section 3.1.1, Resource Study Areas, and defined within each relevant resource area's subsection.

2.2.2. No Project Alternative

CEQA requires that "the specific alternative of 'no project' shall also be evaluated along with its impact" (CEQA Guidelines 15126.6(e)(1)). Further, the guidelines go on to say:

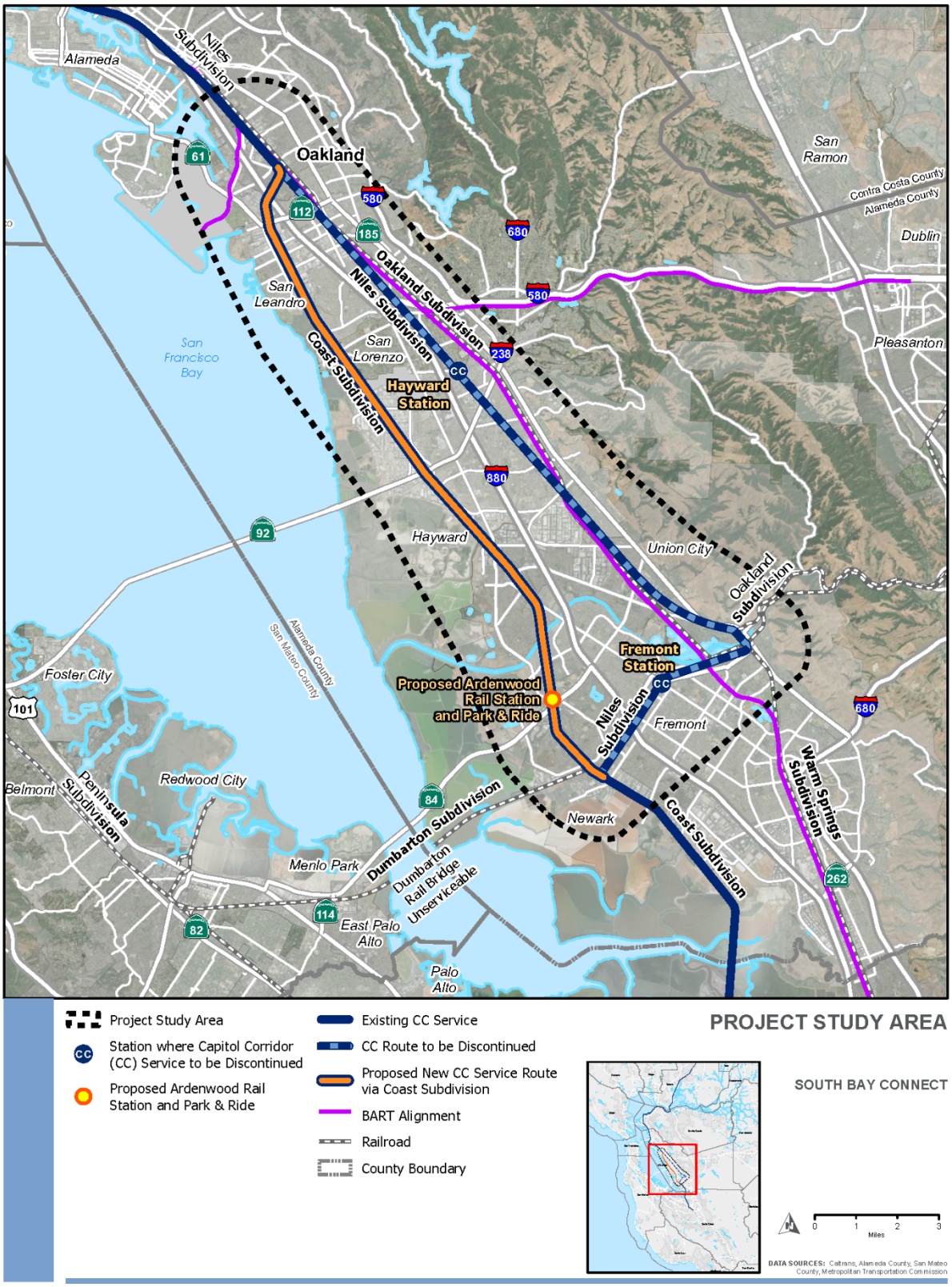
> "The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish the baseline." (CEQA Guidelines 15126.6(e)(1))

Under the No Project Alternative (also known as the No Build Alternative), infrastructure improvements associated with the proposed Project would not be constructed. CCJPA would continue to use the Niles Subdivision for the Capitol Corridor passenger rail service between the junctions at Elmhurst and Newark, and rail service on the Coast Subdivision would only be freight and long-distance Amtrak service. The existing Hayward and Fremont-Centerville stations would continue to be served by Capitol Corridor service. No new station would be constructed at Ardenwood. Intercity passenger rail service and freight rail operations would continue as currently managed.

CCJPA's goals and objectives for the proposed Project would not be met. Passenger travel times between Oakland and San Jose would remain as they currently are. Additional transit ridership from the new proposed Ardenwood Station would not occur. Finally, the opportunity for reducing roadway congestion and lowering greenhouse gas emissions, by conversion of auto commutes to rail use through implementation of the proposed Project, would be lost.

Therefore, since the No Project Alternative would assume no changes to the current environmental setting and would be consistent with the above citation from the CEQA Guidelines, for purposes of this analysis the No Project Alternative is considered identical to the Project baseline.

Figure 2-1. Project Study Area



2.2.3. Proposed Project (Alternative E)

CCJPA considered five primary Project alternatives, Alternatives A through E (Section 2.3). CCJPA has selected Alternative E as the proposed Project; following are descriptions of the proposed Project features, construction activities and materials, ROW acquisitions, and proposed plans for operations and maintenance.

The proposed Project includes relocation of the Capitol Corridor service between the rail junction at Elmhurst and the rail junction at Newark, from the Niles Subdivision to the Coast Subdivision, for a more efficient and reliable passenger rail route from Oakland to San Jose (Figure 2-1). The Project also proposes a new intermodal station on the Coast Subdivision at the existing Ardenwood Park-and-Ride, in the City of Fremont, to serve southern Alameda County passengers and to create new multimodal, transbay transit connections between the East Bay and the San Francisco Peninsula. Finally, the proposed Project includes rail infrastructure improvements on the Coast Subdivision to accommodate both existing freight and passenger rail service, as well as the Capitol Corridor passenger rail service proposed to be relocated from the Niles Subdivision, within the Project Study Area.

As discussed in Chapter 1, CCJPA is not proposing to increase the number of Capitol Corridor trains or change the frequency of Capitol Corridor services from existing conditions. The existing rail stations in Hayward and Fremont-Centerville along the Niles Subdivision would no longer be served by the Capitol Corridor. ACE would continue to serve the Fremont-Centerville Station, which connects riders from the Tri-Valley and Central Valley to San Jose.

There are no freight operational changes contemplated or identified by UPRR as a result of this project; however, because the tracks are owned by UPRR, they may choose to increase, decrease or maintain freight traffic levels or vary the type of freight traffic on their subdivisions based on their own business decisions at any time.

Figure 2-2 through Figure 2-10 present the proposed Project footprint and delineate some of the major features discussed below.

Figure 2-2. Proposed Project Footprint – Segment A

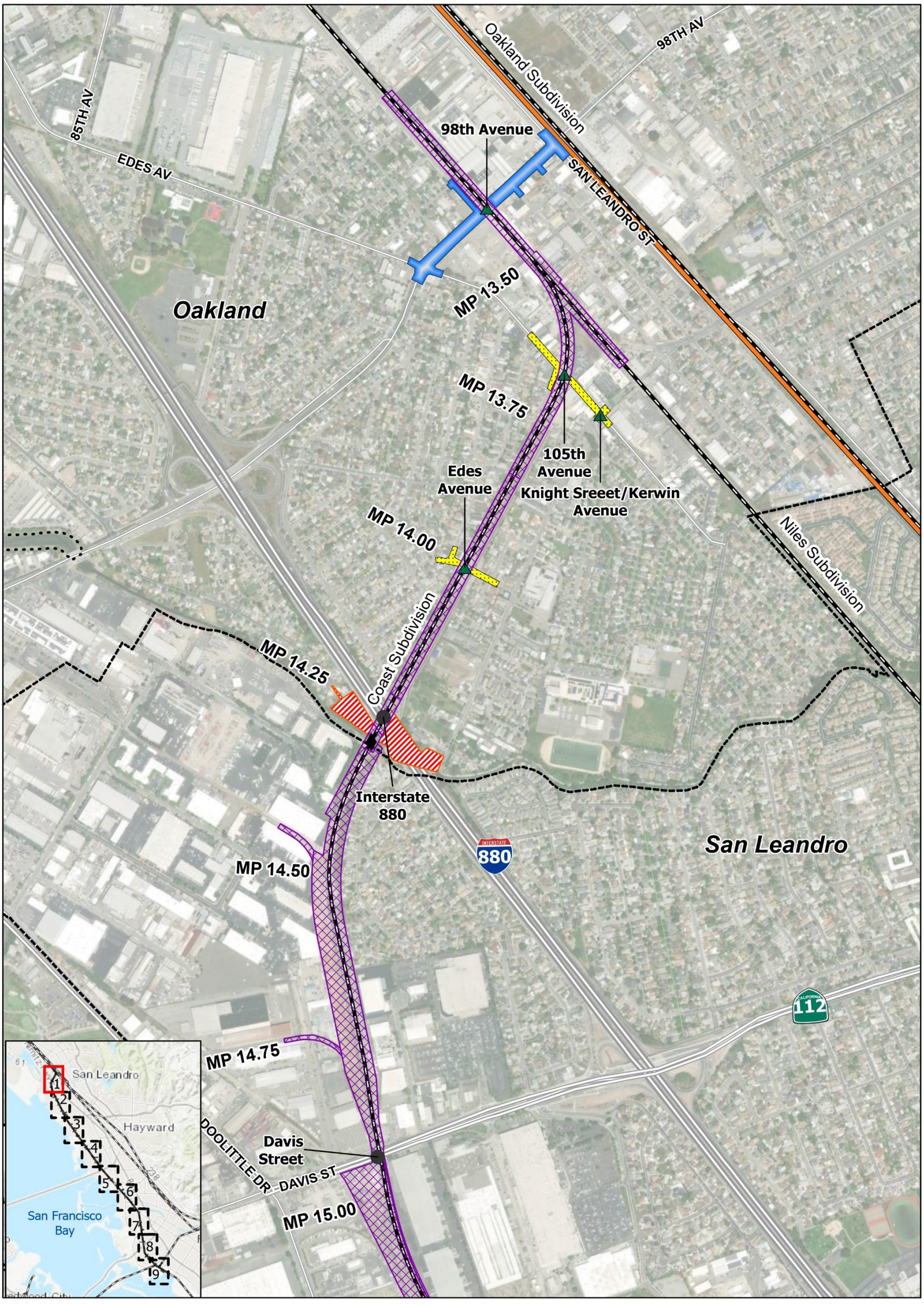


Figure 2-3. Proposed Project Footprint – Segment B

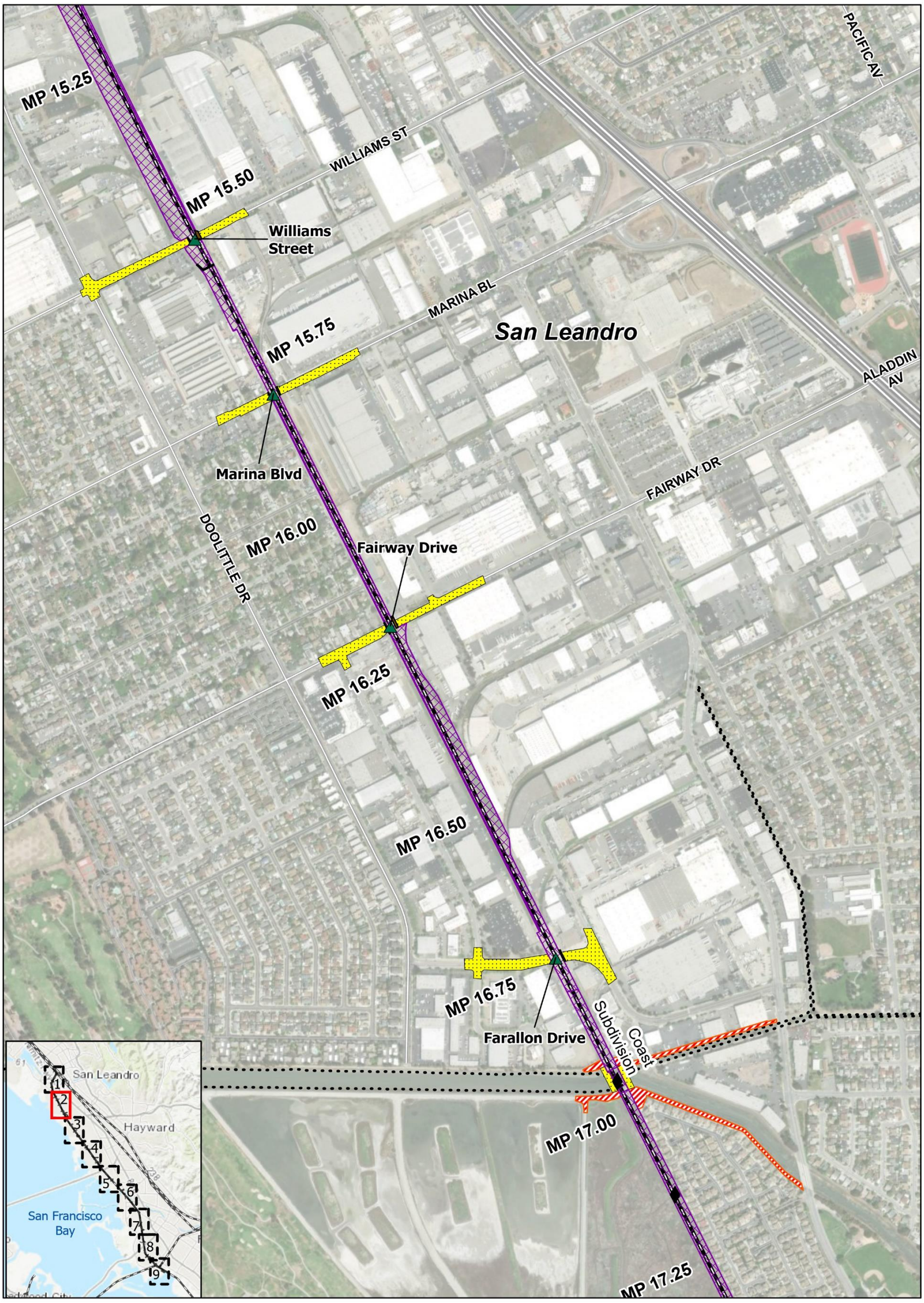


Figure 2-4. Proposed Project Footprint – Segment C

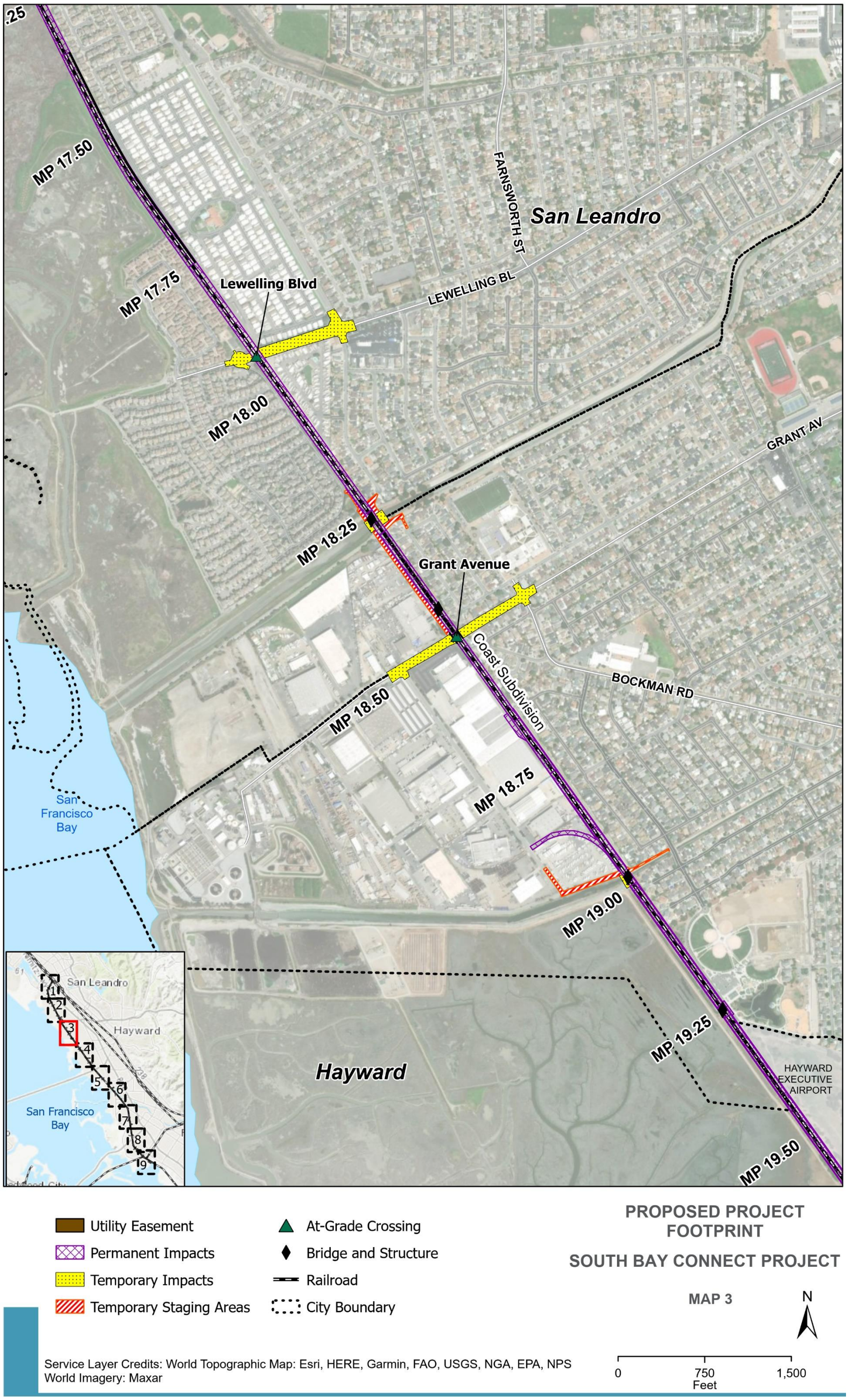


Figure 2-5. Proposed Project Footprint – Segment D

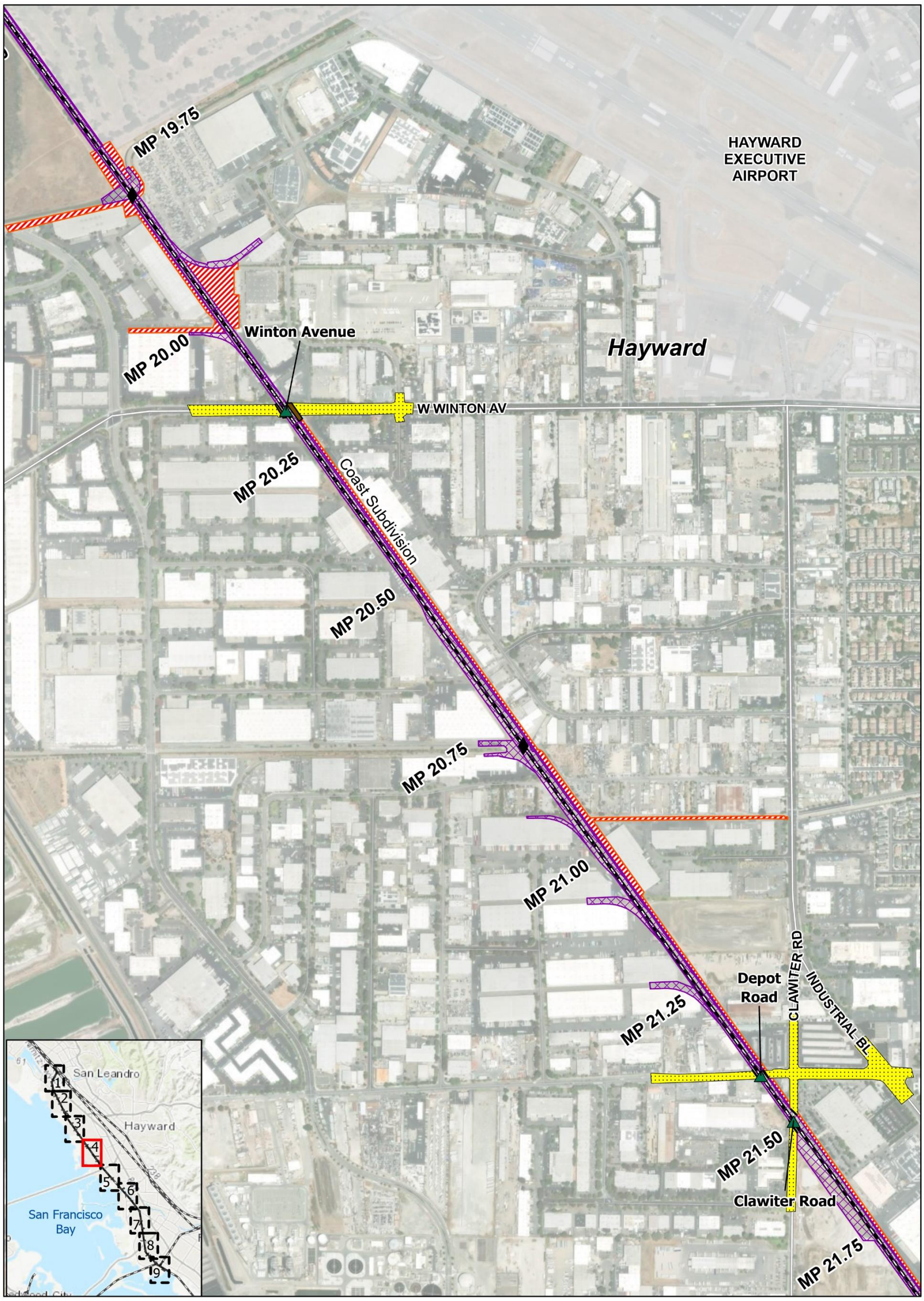


Figure 2-6. Proposed Project Footprint – Segment E

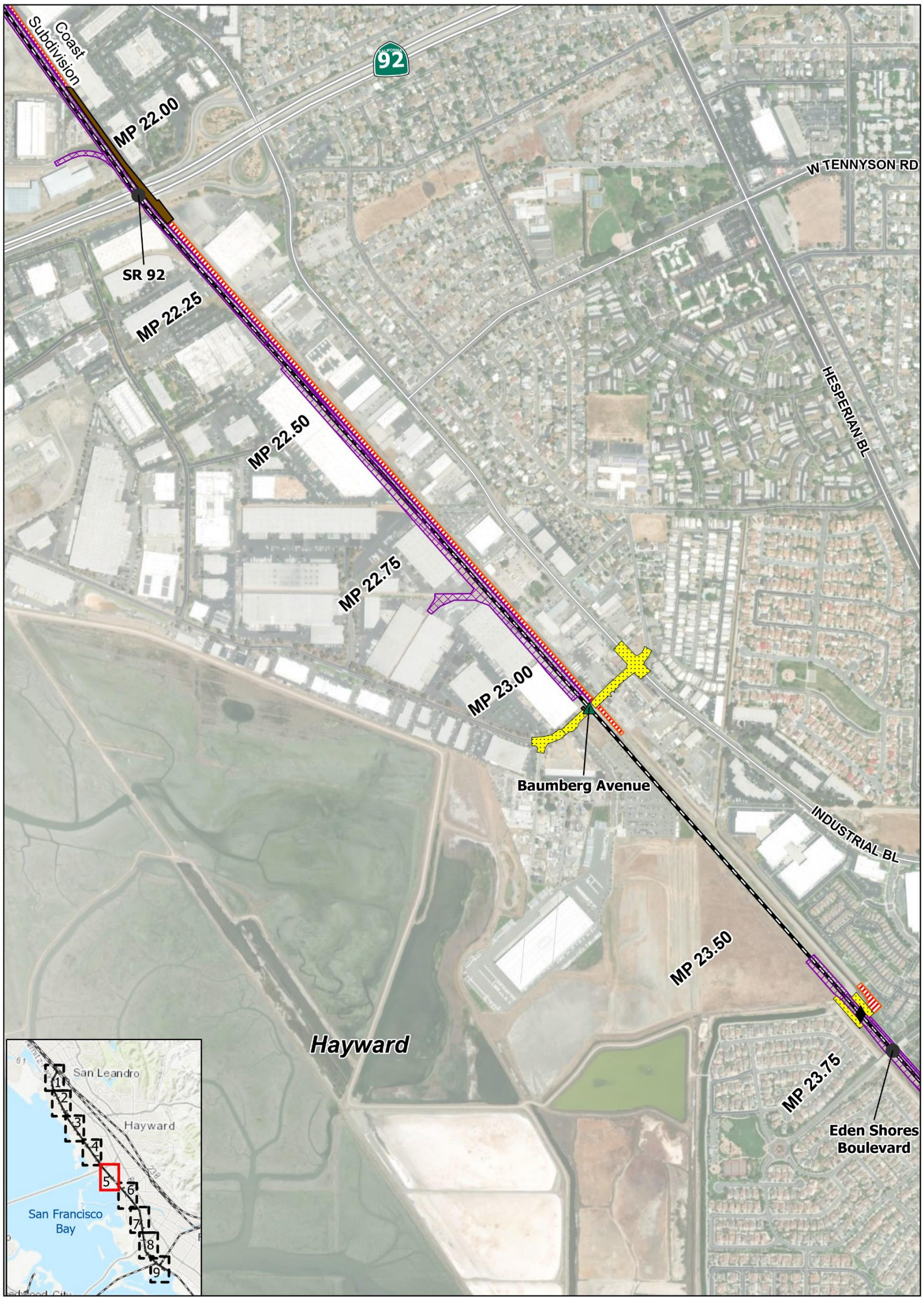


Figure 2-7. Proposed Project Footprint – Segment F

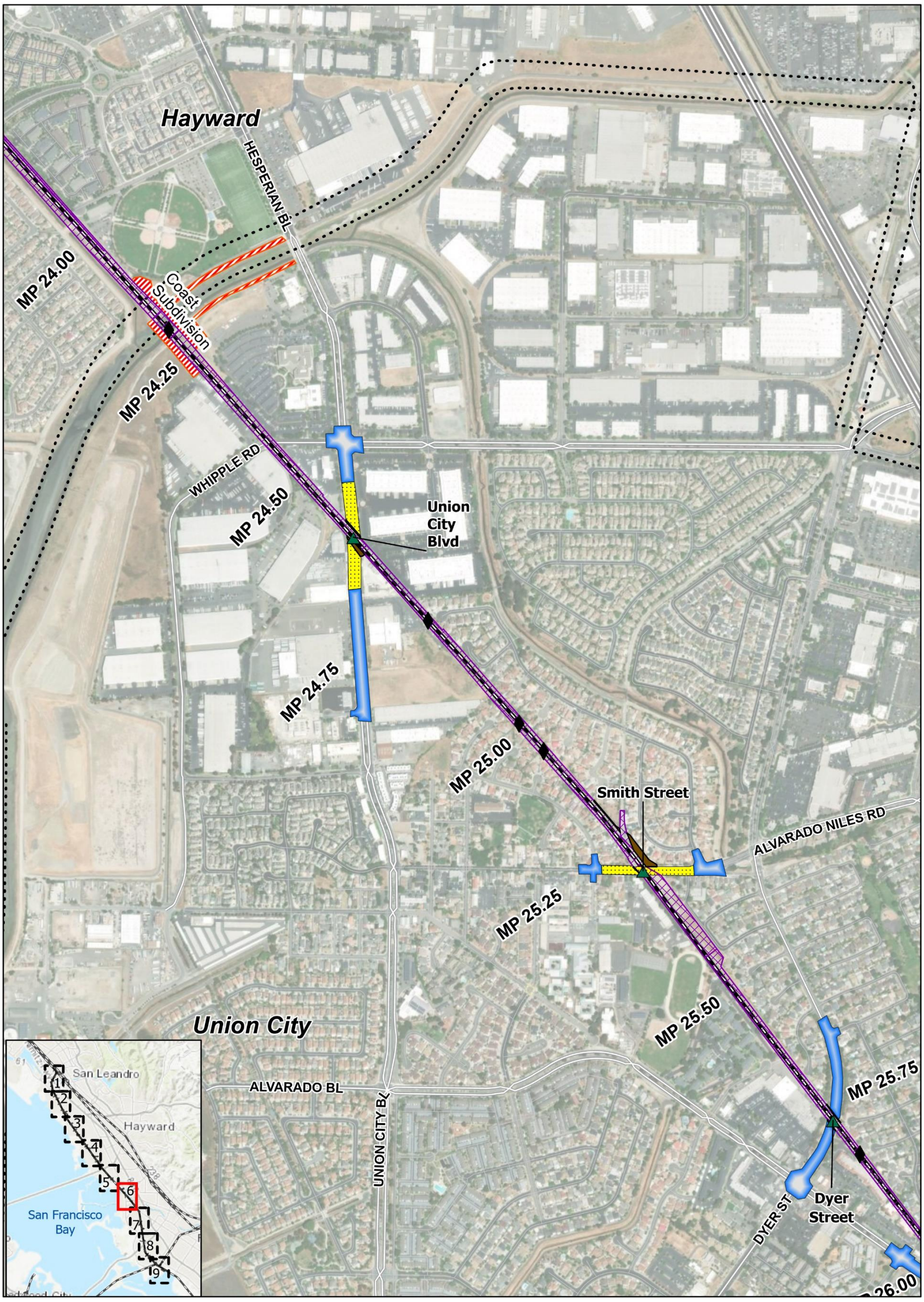


Figure 2-8. Proposed Project Footprint – Segment G

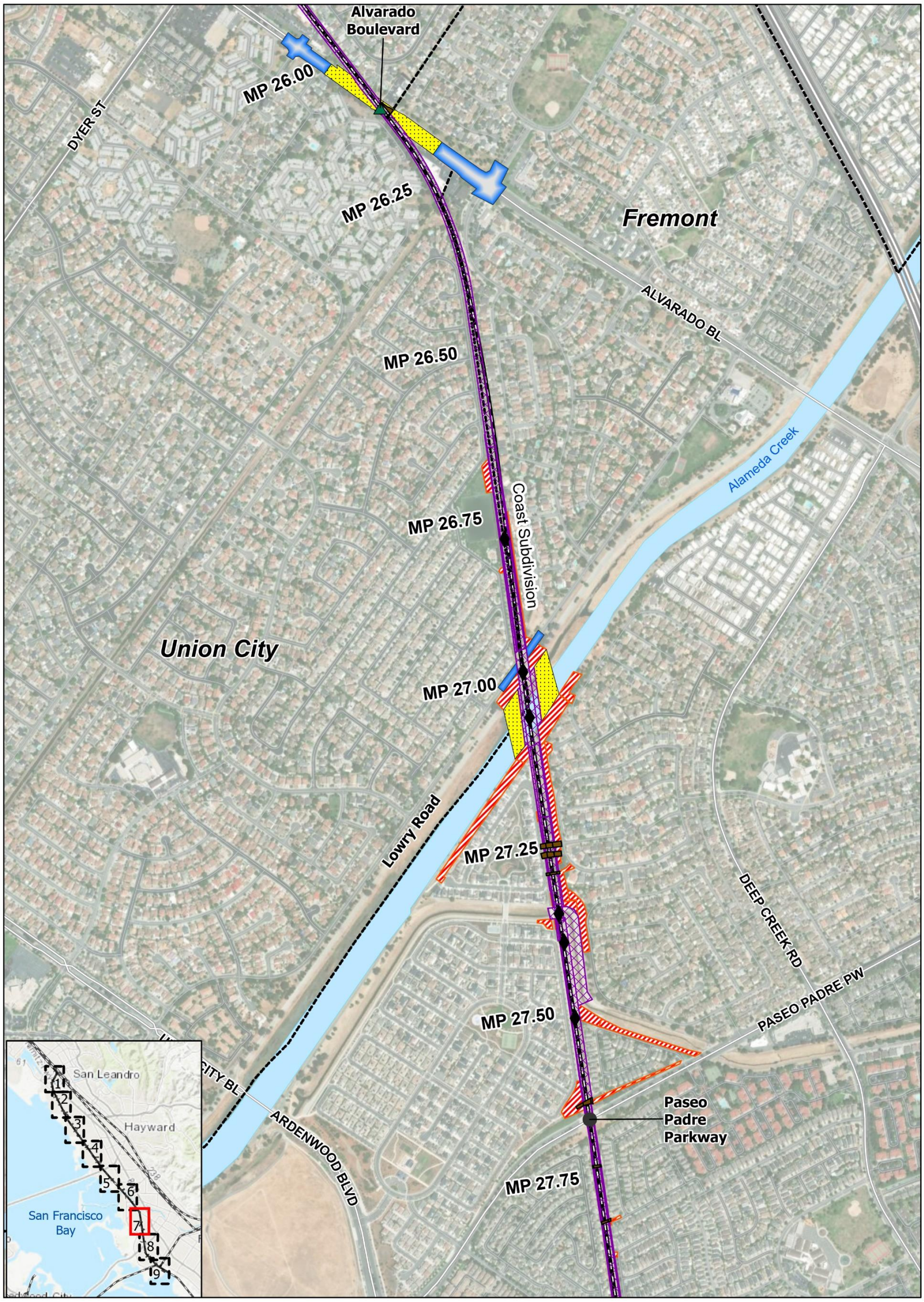


Figure 2-9. Proposed Project Footprint – Segment H

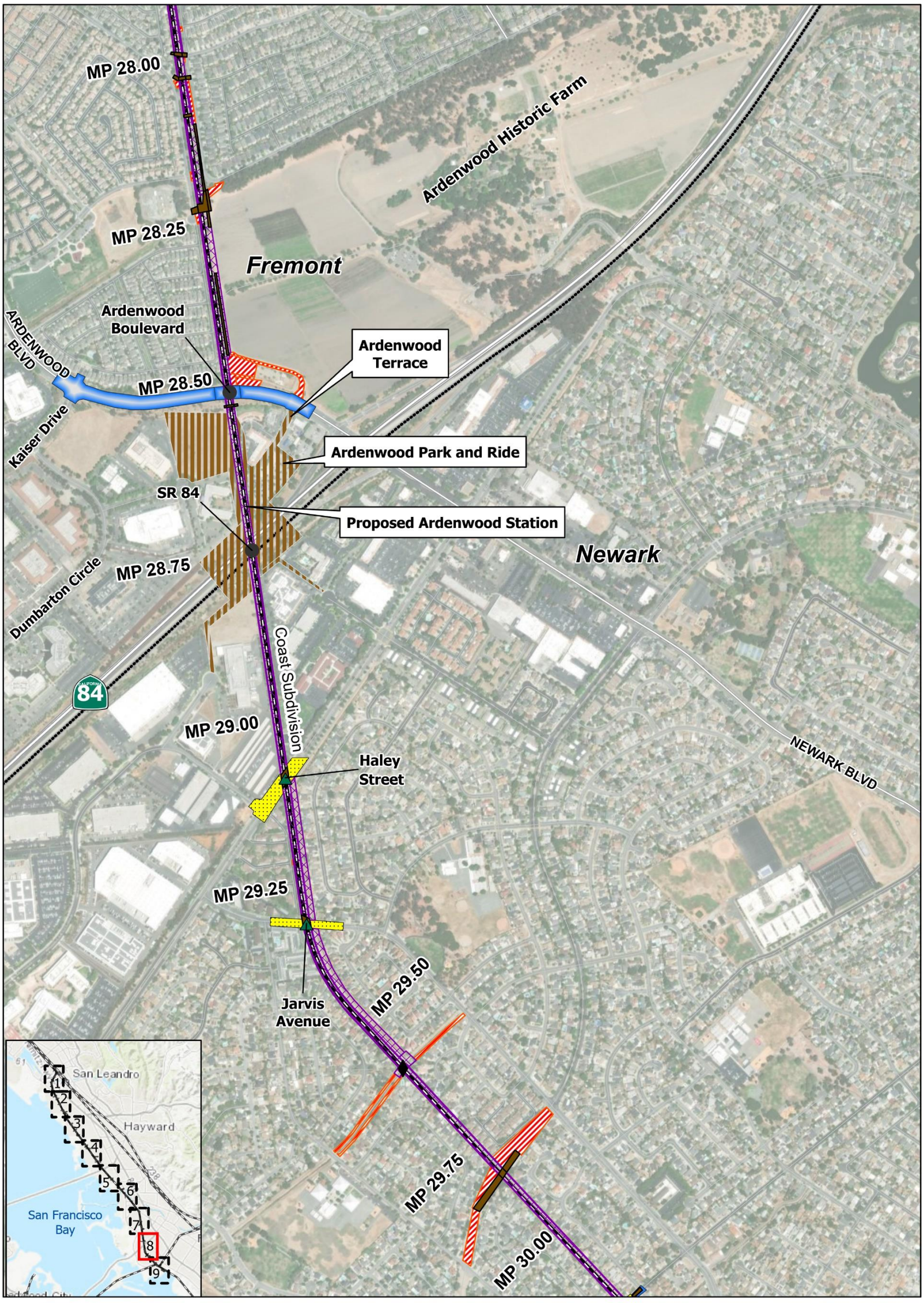
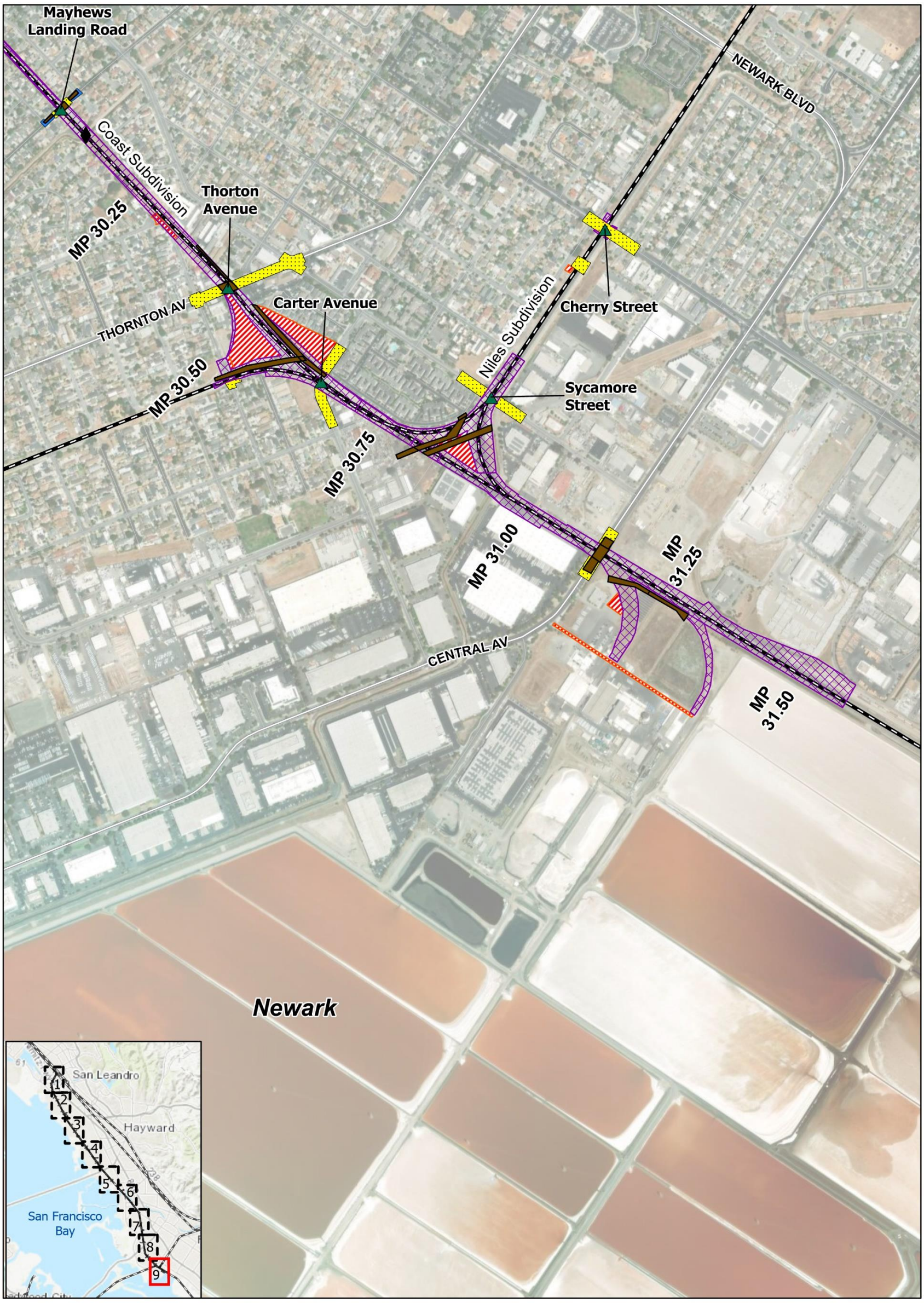


Figure 2-10. Proposed Project Footprint – Segment I



2.2.3.1. Track and Civil Improvements

The proposed Project includes improvements within or adjacent to the existing railroad right-of-way on the Coast Subdivision between the railroad junction at Elmhurst in Oakland and the railroad junction at Newark. The following improvements are proposed on the Coast Subdivision within the Project footprint.

- Replacement of existing rail and ties on the existing track for the entire Coast Subdivision railroad corridor within the Project footprint.
- The addition of several inches of ballast to help level the existing main track and siding tracks.[1]
- Installation of new wayside and grade crossing signal technology and associated equipment.
- Modifications to discourage trespassing, which could include fencing and signage improvements.
- Upgrades and slight shifts of existing tracks to allow higher train speeds.
- Installation of an additional track from Elmhurst to Newark to improve operations and allow trains to meet or pass each other at any location between Elmhurst and Newark.
    - The additional track would extend the entire distance between the junctions at Elmhurst and Newark, approximately 17.4 miles. The existing track in some locations would be shifted from 5 feet to 10 feet (laterally) from its existing alignment to make space for the additional track. The new track is proposed to be constructed about 10 to 15 feet from its original location. Track spacing[2] of the existing track and proposed new track will be 15 to 20 feet along the entire distance between Elmhurst and Newark junctions.
    - Existing bridges would be either upgraded or replaced and new bridges constructed to accommodate the additional track.
    - Existing culverts would be replaced, resized, or lengthened to accommodate the additional track. If water flow conditions warrant, additional culverts may be added to address changes in drainage.
    - Any other existing timber structures would be replaced with bridges or culverts or be removed.
    - Siding tracks, railyard tracks, and industrial spur tracks[3] along the proposed Project corridor may be reconfigured to maintain connection to the new or existing tracks, or new tracks constructed to keep these railyards, tracks, and industrial spurs connected to the rest of the railroad. Minor temporary construction may be conducted outside UPRR ROW and would require access agreements.

1 A siding is a segment of track used for trains to pass by or overtake one another, or a track where engines and cars may be parked when they are not being used or are being loaded or unloaded by customers.
2 Distance between the centers of each of two tracks running parallel on double-track railway lines.
3 A stub track that diverges from main or other tracks and provides access to industrial or commercial areas.

- The elevations of proposed tracks would generally match those of existing tracks in most areas. At bridges, the proposed track may be slightly higher (approximately 1 to 3 feet higher) than the existing track.
- All turnouts[4] on the existing main track would be replaced and industrial spurs realigned to connect to the new turnouts. Minor work may be conducted outside UPRR ROW and would require access agreements.
- Newark and Mulford Yards within the existing UPRR ROW would be reconfigured. Minor work outside the UPRR ROW may be needed at industrial spurs where their alignment changes slightly and would require access agreements.

- Existing utilities within or crossing the UPRR ROW would be relocated or protected. Where utilities are relocated, the connections to the existing facilities may occur outside the UPRR ROW and would require access agreements.
- Reconfiguration of tracks within the UPRR Niles Subdivision at Elmhurst to accommodate the new track connection to and within the Coast Subdivision.
- Addition of a new track crossover in UPRR Niles Subdivision immediately north of Elmhurst Junction.
- Permanent ROW acquisitions and temporary construction easements (TCE) would be required throughout the Project corridor for construction of the second track, bridges, and potential utility protection or relocation activities. These include permanent ROW acquisition up to 10 feet from the existing UPRR ROW and TCEs required at bridge construction locations up to 50 feet from the existing UPRR ROW.

The mapbook included in Appendix A illustrates the areas of the Coast Subdivision where permanent rail improvements are proposed. Areas that would be temporarily affected during construction, by road and rail crossing improvements, bridge improvements or replacements (that is, in-water work), construction buffers at the new Ardenwood Station, and utility relocations, as well as proposed staging areas along the Project corridor, are also identified in Appendix A.

2.2.3.2. At-Grade Crossing Improvements

The proposed Project includes modifications at 25 existing at-grade crossings along the Coast Subdivision due to the installation of new rail infrastructure, potentially including new or modified active warning devices. Where an additional track is proposed, improvements would be needed to the roadway profiles, paving, curbs, gutters, sidewalks, signage, and striping to conform to the proposed new track profile. Improvements would also include upgrades for compliance with the Americans with Disabilities Act of 1990 (ADA) and California Title 24 Regulations, and improvements such as interconnected roadway traffic signals and signage to reduce potential conflicts with cars, bikes, and pedestrians crossing the tracks. Some of these improvements may occur outside the UPRR ROW and would require access agreements.

4 A turnout (also referred to as a switch) describes the movable rails that guide train wheels from one track to another diverging track.

The proposed at-grade crossing improvements are identified in Table 2.2-1 and shown in Figure 2-2 through Figure 2-10.

Table 2.2-1. Proposed Improvements to At-Grade Crossings along the Coast Subdivision

At-Grade Crossing	Proposed Improvements	Jurisdiction
98th Avenue	Sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, potential roadway surfacing, striping, and signage	Oakland
105th Avenue	ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, potential roadway surfacing, striping, and signage	Oakland
Edes Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Oakland
Knight Street/ Kerwin Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Oakland
Williams Street	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	San Leandro
Marina Boulevard	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	San Leandro
Fairway Drive	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	San Leandro
Farallon Drive	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	San Leandro
Lewelling Boulevard	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	San Leandro
Grant Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	San Leandro
Winton Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Hayward

Table 2.2-1. Proposed Improvements to At-Grade Crossings along the Coast Subdivision

At-Grade Crossing	Proposed Improvements	Jurisdiction
Depot Road	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Hayward
Clawiter Road	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Hayward
Baumberg Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Hayward
Union City Boulevard	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Union City
Smith Street	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Union City
Dyer Street	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Union City
Alvarado Boulevard	Addition or one track, potential road re-profiling, sidewalk ADA improvements, potential realignment of pedestrian sidewalk, potential realignment or restriping of bike lane, and minor roadway work, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Union City
Jarvis Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Newark
Haley Street	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Newark
Mayhews Landing Road	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Newark
Thornton Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Newark

Table 2.2-1. Proposed Improvements to At-Grade Crossings along the Coast Subdivision

At-Grade Crossing	Proposed Improvements	Jurisdiction
Carter Avenue	Addition of one track, potential road re-profiling near crossing, sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, striping, and signage	Newark
Sycamore Street	Sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, potential road re-profiling near crossing, striping, and signage	Newark
Cherry Street	Sidewalk ADA improvements, replace existing crossing equipment (gates, arms, signal cabins) as needed, potential road re-profiling near crossing, striping, and signage	Newark

Additional street and traffic signal modifications to adjacent signalized roadway intersections may also be required to accommodate updates to existing railroad crossing equipment and allow for updates to interconnected traffic signals. In some cases, adjacent stop-controlled (i.e., not signalized) roadway intersections may require interconnected traffic signals to provide for improved traffic flow at at-grade crossings. These areas are included in the proposed Project Study Area and effects have been assessed in this EIR, although the need for these additional modifications will not be confirmed until the design is finalized and planning is complete.

2.2.3.3. Grade Separated Crossing Improvements

The proposed Project includes modifications to seven existing grade-separated crossings on the Coast Subdivision. Proposed grade-separated improvements are shown in Figure 2-2 through Figure 2-10.

Improvements are proposed at the following grade-separated crossings:

- Interstate 880, City of Oakland;
- Davis Street, City of San Leandro;
- State Route (SR) 92, City of Hayward;
- Eden Shores Boulevard, City of Hayward;
- Paseo Padre Parkway, City of Fremont;
- Ardenwood Boulevard, City of Fremont; and
- SR 84, City of Fremont/City of Newark.

The SR 84 crossing would require abutment modification, while the other crossings would require pier protection. No other improvements to the existing grade-separated crossings are proposed.

A grade separation (overpass) is scheduled to be constructed at Central Avenue, in the City of Newark. The proposed improvements at Central Avenue will be constructed by others prior to the proposed Project and are not part of this Project.

2.2.3.4. Ardenwood Station Improvements

The proposed Project includes construction of a new passenger rail station on the Coast Subdivision adjacent to the existing Ardenwood Park-and-Ride facility. The proposed Ardenwood Station would provide a new passenger platform, with a pedestrian overcrossing for grade-separated access across the tracks and to the platform. The proposed passenger rail station would be configured to include a center boarding platform located between two tracks. The proposed north pedestrian overcrossing would be approximately 42 feet high. Figure 2-11 provides a conceptual design for the proposed Ardenwood Station.

Figure 2-11. Ardenwood Station Conceptual Design

(looking north from SR-84; existing Park & Ride is to the right of proposed new station on figure)

The proposed station would be within the City of Fremont, except for the south pedestrian overcrossing, which would be within City of Newark jurisdiction. The station plaza and platforms are proposed within parcels zoned as Public Facility, which would be considered a compatible use. The proposed north pedestrian overcrossing structure, approximately 42 feet high, would, however, encroach on parcels zoned as Industrial-Tech (T) on the west and Commercial-General (CG) on the east. The Project would comply with zoning requirements on all parcels.

Pedestrian access would be constructed to connect adjacent business complexes to the new Ardenwood Station. A pedestrian pathway would be constructed under SR 84 facilitating access to areas south of the freeway, where currently there is no direct pedestrian access between the north and south sides of SR 84.

Parking for the new passenger rail station would be built northwest of it on a vacant parcel. The parking facility would initially consist of a surface parking lot with the potential for the construction of a future two-level parking garage, depending on the need for additional parking. Station parking

would be accessible via Ardentech Court on the west side of the Coast Subdivision. In the area of the proposed Ardenwood Station, improvements at the intersections on Kaiser Drive, Dumbarton Circle, Ardentech Court, and Ardenwood Terrance are proposed, including but not limited to pavement resurfacing and signal phasing improvements.

2.2.3.5. Bridge and Structure Improvements

Bridges

The proposed Project would replace or modify existing railroad bridges to accommodate the addition of a track between the junctions at Elmhurst in Oakland and at Newark. Bridge foundations are anticipated to be drilled shafts or driven piles, depending upon the location and geotechnical conditions. It is anticipated that dewatering, drilling, and/or pile-driving activities would be required during the replacement of or modification to the existing bridges. In some locations, temporary "shoofly"[5] bridges and tracks may also be required to make space for construction of new bridges. At the ends of the bridges, short sections of the bridge wingwalls and retaining walls may be constructed approximately 3 feet to 5 feet outside UPRR ROW and would require access agreements.

The existing single-track bridges are anticipated to either be widened to accommodate an additional track or replaced entirely with new bridges that would accommodate two tracks.

The proposed bridge and structure improvement locations are identified in Table 2.2-2.

Table 2.2-2. Proposed Bridge and Structure Improvements

Milepost	Existing Structure	Proposed Structure
14.29	1-track concrete bridge	2-track bridge
16.93	1-track timber trestle	2-track bridge
17.13	1-track timber trestle	2-track bridge or culvert
18.24	1-track timber and steel bridge	2-track
18.38	1-track timber trestle	2-track culvert or fill
18.97	1-track timber trestle	2-track bridge
19.23	1-track timber trestle	2-track bridge
19.77	1-track timber trestle and in-creek hydraulic structure	2-track bridge
20.77	Multi-track concrete box	Multi-track bridge or culvert
23.68	1-track timber trestle	2-track bridge
24.16	1-track timber trestle	2-track bridge

5 A temporary road or track detour that allows traffic to continue flowing around a construction zone. Could also be a temporary bridge or fill with pipes buried in it to allow a creek to flow while constructing a permanent bridge.

Table 2.2-2. Proposed Bridge and Structure Improvements

Milepost	Existing Structure	Proposed Structure
24.76	1-track timber trestle	2-track culvert or fill
24.93	1-track timber trestle	2-track culvert or fill
25.03	1-track timber trestle	2-track culvert or fill
25.81	1-track timber trestle	2-track culvert or fill
26.80	1-track timber trestle	2-track culvert or fill
26.98	1-track concrete bridge (Lowry Road)	2-track bridge
27.01	1-track concrete bridge (Alameda Creek)	2-track bridge
27.37	1-track timber trestle	2-track bridge
27.40	1-track timber trestle	2-track culvert or fill
27.52	1-track timber trestle	2-track culvert or fill
29.57	1-track multiple pipe culvert	2-track multiple pipe culvert
30.09	1-track multiple pipe culvert	2-track multiple pipe culvert

At some utility crossing locations (such as storm drains, water pipes, or gas pipes), utility bridges may be installed to reduce loading on the utilities that might be created by the additional or shifted track. These utility bridges would be structurally similar to a short-span concrete bridge, but are anticipated to be mostly below ground, with only a thin portion of the superstructure visible above ground. The exact locations will be determined in conjunction with utility owners; however, the new locations would occur within the construction buffer assumed as part of the proposed Project footprint (Section 2.1).

Retaining Walls

Retaining walls would also be required to accommodate railroad improvements on the Coast Subdivision. Potential locations where retaining walls would be needed include the following:

- Installation of low retaining walls or ballast retainers would occur intermittently along most of the corridor on one or both sides of the UPRR ROW to facilitate the proposed additional track and shifts to the existing track. In most areas of the corridor, the existing embankment is 3 feet to 6 feet above existing grade, and the height of new retaining walls would be 3 feet to 6 feet, generally matching the existing embankment height.
- Between Milepost (MP) 26.25 and MP 27.60, a 5- to 30-foot-high retaining wall on one or both sides of the rail ROW would be constructed to make space for an additional track. These retaining walls would be variable in height.

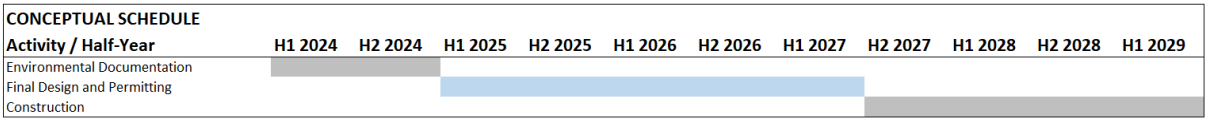
- Near Alvarado Boulevard (near MP 26.25), the retaining wall would be approximately 3 to 10 feet high. Extending southward from Alvarado Boulevard, the retaining wall would increase in height, generally matching the height of the existing track, with the highest portions (approximately 30 feet high) being closest to Lowry Road overpass near MP 26.98. The existing track is on a tall embankment at this location to cross over Lowry Road and the Alameda Creek levees. The proposed track elevation would be as much as 2 feet higher than the existing track elevation at Lowry Road; the elevation of the proposed track would be set to maintain the existing levee height, with the span of the proposed structure crossing above the crown of the levee, rather than passing through it.
- On the south side of Alameda Creek, the existing track embankment is approximately 5 feet to 10 feet above the surrounding ground. The new retaining walls would be approximately 7 feet to 12 feet tall to allow the new bridges and embankments to be approximately 2 feet higher than the existing bridges and embankments, reducing in height to match the existing grade progressing southward.
- Where determined necessary by noise analysis, the existing sound walls in this vicinity may be raised similarly to the track raise (e.g., by approximately 2 feet) to retain their effectiveness.

- Near MP 31.25, a retaining wall about 4 to 8 feet tall and about 500 feet long is proposed on the west side of the UPRR ROW, adjacent to the Cargill property. This wall would support reconfigured industrial switching tracks.

2.2.3.6. Proposed Schedule

CCJPA is currently in design and plans to initiate permitting by early 2025; final design and permitting are planned to be completed by July 2027. CCJPA is proposing construction to begin as early as summer 2027 and be completed by July 2029. Figure 2-12 presents this timeline. Project schedule may change as project funding plans change.

Figure 2-12. South Bay Connect Proposed Planning and Construction Schedule



2.2.3.7. Construction Methods and Materials

The following is an example of the general nature of construction work in the segment between Mt. Eden (just south of the Winton Avenue grade crossing) and the Baumberg Avenue at-grade crossing. This segment includes three at-grade crossings: Depot Road, Clawiter Road, and Baumberg Avenue. Although this is one segment of the Project, the work in this segment is typical of much of the construction along the corridor. This description explains the types of activities that a construction contractor would likely undertake in this segment. These construction methods would be typical of the work activities and sequences along the other segments of the Coast Subdivision.

Retaining Walls and Structures

Construction would likely commence with construction of a low soldier pile retaining wall, which would be used to support grading and the new tracks. The wall would project approximately 3 feet above grade. The wall would be installed by drilling shallow holes with a small drill rig with auger or auger-equipped excavator into which steel H-pile shapes would be placed, and then cement slurry, delivered by cement truck, poured around them. After curing, horizontal lagging panels would be placed between the soldier piles. Lagging panels and piles would be handled by a wheel loader or forklift.

Another element of structural work that would be similar to work at other segments would be construction of new pier protection underneath SR 92. This would include using a drill rig with auger to excavate several holes adjacent to the existing piers. Rebar cages would be inserted into these holes, then the holes would be filled with concrete. These would form a foundation for concrete walls (projecting approximately 7 feet above top-of-rail elevation) to be constructed between the existing support piers for SR 92 and the railroad tracks.

Grading and Track Construction

Once sections of the soldier pile wall are completed, the area to be graded would be cleared of debris and grading would commence, progressing behind the wall installation. Relocation of underground utilities in the railroad ROW would occur either prior to grading, or simultaneous with the grading. Utility relocation in the ROW would generally consist of excavating shallow trenches with a backhoe or small excavator to allow placement of a new utility, then backfilling the trench and compacting the resulting soil.

Grading would consist of shallow excavations to remove unsuitable soils at the surface, or simply breaking up soil by tilling and recompacting the existing soils. Suitable fill would be installed behind the retaining wall and under the proposed track. Rough excavation would be performed by excavators and bulldozers, followed by motor graders for finish grading, followed by compactors.

As grading is completed, railroad track would be constructed. The existing main track is at the approximate center of the ROW in this section. The proposed configuration is for two main tracks. Depending upon location, the two-main track configuration would be achieved in one of two methods. The first method would construct a new track adjacent to the existing track. The second method would shift the existing track to one side by approximately five feet, then a new track would be constructed approximately 15 feet away to the just-shifted track. The second method, involving an initial shift of the existing track prior to construction of a new, second main track, would be required where there is insufficient space to construct the new track adjacent to the existing track while leaving the existing track in its original position.

Construction of new tracks would involve laying out railroad rail and ties on the prepared sub-ballast, then positioning the rail on the ties, and then driving spikes to fasten the rail to the ties. After spiking, spring clips called anchors would be fastened to the rail adjacent to the ties. These operations would involve end-loaders, spike driving machines, a machine to position the rail, and machines to position the rail anchors on the rail.

In the case of new tracks, a train would distribute railroad ballast from hopper cars directly onto the track. Then, a track tamper would lift the track vertically and shift the track laterally into its final position by compacting the ballast around the ties, thereby holding the ties securely in place. The

track tamper would be followed by a ballast regulator to shape the ballast to the appropriate cross section. The same operation of distributing ballast, tamping, and regulating would also occur where existing tracks are upgraded or shifted. In locations where tracks would be shifted several feet, that operation would begin with a machine such as an end-loader pushing the track laterally to its approximate position, followed by a track tamper which would perform final positioning of the track laterally and vertically.

Existing tracks would be upgraded, with up to 75 percent of the old ties replaced with new ties, and new rail installed on the ties. Tie replacement involves several machines operating on the railroad tracks, following one another to remove the spikes from the ties, shift anchors away from the ties, remove steel bearing plates (called tie plates), pull the old tie perpendicularly out of the track, push a new tie in place of the old tie, replace the tie plates, then add spikes to the new tie, and shift the rail anchors back into position. Along with the tie replacement operation would be a rail replacement operation, which would remove the old spikes, remove the old rail, install new rail, and install new spikes to hold the rail in place. These would typically be followed by tampers and regulators to smooth the resulting track.

Roadway and Utilities

In conjunction with railroad track construction, roadway work would also take place at the grade crossings. Roadway work would be necessary because a second track would be added at grade crossings. In this example segment, the affected crossings would be Depot Road, Clawiter Road, and Baumberg Avenue.

There are often utilities buried in roadways that cross the railroad track. To prepare for track construction, utility protection, such as installation of split-steel casings around existing utilities, would occur. Installation of a split-steel casing would be accomplished by excavating a small hole around the utility carrier pipe with a backhoe or excavator to expose the carrier pipe. Then, two half-round piece of steel tubing, larger in diameter than the existing carrier pipe, would be installed on either side of the carrier pipe and the longitudinal seams of the split-steel casing welded together to form a full-round tube around the existing carrier pipe. In other instances, utilities may elect to assemble a section of new carrier pipe inside a casing above ground, then lower that assembly into the ground and connect each end to existing carrier pipes, thereby avoiding the need for welding along the seams of a casing.

The second track would be added by excavating a shallow trench across the road, deep enough for new track (rail, ties, ballast, and subballast) to be installed, with the new top-of-rail elevation approximately matching that of the adjoining track. Concrete crossing panels would be installed on top of the track to provide a smooth driving surface. This would alter the roadway profile slightly and, as a result, the existing asphalt would be removed and replaced approximately 100 to 200 feet to either side of the tracks and a new asphalt driving surface installed with an asphalt paving machine and compacted. Minor concrete flatwork would also be performed at the grade crossings where sidewalks would be modified or installed; this minor concrete work would consist mostly of removing small portions of existing sidewalk with a backhoe, constructing formwork with hand tools, and pouring small amounts of concrete for the new sidewalk.

Traffic signal upgrades would also occur at the intersections near the grade crossing. These upgrades would allow traffic signal timing to interconnect with the grade crossing signals and discourage motorists from queuing on the tracks. This work would include installation of new traffic signals, foundations, and controller cabinets, as well as installation of new control cables between

traffic signals and grade crossing signals and between different traffic signals (where multiple signals would need to be interconnected to each other).

Railroad signals, including wayside signals and grade crossing signals (e.g., crossing gates and flashing lights) would be added or relocated to accommodate the new track. For most areas, this would occur simultaneously with the trackwork.

Typical Timber Bridge Construction

Although there are no bridges in the Mt. Eden to Baumberg segment, there are several along the Project corridor. Thus, this section includes a description of the new bridges that could replace existing bridges along the corridor. Section 2.2.3.7 includes a discussion of the proposed Alameda Creek crossing, which is a much larger bridge, so is unique in both configuration and in how it would be constructed.

The final configuration of the proposed Project involves two main tracks in the ROW, whereas the existing condition has only a single main track, approximately centered in the ROW. Due to the constrained width of the ROW, two proposed tracks would need to "straddle" the one existing track. The same would be true at bridge locations. To keep the existing track and bridge in service, one new bridge, wide enough to accommodate one track, would be constructed adjacent to the existing bridge. After the new bridge is constructed and rail traffic has been shifted over to it, the existing bridge would be removed and another new bridge would be constructed in its place, providing sufficient width for a second new track.

Bridge construction would begin by constructing the piers for the bridge under one of the tracks. A drill rig would auger holes for new piles adjacent to the existing bridge at each pier location. Subsequently, a cage of reinforcing steel would be lowered into the resulting hole and the hole filled with concrete. In some locations, a crane with pile driver attachment may be used in lieu of an auger; this approach would result in steel H-piles, rather than round concrete cast-in-place piles. With either method, a cast-in-place concrete cap would be formed on top of the piles, locking them together and forming a support for the bridge spans. The cast-in-place cap would be constructed with hand tools to build the formwork and small cranes or forklifts to place reinforcing steel. After placing concrete in the forms, the forms would be removed. In general, the piers on existing single-track timber trestles are spaced approximately 15 feet apart. The new concrete structures for the proposed two-track configuration would have piers that are spaced approximately 30 feet apart.

At the abutments (piers at the ends of the bridge), short concrete wing walls would extend as required for grading. These wing walls would be either precast off site and installed with a crane or forklift, or may be cast-in-place, and may connect to short retaining walls constructed adjacent to the track.

After the abutments and piers are constructed, precast or prefabricated bridge sections forming the bridge superstructure would be lowered onto the piers with a crane and secured to each other and to the piers. Once secured, prefabricated walkways and handrails would be attached to the bridge sections and waterproofing installed on the bridge deck. Then, new railroad track would be constructed on the bridge (by distributing ties and rail, fastening rail to the ties, spreading ballast, tamping, and regulating) and the new track connected to previously constructed railroad track on either side.

Once the first bridge (adjacent to the existing bridge) is complete and ready for rail traffic, the original timber bridge would be removed in order to make space for construction of the second, adjacent bridge and its track. In most cases, the original bridge consists of a timber trestle. The track on the trestle would be disassembled and removed with a forklift or end loader. Subsequently, the trestle would be disassembled by un-bolting timber pieces from one another or cutting them apart with hand tools. Pieces of the trestle would be removed with a crane and pilings would be cut off below the groundline or removed with a pile extractor. Then, a new bridge and new track on the bridge would be constructed in place of the original bridge, following the process described above.

Alameda Creek Bridge Replacement

The existing bridge over Alameda Creek, near MP 27, is a long, single-track structure composed of concrete piers supporting a superstructure of concrete girders and concrete deck. To keep the existing bridge in service, a new, single-track bridge would be constructed to one side of the existing bridge. Once that new bridge is in-service, the existing bridge would be removed and another new, single-track bridge would be constructed slightly to one side of the existing bridge. Note that there would likely be lateral overlap between second new bridge and the existing bridge; if the existing bridge were not removed, this second new bridge would interfere with the existing bridge.

Construction would commence when Alameda Creek channel is mostly dry. As was performed for construction of the fish ladder further upstream, some temporary diversion of the remaining waters flows may be necessary. Temporary access would be established into the channel by routing a temporary road over the levee, but not excavating the levee. New piers would be installed in the creek, with the substructure being either driven piles or drilled shafts. Above ground, the piers for the new bridge would be circular or oblong in cross section. These would be cast-in-place concrete.

The bridge superstructure components would be lifted in place by crane. Once the superstructure for the first bridge is installed, the track would be constructed across the first bridge and rail traffic shifted onto the new structure. The existing bridge, including its piers, could be removed after the first new structure is in place. After removal of the superstructure of the existing bridge, the superstructure for the second bridge would be placed.

New Ardenwood Rail Station

The Ardenwood station construction would include the station facility, parking lot, and center island platform with grade-separated access via a pedestrian overpass over the tracks (Figure 2-11). The rail station would not replace the existing Ardenwood Park and Ride, but would be co-located with the existing service. Construction would start with foundation work, setting the long footings for the platform, using hand tools and a small excavator. At this time, a foundation for the elevator and stairway would also be constructed, likely excavated by a small excavator or providing drilled shafts for the taller structure. The same process would be used for the foundations on both sides of the pedestrian overpass. A grade beam foundation for the station facility would also be constructed by excavating shallow trench with a small excavator. At the same time, conduits for future electrical wiring would be placed by hand.

Once foundation work has been completed, the superstructure work would commence. Forming and installation components for the elevator shafts would occur, with either steel beams placed via crane or concrete walls formed with hand tools and a forklift for lifting forms. After concrete is placed with a pump truck and cured, forms would be removed. Once concrete has cured sufficiently, the overpass bridge itself would be placed with a crane. After these major construction items are

complete, finish work, such as electrical wiring, installing light poles, passenger information equipment, painting, signage, etc., would commence. This finish work would be completed with hand tools.

Parking lot construction would occur in parallel with other work. The parking lot would involve grading with small earthmoving equipment, such a small motor grader, end loader, or compactor. At the same time, forms for concrete curbs would be placed with hand tools. Concrete would be placed directly from trucks, followed by form removal by hand. Paving would follow, with asphalt placed by a paving machine followed by a compactor.

2.2.3.8. Construction Equipment and Crews

As shown in Figure 2-12, construction is anticipated to occur over two years, beginning as early as Summer 2027. Construction would occur in multiple "segments" of the Project footprint, generally grouped as follows:

- Elmhurst to Williams Street;
- Williams Street to Mt. Eden;
- Mt. Eden to Baumberg Avenue;
- Baumberg Avenue to Alvarado Boulevard;
- Alvarado Boulevard to Lowry Road;
- Lowry Road to Ardenwood Boulevard (no at-grade crossings);
- Ardenwood Boulevard to Jarvis Avenue (including construction of proposed new rail station);
- Jarvis Avenue to Thornton Avenue, and
- Newark Rail Yard.

Within each segment, construction would generally consist of the following types of actions (see Section 2.2.3.7 for more details). Estimated construction periods and maximum numbers of workers for any one segment are also shown below:

- Grading and earthwork to prepare Project footprint for construction (estimated 3 to 6 months and a maximum of 20 construction workers across segment);
- Construction of structures, such as bridges and retaining walls (estimated 3 to 7 months and a maximum of 22 construction workers across segment);
- Roadway and utility improvements at at-grade rail crossings (estimated 1 to 2 months and a maximum of 37 construction workers across segment, not including proposed Ardenwood Station);
- Track and rail signal upgrades within the rail right of way (estimated 3 to 5 months and a maximum of 52 construction workers across segment).
- Ardenwood Station construction (estimated to take up to 12 months with a maximum number of 20 construction workers onsite per day).

Multiple activities could occur concurrently within a segment, although they would likely stagger in location across the segment. It is also anticipated that multiple segments could be under construction at the same time, with work likely commencing at either end of Project footprint and meeting in middle to reduce overall proposed Project construction period. Note that estimated time frames for activities within a segment could be increased due to weather conditions that would require temporary stops in work due to site stability, access limitations, and/or worker safety concerns.

2.2.3.9. Proposed Operations and Maintenance

Train operations on the Coast Subdivision would be updated by the service operators (UPRR, Amtrak) to accommodate the relocated Capitol Corridor passenger rail service and would not affect the frequency of existing passenger or freight services along the rail line. No changes to freight service operations on the Niles and Oakland Subdivisions would occur as a result of Project implementation.

Maintenance of all railroad subdivisions would continue to follow the standards and guidelines currently in place and implemented by UPRR; no changes to the maintenance requirements would result from implementation of the proposed Project. Operations and maintenance at the proposed new Ardenwood Station would be consistent with procedures and guidelines implemented at existing Capitol Corridor rail stations.

2.2.4. Best Management Practices

During Project implementation, CCJPA will implement a range of best management practices (BMPs) to avoid or minimize adverse effects on the environment. The proposed BMPs and their full descriptions are presented in Table 2.2-3. The BMPs are named after the primary resource area. BMP titles are included in relevant resource sections in Chapter 3, with reference back to this section for full text.

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
BMP AES-1: Special Permits and/or Variance from Local Jurisdictions where Work is Outside of UPRR Right-of-Way (ROW)	To the extent possible, CCJPA will comply with the local jurisdictional codes and regulations pertaining to aesthetics and visual quality for those areas proposed for construction outside of the UPRR ROW. In these non-UPRR areas, CCJPA will obtain the required jurisdictional approvals for any concurrences, variances, and/or permits required related to visual quality. Design elements and/or public art reflective of community aesthetics will also be coordinated with the city or county in areas outside of UPRR ROW.	
BMP AQ-1: Implement Bay Area Air Quality Management District (BAAQMD) Basic Construction Mitigation Measures	Construction of the proposed Project will require that all construction contractors implement the basic construction mitigation measures recommended by BAAQMD. The emissions reduction measures will include, at a minimum, the following: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day. • All haul truck loads will be covered when transporting soil, sand, or other loose material off site. • All visible mud or dirt track-out material on adjacent public roads will be removed using wet-power vacuum-type street sweepers at least once a day. The use of dry-power sweeping is prohibited. • All vehicle speeds will be limited to 15 miles per hour on unpaved roads. • All roadways, driveways, and sidewalks that are to be paved will be paved as soon as possible. Building pads will be laid as soon as possible after grading, unless seeding or soil binders are used. • All excavation, grading, and/or demolition activities will be suspended when average wind speeds exceed 20 mph. • All trucks and equipment, including their tires, will be washed off prior to leaving the site. • Unpaved roads providing access to sites that are located 100 feet or further from a paved road will be treated with a 6- to 12-inch compacted later of wood chips, mulch, or gravel. • Publicly visible signs will be posted with the telephone number and person to contact at CCJPA regarding dust complaints. CCJPA will respond and take	Air Quality Recreation

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	corrective action within 48 hours. BAAQMD's phone number will also be visible to ensure compliance with applicable regulations.	
BMP CUL-1: Conduct Cultural Resources Awareness Training Prior to Project-Related Ground Disturbance	Prior to any Project-related ground disturbance, CCJPA will ensure that all construction workers receive training by a registered professional archaeologist who is experienced in teaching non-specialists to ensure that contractors can recognize archaeological resources in the event that any are discovered during construction. A tribal representative will be invited to participate in the training. Construction staff directly overseeing or engaged in ground disturbing activities will be required to participate in this preconstruction training. This training will be administered as standalone training or included as part of the overall environmental awareness training required as a result of the proposed Project. The training will include, at minimum, the following: • The types of cultural resources that are likely to be encountered; • The procedures to be taken in the event of an inadvertent cultural resource discovery; and • The penalties for disturbing or destroying cultural resources.	Cultural Resources Tribal Cultural Resources
BMP CUL-2: Stop Work if Archaeological Deposits and/or Human Remains are Encountered During Ground-Disturbing Activities	If archaeological deposits are encountered during Project-related ground disturbance, work in the area (100-foot radius) should stop immediately and the procedures outlined in the AMATP will be implemented. If any human remains are discovered during ground-disturbing activities, there should be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent human remains. These remains should be treated in accordance with existing state laws, including California PRC Section 5097.98 and California Health and Safety Code Section 7050.5.	Cultural Resources Tribal Cultural Resources
BMP GEO-1: Geotechnical Investigations	CCJPA will require geotechnical investigations during the Project design phase. The Project will be designed to minimize slope failure, settlement, and erosion using recommended construction techniques and BMPs.	Geology and Soils

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
BMP GEO-2: Expansive Soil	Where expansive soils are present, the structures will be designed and constructed to withstand the increased earth pressures exerted by the expansive clays and to specifications determined by the geotechnical investigation prepared during final design. As necessary, expansive clays will also be treated with lime to reduce the shrink-swell potential in localized areas or removed and replaced with a non-expansive fill material.	Geology and Soils
BMP GHG-1: Implement BAAQMD Construction Measures	Construction of the proposed Project will require implementation of the following measures that would ensure that GHG emissions during construction would be minimized. Use zero-emission and hybrid-powered equipment to the greatest extent possible, particularly if emissions are occurring near sensitive receptors or within a BAAQMD-designated Community Air Risk Evaluation (CARE) area or AB 617 community. • Require all diesel-fueled off-road construction equipment to be equipped with U.S. Environmental Protection Agency Tier 4 Final engines or better. • Require all on-road heavy-duty trucks to be zero emissions or meet the most stringent model-year emissions standard where feasible. • Minimize idling time, either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes. Provide clear signage that posts this requirement for workers at the entrances to the site. • Use California Air Resources Board-approved renewable diesel fuel in off-road construction equipment and on-road trucks where feasible. • Use U.S. Environmental Protection Agency SmartWay-certified trucks for deliveries and equipment transport where feasible. • Require all construction equipment to be maintained and properly tuned in accordance with the manufacturer's specifications. • Where grid power is available, prohibit portable diesel engines and provide electrical hook-ups for electric tools, such as saws, drills, and compressors; use electric tools whenever feasible.	Greenhouse Gas Emissions

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	• Where grid power is not available, use alternative fuels, such as propane or solar electrical power, for generators at construction sites whenever feasible. • Encourage and provide carpools, shuttle vans, transit passes, and/or secure bicycle parking to construction workers and offer meal options onsite or shuttles to nearby meal destinations for construction employees. • Reduce electricity use in the construction office by using LED bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones. • Minimize energy used during site preparation by deconstructing existing structures to the greatest extent feasible. • Recycle or salvage nonhazardous construction and demolition debris, with a goal of recycling at least 15 percent more, by weight, than the diversion requirement in Title 24. • Use locally sourced or recycled materials for construction (goal of at least 20 percent, based on cost of building materials and volume of roadway, parking lot, sidewalk, and curb materials). • Use low-carbon concrete, minimize the amount of concrete used, and produce concrete on-site where feasible if it is more efficient than transporting ready-mix. Develop a plan to efficiently use water for adequate dust control. • Include all requirements in applicable bid documents, purchase orders, and contracts, with successful contractors demonstrating the ability to supply compliant on- or off-road construction equipment prior to any ground-disturbing and construction activities.	
BMP HAZ-1: Prepare a Construction Hazardous Material Management Plan (HMMP)	Prior to construction, CCJPA will ensure that an HMMP is prepared by the construction contractor, which will outline provisions for safe storage, containment, and disposal of chemicals and hazardous materials, contaminated soils, and contaminated groundwater used or exposed during construction, including the proper locations for disposal. The HMMP will be prepared to address construction activity within the Project footprint and include, but not be limited to, the following: • A description of hazardous materials used (29 C.F.R. 1910.1200).	Hazards and Hazardous Materials

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	• A description of handling, transport, treatment, and disposal procedures, as relevant for each hazardous material or hazardous waste (29 C.F.R. 1910.120). • Preparedness, prevention, contingency, and emergency procedures, including emergency contact information (29 C.F.R. 1910.38). ○ A description of personnel training including, but not limited to: (1) recognition of existing or potential hazards resulting from accidental spills or other releases; (2) implementation of evacuation, notification, and other emergency response procedures; (3) management, awareness, and handling of hazardous materials and hazardous wastes, as required by their level of responsibility (29 C.F.R. 1910). • Instructions on keeping Safety Data Sheets on site for each on-site hazardous chemical (29 C.F.R. 1910.1200). • Identification of the locations of hazardous material storage areas, including temporary storage areas, which will be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank (29 C.F.R. 1910.120). • A description of accidental hazardous materials release measures and spill cleanup procedures, including, but not limited to, contacting the correct regulating agency about the spill; evacuating the spill area; securing the spill; placing barriers and absorbents around the spill to prevent contamination from spreading; putting up signs or caution tape to prevent entry to the spill area; characterizing the spill; and cleanup by qualified personnel.	
BMP HAZ-2: Property Acquisition Phase 1 and Phase 2 Environmental Site Assessments	Prior to or during the ROW acquisition phase, CCJPA will ensure that Phase 1 Environmental Site Assessments are conducted in accordance with standard ASTM methodologies to characterize each high-risk parcel prior to acquisition within the Project footprint. The determination of parcels that require a Phase 2 Environmental Site Assessments (for example, soil, groundwater, soil vapor subsurface investigations) would be informed by a Phase 1 Environmental Site Assessments and may require coordination with state and local agency officials. Major work areas requiring substantial ground disturbance and excavation outside of acquired properties will also be subject to Phase 2 investigations.	Hazards and Hazardous Materials

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
BMP HAZ-3: Prepare a General Construction Soil Management Plan	Prior to construction, CCJPA will ensure that a General Construction Soil Management Plan is prepared, which will include general provisions for how soils will be managed within the Project footprint for the duration of construction. General soil management controls to be implemented by the contractor, and the following additional topics, will be addressed within the General Construction Soil Management Plan: • General worker health and safety procedures. • Dust control/wind erosion control. • Management of soil stockpiles. • Traffic control. • Stormwater erosion control using BMPs.	Hazards and Hazardous Materials
BMP HAZ-4: Prepare Parcel-Specific Soil Management Plans and Health and Safety Plans (HASP)	Prior to construction, CCJPA will ensure that parcel-specific Soil Management Plans be prepared for known contaminated sites for submittal and approval by the Department of Toxic Substances Control (DTSC). The plans will include specific hazards and provisions for how soils will be managed for known contaminated sites. The nature and extent of contamination varies widely across the Project footprint, and the parcel specific Soil Management Plan will provide parcel-specific requirements addressing the following: • Soil testing and soil characterization. • Soil disposal protocols. • Protocols governing the discovery of unknown contaminants. • Soil management on properties within the Project footprint with known hazardous contaminants. Prior to construction on individual properties with known contaminants, a parcel-specific HASP will also be prepared for approval by DTSC. The HASP will be prepared to meet OSHA requirements, Title 29 of the C.F.R. 1910.120 and CCR Title 8, Section 5192, and all applicable federal, state, and local regulations and agency ordinances related to the proposed management, transport, and disposal of contaminated media during construction. The HASP will be signed and sealed by a Certified Industrial Hygienist, who is licensed	Hazards and Hazardous Materials Public Services

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	by the American Board of Industrial Hygiene. In addition to general construction soil management plan provisions, the following parcel-specific HASP provisions will also be implemented: • Training requirements for site workers who may be handling contaminated material, including the transport and disposal of contaminated material. • Chemical exposure hazards in soil, groundwater, or soil vapor that are known to be present on a property. • Mitigation and monitoring measures that are protective of site worker and public health and safety. Prior to construction, CCJPA will coordinate proposed soil management measures and reporting activities with regulatory agencies with jurisdiction in order to establish an appropriate monitoring and reporting program that meets all federal, state, and local laws at each of the contaminated sites.	
BMP HAZ-5: Leaking Underground Storage Tank (LUST) Sites and Coordination with DTSC	Prior to construction on properties with a LUST, CCJPA will coordinate with DTSC regarding any plans, construction activities, and/or public outreach that is needed to verify that construction activities on properties with LUSTs would be conducted in a manner protective of public health.	Hazards and Hazardous Materials
BMP HAZ-6: Halt Construction Work if Potentially Hazardous Materials/ Abandoned Oil Wells are Encountered	During construction, CCJPA will ensure that contractors will follow all applicable local, state, and federal regulations regarding discovery, notification, response, disposal, and remediation for hazardous materials and/or abandoned oil wells encountered during the construction process.	Hazards and Hazardous Materials
BMP HAZ-7: Pre-Demolition Investigation	Prior to the demolition of any structures constructed prior to the 1970s, CCJPA will ensure that a survey be conducted for the presence of hazardous building materials, such as Asbestos-Containing Material (ACMs), Lead-Based Paints (LBPs), and other materials falling under the Universal Waste requirements. The results of this survey will be submitted to CCJPA and applicable agencies as deemed appropriate by CCJPA. If any hazardous building materials are identified prior to demolition of any structures, a plan for proper removal will be prepared in accordance with applicable OSHA and	Hazards and Hazardous Materials

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	Alameda County Department of Environmental Health requirements. The contractor performing the work will be required to implement the removal plan, will be required to have a C-21 license in the State of California, and possess an A or B classification. If asbestos-related work is required, the contractor or their subcontractor will be required to possess a California Contractor License (Asbestos Certification). Prior to any demolition activities, the contractor will be required to secure the site and ensure utilities are disconnected.	
BMP HYD-1: Temporary Erosion and Sediment Controls	All temporarily disturbed slopes will be protected with temporary erosion control and sediment controls. Temporary erosion control includes temporary bonded fiber matrix, temporary hydraulic mulch, temporary hydroseeding, and temporary cover with geotextiles or rolled erosion control products (RECPs). Temporary sediment controls include temporary silt fence, temporary check dams, temporary fiber rolls, and storm drain inlet protection.	Hydrology and Water Quality
BMP HYD-2: Construction Management Practices	CCJPA and/or its contractor will practice good housekeeping throughout the construction limits and within staging areas using BMPs such as stabilized construction entrances, material delivery and storage, stockpile management, hazardous waste management, liquid water management, vehicle and equipment fueling and maintenance. Wind erosion, resulting in fugitive dust emissions, will be avoided or minimized by implementing construction roadway speed limits, halting activities during high-wind conditions, and dust suppression by wetting disturbed soil areas. The California Stormwater Quality Association's (CASQA) *Stormwater Best Management Practice Handbook: Construction* (2023) provides further details on these construction BMPs.	Hydrology and Water Quality
BMP HYD-3: Creek Diversion to Address In-Creek Construction	Construction work in live perennial streams and creeks will include temporary creek diversion BMPs. Temporary clear water diversions and dewatering operations would be implemented in accordance with CASQA's *Stormwater Best Management Practice Handbook: Construction* (2023). These	Hydrology and Water Quality

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	BMPs for dewatering operations, erosion control, and soil stabilization will avoid discharging water in a manner and at rates that cause substantial changes in surface water hydrology and water quality. This will be achieved by controlling pumping rates and using velocity dissipation devices or similar methods that minimize impacts on the flow rates of streams.	
BMP HYD-4: Delineate Environmentally Sensitive Areas (ESAs) Near Construction Areas	All environmentally sensitive areas will be protected with high visibility fencing to avoid impacts or disturbance. Thus, preserving existing vegetation and avoiding sensitive wetland and riparian habitats to the extent feasible.	Hydrology and Water Quality
BMP HYD-5: Permanent Erosion Control	All unpaved slopes will be protected with permanent erosion control such as RECP or permanent hydroseeding with hydraulic mulch.	Hydrology and Water Quality
BMP HYD-6: Addressing Additional Impervious Surface Impacts	Permanent water quality impacts from added and replaced impervious areas will be avoided or minimized with the implementation of permanent treatment BMPs and trash capture devices.	Hydrology and Water Quality
BMP HYD-7: Addressing Hydromodification Impacts	Hydromodification impacts from added impervious in susceptible areas will be avoided or managed with the inclusion of flow control features and energy dissipators such as flared end sections, rock slope protection and check dams.	Hydrology and Water Quality
BMP HYD-8: Dewatering at High Groundwater	BMPs for dewatering operations will be used within excavation areas with high groundwater.	Hydrology and Water Quality
BMP HYD-9: Monitoring Weather Forecast to Avoid Construction Impacts During Storm Events	CCJPA and its contractors will need to monitor weather forecasts for intense storm events that have the potential to create flood conditions for areas within the floodplains. When there is a possibility for flooding within the Project footprint, the contractor will remove temporary structures, equipment, and materials from aquatic resources to avoid substantial increases in the WSE of 100-year floodplains. If needed, formworks and falseworks will be designed to remain within floodplains during the winter rainy season and withstand the hydraulic forces of flood flows without increasing WSE by 1 foot.	Hydrology and Water Quality

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
BMP REC-1: Protection of Alameda Creek Regional Trail	When construction work occurs over the Alameda Creek Regional Trail, the trail will be closed for as short duration as feasible. Protective measures will be installed when the trail is open to ensure the safety of trail users.	Recreation
BMP REC-2: Coordinate and Provide Advance Notice of Construction Activities Adjacent to Public Trails	CCJPA will coordinate construction activities adjacent to publicly accessible trails with the East Bay Regional Parks District (EBRPD). CCJPA's contractors will be responsible for informing trail users regarding upcoming construction activities and any potential detours. At least 10 days in advance, notices will be posted along the trail regarding any trail closures or detours. To the extent possible, the trail will be kept open at all times.	Recreation
BMP TR-1: Transportation Management Plan (TMP)	During final design, a TMP will be developed by CCJPA in coordination with affected jurisdictions, fire and police departments, and adjacent construction projects to reduce construction‐related impacts. The TMP will include, at a minimum, the following measures: • Identifying full closures, short‐term closures, and detour routes for all modes of travel, including the pedestrian, bicycle, vehicular, public transit, freight, and emergency vehicle modes. • Coordinating and communication with fire and police departments during development of TMP to ensure adequate access is maintained during construction. • Identifying locations of short‐term and long‐term capacity reductions on the transportation system and coordinating with local agencies to minimize congestion effects. • Installing temporary traffic control measures to promote safety in construction zones. • Installing signage to alert drivers to upcoming closures and lane reductions. • Coordinating with public transit agencies to notify riders about stop closures or diversions. Identifying construction vehicle routings that minimize effects on the transportation system.	Transportation Hazards and Hazardous Materials Land Use and Planning Public Services Recreation Wildfire

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
BMP UT-1: Utility Verification and Coordination with Utility Providers and California Public Utilities Commission (CPUC)	CCJPA and the contractor will coordinate with utility providers regarding protection, relocation, or removal of their utilities, and the following measures will be implemented: • Prior to and during construction, CCJPA will coordinate with service providers to obtain necessary permits and to minimize or avoid interruptions. • At least two days prior to excavation of any subsurface installation, the construction contractor will notify the regional notification Underground Service Alert per the Regional Notification Center System (California Government Code 4216). The Underground Service Alert then notifies utilities that may have buried lines within 1,000 feet of the excavation. Representatives of the utilities will mark the specific location of their facilities within the work area prior to the start of excavation. The construction contractor will probe and expose the underground facilities by hand prior to using power equipment. • Service interruptions will be minimized to the extent feasible. • CCJPA will notify pipeline operators of proposed demolition, excavation, tunneling, or construction near or affecting a pipeline, in accordance with Norman Y. Mineta Research and Special Programs Improvement Act. • Affected utilities will be relocated in-kind. CCJPA will coordinate with CPUC to ensure compliance with General Orders 95 and 131-D. A permit to construct (for powerlines) or a certificate of public convenience and necessity (for transmission lines) will be obtained should it be determined during final design that the proposed Project would require the modification, alteration, or addition of electrical lines over 50 kV. • CCJPA will observe relevant ACWD Standard Specifications for Water Main Extension. • CCJPA will observe the California Department of Health Services (DHS) standards, which require: a 10-foot horizontal separation between parallel sewer and water mains, and a 1-foot vertical separation between perpendicular water and sewer line crossings. In the event that separation requirements cannot be maintained, the Project proponent will obtain a DHS variance through provisions of water encasement or other means deemed suitable by the department.	Utilities and Service Systems

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
BMP UT-2 Minimize Potable Water Use	The contractor will maximize use of recycled water and minimize use of potable water.	Utilities and Service Systems
BMP UT-3: Water Efficient Landscaping	Landscaping, outside of the UPRR ROW, will comply with Water Efficient Landscape Ordinance and Bay Friendly Landscaping criteria. The proposed Project will coordinate with municipalities to ensure landscape improvements at all grade crossings comply with local ordinances. Outside of the UPRR ROW, the Project will: • Use low-water, native plants and avoid planting invasive species. • Use recycled, reclaimed, and/or non-potable water for irrigation where available. • Limit turf to no more than 25 percent of the total planted area on the project. • Utilize the whole systems/watershed approach to design and maintenance of landscaping to support the integrity of the San Francisco Bay watershed through best practices.	Utilities and Service Systems
BMP UT-4: Public Notification	Prior to construction in areas where utility service interruptions are unavoidable, the construction contractor, CCJPA, and/or the affected utility will notify the affected public through a combination of communication media (e.g., by phone, email, mail, newspaper notices, or other means) within that jurisdiction and the affected service providers of the planned outage. The notification will specify the estimated duration of the planned outage and would be published no less than seven days prior to the outage. Construction will be coordinated to avoid interruptions of utility service to hospitals and other critical users.	Utilities and Service Systems
BMP UT-5: Coordinate with Hayward Water System (HWS) and Alameda County Water District (ACWD) in Dry Construction Years	The Project will coordinate with HWS and ACWD in dry years (as defined in their Urban Water Management Plans [UWMPs]). The proposed Project will comply with HWS and ACWD requirements during water shortages, including submittal of a construction water use plan in Level 3 shortages to HWS that addresses how impacts to existing water uses will be minimized, such as by selecting SWPPP measures with lower water requirements. The Project may	Utilities and Service Systems

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	also evaluate acquiring potable and/or non-potable water from outside sources to supplement construction within HWS and/or ACWD service area.	
BMP UT-6: Minimize Construction and Demolition (C&D) Debris	C&D debris will be minimized to the maximum extent practicable, prioritizing reuse of C&D materials and then recycling. Where applicable, the proposed Project will at minimum meet the current state and county recycling requirements and will comply with the municipal recycling requirements at the time of construction to the extent feasible. Where required by regulations, a Waste Reduction and Recycling Plan will be prepared by the Contractor that shows how the proposed Project will meet current recycling requirements. Contractor will provide documentation that recycling requirements were met.	Utilities and Service Systems
BMP UT-7: Treated Wood Waste (TWW) Handler Notification	The contractor will notify DTSC within 30 days if generating more than 10,000 pounds of TWW per calendar year. The contractor will comply with AB 332's Alternative Management Standards for TWW.	Utilities and Service Systems
BMP WF-1: Prepare Fire Prevention Plan	Prior to construction, the contractor will prepare a Fire Prevention Plan for CCJPA approval. This plan will outline fire prevention measures that will be applicable within 500 feet of very high fire hazard severity zones (VHFHSZs) during the dry season (June through December, or earlier if a fire season is declared by a fire protection authority). The Fire Prevention Plan will be prepared in consultation with and comply with the City of Fremont's Fire Department and the East Bay Regional Parks Fire Department requirements. The construction contractor will implement any fire protection measures that are applicable within the VHFHSZ. The plan would include at minimum the following measures: • No parking or driving on dry grasses. • Smoking is prohibited on vegetated areas. • Generators and gas-powered equipment will have spark arrestors. Any flame- or spark- producing activities (e.g., welding, rail cutting) requires 30 feet of clearance to any flammable material (such as grass, weeds, wood chips,	Wildfire Hazards and Hazardous Materials

Table 2.2-3. Proposed Best Management Practices

BMP	BMP Description	Related Resource Areas
	brush, removed rail ties). A suitable fire extinguisher will be immediately accessible for the duration of this work. During Extreme or Very High Fire Danger, use of gasoline powered equipment (e.g., mowers in rough areas, weed eaters, chain saws, welders and generators) may require extra protection measures.	
BMP WF-2: Use Drought-Tolerant and Fire-Resistant Native Plants	Within 500 feet of VHFHSZs and outside of UPRR ROW, landscape design and soil stabilization will use drought-tolerant and fire-resistant native plants and least flammable mulches (e.g., coarse compost) to the extent feasible. CCJPA will ensure that this is included in final design of the project and in construction specifications.	Wildfire Hazards and Hazardous Materials

2.3. Alternatives Considered but Rejected

As discussed in Section 2.3.1, the following project alternatives (Alternatives A through D) were considered during early planning but were rejected as infeasible or because they did not reduce impacts to below thresholds of significance. Since the alternatives were eliminated from consideration, they are not included in the resource assessments in Chapter 3; however, brief summaries are included below and overview plans (conceptual designs) for Alternatives B through D are included in Appendix A. Alternative A was eliminated from consideration prior to conceptual designs being developed by project engineers, so no design sheets are included in the appendix for this alternative.

Alternatives to the single proposed new station location at Ardenwood were also considered and eliminated; a summary is provided in Section 2.3.5.

Like the proposed Project, Alternatives A, B, C, and D proposed to move Capitol Corridor passenger service to the Coast Subdivision; however, improvements on the Coast Subdivision under Alternatives A, B, C, and D were less extensive than those included in the proposed Project. As discussed above, Alternatives A, B, C, and D also proposed to move some freight service currently operating on the Coast Subdivision to the Niles/Oakland subdivisions. As a result, Alternatives A, B, C, and D's proposed improvements to the Niles and Oakland subdivisions would be more expansive than the proposed Project to support increasing demands in freight rail services. Alternatively, the proposed Project includes upgrades at the Niles Subdivision only in the vicinity of the connection points between the Niles Subdivision and Coast Subdivision (at Elmhurst and Newark) and does not include any improvements to the Oakland Subdivision.

The proposed improvements to the Coast Subdivision are identical for Alternatives A, B, C, and D described below in Sections 2.3.1 through 2.3.4. These four alternatives differ only in proposed upgrades and/or new bridges on the Niles and Oakland Subdivisions.

2.3.1. Alternative A

Alternative A proposed to relocate all Capitol Corridor passenger service to the Coast Subdivision and some UPRR freight service to the Niles and Oakland subdivisions. Alternative A proposed track improvements, grade crossing improvements, and new or extended sidings along the Coast, Niles, and Oakland subdivisions. Like the proposed Project, the existing Hayward and Fremont-Centerville passenger stations on the Niles Subdivision would be no longer be serviced by Capitol Corridor and a new passenger rail station would be constructed on the Coast Subdivision at the existing Ardenwood Park-and-Ride facility. Alternative A would also construct a new connection between the Niles and Oakland Subdivisions at Industrial Parkway to allow trains traveling southward on the Niles Subdivision to connect with and continue southward on the Oakland Subdivision to reach Niles Canyon (and vice versa for northward trains).

2.3.1.1. Alternative A Screening Findings

Alignment with Project Goals and Objectives

As introduced in Section 2.1.1, this alternative does not meet the objective of maintaining freight service with no change in operations since it would involve the movement of some freight service to

the Niles and Oakland Subdivisions. This shift in freight operations would require upgrades for structural improvements on the Niles and Oakland subdivisions. These upgrades along those rail lines would be costly and cause substantial resource impacts. Based on this, Alternative A does not meet this screening criterion.

Feasibility of Implementation

This alternative is physically feasible to implement. However, it would require a shift in some or all freight service from the Coast Subdivision to the Oakland and Niles subdivisions. Alternative A includes upgrades to the Niles and Oakland subdivisions to allow for additional freight service may not be financially justifiable (that is, may be financially infeasible). Upgrades to the Niles and Oakland Subdivisions would not benefit Capitol Corridor passenger rail services, and the cost of those improvements would not be offset by further increases in anticipated ridership gains associated with the proposed Project. Therefore, this alternative does not meet this screening criterion.

Reduction of Significant Impacts

As defined in Section 2.3.1, this alternative would not "avoid or substantially lessen one or more of the significant effects of the project", because none were identified during the environmental analysis of the proposed Project. Based on this, Alternative A did not meet this screening criterion.

2.3.2. Alternative B

Alternative B would have many of the same features as Alternative A, including shifting all Capitol Corridor passenger service to the Coast Subdivision, and some UPRR freight service to the Niles and Oakland subdivisions.

This alternative included a new grade-separated structure elevated over Industrial Parkway on the Niles Subdivision and proposed a new connection south of Industrial Parkway between the Niles and Oakland Subdivisions to allow trains traveling southward on the Niles Subdivision to connect with and continue southward on the Oakland Subdivision to reach Niles Canyon (and vice versa for northward trains). Alternative B would also have extended the existing Hayward siding (on the Niles Subdivision) southward as well as construct a new siding on the Oakland Subdivision approximately between Decoto Road and Alameda Creek.

Further, Alternative B would also construct new connections between the Oakland Subdivision and Niles Subdivision in the Fremont area, in the vicinity of Shinn Street. These new connections in the Fremont area would have allowed trains traveling southward on the Oakland Subdivision to reach either Niles Junction or the junction at Newark. Property acquisitions would have been required in Fremont near Shinn Street to facilitate these new connections. Two options were considered:

- *Option B1: Industrial Parkway Design Option*: Under this design option, Industrial Parkway would remain as an at-grade crossing. Safety enhancements would be implemented for the existing at-grade crossing.
- *Option B2: Shinn Area Design*: This design provides an alternative location for the new connection between the Oakland Subdivision and Niles Subdivision, in the Shinn Area. Option B2 would connect to Niles Subdivision approximately 350 yards east of Shinn Street.

2.3.2.1. Alternative B Screening Findings

Findings for the three screening criteria (that is, Alignment with Project Goals and Objectives, Feasibility of Implementation and Reduction of Significant Impacts) for Alternative B are the same as Alternative A.

2.3.3. Alternative C

This alternative proposed the same rail and ancillary improvements discussed under Alternatives A and B for the Coast Subdivision, Niles Subdivision, and Oakland Subdivision. Further, like Alternative B, Alternative C proposed track improvements, grade crossing improvements, and new or extension of existing sidings along the Coast, Niles, and Oakland subdivisions. This Alternative also included a new grade-separated structure over Industrial Parkway and the Industrial Parkway Design Option (Alternative B).

The differences in design and freight rail improvements for Alternative C for the Shinn area included constructing a new connection from the Oakland Subdivision to the Niles Subdivision, allowing southbound trains on the Oakland Subdivision to continue westbound on the Niles Subdivision (and vice versa) via a new connection constructed under the existing BART tracks. Another new connection would be constructed to allow westbound trains on the Oakland Subdivision (i.e., trains coming from Niles Canyon) to continue westbound on the Niles Subdivision towards Newark (and vice versa).

At the Niles Junction area, the following features would be included as part of Alternative C:

- The new connection linking Oakland and Warm Springs Subdivisions would cross over a portion of the Niles Cone Groundwater Basin that is actively managed by the Alameda County Water District on a new approximately 500-foot-long bridge structure with retaining walls at either end.
- Removal of a portion of the existing Niles Subdivision between Niles Junction and Shinn Street.
- Removal of the connection between the Oakland Subdivision and the Niles Subdivision at Niles Junction.
- Construction of a new, additional railroad bridge over Mowry Avenue.

2.3.3.1. Alternative C Screening Findings

Findings for the three screening criteria (that is, Alignment with Project Goals and Objectives, Feasibility of Implementation and Reduction of Significant Impacts) for Alternative C are the same as Alternative A.

2.3.4. Alternative D

Alternative D would include all proposed improvements on the Coast Subdivision as discussed under Alternatives A, B and C, including a new passenger rail station at the Ardenwood Park-and-Ride facility. Alternative D would make improvements to the Niles Subdivision north of and in Niles Junction and would establish a new connection between the Niles Subdivision and Oakland Subdivision across and over Mission Boulevard and Alameda Creek in the northeast quadrant of

Niles Junction. This alternative would also construct a new grade-separated structure at Nursery Avenue by lowering Nursery Avenue and Mission Boulevard to pass under the Niles Subdivision.

Improvements to the Niles Subdivision under Alternative D would occur in the areas of Hayward siding improvements (as discussed under Alternative B and Alternative C). Additional improvements would be constructed starting at Decoto Road and extend southward to a point south of Alameda Creek where the Niles Subdivision would connect to the Oakland Subdivision. Overall track improvements to accommodate freight rail service and improve connectivity include:

- Hayward siding would be extended by approximately 7,000 feet to allow trains to pass each other.
- New siding would be constructed between Decoto Road, through Niles, and over Alameda Creek on a new, curved bridge, in order to allow trains to pass each other while connecting to the Oakland Subdivision east of Niles Junction.
- A new bridge would be constructed over Alameda Creek, in the northeast quadrant of Niles Junction, to establish a connection between the Niles Subdivision and Oakland Subdivision. The new bridge would be approximately 630 linear feet long, extending over both Alameda Creek and over Mission Boulevard and require a curved structure (approximately 8-degree curve) to make the connection to the Oakland Subdivision. The new bridge would cross Alameda Creek between the existing Niles Subdivision railroad bridge and the existing Mission Boulevard roadway bridge. The new railroad bridge would be wide enough to accommodate two tracks. Due to the width of the creek, the structure would not be a clear span; likely up to five piers in the channel would be required.
- Retaining walls and additional tracks would be constructed on the Oakland Subdivision between Niles Junction and Clarke Drive, the first rail-highway grade crossing east of Niles Junction.

Under Alternative D, no connections at Shinn Street or Industrial Parkway would be required. Niles Junction itself would remain unchanged.

2.3.4.1. Alternative D Screening Findings

Findings for the three screening criteria (that is, Alignment with Project Goals and Objectives, Feasibility of Implementation and Reduction of Significant Impacts) for Alternative D are the same as Alternative A.

2.3.5. Hayward and Newark Junction Station Alternatives

The Ardenwood station location was compared to two other potential station locations along the Coast Subdivision. Station area alternatives were selected based on their proximity to transbay bridges or rail lines, since providing an enhanced connection to transbay transit services from the East Bay to the San Francisco Peninsula is a key objective of the project. This assessment produced two additional alternatives station study areas: 1) Hayward at SR 92 and 2) Newark Junction (CCJPA 2019).

Within the study area identified at Hayward near SR 92, a parcel within a ½ mile radius of the intersection of the Coast Subdivision and SR 92 was identified as a potentially suitable location for a future rail station. At this location, near where Clawiter Road crosses the Coast Subdivision, the platform would be located on the northwest side of SR 92. Access to the station parking and

platform was proposed to be provided off Clawiter Road. A pedestrian overcrossing was proposed at the middle of the platform to provide access to the industrial area east of the alignment. Though the area's triangular shape limited potential design options, the needed station elements would be able to be fit within the space.

The Newark Junction potential alternative station study area was at the location where the Dumbarton Rail Corridor connects with the Coast Subdivision and Centerville Line (part of Niles Subdivision). The north end of the study area (north of the Centerville Line) is predominately residential. The south end (south of the Centerville Line) is industrial. Newark Slough runs along the far northern edge of the study area and Plummer Creek cuts through the middle of the study area, parallel to the Centerville Line. Incorporating a station near Newark Junction would likely require re-alignment of the existing tracks at the Junction. Further, in order to conform to design criteria, the space available only provided for a 600-foot platform length. Access to the station parking and platform was proposed to be provided from Carter Avenue. The station would be located at ground level with parking on the second floor of the structure.

The three alternatives were compared based on a series of four criteria, including:

1. Ability to meet the objectives of the 2018 Transit and Intercity Rail Capital Program (TIRCP) $51million grant awarded to CCJPA for the SBC project by Caltrans. Caltrans found that the project's multitude of benefits aligned with the goals identified in Senate Bill No.1 legislation and the 2018 TIRCP guidelines;

2. Feasibility of design, including constructability, amount of non-rail ROW required, meeting CCJPA station standards, cost and schedule;

3. Environmental factors, including land use consistency, access and circulation, impacts on sensitive air quality and noise receptors, and environmental justice; and

4. Station location benefits, including bicycle and pedestrian accessibility, available existing parking, local traffic impacts, State and local plan consistency.

Each alternative was evaluated given the four criteria, using the following scale: unfavorable (1 point), neutral (2 points), and favorable (3 points). The proposed Ardenwood Station location was the only alternative that received a favorable rating for most criteria. The location received "neutral" ratings for only two of 25 criteria considerations: Sensitivity Air Quality and Noise Receptors (reason: temporary noise and air quality impacts may occur during operation of construction vehicles and equipment); and Existing Parking (reason: additional parking may be required; existing lot often reaches capacity by 7am). In relation to the other two station alternatives, however, all three had the same "neutral" finding for Sensitivity Air Quality and Noise Receptors for the same reasons, and the Ardenwood Station alternative was the only one that did not receive an unfavorable rating for parking, as neither of the other two alternatives had any existing parking available.

The Hayward and Newark Junction station alternatives also had lower ridership projections than Ardenwood, which would lower the potential greenhouse gas emissions reduction and air quality improvement benefits of the Project. In addition, both the Hayward and Newark Junction potential stations would have required access to or acquisition of more properties outside of the railroad ROW than the proposed Ardenwood Station. New grade-separated crossings would likely be needed for both the Hayward and Newark Junction alternatives as well. Therefore, constructing a new station at either Hayward or Newark Junction was eliminated from consideration for the Draft EIR

because neither station location would result in fewer environmental impacts compared to the proposed Project.

Findings of the potential station locations evaluation are detailed in the Project Definition Report (2019), which can be reviewed at: https://southbayconnect.com/resources/SBC_ProjectDefinitionReport.pdf.

2.4. References Cited

CCJPA (Capitol Corridor Joint Powers Authority). 2019. Capitol Corridor South Bay Connect Project Definition Report. November 2019. https://southbayconnect.com/resources/SBC_ProjectDefinitionReport.pdf.