Chapter 2. Project Description

2.1 Introduction and Project History

The Pasadena Metro Blue Line Construction Authority/Metro Gold Line Foothill Extension Construction Authority (the "Authority") initially prepared a Draft Environmental Impact Statement/Environmental Impact Report (the "Draft EIS/EIR") for the Gold Line Foothill Extension Project (the "Project"). Referred to as Phase 2 of the overall Project and, at complete build out, extending from the cities of Pasadena to Montclair, the Project was divided into two subsequent phases: Phase 2A, spanning from the cities of Pasadena to Azusa, and Phase 2B, spanning from the cities of Azusa to Montclair. Phase 2A includes 11.5 miles of track through six cities (Pasadena, Arcadia, Monrovia, Duarte, Irwindale, and Azusa), six stations, and the construction of a new Maintenance and Operation (M&O) Facility. In conjunction with Authority's decision to proceed with Phase 2A, a Final EIR was prepared based on the Draft EIS/EIR, though this document was only for the purposes of the Phase 2A extension. It was certified pursuant to the California Environmental Quality Act (CEQA) in February 2007 as the *Gold Line Phase II Pasadena to Montclair-Foothill Extension Final Environmental Impact Report* (the "2007 Final EIR").

Following certification, additional Project refinements to the design of Phase 2A were identified, and two addenda were prepared to address these refinements. The "Addendum to Gold Line Phase II Extension Project as Certified for Segment 1 (SCH # 2003061157)" dated August 21, 2009 (the "2007 Final EIR Addendum No. 1") assessed the following Project refinements:

- Constructing a grade separation and pedestrian crossing over Santa Anita Avenue in the City of Arcadia.
- Redesigning the Myrtle Avenue/Duarte Road/California Avenue at-grade crossings and relocation of traction power supply substation (TPSS) unit No. 3 due to Station Square transit-oriented development in the City of Monrovia.
- Shifting the Irwindale Station location approximately 75 feet eastward from the previously proposed location in the City of Irwindale.
- Eliminating the shift of the freight rail track from the south side to the north side in the City of Azusa.

The "Addendum to Gold Line Phase II Extension Project as Certified for Segment 1 (SCH # 2003061157)" dated June 18, 2010 (the "2007 Final EIR Addendum No. 2") assessed the following Project refinements:

- Relocating TPSS unit No. 1 due to drainage concerns in the City of Arcadia.
- Relocating and/or shifting TPSS unit No. 5 to avoid existing improvements (water well/water tanks) and moving the access road in the City of Duarte.
- Relocating the rail crossover between Station 1026+00 and Station 1031+00 to 1200 feet west of the current location in the City of Monrovia. This refinement also

included replacing the existing bridge over Alta Vista Wash with a bridge class box culvert.

- Relocating TPSS unit No. 6 due to access issues in the City of Irwindale.
- Relocating TPSS units No. 7 and No. 8 due to access issues in the City of Azusa. This refinement also included the option of constructing a surface parking facility on 2 acres of land for the Azusa-Citrus Station parking facility.
- Realigning the freight track from Station 1244+20+/- to Station 1433+80+/- in the cities of Irwindale and Azusa. The refinement also included a 12-foot shift south and the addition of a bridge to accommodate a 30-foot separation of track centers due to Federal Railroad Administration intrusion design requirements.

After certification of the 2007 Final EIR with addenda, it was again determined that further Project refinements were needed. To address these refinements, the Authority prepared the *Gold Line Phase II Pasadena to Montclair-Foothill Extension Final Supplemental Environmental Impact Report* (the "2011 Supplemental EIR No. 1") for the M&O Facility in Monrovia and for other minor refinements within Phase 2A, all of which was based on the 2007 Final EIR. The 2011 Supplemental EIR No. 1, certified in January 2011, assessed the following Project refinements:

- Replacing the North Colorado Boulevard Bridge in the City of Arcadia.
- Constructing the M&O Facility in the City of Monrovia during Phase 2A to support the Metro Gold Line and other existing light rail transit (LRT) systems.
- Relocating the parking facilities at the Monrovia Station in the City of Monrovia.
- Realigning the Mountain Avenue and Duarte Road intersection in the cities of Duarte and Monrovia.
- Replacing the San Gabriel River Bridge in the City of Irwindale.
- Relocating the parking facility at the Irwindale Station in the City of Irwindale.

Upon certification of the 2011 Supplemental EIR No. 1, it was once more determined that additional Project refinements were needed for Phase 2A (referred to as the "Project Refinements" in this Supplemental EIR). Initially, the Authority prepared a third addendum to the 2007 Final EIR. However, in order to ensure the opportunity for public comment on the following Project Refinements, the Authority is preparing this Supplemental Environmental Impact Report No. 2 for Additional Project Refinements (the "Supplemental EIR No. 2").

Section 15163 (b) of the CEQA Guidelines states that "the supplement to the EIR need only to contain the information necessary to make the previous EIR adequate for the project as revised." Accordingly, this supplement analyzes the potential environmental impacts of the currently proposed Project Refinements.

This Project description is intended, among other things, to serve as a general description of the proposed Project's technical, economic, and environmental characteristics per CEQA Guidelines Section 15124(c).

2.2 Project Objectives

The Project Refinements, if approved, would be developed by the Authority to support operations of the Metro Gold Line. Specific objectives of the Project Refinements include:

- Maintaining traction voltage in compliance with Metro Design Criteria.
- Supporting pedestrian accessibility needs and safety, alleviating circulation impacts on surrounding businesses, and ~~reducing~~ minimizing impacts to residential uses.
- Eliminating an unnecessary sound barrier.
- Mitigating vibration impacts for a single-family residence.

2.3 Regional Project Location and Setting

All proposed construction and improvements would occur within Phase 2A of the Project (the Pasadena to Azusa portion of the Gold Line Foothill Extension) (Figure 2-1).

2.4 Description of the Project Refinements and Construction Activity

2.4.1 Project Refinements

Each of the Project Refinements are described regarding refinement location, existing land use, refinement characteristics, access, landscaping, and utilities. All of the Project Refinements are presented on Figure 2-2.

Figure 2-1: Project Location

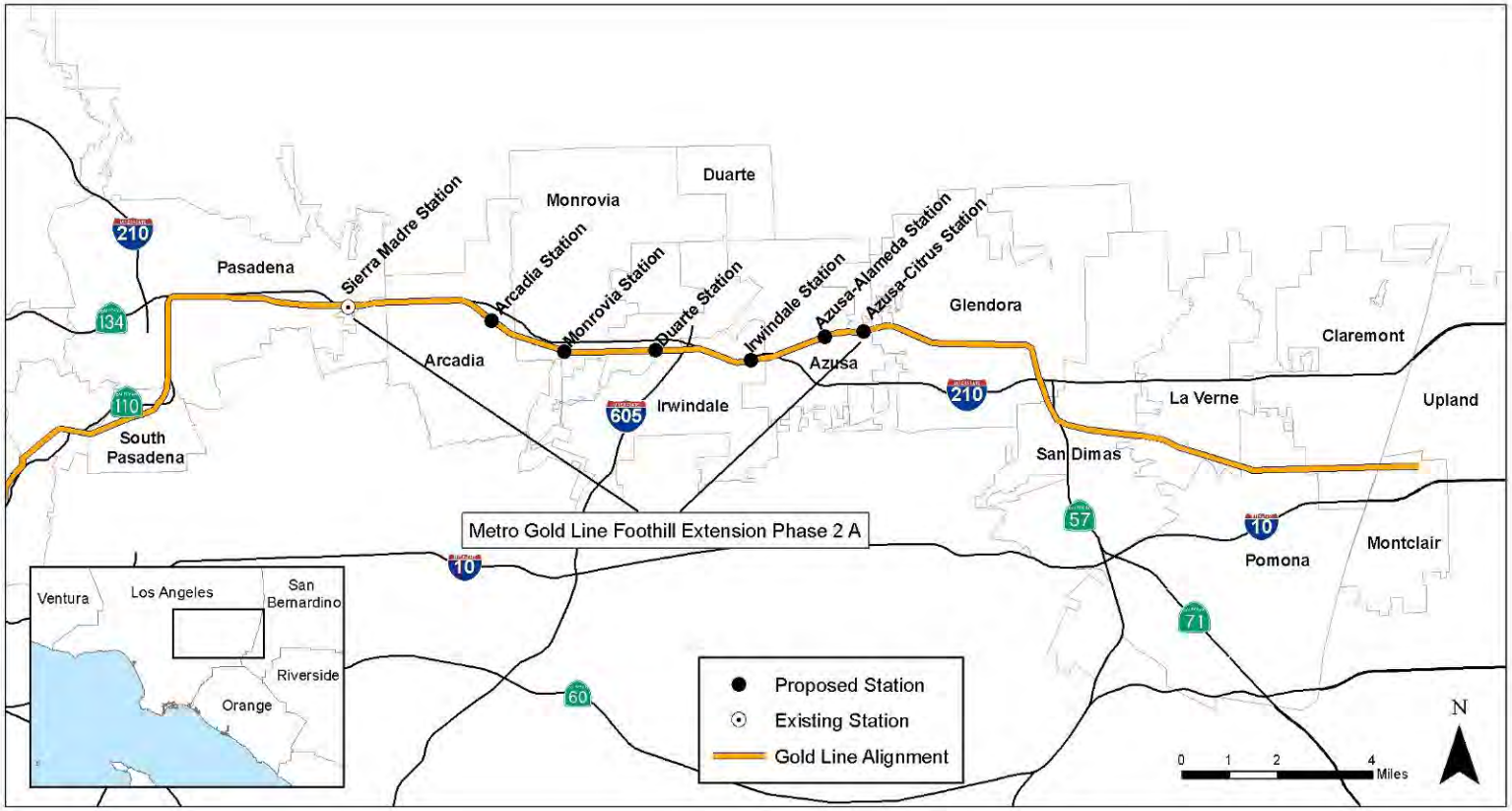


Figure 2-2: Overview of the Project Refinements

2.4.1.1 Project Refinement No. 1: Adding Traction Power Supply Substations (TPSS) Units in Various Cities within Phase 2A

In order to provide electrical power to the light rail vehicles, the Project would require a series of TPSS units along the LRT alignment. The 2007 Final EIR and 2007 Final EIR Addendum No. 2 analyzed eight TPSS units, which were thought to provide the necessary power required for the operation of Phase 2A. However, on June 10, 2011, Metro released a "Traction Power Load-Flow Study Report" that refined the traction power needs of Phase 2A, including sizes and locations for the proposed TPSS units (Appendix E). The analysis indicated that even with all the proposed TPSS units in service, the system could not maintain traction voltage in compliance with Metro Design Criteria. Current Metro Design Criteria require that sustained light rail vehicle performance under abnormal operating conditions, such as providing adequate power to support the anticipated "worst-case" service pattern of 3-car trains spaced at 5-minute headways, have no degradation. Therefore, the report concluded that two additional TPSS units would be needed for the system to be capable of providing the necessary electrical power to meet the new criteria.

The Authority coordinated with Metro to assess the probability of a deviation from Metro Design Criteria that allows for a waiver from the 'no degradation' requirement. In February 2011, Metro rejected the waiver. This rejection occurred after the 2011 Supplemental EIR No. 1 was substantially completed, resulting in the need for the additional TPSS units to be analyzed as part of this document. For purposes of this Supplemental EIR No. 2 and future discussions concerning TPSS units, Table 2-1 identifies the previously proposed units alongside the newly proposed units.

Table 2-1: Traction Power Substation Supply (TPSS) Unit Identification

TPSS Unit No.	TPSS Unit Location Name and Station Location	TPSS Unit Location
No. 0 (New)	Michillinda (0866+00+/-)	Near the intersection of Michillinda Avenue and Arboleda Street and north of the tracks
No. 1	Baldwin (0919+00)	Adjacent to Los Angeles Arboretum off of Baldwin Avenue and south of the tracks and Interstate 210
No. 2	Joseph (0987+00)	West of the 1st Street/Santa Clara crossing and south of the Project alignment
No. 3	Los Robles (1036+00)	North of the tracks and east of the Santa Anita Wash
No. 4	Yard (1117+00)	Also known as the Maintenance and Operations Facility, which is east of California Avenue and north of the tracks
No. 5	Business Center (1208+00)	North of the tracks and west of the Interstate 605 overpass
No. 6	Irwindale (1289+00)	West of the Irwindale Avenue service road and south of the tracks
No. 7	Virginia (1345+00)	South of the tracks and east of Virginia Avenue
No. 8A (New)	Soldano (1385+74+/-)	West of North Soldano Street and north of the tracks within the proposed Project alignment
No. 8B	Citrus (1425+08+/-)	West of Citrus Avenue and north of the tracks.

TPSS unit construction is relatively identical from one substation to the next. Typically, a TPSS unit is a pre-fabricated building, approximately 14 feet wide by 43 feet long and 14 feet high. Each TPSS unit would be installed with a ground mat, access for equipment, security fencing, and parking. The

overall property requirement would be approximately 50 feet by 100 feet (5,000 square feet), which does not include roadway access to the TPSS unit. TPSS units are located within the Authority's existing right-of-way wherever possible. However, a few of the units within Phase 2A would be located on properties immediately adjacent to the Authority's existing right-of-way due to design constraints. The substations would be designed to be compatible with the surrounding land uses through architectural treatments, landscaping, and other means as appropriate for the individual locations. Due to the general availability of electricity in the Project vicinity, utility extensions can easily be added to provide power to the TPSS units, though the utility provider will be required to bring power to each unit location. Figure 2-3 illustrates a typical TPSS unit and configuration.

Figure 2-3: Typical TPSS Unit and Configuration

These TPSS units would provide the necessary switchgear and control equipment for traction electrification of the light rail vehicle servicing tracks. Each unit would also provide traction electrification for the mainline in their applicable area and would be configured for the appropriate isolation between the yard and mainline systems.

Michillinda TPSS (TPSS No. 0)

The Michillinda TPSS (TPSS No. 0) unit is a newly proposed TPSS unit. This Supplemental EIR analyzes three alternatives (Alternative A, B, and C) for the Michillinda TPSS site. The primary difference between the three alternatives is right-of-way ownership. Alternative A would require the Authority to acquire additional right-of-way from an existing residential property. Alternative B would require the Authority to acquire right-of-way from a local bank parking lot. Alternative C is within Caltrans' right-of-way and is subject to Caltrans approval for use and access to the proposed site. All of the alternatives are described herein, and each alternative's impacts are analyzed in Chapter 3, Environmental Evaluation.

Location

The Michillinda TPSS Alternative A would be located at Station 0864+40 north of Interstate 210, one parcel west of the northwest corner of the Michillinda Avenue and Arboleda Avenue intersection in Los Angeles County near the City of Pasadena (Figure 2-4). A one-story, wood-frame, single-family residence currently occupies the site. Access to Alternative A would be from Arboleda Street on the south side of the proposed site. The substation would be accessible to road vehicles for installation, repair, maintenance, and local fire department needs.

Alternative B would be located on the northwest corner of the Michillinda Avenue and Arboleda Avenue intersection and just north of Interstate 210 at Station 0865+40 +/-. The site would be within Los Angeles County near the City of Pasadena (Figure 2-4). A paved parking lot currently occupies the property. Access would be from Arboleda Avenue on the south side of the proposed site.

Alternative C is one of three sites that were considered within Caltrans right-of-way. The site would be located at Station 0859+50 +/- south of Interstate 210 at the intersection of three freeway ramps, the North Colorado Boulevard eastbound on-ramp to the east, the North Colorado Boulevard eastbound off-ramp to the west, and the Rosemead Boulevard eastbound on-ramp to the north (Figure 2-4). Access would be from the North Colorado Boulevard freeway ramps.

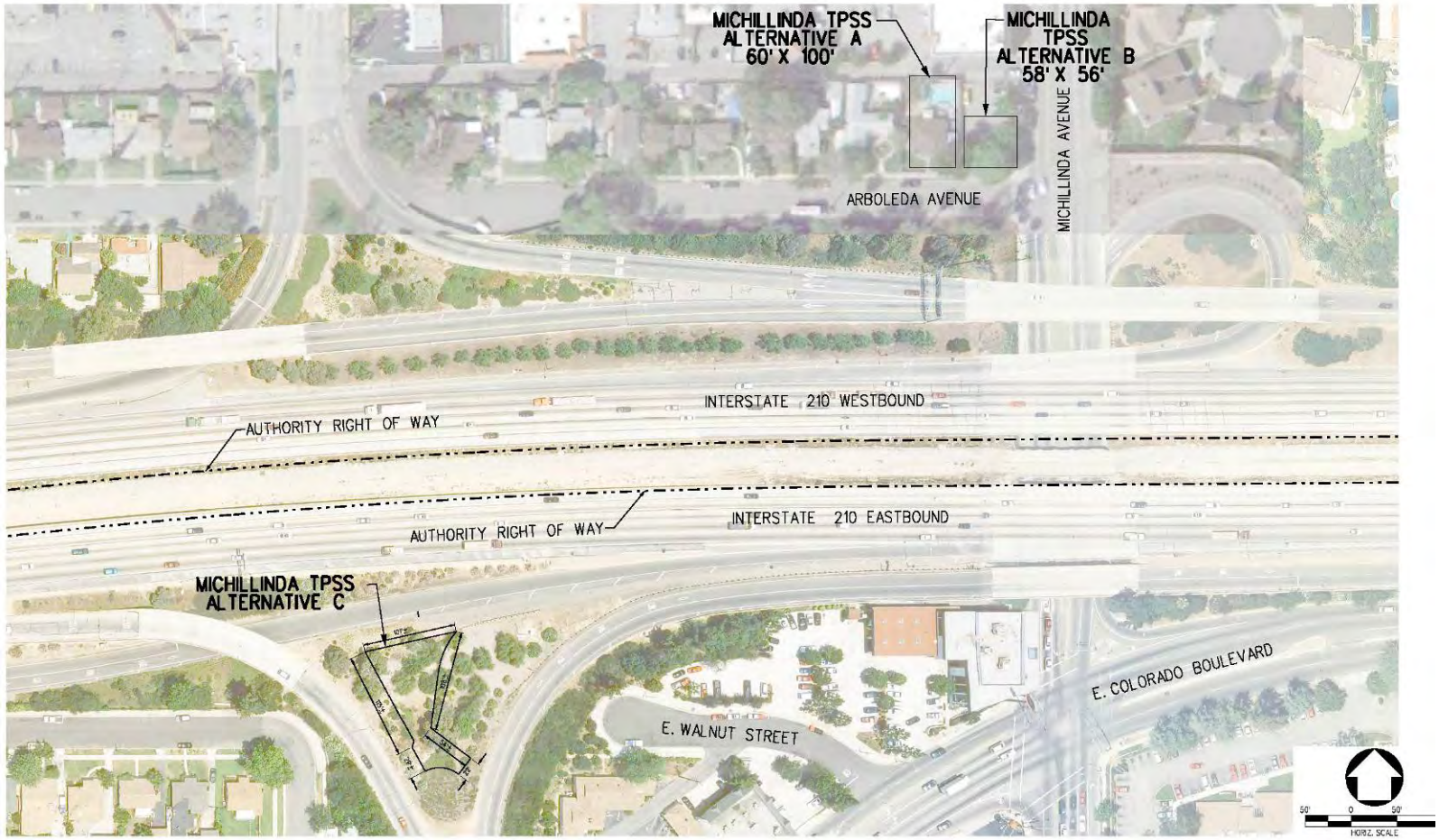
Existing Land Use

Alternative A would be located on a previously disturbed site (landscaped areas; one-story, wood-frame residence; masonry block walls; etc.) adjacent to residential properties off both Michillinda Avenue and Arboleda Street. The parcel is currently zoned as residential. Alternative B would be located on a previously disturbed site adjacent to residential properties off both Michillinda Avenue and Arboleda Street as well. The parcel is currently zoned as commercial. Alternative C would be located on a previously disturbed site (landscaped areas) adjacent to three Interstate 210 on- and off-ramps. The property has no zoning designation because it is within Caltrans' right-of-way, which is designated for transportation purposes.

Project Characteristics

All three alternatives would consist of a pre-fabricated building with roughly the same dimensions noted above and shown on Figure 2-4. Alternative A (60 feet by 100 feet) would be 6,000 square feet in size. Alternative B (58 feet by 56 feet) would be 3,248 square feet in size. Alternative C (irregular configuration) would be 7,487 square feet in size.

Figure 2-4: Michillinda TPSS (TPSS No. 0)



Soldano TPSS (TPSS No. 8A)

The original proposed site location for TPSS No. 8, as identified in the 2007 Final EIR, was relocated due to the southern shift of the freight tracks at Station 1394+32. The 2007 Final EIR Addendum No. 2 evaluated the relocation of TPSS No. 8 to two new, optional locations, which moved the TPSS sites to the north side of the Metro right-of-way. The Authority then reviewed these two options, labeled the Soldano TPSS or Option 8A at Station 1385+74 +/- and the Citrus TPSS or Option 8B at Station 1425+08 +/-. Option 8B was selected under the 2007 Final EIR Addendum No. 2.

Due to Metro's "Traction Power Load-Flow Study Report" and current Metro Design Criteria, additional TPSS units are needed to provide electrical power to the light rail vehicles. Therefore, the Soldano TPSS (TPSS No. 8A) unit would be required in addition to the already proposed and approved Citrus TPSS (TPSS No. 8B) unit from the 2007 Final EIR Addendum No. 2. This additional TPSS unit is described herein, and its impacts are analyzed in Chapter 3, Environmental Evaluation.

Location

The Soldano TPSS unit would be located north of and adjacent to North Soldano Avenue within Metro right-of-way at Station 1385+74 +/- (Figure 2-5). Access to the Soldano TPSS unit would be from North Soldano Avenue on the east side of proposed site.

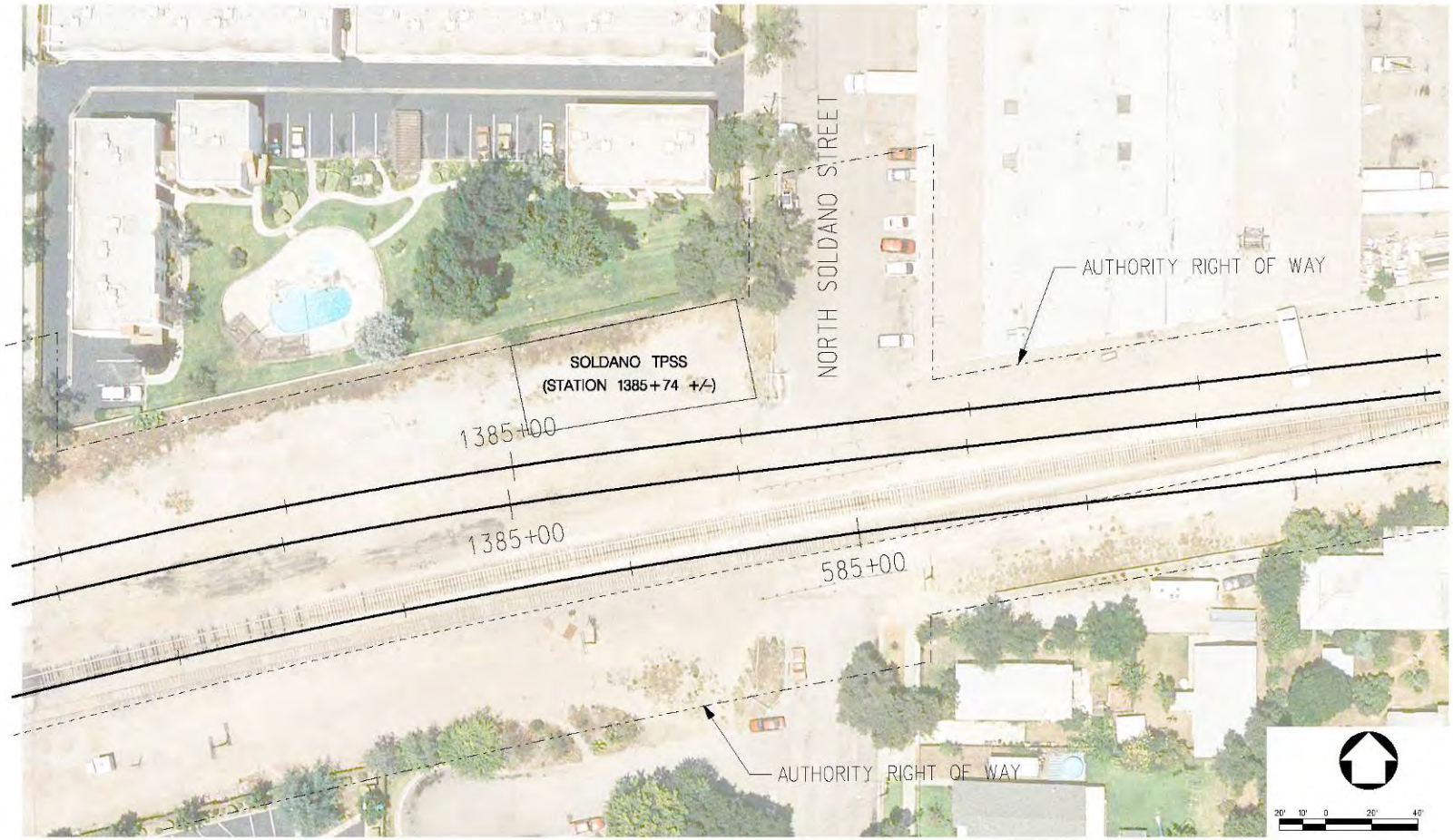
Existing Land Use

The proposed substation site is located in a previously disturbed area adjacent to commercial properties and multi-family apartments off North Soldano Avenue. The property has no zoning designation because it is within Metro right-of-way, which is designated for transportation purposes.

Project Characteristics

The Soldano TPSS (TPSS No. 8A) unit would consist of a pre-fabricated building with the same dimensions noted above. The utility provider would be required to bring power to the proposed TPSS site.

Figure 2-5: Soldano TPSS (TPSS No. 8A)



2.4.1.2 Project Refinement No. 2: Relocating the Duarte Station Parking Facility in the City of Duarte

Although the 2007 Final EIR included analysis of parking facilities for each LRT station, relocating the proposed Duarte Station parking facility is currently being investigated due to anticipated access issues associated with the relocation of the Duarte Station approximately 400 feet to the east. There are two alternatives proposed for the Duarte Station parking facility. Both alternatives would be approximately 1.5 acres and would facilitate 125 parking spaces. The primary difference between the two alternatives is the orientation of a parking facility in an east-west direction (Alternative A) or a north-south direction (Alternative B). Alternative A and Alternative B are described herein, and each alternative's impacts are analyzed in Chapter 3, Environmental Evaluation.

Location

In its desire to design a parking facility that is convenient and safe for pedestrian access, the Authority is evaluating the shifting of the proposed Duarte Station surface parking facility from the location identified in the 2007 Final EIR to the east on a previously cleared, 1.5 acre parcel currently occupied by an existing parking lot. Alternative A and Alternative B would be located at the southeast corner of Business Center Drive and Highland Avenue, approximately 1000 feet east of the 2007 Final EIR location (Figure 2-6 and Figure 2-7). Access to both alternatives would be from Business Center Drive.

Existing Land Use

The proposed Duarte Station parking facility site is located in a previously disturbed area. Alternative A is currently being used as a parking lot for GE Aviation. Alternative B is currently being used for parking for GE Aviation and a number of local businesses immediately to the south.

Project Characteristics

The previously proposed Duarte Station parking facility (as approved in the 2007 Final EIR) would have been located on a 1.5-acre parcel that had been cleared and graded, with two-thirds of the site paved. The remaining third was vacant and covered by grass. According to the 2007 Final EIR, the Authority would purchase the 1.5-acre parcel for parking north of the proposed Duarte Station to accommodate 125 vehicles.

However, the proposed parking facility would be 2,000 feet from the relocated Duarte Station. By relocating the Duarte Station parking facility to the east closer to the Duarte Station, Alternative A and Alternative B would reduce walking distances between the parking facility and the Station, thus increasing patron convenience, safety, and the overall ease of accessibility. Both alternatives are approximately 600 feet from the center of the parking lot to the Duarte Station platform. Because the proposed parking facility would be located closer to the Duarte Station, there is an opportunity to minimize potential impacts on surrounding residential uses to the west and north of the 2007 Final-EIR approved site, although it should be noted that no significant impacts to residents near the approved site were indentified in the 2007 Final EIR. The 2007 Final EIR-approved site could be used to compensate for the parking needs of businesses that could be impacted by either Alternative A or Alternative B. If the 2007 Final EIR-approved site was used as parking for these

businesses, it is expected that use would occur during normal business hours and primarily on weekdays. This would cause less of an impact than Metro's use of the same site for seven days a week during a majority of the day. Lastly, the proposed location is more compatible with future development that the City of Duarte may develop.

Figure 2-6: Duarte Station Parking Facility (Alternative A)

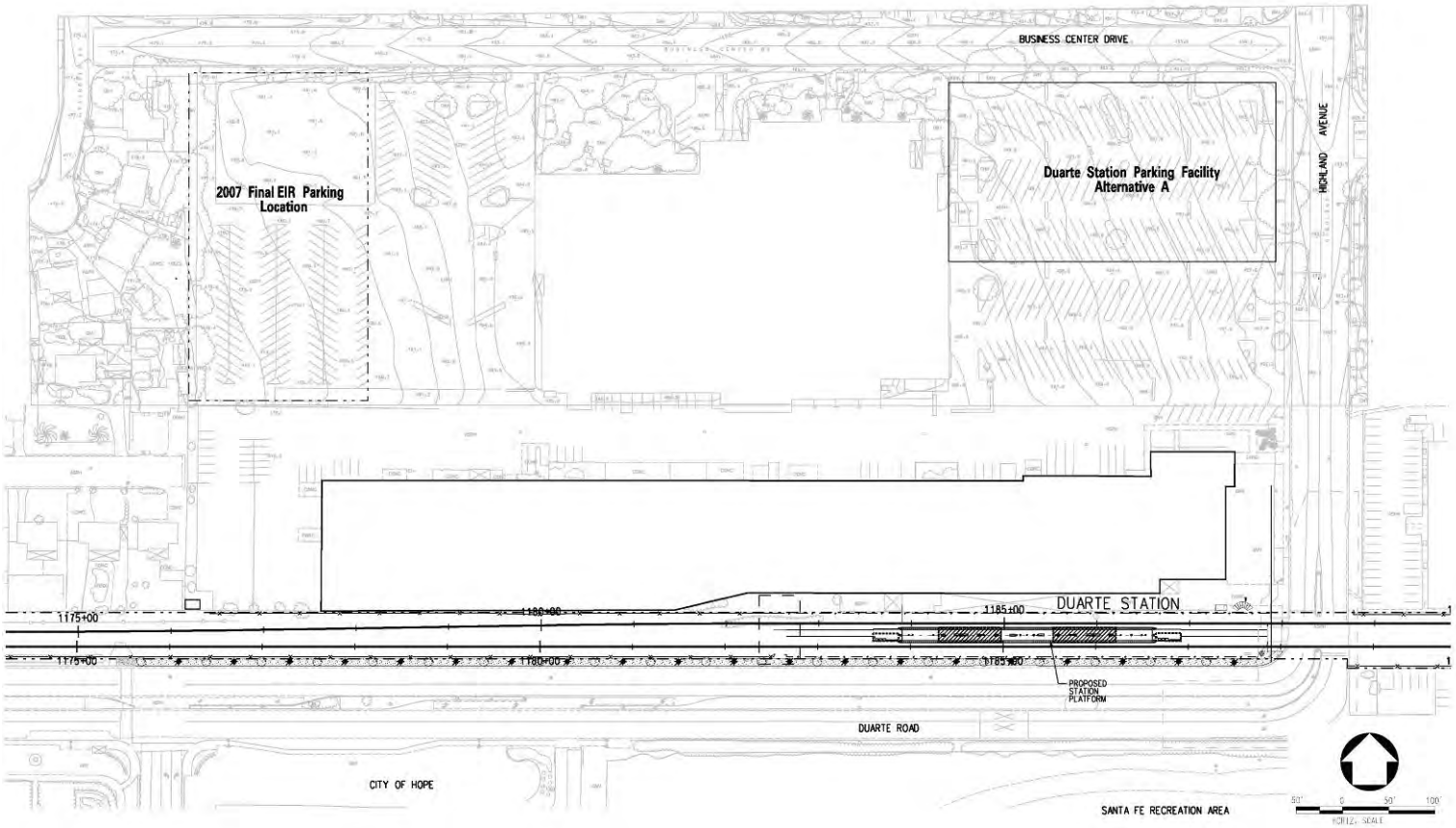
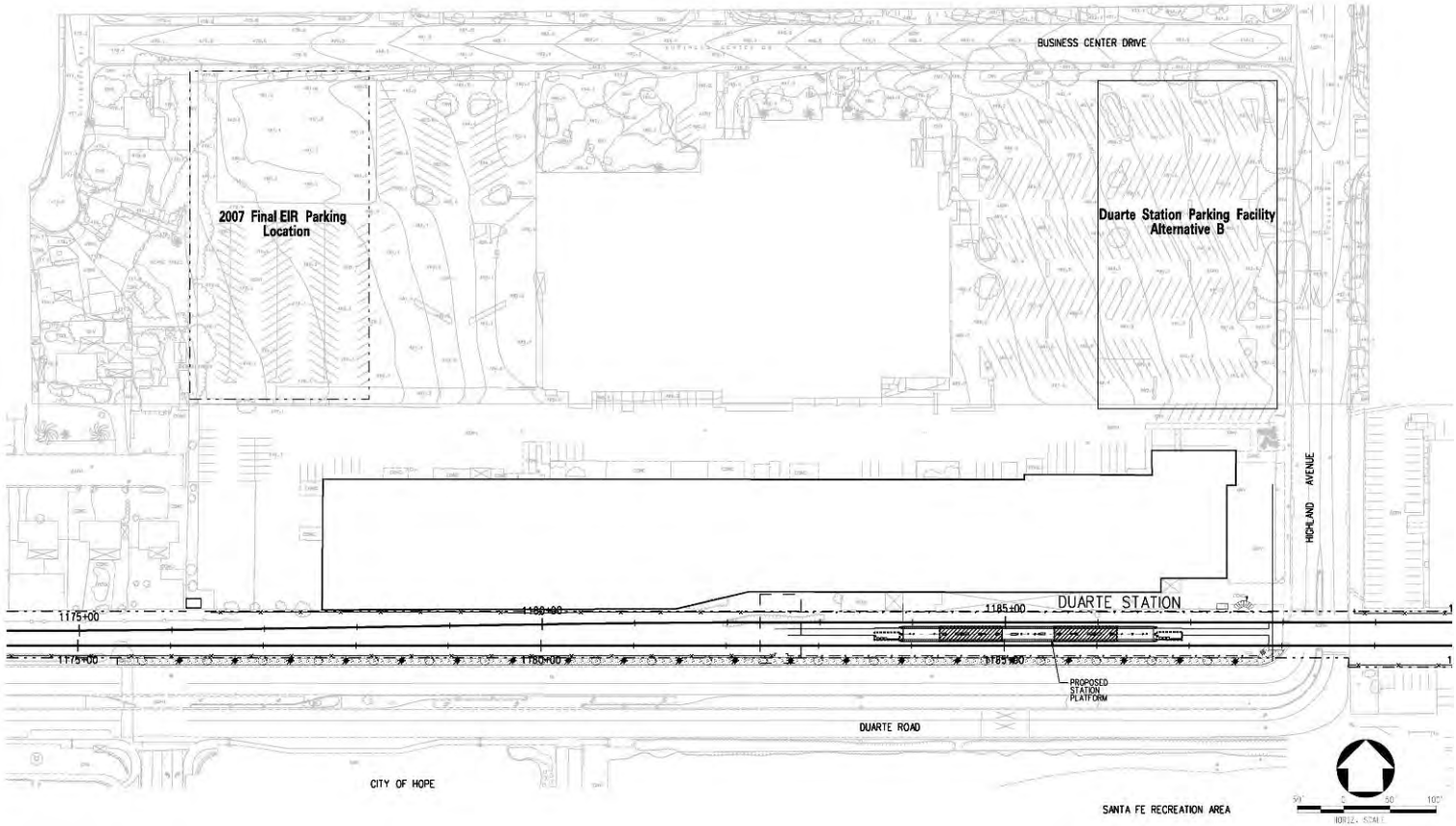


Figure 2-7: Duarte Station Parking Facility (Alternative B)



2.4.1.3 Project Refinement No. 3: Eliminating Sound Barrier (Duarte Eastbound Group 1) in the City of Duarte

The analysis in the 2007 Final EIR recommended a 334-foot sound barrier along the eastbound track in the City of Duarte. Through review of the mitigation recommendations proposed in the 2007 Final EIR, the Authority, based on further analysis and refined design during Advanced Conceptual Engineering and consistent with 2007 Final EIR mitigation commitments, has determined that a sound barrier is not warranted in this location because the predicted noise level is below the impact threshold.

Location

The Project Refinement is located in the City of Duarte from Station 1129+67 to Station 1133+01, east of the Duarte Road and Mountain Avenue intersection. The Project Refinement is along Duarte Road between Mountain Avenue and Park Rose Avenue (Figure 2-8).

Existing Land Use

The Project Refinement is located in a zoned residential area, which includes four, single-family residences labeled as the Duarte Eastbound Group 1.

Project Characteristics

The Authority reviewed the recommendations, assumptions, and prediction calculations from the original noise analysis in the 2007 Final EIR. Upon further review, the Authority determined that noise mitigation is not needed for the Duarte Eastbound Group 1. High existing noise levels at this location are due to the traffic on Duarte Road. In addition, the LRT tracks will be located approximately 120 feet from the residences. Predicted noise levels are below the impact threshold. As such, noise mitigation is not warranted.

2.4.1.4 Project Refinement No. 4: Mitigating Vibration Impacts for a Single-family Residence in the City of Azusa

As part of ongoing design adjustments during the Advanced Conceptual Engineering phase, the preliminary vibration analysis was expanded to better define the limits of vibration mitigation required along the entire alignment. Based on the findings of the "*Updated Vibration Predictions for Metro Gold Line Phase 2A, Pasadena to Azusa"* dated November 17, 2010, vibration levels would exceed the Federal Transit Administration (FTA) impact criteria at one vibration-sensitive receiver (Appendix A). The receiver is a single-family residence located 15 feet from the proposed inbound LRT tracks.

Location

The affected receiver is a one-story, wood-frame, single-family residential structure located at approximately Station 1368+00, near the intersection of the LRT right-of-way with North Angeleno Avenue (Figure 2-9).

Figure 2-8: Eliminating Sound Barrier

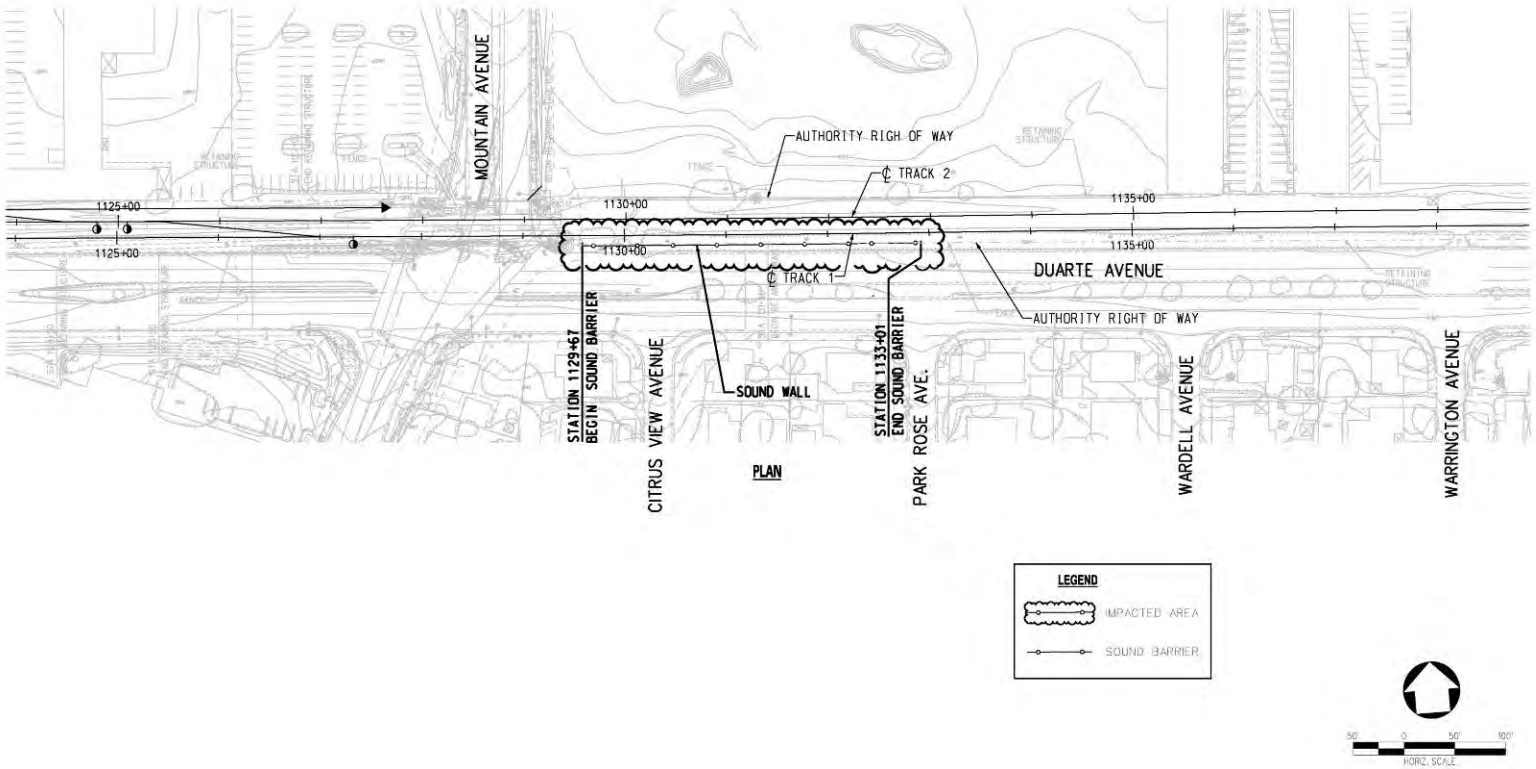
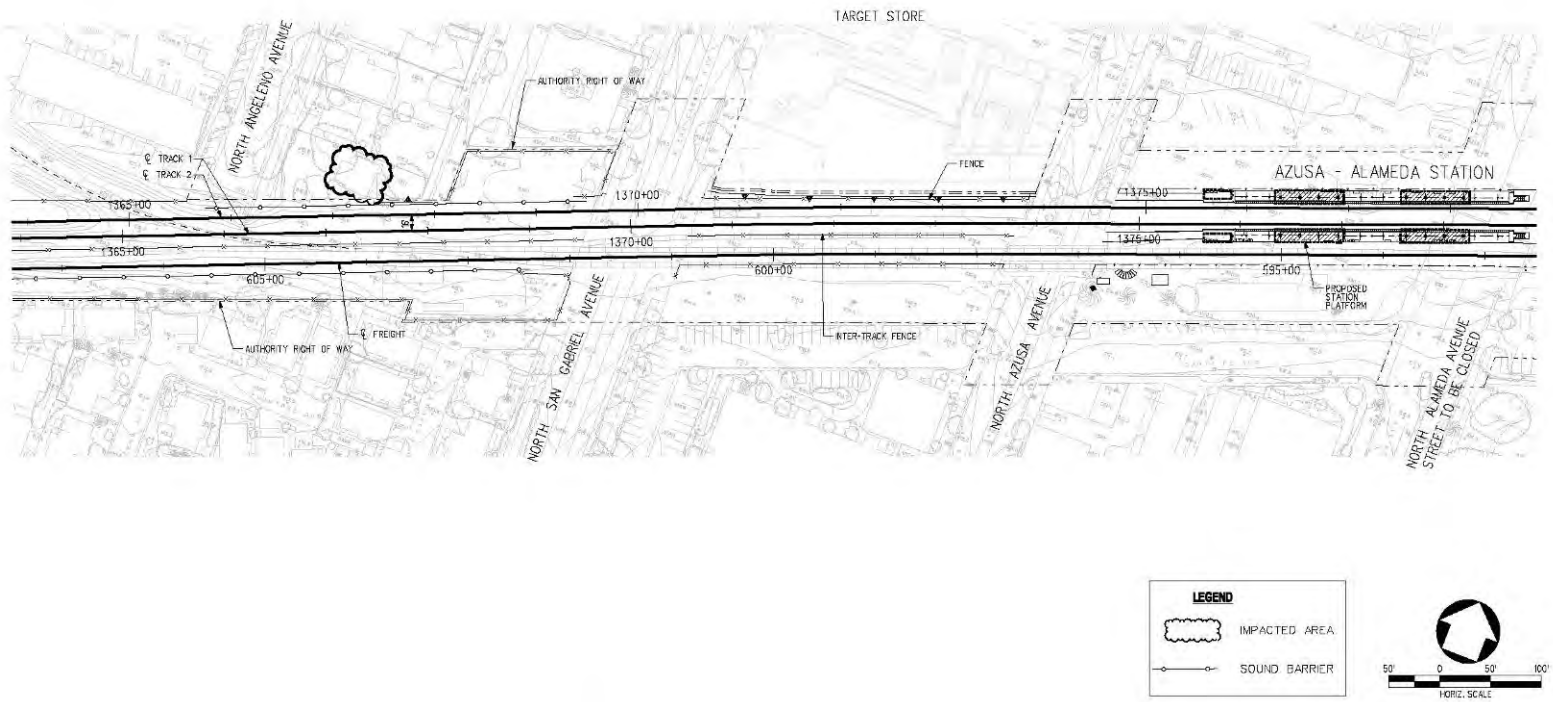


Figure 2-9: Single-family Residence (Vibration Mitigation)



Existing Land Use

The area surrounding the single-family residence is a neighborhood that contains mostly historic-period, single-family residences (mid-20th century) alongside several apartment buildings, the Azusa City Yard, and the existing railroad right-of-way. The residences in this area are labeled the Azusa Westbound Group 1.

Project Characteristics

Without vibration mitigation, vibration levels are predicted to reach 88 vibration decibels (VdB) in the 63 Hertz (Hz) 1/3 octave band. The proposed vibration mitigation measure for the majority of the Project is a 12-inch layer of tire-derived aggregate under the ballast. With the tire-derived aggregate, vibration levels at the Azusa Westbound Group 1 are predicted to reach 79 VdB in the 63 Hz 1/3 octave band, which still exceeds the FTA impact threshold by 7 VdB.

2.4.2 Construction Activity and Schedule

As proposed in the 2007 Final EIR, the Project will utilize a design-build method of delivery that combines the architectural/engineering design services and construction services under one contract (or under a single entity). The Project Refinements would be constructed in phases, with construction estimated to begin in mid to late 2012. The Project completion date is presently scheduled for 2015. Therefore, for purposes of this document, the build-out year or date of completion is assumed to be 2015. During construction, four basic types of activities would be expected to occur, and some activities could occur simultaneously. The first activity would be demolition of existing structures if present on any of the proposed sites. Second, the proposed site would be prepared, excavated, and graded to accommodate the Project Refinements (as applicable). Thirdly, the Project Refinement would be constructed. Finally, the new facilities and the development would be readied for use. Equipment utilized for the refinements would be similar for all demolition activities on the Project, including backhoes, loaders, and dump trucks. In addition at the Caltrans location, dozers would be used. The design-build contractor would be responsible for preparing a comprehensive schedule for all activities, as well as preparing a construction management plan to address all existing and prior construction-related mitigation commitments as identified in the 2007 Final EIR, the 2007 Final EIR Addendum No. 1 and Addendum No. 2, and the 2011 Supplemental EIR No. 1.

Concerning specific Project Refinement construction activities, there would be no construction activities related to eliminating the sound barrier (Duarte Eastbound Group 1) in the City of Duarte. Construction activity and schedule for the remaining three Project Refinements are discussed below.

Michillinda TPSS (TPSS No. 0) and Soldano TPSS (TPSS No. 8A) Units

As noted, each proposed TPSS site would require approximately 5,000 square feet and would include a substation concrete slab with a grounding mat. The TPSS unit itself would be a prefabricated structure approximately 14 feet wide by 43 feet long and 14 feet high. It would be delivered to the site, connected to the slab, and connected to the utilities. Fencing would be installed around the perimeter of the proposed site, and architectural and landscaping treatments would be provided, as appropriate. About six months would be required for site preparation and installation of a TPSS unit.

Construction activity for Alternative A would require the removal of existing landscaping and the residential structure to accommodate the TPSS unit, as well as the removal of existing landscaping and the residential structure (approximately 80 cubic yards of material, ten truck loads). Construction activity for Alternative B would require clearing and preparing the currently paved parking lot to accommodate the TPSS unit (approximately 20 cubic yards of material, two truck loads). Construction activity for Alternative C would require the possible relocation of underground utilities and the removal of some ground vegetation to accommodate the TPSS unit (approximately 35 cubic yards of material, four truck loads). The Alternative C site also has a monitoring well (roughly 18 inches in diameter set in 24 inches of concrete) located on the southern portion of the site between the Interstate 210 on- and off-ramps. Because construction would be above the groundwater (90 to 100 feet below surface), there is an extremely low probability of excavating into any groundwater or contaminated groundwater. In addition the deepest excavation (approximately 5 feet) is on the northern portion of the site, which is a significant distance from the monitoring well. All of the alternatives would be designed to be compatible with the surrounding land uses through architectural treatments, landscaping, and other means as appropriate.

Construction activity at the Soldano TPSS site would require site grading. As stated, the proposed site is located in a previously disturbed area adjacent to commercial properties and an apartment complex at North Soldano Avenue. The proposed site is not landscaped. However, it is anticipated that ground disturbance would be minimal, and any excess material from site grading could be used on the Metro right-of-way. Additionally, the substation would be designed to be compatible with the surrounding land uses through architectural treatments, landscaping, and other means as appropriate.

Duarte Station Parking Facility

The proposed Duarte Station parking facility would be constructed as part of the overall Project. Therefore, the aforementioned construction activity and schedule applies to this Project Refinement. The contractor will prepare a comprehensive schedule for all activities. Alternative A and B sites are currently occupied by an active, cleared parking lot consisting of approximately 150 parking spaces. Therefore, construction is expected to be minimal to convert the existing parking lot into the proposed Duarte Station parking facility with approximately 125 parking stalls. The existing pavement is in fairly good condition, and therefore, construction activity/ground disturbance at the proposed site would be minimal under both alternatives. There would be two to four truckloads of asphalt, and existing curbs would be removed to accommodate various concrete islands.

Single-family Residence in the City of Azusa

To mitigate the vibration impact at the single-family residence, the Authority evaluated potential mitigation measures, such as constructing a floating slab track (2007 Final EIR mitigation), acquiring the single-family residence, or negotiating an easement with the current property owner, further discussed in Chapter 3. Mitigation utilizing tire derived aggregate would not achieve the required vibration reduction required. Therefore, a floating slab or acquiring the single-family residence has been proposed that would require construction and/or demolition.

As noted, construction activity related to the floating slab has already been discussed in the 2007 Final EIR and the "*Updated Vibration Predictions for Metro Gold Line Phase 2A, Pasadena to Azusa*" dated

November 17, 2010. Construction activity related to acquiring the single-family residence would require the removal of existing landscaping and the residential structure (approximately 50 cubic yards of material, five truck loads). There would be no construction activity related to purchasing or negotiating an easement as the owner of the single-family residence would be compensated for the vibration impact. The following presents a more in-depth description of construction activity related to both the acquisition of the single-family residence and the construction of the floating slab.

If the single-family residence is acquired, a regular track will be constructed. Regular track construction consists of preparing the sub-grade (setting alignment and elevation of the soil under the trackway), placing the sub ballast (8 inches of granular material with a mixture of fine, small- and median-graded stone), placing 12 inches of ballast (larger, stronger material), placing ties, filling the voids between and around the ends of the ties with additional ballast, placing a rail fastener, and lastly the rail itself. Generally, a total depth from top of sub-grade to top of rail is 36 inches.

A floating slab starts with the same initial step (sub-grade preparation), then in the area of the floating slab, the sub-grade is removed generally to a depth of 18 inches below sub-grade, and a concrete pocket is formed. The base of the pocket is approximately 18 inches thick, which allows for a 4-inch to 6-inch air space for the rubber vibration isolation pad(s) and another concrete slab approximately 12 inches thick to be placed on top of the isolators or "floats" on the isolators. A plinth (second pour concrete) is formed on top of the floating slab as a base for the track fasteners, the fastener, and then the rail. The total depth of a floating slab is approximately 54 inches.

Both types of mitigation (i.e., constructing a floating slab and acquiring/removing the house) would require the same general equipment, which includes dozers, backhoes, graders, rollers. Demolition of the house will require backhoes and dozers as well as dump trucks to haul the waste off site. Dust control will require either a watering truck or permission to use a local hydrant, and materials would need to be transported and dumped in a landfill. Slab construction will require a crane to lift the second concrete slab, as well as concrete delivery and placement. No materials would need to be transported and dumped in a landfill.

2.5 Permits and Authorization

In addition to compliance with CEQA, the Project Refinements would be subject to additional permitting requirements under state and federal regulations. Anticipated permitting requirements for the overall Project are described in Table 2-2.

Table 2-2: Permitting Requirements

Agency	Type of Permit/Authorization
U.S. Army Corps of Engineers	Clean Water Act, Section 404
Regional Water Quality Control Board	Clean Water Act, Section 401 Porter Cologne Water Quality Control Act

Regional Water Quality Control Board	National Pollutant Discharge Elimination System Permits
California Department of Fish and Game	Fish and Game Code, Section 1602, California Endangered Species Act, Section 2081