RESOLUTION NO. 2014-R-03

RESOLUTION OF THE METRO GOLD LINE FOOTHILL EXTENSION CONSTRUCTION AUTHORITY, ADOPTING AN ADDENDUM PURSUANT TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT AND APPROVING PROJECT REFINEMENTS RELATED TO PHASE 2B OF THE GOLD LINE FOOTHILL EXTENSION, FROM AZUSA TO MONTCLAIR, INCLUDING A BRIDGE CROSSING AT GAREY AVENUE AND RELOCATION OF THE POMONA STATION

THE METRO GOLD LINE FOOTHILL EXTENSION CONSTRUCTION AUTHORITY HEREBY FINDS, DECLARES, AND RESOLVES AS FOLLOWS:

WHEREAS, the Metro Gold Line Foothill Extension Construction Authority ("Authority") is a public entity created by the California State Legislature pursuant to Section 132400 *et seq.* of the Public Utilities Code ("PUC") for the exclusive purpose of awarding and overseeing all design and construction contracts for completion of the Gold Line light rail project, which is defined in PUC Section 132400 as extending from Union Station in the City of Los Angeles to the City of Montclair; and

WHEREAS, the Authority certified a Final Environmental Impact Report ("FEIR") for Phase II, Segment 2 from Azusa to Montclair of the Gold Line Foothill Extension (also referred to as Phase 2B, and the "Project" herein) and approved the Project in March of 2013; and

WHEREAS, further refinements to the Project, as set forth in Exhibit B, incorporated herein by reference ("Project Refinements") have been proposed and reviewed by the Authority Board; and

WHEREAS, the Authority has caused an Addendum ("Addendum") to the FEIR to be prepared for the Project Refinements in accordance with the California Environmental Quality Act Guideline § 15164, because the proposed Project Refinements do not require the preparation of a new or supplemental EIR in accordance with CEQA Guideline § 15162, which Addendum is attached hereto as Exhibit A; and

WHEREAS, an addendum need not be circulated for public review but is attached to the FEIR in accordance with CEQA Guideline § 15164; and

WHEREAS, the Authority Board has reviewed and considered the Addendum in conjunction with the FEIR; and

WHEREAS, the Authority Board has reviewed the findings made in this Resolution and finds that they are based upon substantial evidence that has been presented to the Authority Board in the record of the proceedings. The documents, staff reports, technical studies, appendices, plans, specifications, and other materials that constitute the record of proceedings on which this Resolution is based are on file and available for public examination during normal business hours in the Authority's offices and with the Clerk of the Board, who serves as the custodian of these records.

NOW, THEREFORE, THE METRO GOLD LINE FOOTHILL EXTENSION CONSTRUCTION AUTHORITY HEREBY FINDS, DECLARES, AND RESOLVES AS FOLLOWS:

Section 1. The foregoing recitals are incorporated into this Resolution by this reference, and constitute a material part of this Resolution.

Section 2. The Authority Board has independently reviewed and considered the contents of the Addendum prior to deciding whether to approve the Project Refinements.

Section 3. The Authority Board hereby adopts the Addendum, attached hereto as Exhibit A and incorporated herein by this reference, and approves the Project Refinements, attached hereto as Exhibit B and incorporated herein by this reference (and described more particularly in the Addendum). The Authority Board further directs staff to prepare and file notices of determination in Los Angeles and San Bernardino Counties within (5) business days of the date on which this Resolution is adopted.

Section 4. The Clerk of the Authority Board shall certify to the adoption of this Resolution, and shall cause this Resolution to be entered in the official records of the Authority.

Adopted this 28th day of May, 2014.

DOUG TESSITOR
Chair of the Metro Gold Line Foothill Extension Construction Authority Board

ATTEST:

CHRISTOPHER LOWE
Clerk of the Board

APPROVED AS TO FORM:

MICHAEL ESTRADA
General Counsel

EXHIBIT A

ADDENDUM

Addendum No. 1

to

Final Environmental Impact Report for Metro Gold Line Foothill Extension – Azusa to Montclair (SCH 2010121069)

Analyzing a Grade-Separated Crossing at Garey Avenue and a Shift in the Location of the Pomona Station Platform

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Metro Gold Line Foothill Extension Construction Authority

May 2014

Chapter 1 – Introduction

1.1 ROLE OF THE ADDENDUM

A Final Environmental Impact Report (EIR) for the Metro Gold Line Foothill Extension – Azusa to Montclair project was published on February 14, 2013. This Addendum No.1 assesses potential changes resulting from design refinements to the project proposed after the Metro Foothill Extension Construction Authority (the Construction Authority) certified the Final EIR on March 6, 2013. The potential changes consist of a grade-separated LRT crossing ("bridge") at Garey Avenue in Pomona, and a shift in the location of the Pomona Station platform.

The California Environmental Quality Act (CEQA) and CEQA Guidelines Sections 15162 and 15164 provide for the preparation of an addendum to a final EIR when "some changes or additions are necessary" that do not require major revisions to the previous EIR "due to involvement of new significant environmental effects or a substantial increase in severity of previously identified significant effects", or substantial changes "with respect to the circumstances under which the project is undertaken".

The CEQA Guidelines Section 15164 also indicates that the addendum need not to be circulated for public review, but "can be included in, or attached to the final EIR", and that "the decision making body shall consider the addendum with the final EIR prior to making a decision on the project". This Addendum No.1 is an informational document presenting an evaluation of potential environmental impacts of the proposed design refinements to be used by decision makers and it is not a policy document of the Construction Authority. The Construction Authority, as the Lead Agency under CEQA, will consider the information provided in this Addendum No. 1 prior to making a decision whether or not to approve the proposed refinements.

1.2 ORGANIZATION OF THE ADDENDUM

The information in this Addendum is organized as follows:

Chapter 1: Introduction, which identifies the role and organization of the Addendum.

Chapter 2: Project Refinements, which describes the proposed project design refinements in detail.

Chapter 3: Environmental Evaluation, which presents the evaluation of potential environmental impacts of the proposed design refinements.

Chapter 4: List of Preparers, which identifies the lead personnel involved in preparing the Addendum.

Appendices

Appendix A: Traffic Technical Report
Appendix B: Noise and Vibration Technical Report

Chapter 2 – Project Refinements

Subsequent to the certification of the Final EIR and project approval in March 2013, the following design refinements have been proposed, and are discussed in detail below:

(1) A new elevated light rail grade separated crossing at Garey Avenue ("bridge").
(2) The shift in location of the Pomona station platform

2.1 BRIDGE AT GAREY AVENUE IN THE CITY OF POMONA

The Authority has analyzed the potential refinement of the track alignment design to include an LRT bridge at Garey Avenue, which would address concerns of the City of Pomona about an at-grade crossing at this location. The length of the grade separation from end to end would be approximately 2,300 feet—spanning from just east of the adjusted station platform to a point approximately 1,500 feet east of Garey Avenue.

Adhering to California Manual on Uniform Traffic Control Devices (MUCTD) standards, the roadway clearance (for vehicles) for the Garey Avenue road below the bridge would be 15 feet and 6 inches.

At Garey Avenue, the bridge would be approximately 27 feet tall at the highest point as measured from the roadway to the top of the barrier, the highest most visible permanent element of the structure. The overhead catenary system (OCS), i.e., the electric wires that power the train and the poles that suspend them, are between 19 and 21 feet above the top of rail. OCS poles, normally spaced 130-140 feet apart, are 24 feet in total height.

The horizontal design, i.e., the "footprint" of the Metro Gold Line tracks would not change from that described in the Final EIR. The existing freight/Metrolink tracks to the south of the bridge would not be affected, and both freight and Metrolink trains would continue to operate at grade as they do currently.

Figure 1 illustrates the plans for the bridge and Figure 2 provides an illustration of architectural design features that would be used for the Garey Avenue bridge based on the Metro Gold Line bridge at North Santa Anita Avenue in the City of Arcadia. Figure 3 presents a visual simulation of the bridge at Garey Avenue.

Figure 1. Plan and Profile of Bridge at Garey Avenue

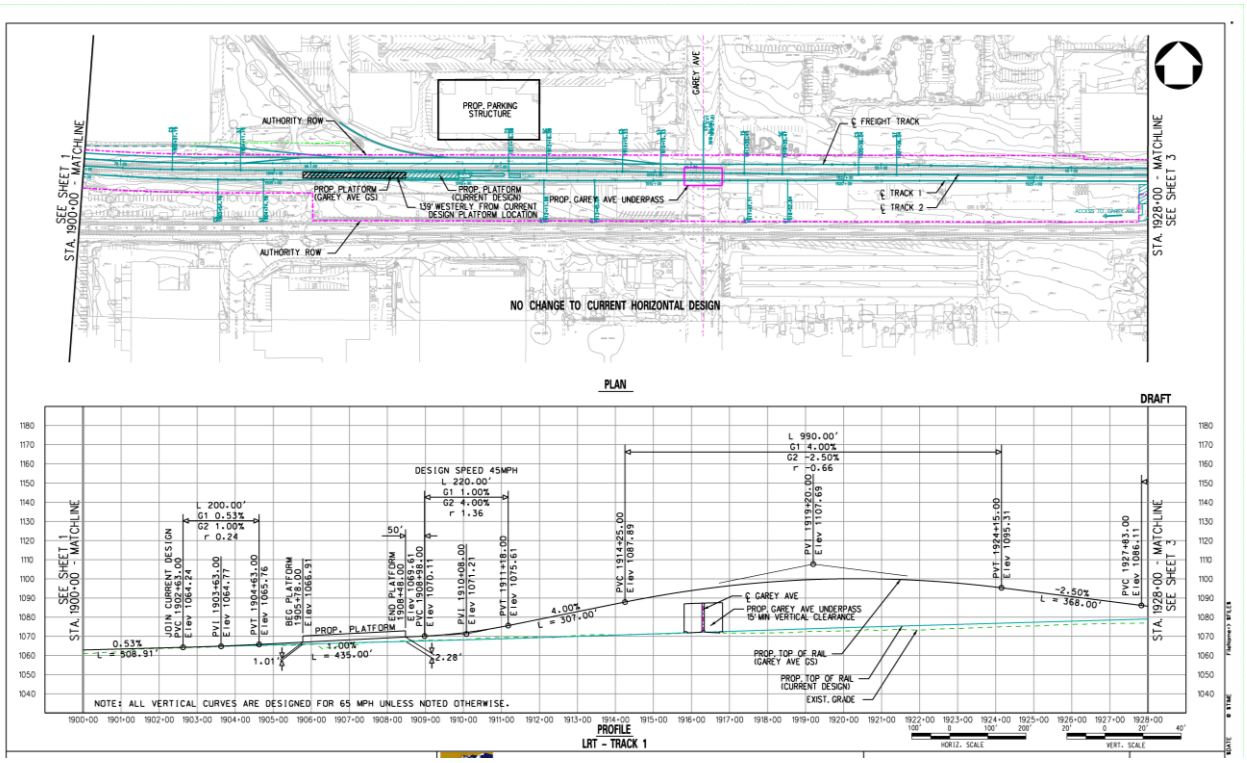


Figure 1 shows the plans depicting both the platform location considered in the Final EIR (in green) and the proposed platform location refinement (in black).

Figure 2. LRT Grade Separation Architectural Design Concept at N. Santa Anita Avenue

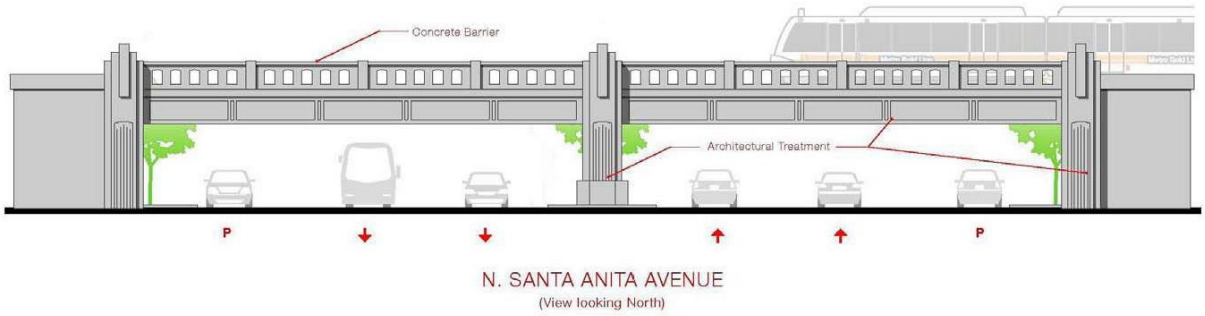


Figure 3. Visual Simulation of LRT Bridge at Garey Avenue

2.2 STATION PLATFORM IN THE CITY OF POMONA

In the Final EIR, the Metro Gold Line station in the City of Pomona was proposed as being approximately 590 feet west of Garey Avenue. To accommodate the addition of the bridge (discussed above), the 270-foot long station platform would need to shift 139 feet— about half the length of the platform—further west, closer to the existing Metrolink platforms. No change would occur to the location of the parking structure, the access roads to the parking structure, or pedestrian access to the platform from the parking structure.

Chapter 3 – Environmental Evaluation

Additional visual, noise and vibration, and traffic studies were conducted to evaluate the effects of the proposed refinements. All other environmental issue areas identified in the Final EIR were also evaluated in this Addendum No.1.

3.1 NOISE AND VIBRATION

The proposed refinements are located in a predominantly industrial area, and no sensitive receptors adjoin the project refinements. The only noise and vibration sensitive receiver that is located in the vicinity of the bridge is a cluster of single family residences on Kimball Avenue between Garey Avenue and Towne Avenue south of the project right-of-way. This receptor is labeled "EB1" in Figure 4 and Figure 5.

Figure 4. Sensitive Noise and Vibration Receptor Location (Sheet 1 of 2)

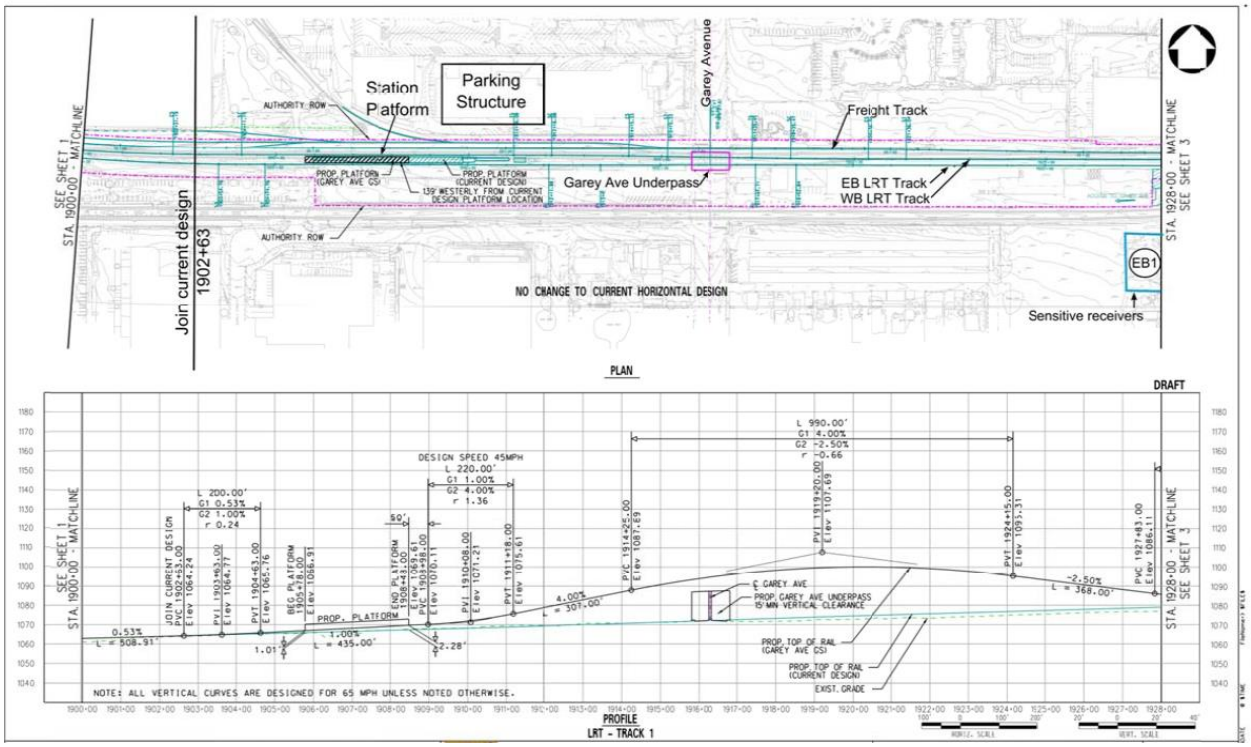
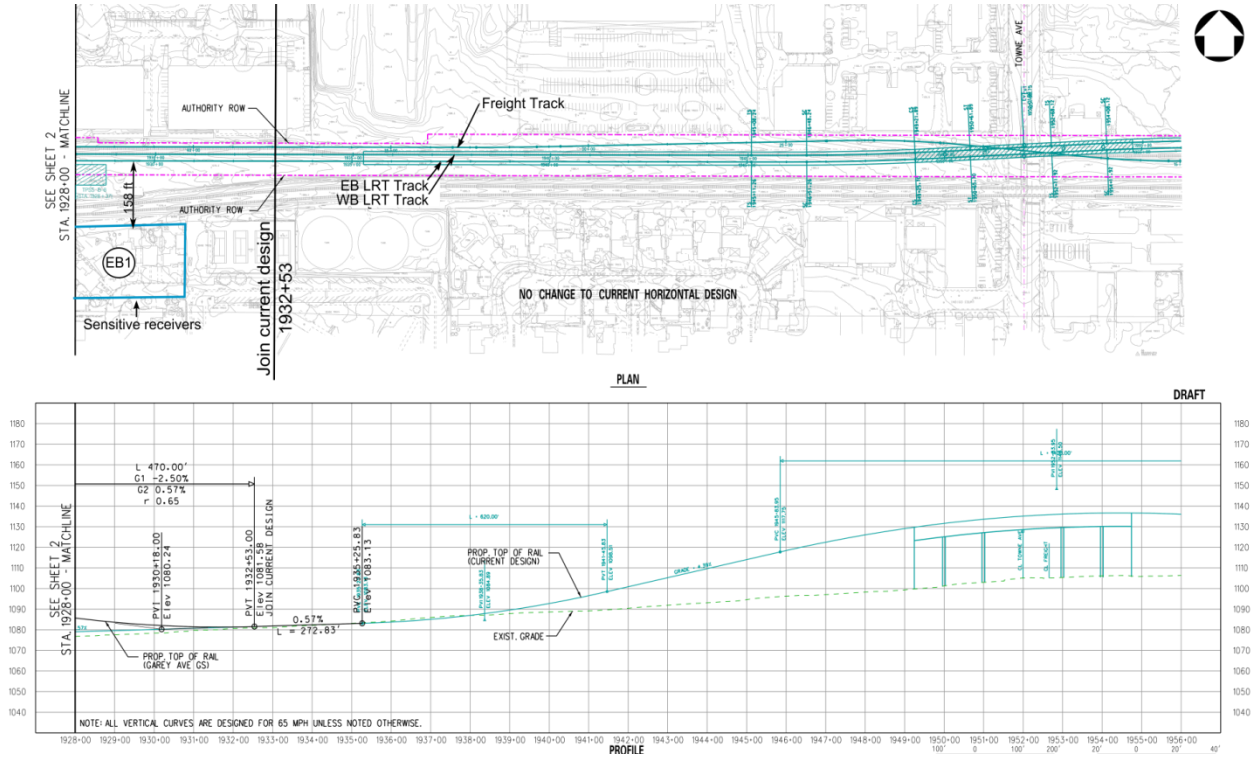


Figure 5. Sensitive Noise and Vibration Receptor Location (Sheet 2 of 2)



The study took into account the distance between the sensitive receiver cluster and the LRT tracks (158 feet between the eastbound track and the façade of the nearest cluster). As in the Final EIR, the analyses were based on the following inputs:

- An LRT speed of 65 mph, except for a small segment immediately east of the Pomona station platform, where the design speed is 45 mph), and track type (ballast-and-tie).
- A reference train noise level of Lmax of 77.7 dBA at 50 feet and 40 mph for a two car train on ballast-and-tie track.
- 63 train events during daytime hours (7 a.m. to 10 p.m.) and 21 train events during nighttime hours (10 p.m. to 7 a.m.), with two-car operation.
- A relocation of the existing freight track within the project right-of-way.

As shown in Table 1, the predicted noise level is an Ldn of 63.5 dBA, a 1.5 dB increase over the existing noise level, which is lower than the FTA's moderate impact threshold of a 1.7 dB increase. Therefore, the proposed refinements would not result in any new or greater significant noise impacts. (See Table 4 for a comparison of predicted noise levels for the project with and without the proposed refinements.)

Table 1. Predicted Noise Level and Impact Assessment

Cluster No.[1]	Eng. Station	Dist., ft[2]	Speed, mph	Existing Ldn, dBA	Predicted Ldn, dBA	Threshold[3]		Impact	No. of Impacts
						Mod.	Sev.		
Pomona Eastbound									
EB1	1929+00	158	65	62	63.5	1.7	4.4	No	-

Source: ATS Consulting, 2014
Notes:
[1]The buildings included in each cluster are detailed in Figure 1 and Figure 2
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]The threshold is the allowable increase in noise from the existing Ldn. The FTA designates two threshold levels: moderate and severe.

Table 2 shows predicted noise levels by the area's noise source.

Table 2. Predicted Noise Levels by Source

Cluster No.[1]	Eng. Station	Dist., ft[2]	LRT Ldn, dBA	BNSF Ldn, dBA	BNSF Horn Ldn, dBA	Traffic Noise Ldn[3], dBA	Predicted Ldn[4], dBA	Existing Ldn[5], dBA
Pomona Eastbound								
EB1	1929+00	158	56.5	41.7	53.3	62	63.5	62

Source: ATS Consulting, 2014
Notes:
[1]The buildings included in each cluster are detailed in Figure 1 and Figure 2.
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]The traffic noise Ldn is the measured existing Ldn without the BNSF train and horn noise.
[4]The predicted Ldn is the sum of the LRT Ldn, BNSF Ldn, BNSF horn Ldn, and Traffic Noise Ldn.
[5]The existing Ldn is the measured existing noise level.

The same inputs used in the vibration predictions in the Final EIR analysis are used in this analysis, including the distance from the sensitive receiver cluster to the LRT tracks, train speed, and track type. As shown in Table 3, the predicted vibration level at the sensitive receiver is 67 VdB in the 31.5 Hz 1/3 octave band, which is 5 decibels below the FTA's impact threshold.

Table 3. Predicted Vibration Levels in Pomona

Cluster No.[1]	Eng. Station	Dist., ft[2]	Speed, mph	Threshold, VdB	Predicted Band Max., VdB[3]	1/3 Octave Band, Hz[4]	Impact	No. of Impacts[5]
Pomona Eastbound								
EB1	1929+00	158	65	72	67	31.5	No	—

Notes:
[1]The cluster numbers refer to the same sensitive receivers used for the noise analysis. The buildings included in each cluster are detailed in Figure 1 and Figure 2.
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]Maximum predicted vibration level in any 1/3 octave band.
[4]The 1/3 octave band that corresponds to the predicted band maximum.
[5]Number of dwelling units in the cluster.

There are no sensitive receivers near the proposed platform for the Final EIR project or for the LRT bridge project, so the shift in the platform location will not result in any changes to the noise or vibration analysis, as shown in Table 4.

Table 4. Comparison of Predicted Noise and Vibration Levels With and Without Project Refinements

Cluster No.[1]	Eng. Station	Dist., ft[2]	Speed, mph	Project without Refinements Predicted Noise Level[3], Ldn, dBA	Project with Refinements Predicted Noise Level[3], Ldn, dBA	Project without Refinements Predicted Vib Level, Band Max, VdB	Project with Refinements Predicted Vib Level, Band Max, VdB
Pomona Eastbound							
EB1	1929+00	158	65	63.5	63.5	67	67

Notes:
[1]The buildings included in the cluster are detailed in Figure 4 and Figure 5.
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]The predicted Ldn is the sum of the LRT Ldn, BNSF Ldn, BNSF horn Ldn, and Traffic Noise Ldn.

In summary, the analyses determined that under the worst-case scenario where trains travel at maximum design speed of 65 miles per hour, the predicted noise and vibration levels at this receiver would not exceed the FTA impact thresholds. Therefore, the proposed refinements would not result in any new or increased significant impacts.

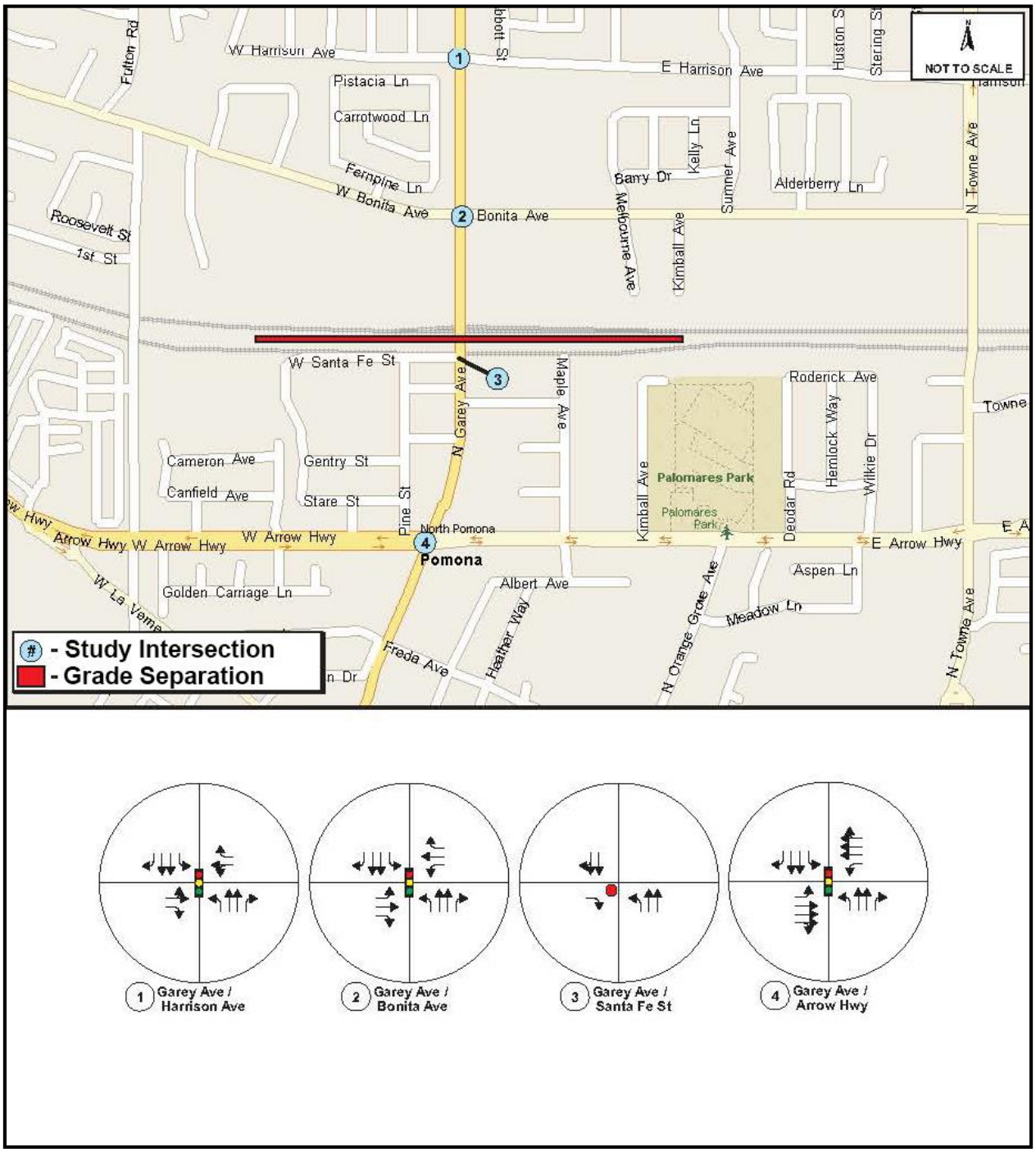
3.2 TRAFFIC

The proposed bridge over Garey Avenue will not eliminate or affect the existing at-grade railroad crossing, which will remain and continue to be used by Metrolink and freight trains. To evaluate potential traffic effects, traffic was evaluated at the following four intersections:

- Garey Avenue/Harrison Avenue
- Garey Avenue/Bonita Avenue
- Garey Avenue/Santa Fe Street
- Garey Avenue/Arrow Highway

As illustrated in Figure 6, these are the only intersections that are close to the proposed bridge and therefore, could potentially be affected by this refinement.

Figure 6. Traffic Study Locations



Intersections are studied for impacts according to the criteria in the *Los Angeles County Traffic Impact Analysis Study Guidelines (1997)*, which defines the level of impact depending on the number of seconds/vehicle and final level of service (LOS) with the project illustrated in Table 5.

Table 5. Los Angeles County Intersection Impact Thresholds

Control Type	Final Level of Service (LOS) with Project	Significant Increase in Delay (Seconds/Vehicle)
Unsignalized Intersection	LOS C	≥ 4
	LOS D	≥ 2
	LOS E/F	≥ 1.5
Signalized Intersection	LOS C	≥ 6
	LOS D	≥ 4
	LOS E/F	≥ 2.5

Source: Los Angeles County Traffic Impact Analysis Study Guidelines, 1997.

Intersection operating conditions with the proposed refinements were compared with the No Build Alternative to identify potentially significantly affected locations. Table 6 and Table 7 summarize intersection impacts for the AM and PM peak hours, respectively. As indicated, there would be no change in the level of impact with the proposed refinements. Impacts at three of the four intersections would continue to be less than significant, and as shown in Table 6, the previously identified significant effect at Avenue/Bonita Avenue intersection within the study area would not change. This impact was previously identified in the 2013 Final EIR on page 2-94, Table 2-27 as generally due to the increase in the number of vehicles at this intersection, which are destined for the parking structure at the Pomona station in the AM peak.

Table 6. AM Peak Hour Intersection Impacts Comparison

Intersection	Control Type	2035 No Build		2035 Build		Change in Delay	Significant Impact
		LOS	Delay[1]	LOS	Delay		
Garey Avenue/ Harrison Avenue	Signalized	A	7.5	A	7.9	0.4	NO
Garey Avenue/ Bonita Avenue	Signalized	B	16.0	C	32.6	16.6	YES
Garey Avenue/ Santa Fe Street	One-way Stop	B	10.8	A	9.4	-1.4	NO
Garey Avenue/ Arrow Highway	Signalized	C	28.3	C	29.9	1.6	NO

[1]Average vehicle delay in seconds

Table 7. PM Peak Hour Intersection Impacts Comparison

Intersection	Control Type	2035 No Build		2035 Build		Change in Delay	Significant Impact
		LOS	Delay[1]	LOS	Delay		
Garey Avenue/ Harrison Avenue	Signalized	A	6.0	A	5.9	-0.10	NO
Garey Avenue/	Signalized	B	15.8	B	18.5	2.7	NO

Bonita Avenue							
Garey Avenue/ Santa Fe Street	One-way Stop	B	12.4	B	13.2	0.8	NO
Garey Avenue/ Arrow Highway	Signalized	C	30.9	C	34.5	3.6	NO

[1]Average vehicle delay in seconds

Table 8 and Table 9 show, respectively, a comparison of AM and PM peak hour intersection LOS between the project as described in the Final EIR and the project with the proposed refinements.

Table 8. AM Peak Hour Intersection LOS Comparison of Project With and Without Proposed Refinements

Intersection	Control Type	2035 Final EIR Project		2035 Project with Refinements		Change in Delay
		LOS	Delay[1]	LOS	Delay[1]	
Garey Avenue/Harrison Avenue	Signalized	A	7.9	A	7.9	0.0
Garey Avenue/Bonita Avenue	Signalized	C	32.6	C	32.6	0.0
Garey Avenue/Santa Fe Street	One-Way Stop	A	9.4	A	9.4	0.0
Garey Avenue/Arrow Highway	Signalized	C	29.9	C	29.9	0.0

[1] Average vehicle delay in seconds

Table 9. PM Peak Hour Intersection LOS Comparison of Project With and Without Proposed Refinements

Intersection	Control Type	2035 Final EIR Project		2035 Project with Refinements		Change in Delay
		LOS	Delay[1]	LOS	Delay[1]	
Garey Avenue/Harrison Avenue	Signalized	A	5.9	A	5.9	0.0
Garey Avenue/Bonita Avenue	Signalized	B	18.5	B	18.5	0.0
Garey Avenue/Santa Fe Street	One-Way Stop	B	13.2	B	13.2	0.0
Garey Avenue/Arrow Highway	Signalized	C	34.5	C	34.5	0.0

[1] Average vehicle delay in seconds

As shown, the LOS for these intersections along Garey Avenue is not affected by the grade crossing because the railroad tracks are located mid-block from adjacent signalized intersections (which are Bonita Avenue to the north and Arrow Highway to the south). The existing southbound lanes from Bonita Avenue have the queuing capacity of 720 feet per lane and the northbound lanes from Arrow Highway have the capacity of 1,280 feet per lane, while the “gate spill back” queue from the gate to the intersection is estimated at 400 feet per lane southbound from Bonita Avenue and 390 feet per lane northbound from Arrow Highway. Thus, because this is a mid-block at-grade crossing location with ample storage capacity for queuing, the queues do not spill back to the signalized intersections. For the unsignalized intersection, the north/south traffic is not controlled and the eastbound one-way out of Santa Fe Street is a right-turn only stop sign, so the eastbound traffic needs to wait for gaps from opposite traffic and does not get delayed when the gate is down.

As there would be no change at these four intersections that are close to the bridge, there would be no change at any other of the six intersections in Pomona analyzed in the Final EIR which are located farther away from the proposed bridge. Nonetheless, incorporating the proposed bridge into the project would have a beneficial effect. It would eliminate the addition of another at grade crossing for LRT trains to the existing at-grade railroad crossing which is, and will continue to be, used by freight and Metrolink trains. Without adding LRT trains to this at-grade crossing, the gate down time would result in a reduced frequency of queues at the crossing during the peak hour. With LRT trains added (as considered in the Final EIR), the gate down time would result in queues 49% of the time during the peak hour. With the proposed bridge, and thus without LRT trains added, the gate down time would result in queues 22% of the time during the peak hour. In addition, as addressed in Section 3.5 (Safety and Security) of this Addendum, the provision of the proposed bridge refinement would have a beneficial effect of enhancing vehicular and pedestrian safety at this location.

The same mitigation identified in the Final EIR and set forth below, would be implemented for the project with the proposed refinements:

> LTR-4 — In Pomona, the Construction Authority shall cooperatively work with the City, and contribute funding as necessary, to modify the Garey Avenue and Bonita Avenue intersection within existing right-of-way. The proposed modification is a restriping of the northbound approach to provide two exclusive left-turn lanes, one through lane, and one shared right-turn/through lane. The "receiving leg" would also be restriped to provide two through lanes.

With this measure, as identified on page 2-113, Table 2-33 of the Final EIR, the intersection of Garey Avenue and Bonita Avenue would operate at LOS C in the AM peak hour and at LOS B in the PM peak hour, as shown below.

Intersection	AM		PM		Residual Impact
	LOS	Delay	LOS	Delay	
Garey Avenue/Bonita Avenue	C	21.9	B	19.1	NO

In the Final EIR, Garey Avenue was identified as a grade crossing location that would require improvements to maintain safe operations of the proposed LRT with an at-grade configuration, These improvements were identified in the Final EIR as two long-term mitigation measures LTR-6 and LTR-7, With the implementation of the proposed Garey Avenue bridge to grade separate the LRT tracks from the at-grade crossing at Garey Avenue, these at-grade improvements would no longer be necessary. Nonetheless, even though as a result of the proposed bridge these measures are no longer necessary, they would constitute an improvement for Metrolink and freight train operations which will continue as they currently do. Therefore, the mitigation measures LTR-6 and LTR-7would be implemented to enhance at-grade crossing operations for Metrolink and freight trains at Garey Avenue.

The shifting of the station platform 139 feet to the west to accommodate the LRT bridge at Garey would not change station access. The station would continue to be accessed by car only via the parking structure at the same location considered and evaluated in the Final EIR.

The proposed station platform location refinement would result in a beneficial effect of furthering efficient and convenient pedestrian and/or user traffic between the Metro Gold Line station and the existing nearby Metrolink station.

Therefore, the shifting of the station platform and the provision of the proposed bridge would not result in any new or increased adverse traffic impacts.

3.3 VISUAL

The proposed bridge at Garey Avenue would be a new visual element in the City of Pomona. As noted in the Final EIR (page 3.13-21), the area adjacent to the right-of-way between Fulton Road and Garey Avenue is an industrial park with few landscape features, little topographic relief, and no scenic resources other than intermittent north-facing views of the San Gabriel Mountains. Concrete and corrugated metal-clad industrial buildings and two sets of railroad tracks are the visually dominant features. The area adjacent to the right-of-way between Garey Avenue and Towne Avenue is also predominantly industrial and commercial, and the proposed bridge structure would face industrial buildings that abut the existing freight railroad track.

There are no residential or other sensitive uses that adjoin the proposed bridge. The closest such uses are a senior citizen residential complex (Serenity Villas) at 158 E. Bonita Avenue, and a row of single-family homes at 141-295 E. Magnolia Street. The closest corner of the Serenity Villas is approximately 400 feet northeast from the bridge at Garey Avenue and the closest single-family home is approximately 400 feet southeast from the bridge. The only scenic resources identified in this setting are the north-facing views of the San Gabriel Mountains.

As with all project components, construction of the proposed bridge would involve temporary presence of construction equipment and activities along the right-of-way. While this temporary presence would be visible to the surrounding uses, it would be over 400 feet away from the closest residential uses and has no potential to substantially disrupt the residents' north-facing views of the mountains. Construction hours are not expected to extend into the night; therefore, use of lights would be minimal. As identified in the Final EIR, if the use of lights is necessary, an adequate buffer and screening will be provided to avoid light spill (Mitigation Measures VIS-3). Therefore, this temporary impact would be less than significant.

Because the proposed bridge crosses over a roadway and not another railroad, it is more than eight feet lower than the flyover structure at Towne Avenue evaluated in the Final EIR. Whereas the Towne Avenue flyover has a clearance of approximately 24 feet, the Garey Avenue bridge has a clearance of 15 feet and 6 inches. The proposed bridge will have a much lower profile and lesser length and would be designed with aesthetic features that give it an appearance similar to the Metro Gold Line bridge at Santa Anita Avenue in the City of Arcadia (see Figure 2). These design features would also be incorporated into the Towne Avenue flyover to reduce its aesthetic effect.

Figure 7 presents an existing view at Garey Avenue facing north toward the railroad tracks, and Figure 8 presents the same view with a superimposed visual simulation of the proposed bridge.

Figure 7. Existing View from Garey Avenue without the Proposed Bridge

Vantage point: south of existing tracks looking north.

Figure 8. Existing View from Garey Avenue with Proposed Bridge Simulation

Neither Serenity Villas nor the residences at 141-295 E. Magnolia Street would have a direct view of the proposed bridge. This is because of the orientation of the closest Serenity Villa building, which is 400 feet away from the proposed bridge and an intervening two-story commercial development (currently under construction) that constrain southwest-facing views. Similarly, the single-family residences along E. Magnolia Street 400 feet away from the proposed bridge would be visually buffered from the bridge by existing intervening commercial properties, including a large storage facility that abuts the alley just to

the north of the single-family homes. With no direct view of the bridge, the proposed bridge would not block or obscure the views of the north-facing panoramic views of the San Gabriel Mountains from these uses.

Given the primarily industrial context of the bridge, its low profile, and the aesthetic treatments of its design, the impact would be less than significant.

The shifting of the station platform 139 feet—about half the platform's length—to the west to accommodate the proposed bridge has no potential to block or obscure the north-facing panoramic views of the San Gabriel Mountains when compared to the previously considered platform location.

No new or increased significant impacts on visual resources would occur with the proposed project refinements.

3.4 AIR QUALITY AND GREENHOUSE GASES (GHG)

The proposed Pomona station refinement consists of providing the station platform 139 feet farther to the west in comparison to the platform location considered in the Final EIR. The refinement does not involve any changes to the platform itself or to any other station elements. Providing the same station platform 139 feet farther to the west would not involve any new, additional, or different construction or operation activities than those associated with providing the station platform as considered in the Final EIR. Therefore, this refinement would not generate any new or greater air pollutant or greenhouse gas emissions than those considered for the Pomona station in the Final EIR.

The provision of the proposed bridge at Garey Avenue in Pomona refinement would involve activity associated with bridge construction instead of activities associated with the at-grade crossing that was considered for this location in the Final EIR. The proposed bridge refinement would be a smaller structure than the flyover structure at the Pomona's Towne Avenue location that was evaluated in the Final EIR and consequently, it would involve more limited construction, and correspondingly fewer air pollutant and GHG emissions.

As with all construction activities associated with the project, construction activities associated with the proposed bridge refinement will proceed in compliance with Metro's Green Construction Policy and would implement mitigation measures identified in the Final EIR to reduce peak day air pollutant, including GHG, emissions. As identified in the Final EIR, a range of mitigation measures to reduce construction-related emissions identified for similar LRT projects in the South Coast Air Quality Management District (SCAQMD) area and in Metro's Green Construction Policy will be used, which includes the following:

- **CON-1**—Water or a stabilizing agent shall be applied to exposed surfaces in sufficient quantity to prevent generation of dust plumes.
- **CON-2**—Track-out shall not extend 25 feet or more from an active operation and track-out shall be removed at the conclusion of each workday.
- **CON-3**—Contractors shall be required to utilize at least one of the measures set forth in South Coast Air Quality Management District Rule 403 section (d)(5) to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site.
- **CON-4**—All haul trucks hauling soil, sand, and other loose materials shall maintain at least six (6) inches of freeboard in accordance with California Vehicle Code Section 23114.

- **CON-5**—All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- **CON-6**—Traffic speeds on unpaved roads shall be limited to 15 mph. Operations on unpaved surfaces shall be suspended when winds exceed 25 mph.
- **CON-7**—Heavy equipment operations shall be suspended during first and second stage smog alerts.
- **CON-8**—On-site stockpiles of debris or rusty materials shall be covered at all times when not being used. On-site stockpiles of dirt shall be watered at least two times per day or covered at all times when not being used.
- **CON-9**—Contractors shall maintain equipment and vehicle engines in good condition and in proper tune per manufacturers' specifications.
- **CON-10**—Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.
- **CON-11**—Construction parking shall be configured to minimize traffic interference.
- **CON-12**—Construction activity that affects traffic flow on the arterial system shall be limited to off-peak hours.
- **CON-13**—Construction staging and vehicle parking, including workers' vehicles, shall be prohibited on streets adjacent to sensitive receptors such as schools, daycare centers, senior facilities, and hospitals.
- **CON-14**—Portable generators shall be low-emitting and use ultra low sulfur diesel (<15 parts per million) or gasoline.
- **CON-15**—Construction equipment shall use a combination of low sulfur diesel (<15 parts per million) and exhaust emission controls.
- **CON-16**—The construction process shall use equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for the intended job).
- **CON-17**—Contractors shall be prohibited from tampering with construction equipment to increase horsepower or defeat emission control devices.
- **CON-18**—The Construction Authority shall designate a person to ensure the implementation of air quality mitigation measures through direct inspections, records reviews, and complaint investigations.

As identified in the Final EIR, during construction, mitigation measures CON-1 through CON-8 would reduce fugitive dust emissions, and mitigation measures CON-9 through CON-19 would reduce exhaust emissions, including NO_X, $PM_{2.5}$, and PM_{10}. Generally, SCAQMD dust control measures aim to reduce fugitive dust by approximately 60 percent and measures CON-1 through CON-19 would further reduce the temporary effects of construction on air quality. However, even with these reductions, the peak day emissions of NOx pollutants from construction of the entire project may exceed the SCAQMD daily threshold amounts and emissions of $PM_{2.5}$ and PM_{10} may exceed localized thresholds, as illustrated in Table 10 in the Final EIR and shown below. The table shows construction emissions, calculated as maximum regional construction emissions which present a "worst case" scenario for a peak construction day impacts for the entire Azusa to Montclair extension project.

Table 10. Potential Maximum Peak Day Construction Emissions

	Pounds Per Day					
	VOC	**NO_x**	**CO**	**SO_x**	**$PM_{2.5}$**	**PM_{10}**
Maximum Regional Emissions	31	267	147	<1	18	29
Regional Significance Threshold	75	100	550	150	55	150
Exceed Threshold?	No	**Yes**	No	No	No	No
Maximum Localized Emissions	21	191	90	<1	14	25
Localized Significance Threshold	—[1]	91	664	—[1]	3	5
Exceed Threshold?	—[1]	**Yes**	No	—[1]	**Yes**	**Yes**

Source: *Metro Gold Line Foothill Extension – Azusa to Montclair* F*inal EIR*, February 2013.
[1.] SCAQMD has not developed localized significance thresholds for VOC or SO_x.

This "worst case" scenario of potential peak construction day emissions represents the potential emissions from construction of the entire project, as described in the Final EIR. This "worst case" scenario assumed up to 20 pieces of heavy-duty equipment operating simultaneously and up to 200 heavy-duty truck roundtrips per day on a peak day construction day for the entire project, which would accommodate the construction associated with the proposed bridge refinement. Therefore, with implementation of the identified mitigation measures, no new or increased significant air quality or GHG impacts are anticipated from construction of the project, including the proposed Garey Avenue bridge refinement, beyond those considered in the Final EIR.

With the proposed refinements, and as identified in the Final EIR, the project would continue to: (1) result in long-term beneficial effect on air quality by providing additional mode of transportation with electrically-powered trains predicted to reduce regional emission burden levels, and (2) be consistent with growth assumptions and objectives of the regional Air Quality Management Plan (AQMP) as it is included in regional growth assumptions of the SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Thus, with the proposed refinements the project would continue to contribute to the implementation of the regional AQMP and to the region's ability to comply with federal and state air quality standards, as identified in the Final EIR.

3.5 OTHER IMPACTS

Biological Resources: There are no biological resources located in the area of the proposed Pomona station platform location and the Garey Avenue bridge refinements. The proposed refinements do not involve the removal or trimming of trees or other vegetation or work within or near existing drainages and thus, the proposed refinements would result in no impact on biological resources.

Communities, Population, Housing and Land Use and Planning: The proposed refinements consist of locating the Pomona station platform 139 feet further to the west and providing an LRT bridge rather than an at-grade crossing at Garey Avenue in Pomona within the project's right-of-way. No acquisition or displacement of any existing use would occur, and the proposed refinements would not result in a new or increased significant effect on the community, housing, population, land use or planning.

As identified in the Final EIR, to address concerns related to access to properties during construction, the following preventive measures would be implemented as part of the Traffic Management Plan:

- **S-1—**Schedules for street closures shall be developed in consultation with each corridor city.

- **S-2—**Advance notice indicating when access will be closed or limited shall be posted on city streets.
- **S-3—**Signs indicating access routes and alternate access points, as well as announcing that affected businesses are open, shall be posted.
- **S-4—**Newspaper notices shall be placed to indicate street and access closures.
- **S-5—**The Construction Authority website shall include information regarding planned street and access closures.

These mitigation measures will be implemented during construction of all project components, including the proposed refinements if they are approved. With implementation of these measures, the impact of the project would continue to be less than significant as determined in the Final EIR.

Community Facilities and Parkland: There are no community facilities or parklands located in the area of the proposed Pomona station platform location and the Garey Avenue bridge refinements. Thus, the proposed refinements will not result in any new or increased impacts on these resources.

Cultural Resources: There are no known cultural resources located in the area of the proposed Pomona station platform location and the Garey Avenue bridge refinements. Thus, the proposed refinements would result in no new or increased impact on these resources.

As identified in the Final EIR, the following mitigation measures will be implemented during construction of the project in the event of an accidental discovery of the previously unknown cultural resources:

- **CR-1—**If buried cultural resources are uncovered during construction, all work shall be halted in the vicinity of the archaeological discovery until a qualified archaeologist can visit the site of discovery and assess the significance of the archaeological resource. In the event that any artifact or an unusual amount of bone, shell, or non-native stone is encountered during construction, work will be immediately stopped and relocated to another area. The Construction Authority will stop construction within 100 feet of the exposed resource until a qualified archaeologist can evaluate the find (see 36 CFR 800.11.1 and CCR, Title 14, Section 15064.5[f]). Examples of such cultural materials might include: ground stone tools such as mortars, bowls, pestles, and manos; chipped stone tools such as projectile points or choppers; flakes of stone not consistent with the immediate geology such as obsidian or fused shale; historic trash pits containing bottles and/or ceramics; or structural remains. If the resources are found to be significant, they will be avoided or will be mitigated consistent with State Historic Preservation Office (SHPO) Guidelines. All construction equipment operators will attend a preconstruction meeting presented by a professional archaeologist retained by the Construction Authority that will review types of cultural resources and artifacts that would be considered potentially significant, to ensure operator recognition of these materials during construction.

  In the event of an accidental discovery of any human remains in a location other than a dedicated cemetery, the steps and procedures specified in Health and Safety Code Section 7050.5, California Environmental Quality Act (CEQA) Section 15064.5(e), and Public Resources Code Section 5097.98 shall be implemented. No further excavation or disturbance of the area or any nearby area reasonably suspected to overlie adjacent remains until the coroner is contacted and the appropriate steps taken pursuant to Health and Safety Code §7050.5 and Public Resource Code §5097.98. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. If Native American human remains are discovered during project construction, it shall be necessary to comply with state laws relating to the disposition

of Native American burials that are under the jurisdiction of the NAHC (Pub. Res. Code Section 5097). For remains of Native American origin, no further excavation or disturbance shall take place until the most likely descendant of the deceased Native American(s) has made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of the human remains and any associated grave goods, with appropriate dignity, as provided in the Pub. Res. Code Section 5097.98; or the NAHC is unable to identify a most likely descendant or the descendant fails to make a recommendation within 48 hours after being notified. In consultation with the most likely descendant, the project archaeologist and the Construction Authority shall determine a course of action regarding preservation or excavation of Native American human remains, and this recommendation shall be implemented expeditiously. If a most likely descendent cannot be located or does not make a recommendation, the project archaeologist and the Construction Authority shall determine a course of action regarding preservation or excavation of Native American human remains, which shall be submitted to the NAHC for review prior to implementation.

- **CR-2—**Project plans shall specify that a qualified paleontologist shall be contacted in the event that potential paleontological resources are discovered. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground disturbing activities if paleontological resources are discovered. The qualified paleontologic monitor shall retain the option to reduce monitoring if, in his or her professional opinion, the sediments being monitored were previously disturbed. Monitoring may also be reduced if the previously described potentially fossiliferous units are not present or, if present, are determined by qualified paleontologic personnel to have a low potential to contain fossil resources. The monitor shall be equipped to salvage fossils and samples of sediments as they are unearthed to avoid construction delays and shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens shall be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, shall be prepared and shall signify completion of the program to mitigate impacts on paleontological resources.

As with all project elements, the construction of the proposed refinements would include implementation of these measures and the project would continue to result in a less than significant impact on cultural resources as identified in the Final EIR.

Energy: The proposed refinements will not affect operations of the project LRT and the project would continue to result in a beneficial effect of slightly decreasing regional energy use.

Construction of the project, including the proposed refinements, would result in the one-time expenditure of energy during construction operations. As identified in the Final EIR, construction mitigation measures include the use of newer, more energy-efficient equipment and the minimization of idle times of construction equipment. These measures, many of which are in Metro's Green Construction Policy, include:

- **CON-9**—Contractors shall maintain equipment and vehicle engines in good condition and in proper tune per manufacturers' specifications.
- **CON-10**—Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.
- **CON-11**—Construction parking shall be configured to minimize traffic interference.

- **CON-12**—Construction activity that affects traffic flow on the arterial system shall be limited to off-peak hours.
- **CON-13**—Construction staging and vehicle parking, including workers' vehicles, shall be prohibited on streets adjacent to sensitive receptors such as schools, daycare centers, senior facilities, and hospitals.
- **CON-14**—Portable generators shall be low-emitting and use ultra low sulfur diesel (<15 parts per million) or gasoline.
- **CON-15**—Construction equipment shall use a combination of low sulfur diesel (<15 parts per million) and exhaust emission controls.
- **CON-16**—The construction process shall use equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for the intended job).
- **CON-17—**Contractors shall be prohibited from tampering with construction equipment to increase horsepower or defeat emission control devices.
- **CON-18**—The Construction Authority shall designate a person to ensure the implementation of air quality mitigation measure through direct inspections, records reviews, and complaint investigations.
- **CON-19**—LED lighting shall be used for construction activities taking place at night, to the extent feasible.

With the implementation of these measures throughout construction, including construction of the proposed refinements, the project would not result in wasteful, inefficient, or unnecessary use of energy or in a substantial increase energy demand during construction, and impact would continue to be less than significant.

Geologic Hazards: As with all of the project's components, the proposed refinements would be constructed in strict compliance with local, state, or federal regulations or permits as listed in the Final EIR that have been developed by regulatory agencies to manage geologic and seismic concerns during construction, and no new or increased impact would result. With this mandatory compliance with current seismic safety and geotechnical safety requirements and regulations, including safety design standards, the project would continue to result in less than significant impacts related to geologic and seismic concerns.

Hazardous Waste and Materials: There are no known hazardous wastes or materials located in the area of the proposed refinements. However, as identified in the Final EIR, there is the potential to encounter hazardous materials during shallow soil earth work activities during construction. Such potential impacts would be mitigated through implementation of the identified mitigation measures in the Final EIR, including the appropriate investigation of areas undergoing earthwork activities and paint striping disturbance, and the removal and disposal of impacted materials according to federal and state requirements conducted as part of construction activities, as follows:

- **HW-1—**A Soil Mitigation Plan shall be prepared once final construction plans are in place, showing the lateral and vertical extent of soil disturbance. The plan shall establish soil reuse criteria, establish a sampling plan for stockpiled materials, describe the disposition of materials that do not satisfy the reuse criteria, and specify criteria for imported materials.
- **HW-2—**During project final design, specific soil testing shall be conducted and necessary and appropriate specific means for remediation shall be selected and incorporated into construction or

contract documents, such as excavation with offsite disposal or onsite reuse in low risk areas, vapor extraction, or in-situ remediation.

- **HW-3—**Risk-based cleanup levels shall be established in the Soil Mitigation Plan, which will be reviewed and approved by the oversight agency. Soil that contains soluble concentrations of metals in excess of the Soluble Threshold Limit Concentration (STLC) is considered a California hazardous waste and shall be removed from the site and disposed of in accordance with federal and state regulations.
- **HW-4—**Groundwater is not anticipated to be encountered, however, if ongoing engineering indicates groundwater may be encountered, testing shall be designed and performed to characterize groundwater where dewatering is required.
- **HW-5—**Hazardous materials, drums, trash, and debris shall be removed and disposed of in accordance with regulatory guidelines.
- **HW-6—**A health and safety plan shall be developed and implemented for construction personnel. When ground-disturbing activities begin, the Construction Authority shall identify potential contamination, such as, but not limited to, the presence of underground facilities, buried debris, waste drums, tanks, and stained or odorous soils. Should such materials be encountered, further investigation and analysis shall be conducted and may include the following actions:
  - Removal and disposal—Identify, remove, transport, and dispose of materials in a licensed Class I, II, or III disposal facility as established by waste profiling procedures.
  - Recycling—Treat and/or recycle materials at regulated recycling facilities.
  - Reuse uncontaminated or treated materials on project lands.
  - Segregate and stockpile the material on plastic sheeting.
  - Spray the stockpile with water or a South Coast Air Quality Management District-approved dust or vapor suppressant, and cover the stockpile with plastic sheeting to prevent exposure to soil.
  - Provide qualified and trained personnel with personal protective equipment for activities that include, but are not limited to, excavation, segregation, stockpiling, loading, and transporting hazardous substances.

With the implementation of these measures during project construction, including the construction of the proposed refinements, the project potential impacts would continue to be reduced to a less than significant level. No new or increased impacts would occur.

Safety and Security: The proposed Garey Avenue bridge refinement would result in a beneficial effect of enhancing vehicular, pedestrian, and bicycle safety by providing a grade-separation at this location. The proposed station platform location refinement would result in a beneficial effect of furthering efficient and convenient pedestrian and/or user traffic between the Metro Gold Line station and the currently existing and proximately located Metrolink station, and would also enhance safety. No adverse impacts would result as a result of the proposed refinements.

Water Resources: As identified in the Final EIR, compliance with local, state, and federal regulations and requirements would eliminate or reduce impacts on water resources by establishing project controls through formalized processes, agreements, and permits. The regulatory compliance would include coordination with regulatory agencies prior to construction to determine the requirements for each agency's permits for any blue line streams, as well as potential culverts and/or storm drains affected by project construction; obtaining an NPDES Construction General Permit from both the Los Angeles RWQCB and Santa Ana RWQCB, which includes a Storm Water Pollution Prevention Plan (SWPPP) that would be implemented throughout construction; preparing and implementing a Standard Urban

Stormwater Mitigation Plan (SUSMP); developing a Water Quality Management Plan (WQMP) and submitting WQMP for review to each respective City within the Study Area, which would be acted on by the Cities prior to the issuance of precise grading permits for project facility development. These plans will describe the routine and special post-construction BMPs to be used, including both structural and non-structural measures; describe responsibility for initial implementation and long-term maintenance of the BMPs; and identify the locations of the structural BMPs. Also, in compliance with existing regulations, should the project contribute to off-site drainage deficiencies, participation on a fair-share basis in the construction of improvements necessary (as determined by the Cities affected by the project) to address these deficiencies would occur.

The proposed refinements, as with all the project's components, would be constructed in compliance with these regulations and requirements, which would minimize surface and groundwater quality impacts to less than significant levels. No new or increased impacts would occur.

Cumulative Impacts: The provision of the proposed refinements has no potential to result in changes in the project's location, construction, operation, or function that could lead to new or increased significant cumulative impacts. As identified in the Final EIR, the project may result in significant cumulative impacts during construction by (1) contributing to regional cumulative air quality impacts when added to other transportation projects and improvements within the entire SCAG region that may be under construction during the same time period, and (2) if unknown buried cultural resources are discovered during construction of the project then contributing to the significant cumulative impacts related to discovery of unknown materials at a regional scale identified in the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy EIR. No new or increased significant cumulative impacts would occur as a result of the proposed project refinements.

Growth-Inducing Impacts: The proposed refinements of locating the Pomona station platform closer to the existing Metrolink station and providing a bridge, rather than an at-grade crossing, at Garey Avenue in Pomona would have no potential to induce growth beyond that already identified for the project in the Final EIR. As identified in the Final EIR, the project could potentially attract new transit-oriented development (TOD) around the light-rail transit (LRT) stations. The Cities of Montclair, Pomona, and Glendora already include plans for future TOD around the project stations. Thus, the potential future TOD development would be consistent with land use designations and zoning regulations established by Pomona and reflective of the City long-term planning goals, objectives, and policies for growth in the vicinity of the project refinements.

The project, including the proposed refinements, does not include the development of employment-generating uses. Though improved transit service would result in reduced traffic congestion and home-to-work travel times, which may attract new businesses to the project area, the Southern California Association of Governments (SCAG) projections of population, households, and employment in the region through 2035 have taken into account the development of the project from Azusa to Montclair.

The proposed refinements and other project elements do not include and would not result in any substantial modifications to existing roadways, or other infrastructure facilities or service systems that could induce growth beyond that already envisioned for the region or by each corridor City.

Thus, the project, including the proposed deign refinements, is not anticipated to directly or indirectly attract growth beyond that already envisioned in SCAG's 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The corridor Cities' land use plans recognize and account for the project and any future new development would be consistent with each City's land use plans and regulations. Therefore, no significant impacts would result.

3.6 FINDING OF NO NEW OR INCREASED SIGNIFICANT IMPACT

The provision of the proposed refinements, consisting of locating the Pomona station platform 139 feet further to the west and providing a bridge rather than an at-grade crossing at Garey Avenue in Pomona, will not materially change the location, function, or the operational characteristics of the Metro Gold Line Foothill Extension – Azusa to Montclair project. Based on the evaluation of environmental effects contained in the 2013 Final EIR and this Addendum No.1, the provision of the proposed refinements has no potential to result in either new or substantially increased significant environmental impacts. With no new or greater significant impact and with no change with respect to the circumstances under which the project is undertaken since the certification of the 2013 Final EIR, the preparation of a subsequent EIR for the proposed refinements is not warranted.

Chapter 4 – List of Preparers

4.1 LEAD AGENCY

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Appendix A: Traffic Technical Report

INTUEOR
MAXIMIZING VALUE

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To: John Gahbauer – PB
From: Farid Naguib, Wahid Farhat – Intueor
Date: March 26, 2014
Re: Garey Avenue Bridge Traffic Impact Analysis

INTRODUCTION

A bridge is proposed at the Garey Avenue at-grade crossing in the City of Pomona to grade separate the LRT (**Figure 1**). Metrolink and freight train operations will continue to operate at-grade. It is assumed that the proposed bridge for the LRT tracks will take-off and rise after the at-grade crossing at Fulton Road and touchdown in advance of Towne Avenue. Subsequently, the LRT tracks will take-off and rise again before reaching Towne Avenue because of the proposed grade separation of the LRT tracks at Towne Avenue too.

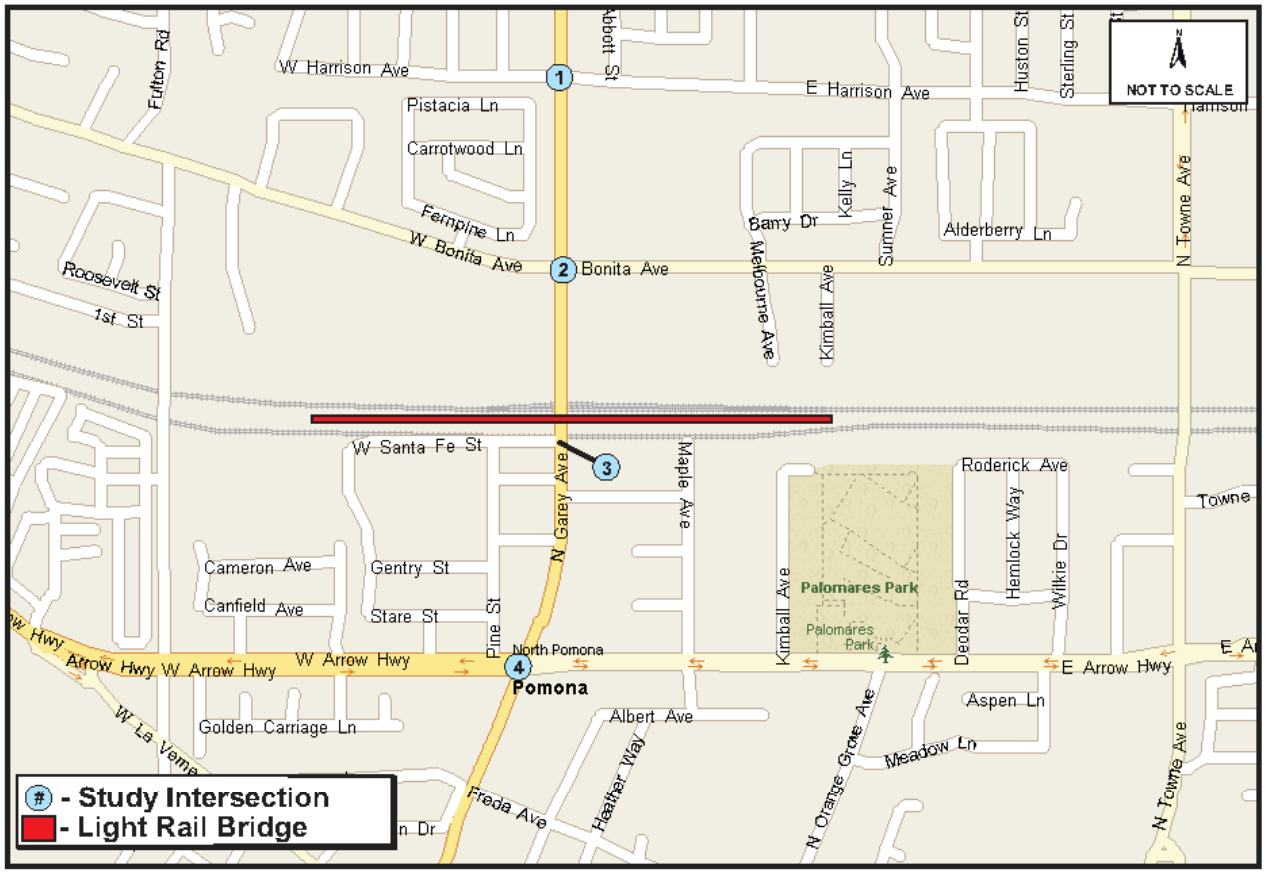
The objective of this traffic impact analysis is to present the change in traffic operations, if any, along the Garey Avenue intersections, adjacent to the at-grade crossing, due to the proposed LRT bridge at Garey Avenue.

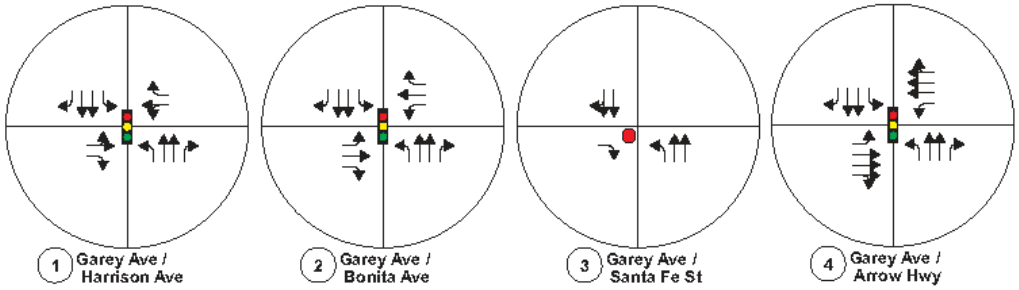
The four intersection locations previously studied in the 2013 Final EIR (FEIR), which make up the study area for the purposes of this traffic impact evaluation, are illustrated in **Figure 1**. The intersections are located along Garey Avenue and adjacent to the proposed bridge. The study intersections that were evaluated are as follows:

1. Garey Avenue/Harrison Avenue
2. Garey Avenue/Bonita Avenue
3. Garey Avenue/Santa Fe Street
4. Garey Avenue/Arrow Highway

IMPACT CRITERIA

The methodology used to determine adverse or significant impacts at the study intersections is similar to the methodology used in the traffic study for the 2013 environmental document and consists of identifying the change in delay between the TSM and Build Alternatives and the No Build Alternative. Similar to what was applied in the traffic study that was prepared for the 2013 FEIR document, the impact criteria used for this comparison was based on the *Los Angeles County Traffic Impact Analysis Study Guidelines* (1997).





INTUEOR MAXIMIZING VALUE	Garey Avenue Bridge	Figure 1: Traffic Analysis Locations

Based on these guidelines under the TSM and Build Alternatives, an intersection is considered to have adverse or significant impacts, if the change in delay from the No Build Alternative is equal to or greater than the criteria presented in **Table 1**.

Table 1. Los Angeles County Intersection Impact Thresholds

Control Type	Final Level of Service (LOS) with project	Significant Increase in Delay from the No Build (Seconds/Vehicle)
Unsignalized Intersection	LOS C	≥ 4
	LOS D	≥ 2
	LOS E/F	≥ 1.5
Signalized Intersection	LOS C	≥ 6
	LOS D	≥ 4
	LOS E/F	≥ 2.5

Source: Los Angeles County Traffic Impact Analysis Study Guidelines, 1997.

STUDY INTERSECTIONS AND EXISTING LEVELS OF SERVICE

Turning movement counts for the four study intersections were obtained from the traffic study that was prepared for the 2013 FEIR document to assess existing peak hour traffic conditions. As previously noted in the traffic study, the traffic volume data collection was conducted on a representative weekday (Tuesday, Wednesday, or Thursday) in May 2010 at the locations shown in **Figure 1**. The chosen intersections are located along Garey Avenue and adjacent to the proposed bridge. The AM and PM peak hours were identified as the critical time periods for an assessment of existing conditions.

The intersection analysis showed that all study intersections being evaluated operated at LOS C or better during both AM and PM peak hours. **Table 2** presents the results of the existing AM and PM traffic operations and corresponding LOS at each of the study intersections. The detailed existing conditions LOS worksheets are presented in **Appendix A**.

Table 2. Existing Intersection Level of Service Analysis (2010)

#	Intersection	Control Type	AM		PM	
			LOS	Delay[1]	LOS	Delay[1]
1	Garey Avenue/Harrison Avenue	Signalized	A	6.7	A	4.7
2	Garey Avenue/Bonita Avenue	Signalized	B	13.2	B	13.3
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	11.8	B	11.5
4	Garey Avenue/Arrow Highway	Signalized	C	21.5	C	25.8

[1] Average vehicle delay in seconds

NO BUILD ALTERNATIVE

The No Build Alternative represents the baseline case consisting of existing and committed elements of the region's transportation plan, excluding the proposed project. Consequently, the No Build Alternative is focused on the preservation of existing services as well as the inclusion of local project elements that are already programmed and committed. Within the study area, intersection lane configurations were assumed to be the same as the existing conditions.

Intersection Traffic Conditions

No Build traffic forecasts for year 2035 were developed using the same growth criteria presented in the 2013 FEIR document. Traffic projections for the No Build Alternative were developed by applying an accumulated growth factor of 17.5% to the existing peak hour intersection traffic volumes.

Under the No Build Alternative, all four study intersections would continue to operate at LOS C or better during both AM and PM peak hours. **Table 3** presents the results of the No Build AM and PM peak hour traffic operations and corresponding LOS at each of the study intersections. The detailed LOS worksheets for the No Build Alternative are presented in **Appendix B**.

Table 3. No Build Alternative Intersection Level of Service (2035)

#	Intersection	Control Type	AM		PM	
			LOS	Delay[1]	LOS	Delay[1]
1	Garey Avenue/Harrison Avenue	Signalized	A	7.5	A	6.0
2	Garey Avenue/Bonita Avenue	Signalized	B	16.0	B	15.8
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	10.8	B	12.4
4	Garey Avenue/Arrow Highway	Signalized	C	28.3	C	30.9

[1] Average vehicle delay in seconds

TRANSPORTATION SYSTEMS MANAGEMENT (TSM) ALTERNATIVE

As noted in the 2013 FEIR document, this alternative proposes a bus rapid transit (BRT) route instead of the LRT as a link between the Azusa-Citrus Station and the Montclair Transcenter. The roadway conditions would be the same as those in the No Build Alternative. Within the study area, intersection lane configurations were assumed to be the same as the No Build conditions.

Intersection Traffic Conditions

As detailed in the traffic study for the 2013 FEIR, an overall percentage decrease of -0.380% was applied to the 2035 No Build Alternative AM and PM peak hour intersection volumes to develop

the future AM and PM peak hour projections for the TSM Alternative at each of the four study intersections.

The results of the traffic analysis for the TSM Alternative and corresponding AM and PM peak hour LOS, presented in **Table 4**, are similar to the No Build Alternative. Under the TSM Alternative, all four study intersections would continue to operate at LOS C or better. The detailed LOS worksheets for the TSM Alternative are presented in **Appendix C**.

Table 4. TSM Alternative Intersection Level of Service (2035)

#	Intersection	Control Type	AM		PM	
			LOS	Delay[1]	LOS	Delay[1]
1	Garey Avenue/Harrison Avenue	Signalized	A	7.5	A	5.9
2	Garey Avenue/Bonita Avenue	Signalized	B	16.0	B	15.7
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	10.8	B	12.4
4	Garey Avenue/Arrow Highway	Signalized	C	28.1	C	30.7

[1] Average vehicle delay in second

Summary of Intersection Impacts

Using the threshold criteria presented in Table 1, intersection operating conditions under the TSM Alternative were compared with the No Build Alternative to identify significantly affected locations. As indicated in **Table 5** and **Table 6**, no intersections are projected to be adversely affected by the proposed bridge project.

Table 5. AM Peak Hour Intersection Impacts Comparison (TSM and No Build Alternatives)

#	Intersection	Control Type	2035 No Build		2035 TSM		Change in Delay	Significant Impact
			LOS	Delay[1]	LOS	Delay[1]		
1	Garey Avenue/Harrison Avenue	Signalized	A	7.5	A	7.5	0.0	NO
2	Garey Avenue/Bonita Avenue	Signalized	B	16.0	B	16.0	0.0	NO
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	10.8	B	10.8	0.0	NO
4	Garey Avenue/Arrow Highway	Signalized	C	28.3	C	28.1	-0.2	NO

[1] Average vehicle delay in seconds

Table 6. PM Peak Hour Intersection Impacts Comparison (TSM and No Build Alternatives)

#	Intersection	Control Type	2035 No Build		2035 TSM		Change in Delay	Significant Impact
			LOS	Delay[1]	LOS	Delay[1]		
1	Garey Avenue/Harrison Avenue	Signalized	A	6.0	A	5.9	-0.1	NO
2	Garey Avenue/Bonita Avenue	Signalized	B	15.8	B	15.7	-0.1	NO
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	12.4	B	12.4	0.0	NO
4	Garey Avenue/Arrow Highway	Signalized	C	30.9	C	30.7	-0.2	NO

[1] Average vehicle delay in seconds

BUILD ALTERNATIVE

As described in the 2013 FEIR, the Build Alternative would be a 12.3-mile LRT line extending from just east of the Azusa-Citrus station (built as part of the Pasadena to Azusa extension) to Montclair. Within the Garey Avenue study area, intersection lane configurations were assumed to be the same as the No Build and TSM Alternatives.

Intersection Traffic Conditions

Similar to the TSM Alternative, adjustments to traffic flow patterns as a result of the Build Alternative were determined by using projections from the 2013 FEIR. An overall percentage decrease of -1.380% was applied to the 2035 No Build AM and PM peak hour intersection volumes to develop the AM and PM peak hour traffic projections for the Build Alternative at each of the four study intersections. Also, the turning movement traffic volumes were adjusted to reflect increased vehicular activity due to the Pomona station and its associated parking structure.

Under the Build Alternative, all four study intersections would continue to operate at LOS C or better during both AM and PM peak hours. **Table 7** presents the results of the Build AM and PM peak hour traffic operations and corresponding LOS at each of the study intersections. The detailed LOS worksheets for the Build Alternative are presented in **Appendix D**.

Table 7. Build Alternative Intersection Level of Service (2035)

#	Intersection	Control Type	AM		PM	
			LOS	Delay[1]	LOS	Delay[1]
1	Garey Avenue/Harrison Avenue	Signalized	A	7.9	A	5.9
2	Garey Avenue/Bonita Avenue	Signalized	C	32.6	B	18.5
3	Garey Avenue/Santa Fe Street	One-Way Stop	A	9.4	B	13.2
4	Garey Avenue/Arrow Highway	Signalized	C	29.9	C	34.5

[1] Average vehicle delay in seconds

Summary of Intersection Impacts

Using the threshold criteria presented in Table 1, intersection operating conditions under the Build Alternative were compared with the No Build Alternative to identify significantly affected locations. **Table 8** and **Table 9** summarize intersection impacts for the AM and PM peak hours, respectively. As indicated in **Table 8** and **Table 9**, one intersection within the study area is projected to be adversely affected by the proposed LRT project during the AM peak hour. This impact is not new and was previously identified as a significant impact in the 2013 FEIR on page 2-94, Table 2-27. This impact, at the Garey Avenue/Bonita Avenue intersection is generally due to the increase in the number of vehicles at this intersection, which are destined for and accessing/exiting the parking structure at the Pomona Station. This previously identified impact is not new and is unrelated to the proposed Garey Avenue bridge. In summary, there are no significant impacts to the four study intersections which can be attributed to the Garey Avenue bridge. These results are presented in **Table 10** and **Table 11** for the AM and PM peak hours, respectively. The two tables show a comparison between the 2035 Build Alternative for the existing approved project and the 2035 Build Alternative for the proposed LRT bridge at Garey Avenue. Both tables show no change in the delay between the two Build conditions for the AM and PM peak hours.

Table 8. AM Peak Hour Intersection Impacts Comparison (Build and No Build Alternatives)

#	Intersection	Control Type	2035 No Build		2035 Build		Change in Delay	Significant Impact
			LOS	Delay[1]	LOS	Delay[1]		
1	Garey Avenue/Harrison Avenue	Signalized	A	7.5	A	7.9	0.4	NO
2	Garey Avenue/Bonita Avenue	Signalized	B	16.0	C	32.6	16.6	YES
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	10.8	A	9.4	-1.4	NO
4	Garey Avenue/Arrow Highway	Signalized	C	28.3	C	29.9	1.6	NO

[1] Average vehicle delay in seconds

Table 9. PM Peak Hour Intersection Impacts Comparison (Build and No Build Alternatives)

#	Intersection	Control Type	2035 No Build		2035 Build		Change in Delay	Significant Impact
			LOS	Delay[1]	LOS	Delay[1]		
1	Garey Avenue/Harrison Avenue	Signalized	A	6.0	A	5.9	-0.1	NO
2	Garey Avenue/Bonita Avenue	Signalized	B	15.8	B	18.5	2.7	NO
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	12.4	B	13.2	0.8	NO
4	Garey Avenue/Arrow Highway	Signalized	C	30.9	C	34.5	3.6	NO

[1] Average vehicle delay in seconds

Table 10. AM Peak Hour Intersection LOS Comparison Between the Approved Project and the Proposed LRT Bridge

#	Intersection	Control Type	2035 Build for the Approved Project		2035 Build for the Proposed LRT Bridge		Change in Delay
			LOS	Delay[1]	LOS	Delay[1]	
1	Garey Avenue/Harrison Avenue	Signalized	A	7.9	A	7.9	0.0
2	Garey Avenue/Bonita Avenue	Signalized	C	32.6	C	32.6	0.0
3	Garey Avenue/Santa Fe Street	One-Way Stop	A	9.4	A	9.4	0.0
4	Garey Avenue/Arrow Highway	Signalized	C	29.9	C	29.9	0.0

[1] Average vehicle delay in seconds

Table 11. PM Peak Hour Intersection LOS Comparison Between the Approved Project and the Proposed LRT Bridge

#	Intersection	Control Type	2035 Build for the Approved Project		2035 Build for the Proposed LRT Bridge		Change in Delay
			LOS	Delay[1]	LOS	Delay[1]	
1	Garey Avenue/Harrison Avenue	Signalized	A	5.9	A	5.9	0.0
2	Garey Avenue/Bonita Avenue	Signalized	B	18.5	B	18.5	0.0
3	Garey Avenue/Santa Fe Street	One-Way Stop	B	13.2	B	13.2	0.0
4	Garey Avenue/Arrow Highway	Signalized	C	34.5	C	34.5	0.0

[1] Average vehicle delay in seconds

MITIGATION MEASURES

Since the proposed Garey Avenue bridge does not result in any additional new significant impacts, there is no need for any additional new mitigations measures due to this proposed project variation. Therefore, no new mitigation measures, above and beyond those identified in the 2013 FEIR, are proposed.

As previously identified in the 2013 FEIR on page 2-112, the Metro Gold Line Foothill Extension Construction Authority shall cooperatively work with the City of Pomona, and contribute funding as necessary, to modify the Garey Avenue and Bonita Avenue intersection within existing right-of-way. The proposed modification is a restriping of the northbound approach to provide two exclusive left turn lanes, one through lane, and one shared through/right turn lane. The "receiving leg" would also be restriped to provide two through lanes.

LEVEL OF IMPACT AFTER MITIGATION

The results of the intersection operating conditions after implementation of the Build Alternative mitigation measures, are provided in **Table 12**. These results are taken from page 2-113, Table 2-

33 of the 2013 FEIR. As shown, the intersection of Garey Avenue and Bonita Avenue will be mitigated to a level that is less than significant. The detailed LOS worksheets for the mitigated Build conditions are presented in **Appendix E**.

Table 12. Build Alternative—Mitigated Intersection Level of Service (LOS)

#	Intersection	AM		PM		Residual Impact
		LOS	Delay[1]	LOS	Delay[1]	
2	Garey Avenue/Bonita Avenue	C	21.9	B	19.1	No

[1] Average vehicle delay in seconds

ADDITIONAL TRAFFIC ISSUES

In the 2013 FEIR, Garey Avenue was identified as a grade crossing location that would require improvements to maintain safe operations of the proposed LRT with an at-grade configuration. With the implementation of the proposed Garey Avenue bridge to grade separate the LRT tracks from the at-grade crossing at Garey Avenue; the need for these proposed at-grade improvements would no longer be necessary for this project. However, their implementation would constitute an improvement for Metrolink and freight train operations. Consequently, page 2-112 of the 2013 FEIR discusses two proposed long-term mitigation measures, LTR-6 and LTR-7, which would be implemented to enhance at-grade crossing operations for Metrolink and freight trains at Garey Avenue.

Appendix B: Noise and Vibration Technical Report

ATSConsulting
acoustics, transportation + strategy

MEMORANDUM

To: John Gahbauer
Parsons Brinkerhoff

From: Shannon McKenna
Steven Wolf
ATS Consulting

Date: March 27, 2014

Subject: Draft: Noise and Vibration Impact Assessment for the Garey Avenue LRT Bridge

INTRODUCTION

This memorandum presents the noise and vibration impact assessment for the incorporation of a light-rail transit (LRT) bridge at Garey Avenue as part of the Metro Gold Line Foothill Extension Azusa to Montclair project. The Final Environmental Impact Report (EIR) for the project was completed in February 2013. The design at the time the Final EIR was completed included an at-grade crossing at Garey Avenue in Pomona. Incorporating an LRT bridge at Garey Avenue will result in a change in the PE drawings used for the Final EIR analysis between station 1902+63 and 1932+53. The only noise and vibration sensitive receivers located within these station limits are a cluster of single family residences on Kimball Avenue between Garey Avenue and Towne Avenue south of the project right-of-way. The residences are shown in Figure 1 and Figure 2 in the cluster labeled EB1. This is the same labeling used to represent these residences in the noise and vibration analysis in the 2013 Final EIR.

The noise and vibration prediction methodology for the predictions presented in this report follow the same methodology as was presented in the Noise and Vibration Technical Report that is included in the 2013 Final EIR. The prediction methodology and impact thresholds used to assess impact follow the guidance set forth in the Federal Transit Administration (FTA) Guidance Manual[1]. Background information and definitions of key noise and vibration terms are included in Appendix A of this memorandum.

The main factors that affect the predicted noise and vibration levels from light-rail transit (LRT) operations are:

- distance from the sensitive receiver to the LRT tracks,
- light-rail vehicle (LRV) speed, and
- track type.

The incorporation of the LRT bridge will not change the horizontal distance from the sensitive receivers to the LRT tracks or the LRV speed. The track type on the LRT bridge structure will be ballast-and-tie,

[1] *Transit Noise and Vibration Impact Assessment,* US Department of Transportation, Federal Transit Administration, Document FTA-VA-90-1003-06, May 2006.

the same track-type as the at-grade design. However, the tracks will be on the LRT bridge structure and vibration levels are about 10 dB lower for LRT track on an elevated structure.

The following sections of this memorandum include the predicted noise and vibration levels and impact assessment for the sensitive receivers located near the LRT bridge. The predicted noise and vibration levels for the residences in the Pomona EB1 cluster do not exceed the FTA impact thresholds.

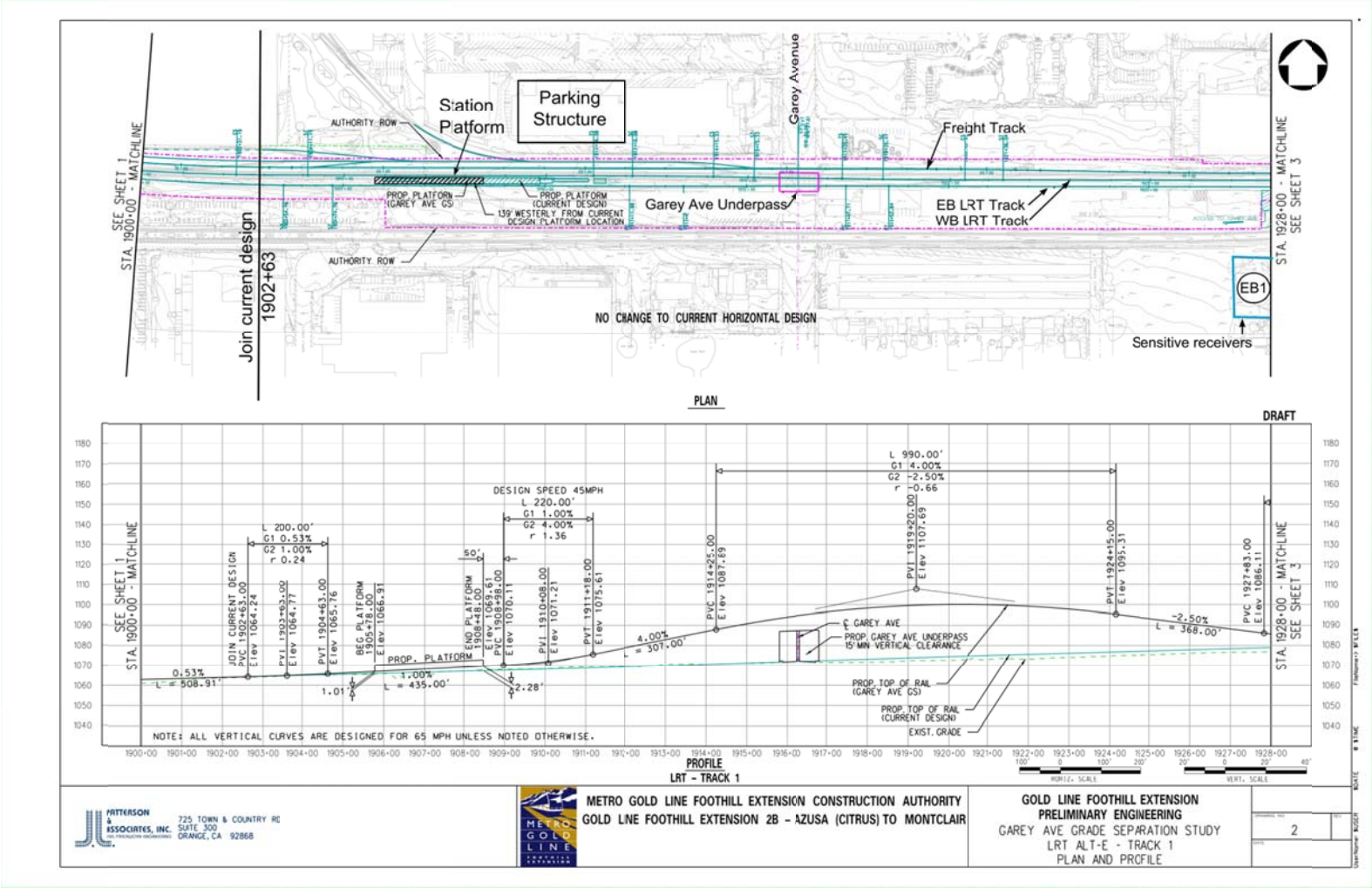


Figure 1: Plan and Profile of Garey Avenue LRT Bridge (Page 1)

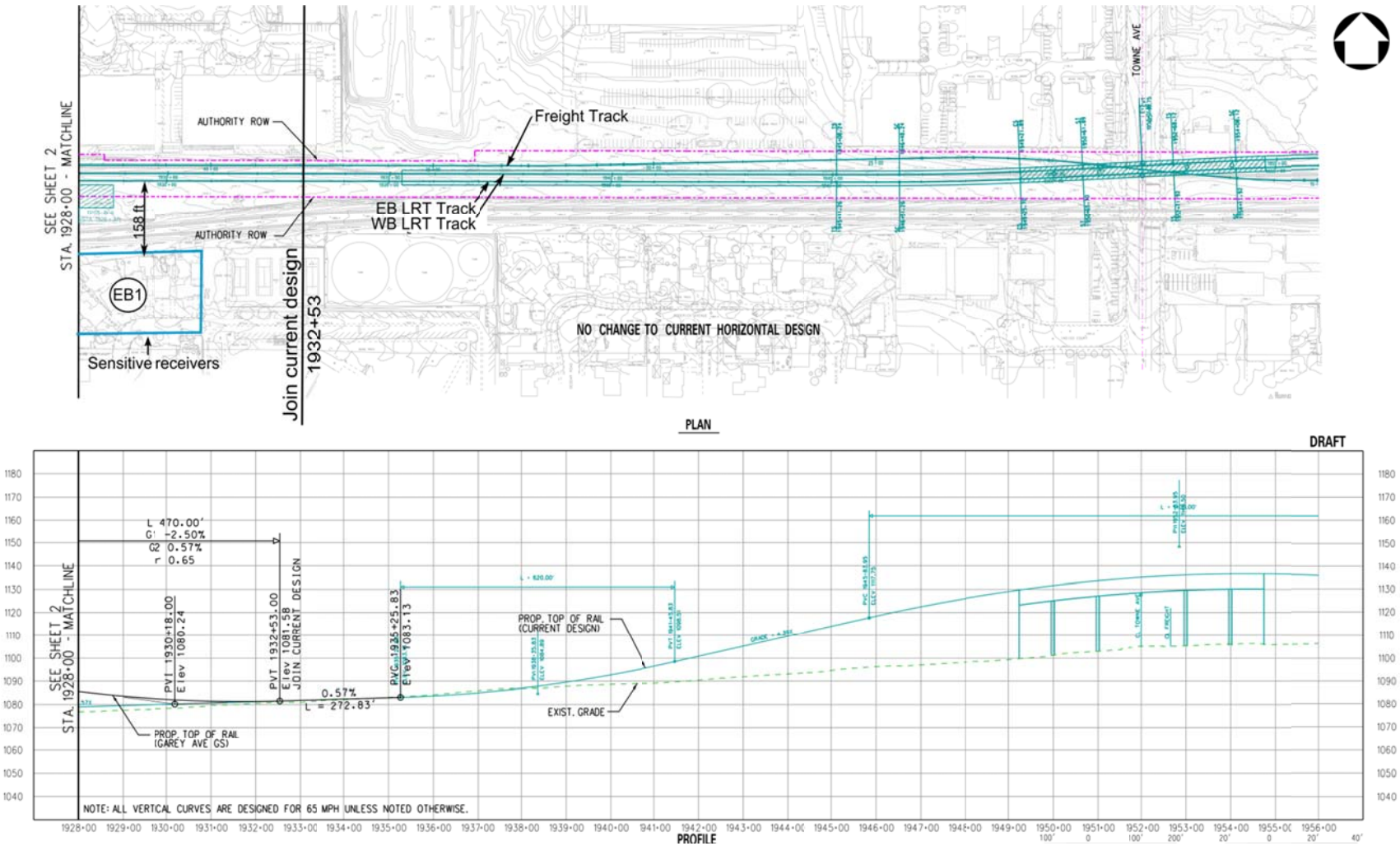


Figure 2: Plan and Profile of Garey Avenue LRT Bridge (Page 2)

NOISE IMPACT ASSESSMENT

The noise sensitive receivers potentially affected by the LRT bridge at Garey Avenue are five single-family residences (SFRs) on Kimball Avenue between Garey Avenue and Towne Avenue south of the project right-of-way. The locations of the residences are shown in Figure 1 and Figure 2 where the cluster of residences is labeled EB1. This is the same label applied to these residences in the 2013 Final EIR.

Determining the existing noise level at a sensitive receiver is an important step in the noise impact assessment because the thresholds for noise impact are based on existing noise. The noise impact thresholds are higher for areas with high existing noise levels and lower for areas with low existing noise levels.

The existing noise level for the residences in cluster EB1 near the LRT bridge at Garey Avenue was measured nearby at 2655 Deodar Road, Pomona. The measured day-night noise level (Ldn) was 62 dBA. The primary noise source was train traffic (Metrolink and freight) on the existing tracks. The moderate impact threshold for an existing noise level of 62 dBA is an increase in noise level of 1.7 dB and the severe impact threshold is an increase in noise level of 4.4 dB.

The key assumptions included in the noise prediction for the residences in cluster EB1 are:

- The sensitive receivers are 158 ft from the eastbound LRT track. This is the distance from the centerline of the track to the facade of the nearest residence within the cluster.
- LRVs will travel 65 mph through this area.
- The reference train noise level is an Lmax of 77.7 dBA at 50 ft and 40 mph for a 2 car train for ballast-and-tie track.
- There will be ballast-and-tie track near the sensitive receivers.
- There will be 63 train events during daytime hours (7 a.m. to 10 p.m.) and 21 train events during nighttime hours (10 p.m. to 7 a.m.). Metro will operate two car trains. The same operating assumptions were applied in the 2013 Final EIR analysis.
- The existing freight track within the project right-of-way will be relocated as part of the project. Freight traffic on this track (four BNSF freight trains daily) is included in the project noise predictions.

Table 1 shows the predicted noise levels at the sensitive receiver cluster EB1. The predicted noise level is an Ldn of 63.5 dBA, a 1.5 dB increase over the existing noise level. The moderate impact threshold is an increase of 1.7 dB. Therefore, no noise impact is predicted at the sensitive receivers and no noise mitigation is recommended.

Table 2 shows the predicted noise level by source. Included in the predicted future noise level is the LRT noise, BNSF (freight train) noise, and existing traffic noise (which includes Metrolink train traffic on existing tracks that are not located within the project right-of-way and will not be relocated as part of the project).

Table 1: Predicted Noise Level and Impact Assessment

Cluster No.[1]	Eng. Station	Dist., ft[2]	Speed, mph	Existing Ldn, dBA	Predicted Ldn, dBA	Threshold[3]		Impact	No. of Impacts
						Mod.	Sev.		
Pomona Eastbound									
EB1	1929+00	158	65	62	63.5	1.7	4.4	No	--

Source: ATS Consulting, 2014
Notes:
[1]The buildings included in each cluster are detailed in Figure 1 and Figure 2
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]The threshold is the allowable increase in noise from the existing Ldn. The FTA designates two threshold levels: moderate and severe.

Table 2: Predicted Noise Levels by Source

Category 2 Land Uses

Cluster No.[1]	Eng. Station	Dist., ft[2]	LRT Ldn, dBA	BNSF Ldn, dBA	BNSF Horn Ldn, dBA	Traffic Noise Ldn[3], dBA	Predicted Ldn[4], dBA	Existing Ldn[5], dBA
Pomona Eastbound								
EB1	1929+00	158	56.5	41.7	53.3	62	63.5	62

Source: ATS Consulting, 2014
Notes:
[1]The buildings included in each cluster are detailed in Figure 1 and Figure 2.
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]The traffic noise Ldn is the measured existing Ldn without the BNSF train and horn noise.
[4]The predicted Ldn is the sum of the LRT Ldn, BNSF Ldn, BNSF horn Ldn, and Traffic Noise Ldn.
[5]The existing Ldn is the measured existing noise level.

VIBRATION IMPACT ASSESSMENT

Vibration from LRVs on an elevated structure is about 10 decibels lower than vibration from LRVs on at-grade track, because the structure attenuates the vibration. The location of the sensitive receivers relative to the Garey Avenue LRT bridge structure is shown in Figure 1 and Figure 2. The residences are at the east end of the LRT bridge, where the tracks have already descended close to existing grade. At this location we do not expect the vibration levels to be reduced by the LRT bridge structure at the sensitive receivers.

There are no changes to the assumptions used in the vibration predictions from the 2013 Final EIR analysis, including the distance from the sensitive receiver to the LRT tracks, LRV speed, and track type. The vibration prediction methodology, including the Force Density Level (FDL) and Line Source Transfer Mobility (LSTM), are explained in detail in the Noise and Vibration Technical Report in the Final EIR.

The predicted vibration level at the sensitive receiver is 67 VdB in the 31.5 Hz 1/3 octave band, which is 5 decibels below the impact threshold. No vibration mitigation is recommended.

Table 3: Predicted Vibration Levels in Pomona, Category 2 Land Uses

Cluster No.[1]	Eng. Station	Dist., ft[2]	Speed, mph	Threshold, VdB	Predicted Band Max., VdB[3]	1/3 Octave Band, Hz[4]	Impact	No. of Impacts[5]
Pomona Eastbound								
EB1	1929+00	158	65	72	67	31.5	No	--

Source: Metro Gold Line Foothill Extension, Azusa to Montclair Final EIR, 2013
Notes:
[1]The cluster numbers refer to the same sensitive receivers used for the noise analysis. The buildings included in each cluster are detailed in Figure 1 and Figure 2.
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]Maximum predicted vibration level in any 1/3 octave band.
[4]The 1/3 octave band that corresponds to the predicted band maximum.
[5]Number of dwelling units in the cluster.

COMPARISON OF FINAL EIR PROJECT AND LRT BRIDGE PROJECT

The incorporation of the LRT bridge will result in a vertical change in the track location, but will not result in a horizontal change in the track location. The incorporation of the LRT bridge will also result in a shift of a proposed station platform farther west. The sensitive receivers near the proposed LRT bridge (cluster EB1 in Pomona) are located at the east end of the bridge, where the proposed top of rail will be about 5 feet higher than the proposed top of rail for the Final EIR project. The 5 foot elevation difference does not result in a change in the predicted noise or vibration levels. The predicted noise and vibration levels for both the Final EIR Project and Addendum Project are shown in Table 4. There are no sensitive receivers near the proposed platform for the Final EIR project or for the LRT bridge project, so the shift in the platform location will not result in any changes to the noise or vibration analysis.

Table 4: Comparison of Predicted Levels

Cluster No.[1]	Eng. Station	Dist., ft[2]	Speed, mph	Addendum Predicted Noise Level[3], Ldn, dBA	Final EIR Predicted Noise Level[3], Ldn, dBA	Addendum Predicted Vib Level, Band Max, VdB	Final EIR Predicted Vib Level, Band Max, VdB
Pomona Eastbound							
EB1	1929+00	158	65	63.5	63.5	67	67

Notes:
[1]The buildings included in the cluster are detailed in Figure 1 and Figure 2.
[2]The distance in feet from the closest sensitive receiver in the cluster to the proposed near light-rail track.
[3]The predicted Ldn is the sum of the LRT Ldn, BNSF Ldn, BNSF horn Ldn, and Traffic Noise Ldn.

APPENDIX A: FUNDAMENTAL CONCEPTS OF NOISE AND VIBRATION

Noise Fundamentals

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted or excessive sound. Sound can vary in intensity by over one million times within the range of human hearing. Therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity and compress the scale to a more convenient range.

Sound is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale has been developed. A-weighted decibels are abbreviated as "dBA." On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA. As a point of reference, Figure 3 includes examples of A-weighted sound levels from common indoor and outdoor sounds.

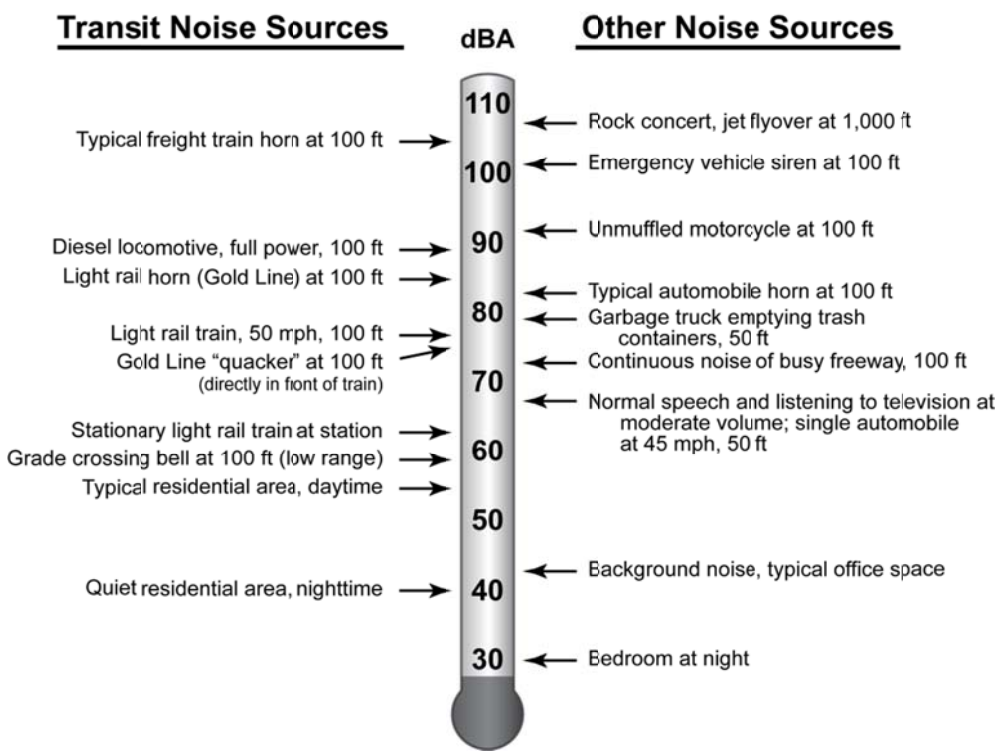


Figure 3: Typical Indoor and Outdoor Noise Levels

Using the decibel scale, sound levels from two or more sources cannot be directly added together to determine the overall sound level. Rather, the combination of two sounds at the same level yields an increase of 3 dB. The smallest recognizable change in sound level is approximately 1 dB. A 3-dB increase in the A-Weighted sound level is generally considered perceptible, whereas a 5-dB increase is readily perceptible. A 10-dB increase is judged by most people as an approximate doubling of the perceived loudness.

The two primary factors that reduce levels of environmental sounds are increasing the distance between the sound source and the receiver and having intervening obstacles such as walls, buildings, or terrain features that block the direct path between the sound source and the receiver. Factors that act to make environmental sounds louder include moving the sound source closer to the receiver, sound enhancements caused by reflections, and focusing caused by various meteorological conditions.

Following are brief definitions of the measures of environmental noise used in this study:

- *Maximum Sound Level (L_{max}):* L_{max} is the maximum sound level that occurs during an event such as a train passing. For this analysis L_{max} is defined as the maximum sound level using the slow setting on a standard sound level meter.
- *Equivalent Sound Level (L_{eq}):* Environmental sound fluctuates constantly. The equivalent sound level (L_{eq}) is the most common means of characterizing community noise. L_{eq} represents a constant sound that, over a specified period of time, has the same sound energy as the time-varying sound. L_{eq} is used by the FTA to evaluate noise effects at institutional land uses, such as schools, churches, and libraries, from proposed transit projects.
- *Day-Night Sound Level (L_{dn}):* L_{dn} is basically a 24-hour L_{eq} with an adjustment to reflect the greater sensitivity of most people to nighttime noise. The adjustment is a 10 dB penalty for all sound that occurs between the hours of 10:00 p.m. to 7:00 a.m. The effect of the penalty is that, when calculating L_{dn}, any event that occurs during the nighttime is equivalent to ten occurrences of the same event during the daytime. L_{dn} is the most common measure of total community noise over a 24-hour period and is used by the FTA to evaluate residential noise effects from proposed transit projects.
- *L_{XX}:* This is the percent of time a sound level is exceeded during the measurement period. For example, the L_{99} is the sound level exceeded during 99 percent of the measurement period. For a 1-hour period, L_{99} is the sound level exceeded for all except 36 seconds of the hour. The tables of the hourly noise levels in Appendix B include L_1, L_{33}, L_{50}, and L_{99}, the sound levels exceeded 1 percent, 33 percent, 50 percent and 99 percent of the hour. L_1 represents typical maximum sound levels, L_{33} is approximately equal to L_{eq} when free-flowing traffic is the dominant noise source, L_{50} is the median sound level, and L_{99} is close to the minimum sound level.
- *Sound Exposure Level (SEL):* SEL is a measure of the acoustic energy of an event such as a train passing. In essence, the acoustic energy of the event is compressed into a 1-second period. SEL increases as the sound level of the event increases and as the duration of the event increases. It is often used as an intermediate value in calculating overall metrics such as L_{eq} and L_{dn}.
- *Sound Transmission Class (STC):* STC ratings are used to compare the sound insulating effectiveness of different types of noise barriers, including windows, walls, etc. Although the amount of attenuation varies with frequency, the STC rating provides a rough estimate of the transmission loss from a particular window or wall.

Vibration Fundamentals

One potential community effect from the proposed project is vibration that is transmitted from the tracks through the ground to adjacent houses. This is referred to as *groundborne vibration*. When evaluating human response, groundborne vibration is usually expressed in terms of decibels using the root mean square (RMS) vibration velocity. RMS is defined as the average of the squared amplitude of the vibration

signal. To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. All vibration decibels in this report use a decibel reference of 1 micro-inch/second (µin/sec.).[2] The potential adverse effects of rail transit groundborne vibration are as follows:

- **Perceptible Building Vibration:** This is when building occupants feel the vibration of the floor or other building surfaces. Experience has shown that the threshold of human perception is around 65 VdB and that vibration that exceeds 75 to 80 VdB may be intrusive and annoying to building occupants.
- **Rattle:** The building vibration can cause rattling of items on shelves and hanging on walls, and various different rattle and buzzing noises from windows and doors.
- **Reradiated Noise:** The vibration of room surfaces radiates sound waves that may be audible to humans. This is referred to as *groundborne noise*. When audible groundborne noise occurs, it sounds like a low-frequency rumble. For a surface rail system such as the proposed build alternatives, the groundborne noise is usually masked by the normal airborne noise radiated from the transit vehicle and the rails.
- **Damage to Building Structures:** Although it is conceivable that vibration from a light-rail system could cause damage to fragile buildings, the vibration from light-rail transit systems is usually one to two orders of magnitude below the most restrictive thresholds for preventing building damage. Hence the vibration effect criteria focus on human annoyance, which occurs at much lower amplitudes than does building damage.

Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration of the motion. The response of humans to vibration is very complex. However, the general consensus is that for the vibration frequencies generated by passenger trains, human response is best approximated by the vibration velocity level. Therefore, vibration velocity has been used in this study to describe train-generated vibration levels.

When evaluating human response, groundborne vibration is usually expressed in terms of decibels using the root mean square (RMS) vibration velocity. RMS is defined as the average of the squared amplitude of the vibration signal. To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. All vibration decibels in this report use a decibel reference of 1 µin/sec.

Figure 4 shows typical vibration levels from rail and non-rail sources as well as the human and structure response to such levels.

[2] One µin/sec= 10^{-6} in/sec.

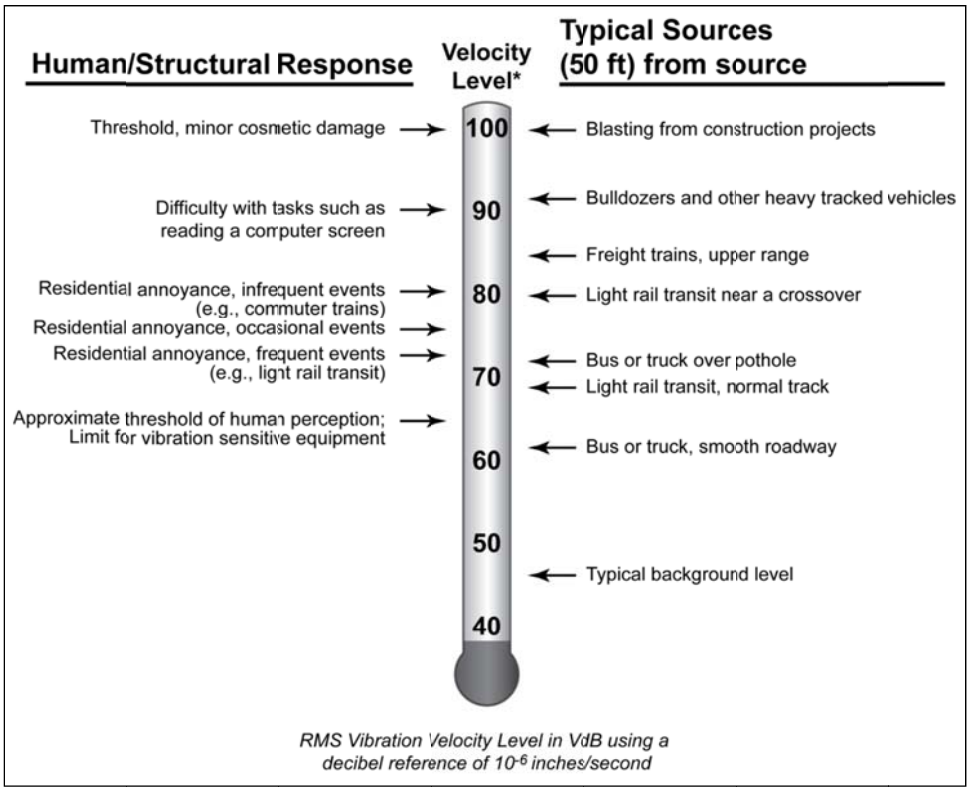


Figure 4: Typical Vibration Levels

Although there has been relatively little research into human and building response to groundborne vibration, there is substantial experience with vibration from rail systems. In general, the collective experience indicates that:

- It is rare that groundborne vibration from transit systems results in building damage, even minor cosmetic damage. The primary consideration therefore is whether vibration will be intrusive to building occupants or will interfere with interior activities or machinery.
- The threshold for human perception is approximately 65 VdB. Vibration levels in the range of 70 to 75 VdB are often noticeable but acceptable. Beyond 80 VdB, vibration levels are often considered unacceptable.
- For human annoyance, there is a relationship between the number of daily events and the degree of annoyance caused by groundborne vibration. The FTA Guidance Manual includes an 8 VdB higher impact threshold if there are fewer than 30 events per day and a 3 VdB higher threshold if there are fewer than 70 events per day.

Often it is necessary to determine the contribution at different frequencies when evaluating vibration or noise signals. The 1/3-octave band spectrum is the most common procedure used to evaluate frequency components of acoustic signals. The term "octave" has been borrowed from music where it refers to a span of eight notes. The ratio of the highest frequency to the lowest frequency in an octave is 2:1. For a 1/3-octave band spectrum, each octave is divided into three bands where the ratio of the lowest frequency to the highest frequency in each 1/3-octave band is $2^{1/3}$:1 (1.26:1). An octave consists of three 1/3 octaves.

The 1/3-octave band spectrum of a signal is obtained by passing the signal through a bank of filters. Each filter excludes all components except those that are between the upper and lower range of one 1/3-octave band. The FTA Guidance Manual is a good reference for additional information on transit noise and vibration and the technical terms used in this section.

EXHIBIT B

PROJECT REFINEMENTS

(1) A new elevated light rail grade separated crossing at Garey Avenue ("bridge"), in lieu of an at-grade crossing.

(2) A shift in location of the Pomona station platform approximately 139 feet to the west.

(3) Incorporation of design features similar to the Metro Gold Line bridge at Santa Anita Avenue in the City of Arcadia into the Towne Avenue flyover.