3.17 Construction

This section evaluates the construction effects from the No Build Alternative and the Build Alternative. The analysis incorporates data from the following technical reports: **Appendix E** (Alternatives Considered and Project Description), **Appendix F** (Air Quality Impacts Report), **Appendix G** (Biological Resources Database Search Results), **Appendix H** (Community Impacts Assessment), **Appendix I** (Economic and Fiscal impacts Reports); **Appendix J** (Hazardous Materials Impacts Report), **Appendix K** (Historic, Archeological and Tribal Resources Technical Report), **Appendix L** (Noise and Vibration Impacts Report), **Appendix M** (Real Estate and Acquisition Impacts Report), and **Appendix O** (Transportation Impacts Report).

The assessment of reasonably foreseeable effects in this section is based upon the temporal and geographic proximity parameters detailed in **Chapter 3.0** (Introduction). Regarding temporal scope, this construction section specifically analyzes temporary effects that are expected to occur during Build Alternative construction, which is anticipated to last approximately 60 to 84 months. Long-term effects are discussed in **Section 3.2** through **Section 3.16** of the EA. Regarding geographic proximity, most resource topics rely on the Study Area defined in **Chapter 3.0**, unless they use specialized study areas defined in the resource-specific section of the EA (**Section 3.2** through **Section 3.16**).

3.17.1 Affected Environment

The Study Area is an urbanized area that is largely built-out and includes a diverse mix of land uses and densities, including single and multi-family residences, commercial and retail uses, industrial development, parks, and public and community facilities, such as schools and the East Los Angeles Civic Center. For some resource topics, specialized study areas have been developed that differ from the Study Area to include the geographical extents that may be affected by construction activities associated with the Build Alternative. Regulations applicable to construction are summarized in **Appendix S** (Regulatory Setting Summary) and detailed in for specific resource topics in **Appendix F**, **Appendix H**, **Appendix I**, **Appendix J**, **Appendix K**, **Appendix L**, **Appendix M**, and **Appendix O**.

3.17.1.1 No Build Alternative

The No Build Alternative, as described in **Section 2.2** (No Build Alternative) of the EA, would include already planned and funded roadway and transit projects but would not provide a rail transit option for communities in eastern Los Angeles County. Under the No Build Alternative, no construction of additional light rail transit infrastructure would occur within the Study Area. Overall, as shown in **Table 3.17-1**, the No Build Alternative would not require construction outside of already planned transit and roadway projects and would not result in an adverse effect related to construction.

Table 3.17-1 Construction Impact Summary – No Build Alternative

Topic	Impact	Rationale
Construction	No Adverse Effect	▪ Construction of already planned transit and roadway projects within the region would comply with federal, state, and local regulations and standards protecting environmental and historic resources, human health and safety, and infrastructure. ▪ Each of the projects that would be built under the No Build Alternative would be required to undergo separate environmental reviews to determine the individual project's short-term construction effects and mitigation, as necessary. ▪ The projects under the No Build Alternative would primarily be constructed within developed and paved areas with limited to no natural areas and would not result in a substantial change in impervious surface.

Source: Metro; CDM Smith/AECOM JV 2026.

3.17.1.2 Build Alternative

The Build Alternative would consist of approximately 4.7 miles of reconfigured and new light rail transit guideway to extend the Metro E Line, a light rail transit line, from its current terminus at the Atlantic Station in East Los Angeles (unincorporated Los Angeles) to the Cities of Commerce and Montebello. The 4.7 miles would include reconfiguration of 0.4 mile of existing track to transition to a new 4.3 mile extension.

Construction of the Build Alternative would comply with applicable Metro policies, Metro Rail Design Criteria, standards, local regulations, and permits that would be obtained to perform the construction. Metro's contractor would establish construction quality and safety programs for the Build Alternative. Metro uses a quality management process that ensures Build Alternative elements are built as designed by the Engineer of Record and are compliant with the construction standards set forth by the Metro Rail Design Criteria, building codes, and regulatory frameworks. Metro's contractor would establish a construction safety program that would, at minimum, conform to the provisions set forth by Metro Construction Safety Policies, federal Occupational Safety and Health Administration, and California Occupational Safety and Health Administration. Project engineering and construction would, at minimum, be completed in conformance with the regulations, guidelines, and criteria specified in **Appendix S**.

3.17.1.2.1 Construction Activities

Before the start of construction, geotechnical and hazardous material field surveys would be conducted to identify soil conditions and any potential hazards related to the Build Alternative's design and construction. Construction would start with site preparation. Once the site is cleared, utilities (such as water, power, and telecommunications lines) that conflict with the Build Alternative would either be relocated or protected in place. The Build Alternative would require the installation of a power line to provide electrical power to the tunnel boring machine. The line would connect to an existing Southern California Edison power substation and extend to the proposed tunnel boring machine launch site, which would also be the location of MSF Site 3. Beginning at the existing Southern California Edison substation at Yates Avenue and north of Flotilla Street, the underground line would proceed south on Yates Avenue to Washington Boulevard, turn west on Washington Boulevard, and then terminate at the tunnel boring machine launch site. The underground trench would be excavated about 20 feet deep with maintenance holes every few hundred feet. Trench lines would be supported with support excavation in conformance with federal and California Occupational Safety and Health Administrations and covered with steel plates to maintain traffic use. If needed, temporary roadway reconfiguration or restriping would be carried out to accommodate the work while keeping traffic moving. Metro would coordinate relocations, modifications, and protection-in-place with all potential utilities affected under the terms of each provider's franchise or other agreements defining the provisions for such matters.

Key construction activities associated with the guideway construction (including at-grade, aerial, and underground) would include tunnel boring and temporary roadway decking (i.e., temporary deck slabs placed above an excavation so traffic can continue above while construction work happens) for the cut and cover sections. Additional activities would include underground and at-grade station construction, demolition, utility relocations, street improvements (such as sidewalk reconstruction and traffic signal installation), construction of the aerial structure and retaining walls, and the installation of light rail transit operating systems, including traction power substations and overhead catenary systems. The Build Alternative would also include the construction of a parking facility, other railroad system facilities, the Maravilla Crossover and other crossovers along the alignment, potential street widening, and the MSF. Construction of aerial structures would generally occur in stages, including installation of foundation piles, reinforced concrete columns, and placement of the superstructure, which may require temporary falsework to support formwork and loads during construction. Utility relocation work would generally occur within the affected right-of-way and on adjacent and nearby streets.

The tunnel boring machine would be launched from the southern tunnel portal near Saybrook Avenue and Gayhart Street (west of Washington Boulevard). Work at this site would include cut and cover excavation, installing temporary support structures (shoring), large-scale soil removal (mass excavation), and hauling excavated material (spoils) away by truck. The tunnel boring machine would then excavate the first tunnel north towards the excavation pit located at East of Atlantic Boulevard between Repetto Avenue and 4th Street. The tunnel boring machine would be turned at the excavation pit and relaunched towards the launch pit to bore the second tunnel. The tunnel boring machine would be dissembled and lifted from the launch pit.

The cut and cover method would also be used east of Atlantic Boulevard in a north-south orientation, starting north of East 4th Street and then transitioning to an east-west orientation along Beverly Boulevard and 3rd Street. The cut and cover would end on 3rd Street between Woods Avenue and La Verne Avenue where the tunnel connects to existing tracks. Limits of the cut and cover at and near the Atlantic/Pomona station can be seen in **Figure 2.4** and **Figure 2.14** in **Chapter 2.0** (Description of Alternatives). Cut and cover activities would deck portions of existing roadways that support live traffic. Such activities would occur at Atlantic Boulevard between Beverly Boulevard and Pomona Boulevard (east of the proposed Atlantic Pomona station), and east of Atlantic Boulevard at Beverly Boulevard, Via Corona Street, Repetto Avenue, and 4th Street (see **Figure 2.14** in **Chapter 2.0**).

Tunnel boring is expected to advance at least 30 feet per day and may occur at the same time as at-grade and aerial construction along Washington Boulevard. Station construction would take place simultaneously with guideway work. Afterward, track installation and light rail transit operating systems (including overhead catenary system, overhead conductor rail, traction power substation, and train control facilities) would be completed, followed by station art, final street improvements, and landscaping.

The Build Alternative may utilize the Interstate 5 freeway as a haul route during construction activities. Consistent with local plans, truck routes that may be used for transporting and hauling construction-related materials include Washington Boulevard, Atlantic Boulevard, Whittier Boulevard, Saybrook Avenue, Gayhart Street, Telegraph Road, Paramount Boulevard, Rosemead Boulevard, Slauson Avenue, Smithway Street, Vail Avenue, Yates Avenue, and Greenwood Avenue. For the twin bore tunnel, tunneling would generate an average of about 1,000 cubic yards of soil from each bored tunnel each day.

For additional details on construction for the Build Alternative refer to **Appendix E** (Alternatives Considered and Project Description) of this EA.

3.17.1.2.2 Construction Timing

The construction activities for the Build Alternative are expected to last 60 to 84 months. Most construction activities would occur during daytime hours. For specialized construction tasks (i.e., underground excavation and station construction, tunnel boring machine tunneling, and installation of support columns and road decking for cut and cover structures), it is common to work during both daytime and nighttime hours. Other disciplines, such as utility work, roadway work, and cut-and-cover, may require nighttime construction to minimize traffic disruptions. Construction work during nighttime hours would be conducted with a variance from nighttime ordinances that would include community input, which would include advanced coordination with stakeholders and notifications within the affected community. Traffic and pedestrian control measures during construction would follow local jurisdiction guidelines and California Manual on Uniform Traffic Control Devices standards. Industry standard roadway construction traffic control methods and devices would be followed including the use of signage and barricades to regulate, warn, or guide road users. Refer to **Appendix O** for more information.

Table 2-5 in **Chapter 2.0** provides a description of typical construction activities to support light rail transit construction, describing the activity, typical duration, and equipment required. This table summary is meant to be representative, not all inclusive.

3.17.2 Construction Effects, Avoidance, Minimization, and Mitigation Measures for the Build Alternative

Table 3.17-2 summarizes the effects associated with construction activities under the Build Alternative on resource topics and references avoidance, minimization, and mitigation measures. As shown in **Table 3.17-3**, because of compliance with existing regulations and NPM and NMM (where applicable), construction of the Build Alternative would have no short-term adverse effects. **Table 3.17-3** provides the full text of the avoidance, minimization, and mitigation measures that would be implemented for construction activities.

Table 3.17-2 Short-Term Construction Effects of the Build Alternative

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Air Quality (Construction Emissions)	Fugitive dust engine exhaust, and area emissions during construction activities were estimated for all components of the Build Alternative, including trenching tunnel boring machine power infrastructure, construction of stations and parking facility for the Greenwood station, rail lines, and the MSF (including MSF Site 1, 2, or 3). Construction-related emissions would be temporary (approximately 60 to 84 months), and neither the maximum total regional daily emissions nor the peak localized daily emissions would exceed the South Coast Air Quality Management District's regional construction emissions thresholds or localized significance thresholds. Areas of localized construction emissions would change during the construction period. Construction would not be expected to result in emissions in any one location for 5 years or more; thus, under Environmental Protection Agency Transportation Conformity particulate matter Hot-Spots guidance, construction emissions would not be expected to meaningfully affect long-term ambient concentrations and no quantitative particulate matter hot spots analysis is required. No adverse effect would occur. See **Appendix F** for more detailed analysis of construction effects. On March 24, 2026, the Transportation Conformity Working Group determined that the Build Alternative is not a Project of Air Quality Concern and would not have adverse impacts on air quality. The Build Alternative meets the requirements of the Clean Air Act and 40 CFR 93.116.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Biological Resources (Federally listed species)	As discussed in **Section 3.3** (Biological Resources), the Biological Resources Study Area is highly developed and does not support habitat or critical habitat for federally listed species. There would be no effect.	No Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Biological Resources (Migratory Birds)	Street trees and landscape vegetation could be affected by construction and maintenance activities during the 3-year tree establishment maintenance period. If vegetation disturbance occurs during the bird nesting season, it could adversely affect migratory birds by disrupting nesting activities. The Build Alternative would comply with the Migratory Bird Treaty Act, Metro's tree policy, and tree protection policies of the corridor jurisdictions, which include provisions for tree protection and replanting during construction. Implementation of NMM BIO-1, which requires nesting bird surveys and avoidance of active nests during the bird nesting season, would reduce adverse effects on migratory birds during construction and the 3-year tree establishment maintenance period.	Adverse Effect	NMM BIO-1 - Nesting Birds	No Adverse Effect
Biological Resources (Vegetation)	Street trees and landscape vegetation could be affected by construction activities but Metro would comply with its tree policy and local tree protection policies, which include provisions for tree protection and replanting during construction, and care of planted trees during the 3-year tree establishment maintenance period.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Biological Resources (Invasive species and pathogens)	Equipment for construction activities has the potential to transport invasive plant seeds in areas of exposed soil and spread tree disease pathogens. The Biological Resources Study Area is primarily built out with minimal landscaping, isolated street trees, and no vegetation communities. Thus, there would be limited potential to spread invasive species and tree disease pathogens.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Community Impacts (Neighborhood Continuity)	Construction could result in temporary impacts to local businesses near construction areas. However, Metro has several programs that provide financial assistance and marketing assistance to small businesses along rail corridors under construction. Temporary traffic delays would occur near construction staging areas. Construction best management practices as set forth in NPM TRA-2 would minimize these short-term disruptions to the corridor jurisdictions. As set forth in NPM TRA-4, site access to the MSF and adjacent properties would be retained and adhere to design requirements. However, there would be an adverse effect due to reduced access within the corridor jurisdictions, which could lower quality of life and increase community isolation. Implementation of NMM TRA-2, which would require that access to important community facilities and neighborhood areas are maintained, would reduce this effect to not adverse. Construction of the Build Alternative and MSF would result in temporary employment opportunities. Construction workers for the Build Alternative and the MSF would likely be sourced from the existing local labor pool and would not result in new workers relocating to the area. Thus, construction of the Build Alternative and MSF would not require the construction of new housing and would therefore not induce unplanned growth. Construction-related air quality emissions would not exceed South Coast Air Quality Management District's regional construction emissions thresholds levels (see **Appendix F**). Construction-related noise and vibrational impacts would be reduced with implementation of measures identified in NPM NOI-2 and adverse effects would be reduced to not adverse with implementation of NMM NOI-1 through NMM NOI-10, NMM NOI-13, and NMM NOI-14, as discussed in the following construction noise analysis and in **Appendix L**. See **Appendix H**, for more detailed analysis of construction effects.	Adverse Effect	NPM NOI-2 - Construction Noise and Vibration Control NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM NOI-1 - Construction Noise Plan and Noise Monitoring Plan NMM NOI-2 - Cast-in-Drilled-Hole Construction Methodology NMM NOI-3 - Noise Barriers NMM NOI-4 - Construction Staging Area NMM NOI-5 - Haul Routes NMM NOI-6 - Best Available Control Technologies NMM NOI-7 - Construction Working Hours NMM NOI-8 - Public Notification of Construction Operations and Schedules NMM NOI-9 - Truck Staging NMM NOI-10 - Tunnel Vent Fans Away From Residences NMM NOI-13 - Identify Vibration Susceptible Properties NMM NOI-14 - Vibration Pre-Construction Survey and Control Plan NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Community Impacts (Physical Character)	Street closures would potentially physically divide established communities. However, street closures would be periodic and temporary. Construction best management practices as set forth in NPM TRA-2 would minimize disruptions. However, there would be an adverse effect due to street closures potentially physically dividing established communities. These adverse effects would be reduced to not adverse with implementation of NMM TRA-2, which would minimize street closure disruptions during construction and maintain access within and between established communities. Temporary construction easements would be required. Metro would provide relocation services and payments to displaced businesses. After construction, properties would likely return to their original use. No residences, churches, schools, parks, or other sensitive land uses would be permanently acquired. MSF: The MSF would be primarily on existing parcels designated for industrial uses that are spatially separated from community facilities and residential neighborhoods. Construction of the MSF would require temporary changes to traffic circulation and controls. As set forth in NPM TRA-4, site access to the MSF and surrounding properties would be retained and meet design requirements during construction. See **Appendix H** for more detailed analysis of construction effects.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Community Impacts (Access and Mobility)	Temporary and periodic street and sidewalk closures would be required during construction activities. As set forth in NPM TRA-2, lane and/or road closures would be scheduled to minimize disruptions to circulation patterns. However, there would be an adverse effect due to street closures impacting access and mobility within and between communities. With implementation of NMM TRA-2, the Traffic Management Plan specifies measures to minimize disruption to access and mobility during construction and would require that access to important community facilities and neighborhood areas are maintained and reduce adverse effects. MSF Site 1: Closure of Acco Street and other temporary changes to traffic circulation and control would be required. As set forth in NPM TRA-4, access to nearby properties would be maintained and alternative routes would be available for any streets requiring closure. However, there would be an adverse effect due to street closures impacting access to these properties. NMM TRA-2 specifies measures to minimize disruption to access and mobility during construction and would reduce adverse effects to not adverse. MSF Site 2: Reduced access on Yates Avenue and other temporary changes to traffic circulation and controls would be required. Access would be maintained to nearby properties and disruptions minimized using measures set forth in NPM TRA-4. With implementation of NMM TRA-2, adverse effects associated with street closures would be reduced to not adverse. MSF Site 3: Construction would not require the closure of any primary vehicle routes. See **Appendix H** for more detailed analysis of construction effects.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Community Impacts (Parks)	Intermittent increases in noise, dust, odors, and traffic delays would occur during construction, which could affect adjacent parks. However, as discussed in **Appendix F**, **Appendix L**, and **Appendix O**, these impacts would not be adverse with implementation of standard control measures and noise and vibration mitigation measures. Implementation of NPM TRA-2 would minimize disruptions to the public caused by temporary closures. However, there would be an adverse effect due to intermittent closures and detours during construction, which could inhibit access to parks. Implementation of NMM TRA-2 would maintain mobility and access to local facilities and reduce adverse effects to not adverse. See **Appendix H** for more detailed analysis of construction effects.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Community Impacts (Multi-Use Trails)	Construction traffic could potentially delay access to the multi-use trails from Washington Boulevard. As set forth in NPM TRA-2, Metro standard practices shall include timing closures to minimize disruptions to the public. However, there would be an adverse effect due to street closures inhibiting access to multi-use trails. Implementation of NMM TRA-2 would require development of a Traffic Management Plan to maintain mobility and access to local facilities, which would reduce adverse effects to not adverse. See **Appendix H** for more detailed analysis of construction effects.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Community Impacts (Other Community Facilities)	Construction traffic could potentially result in traffic delays and thus hinder access to other community facilities. As identified in NPM TRA-2, Metro standard practices shall include timing closures to minimize disruptions to the public. However, there would be an adverse effect due to street closures inhibiting access to other community facilities. Implementation of NMM TRA-2 would require development of a Traffic Management Plan to maintain mobility and access to local facilities, which would reduce adverse effects to not adverse. MSF: Closure of Acco Street for MSF Site 1 and reduced access on Yates Avenue for MSF Site 2 would be required. Construction of MSF Site 3 would not require the closure of any primary vehicle routes. Access to nearby properties would be maintained, and alternative routes would be available for any streets requiring a closure as set forth in NPM TRA-4. However, there would be an adverse effect due to street closures inhibiting access to other community facilities. As required by NMM TRA-2, a Traffic Management Plan would maintain mobility and access to local facilities, which would reduce adverse effects to not adverse. See **Appendix H** for more detailed analysis of construction effects.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Historic, Archaeological, and Tribal Resources (Historic Properties)	Construction activities would not destroy, damage, alter, move, or result in the neglect or deterioration of the historic properties. The physical features within each property's setting that contribute to its historic significance would not change. The construction of new visual elements of the Build Alternative (e.g., the aerial structure) would be congruent with the surrounding industrial setting and would not diminish features of the historic properties. Effects on specific properties are summarized below and discussed in more detail in **Appendix K**. National Chicano Moratorium March: Construction would remove and replace asphalt pavement along portions of the historic district's contributing march route at East 3rd Street, East Beverly Boulevard, Atlantic Boulevard, and Whittier Boulevard. A trench would be installed within the existing right-of-way at 3rd Street and La Verne Avenue where the alignment would transition underground. These activities would be temporary and would not result in a permanent alteration to the historic property. Additional curb ramps would be installed at intersections where non-historic post-1970 curb ramps already exist. The Build Alternative would not result in the reconfiguration of the streets and sidewalks that contribute to the significance of the historic district's linear route. While the Build Alternative would include street and sidewalk improvements, the National Chicano Moratorium March route would be maintained, and improvements would be made using matching materials (asphalt). The district's use would not change, nor would the physical features within the property's setting contribute to its historic significance. None of the district's character-defining features or contributing elements, such as the National Chicano Moratorium March route, El Barrio Free Clinic, Silver Dollar Café, or Ruben Salazar Park, would be demolished or altered. Therefore, the Build Alternative would have no adverse effect on the National Chicano Moratorium March route. Golden Gate Theater: Construction of the guideway and station has the potential to cause vibrations and ground settlement that could impact the Golden Gate Theater, resulting in an adverse effect. Implementation of NMM CUL-1 would require building protection measures to be put in place, such as ground improvements and/or use of lower vibration-generating construction equipment, as identified in a pre-construction survey. NMM CUL-1 would reduce the potential for vibration-related adverse effects generated during construction activities to damage the Golden Gate Theater, and there would be no adverse effect. Vail Field Industrial Addition historic district: Demolition of six contributors to the historic district would occur during construction. As discussed in **Section 3.5** and **Appendix K**, this would not alter the district's character defining features and the core of the historic district would have characteristics to convey its historical significance. Therefore, the Build Alternative would have no adverse effect on the Vail Field Industrial Addition historic district.	Adverse Effect	NMM CUL-1 - Protection Measures – Differential Settlement/Vibration/ Tunnel Boring Machine [TBM] Specifications for CVS Pharmacy [CVS]/Golden Gate Theater	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
	Pacific Metals Company: Construction of the Build Alternative would introduce a new visual element but would not change the historic character of the building. The aerial guideway, while conspicuous, would be congruent with other railway infrastructure in the area. The Build Alternative would have no adverse effect on Pacific Metals Company building. MSF Site 2: Under MSF Site 2, construction of the aerial guideway would intersect the southeastern corner of Pacific Metals Company building parcel where the existing parking lot is located; however, this would not adversely alter the façade of the Pacific Metals Company building or diminish the integrity of the building's significant features. There would be no adverse effect on Pacific Metals Company building. The E.F. Hauserman Company building would be within the vicinity of MSF Site 2. MSF Site 2 would introduce a new visual element but would not change the historic character of the building. Construction activities would not materially impair the historic property due to the distance from MSF Site 2 and its tail tracks. MSF Site 2 would have no adverse effect on historic properties. MSF Site 3: MSF Site 3 would be located within the Vail Field historic district. Construction activities for the MSF would introduce a new visual element, but the they would be consistent with the industrial nature of the historic district and would not have an adverse effect. See **Appendix K** for more detailed analysis of construction effects.			
Historic, Archaeological, and Tribal Resources (Archaeological Resources)	Construction would not have a reasonably foreseeable effect on known archaeological resources within the Area of Potential Effects (APE). However, construction could have the potential to disturb and destroy archaeological resources that are currently unknown. NMM CUL-2 requires that construction workers receive training on how to proceed if cultural resources are inadvertently discovered, and that a Cultural Resources Monitoring and Mitigation Plan be prepared for unanticipated discoveries. Implementation of this mitigation would reduce adverse effects on archaeological resources to not adverse. The tunnel boring machine does not allow for discovery of intact archaeological resources because of the method of construction. However, ground disturbance during tunnel boring would occur in deep soil levels that are too old, generally older than 15,000 years before present, to be available for human occupation. Therefore, they are unlikely to contain buried resources. See **Appendix K** for more detailed analysis of construction effects.	Adverse Effect	NMM CUL-2 - Unknown Archaeological Resources	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Historic, Archaeological, and Tribal Resources (Traditional Cultural Properties [TCPs})	No precontact archaeological sites were identified through research, survey, and Native American consultation in the APE; therefore, precise locations with a higher potential to contain such resources cannot be identified. If unmitigated, there could be a potential disturbance of Traditional Cultural Places that are currently unknown during construction, resulting in an adverse effect. Implementation of NMM TCP-1, NMM TCP-2, and NMM TCP-3 would ensure that workers have a clear understanding of Traditional Cultural Places that may be present in the construction area, and that procedures and plans would be in place for monitoring for and for safely handling Traditional Cultural Places. Implementation of NMM TCP-1 through NMM TCP-3 would reduce adverse effects to not adverse. The tunnel boring machine does not allow for discovery of intact archaeological resources because of the method of construction. However, ground disturbance during tunnel boring would occur in deep soil levels that are too old, generally older than 15,000 years before present, to be available for human occupation. Therefore, they are unlikely to contain buried resources. See **Appendix K** for more detailed analysis of construction effects.	Adverse Effect	NMM TCP-1 - Traditional Cultural Places [TCP] Training NMM TCP-2 - Retain a Native American Monitor NMM TCP-3 - Unknown Traditional Cultural Places [TCP]	No Adverse Effect
Economic Impacts (Capital Expenditures)	The gross capital expenditures for construction of the Build Alternative relative to the No Build Alternative are estimated to be $5.889 billion (2022 dollars). Capital expenditure categories include general construction ($3.612 billion); vehicles ($91.8 million); right-of-way, land, and existing improvements ($903 million); soft costs/professional services ($745 million); and unallocated contingency ($536 million). General construction and soft costs/professional services are the two types of capital expenditures that may potentially affect the local economy. Construction-related goods and services would largely be purchased within the local economy. Soft costs/professional services are produced within and purchased from the local economy and therefore have a local economic effect. Because these capital expenditures would generate investment in the local economy, there would be a beneficial economic effect.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	Beneficial Effect
Economic Impacts (Capital Funding Sources)	Although the amount of new or federal funding sources is not known, the economic effects associated with construction spending are estimated using the total project cost minus the $3 billion from Measure M allocated to the Build Alternative (Metro 2025b). Because Measure M funding is restricted to projects specified in the Expenditure Plan, these funds would generate regional economic activity through some Expenditure Plan project regardless of whether this specific project is approved. The incremental economic benefit attributable to the Build Alternative, therefore, comes from external funding sources that would not otherwise enter the economy. Therefore, there would be a beneficial economic effect.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	Beneficial Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Economic Impacts (Capital Expenditure Effects on the Economy)	Construction of the Build Alternative would represent a substantial capital investment in the economy that would increase employment, earnings, and economic output during the construction period. Regional Input-Output Modeling System II multipliers were used to translate capital expenditures into the associated job and income effects. Construction activities would generate 11,679 person-year jobs for Los Angeles County and 12,932 person-year jobs for the Los Angeles-Long Beach-Santa Ana Metropolitan Statistical Area. Because these capital expenditures would generate employment in Los Angeles County and the Los Angeles-Long Beach-Santa Ana Metropolitan Statistical Area during the construction period (approximately 60 to 84 months), they would provide beneficial economic effects.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	Beneficial Effect
Economic Impacts (Pilot Local Hire Initiative Effects)	Under the Metro Pilot Local Hire Initiative, Metro's Project Labor Agreement and Construction Careers Policy, local hire provisions would be instituted regardless of the funding source of the Project. As a result, all contractors working on Metro construction projects covered by the Pilot Local Hire Initiative and Construction Careers Policy would be required to comply with the targeted hiring requirements, as set forth in NPM EFI-1. The Pilot Local Hire Initiative would result in an increase in employment for Community Area Residents (3,584 hires), workers from within Los Angeles County (896 hires), and local target workers (apprentice) (896 hires). Therefore, the Build Alternative would generate employment; there would be a beneficial economic effect.	No Adverse Effect	NPM EFI-1 - Metro Joint Development Program and Metro Pilot Local Hiring Initiative	Beneficial Effect
Economic Impacts (Localized Temporary Effects on Businesses)	Construction activities could have temporary adverse economic effects on some commercial and industrial businesses, particularly near or adjacent to construction sites, including traffic disruption and air quality and noise effects. These construction effects could result in a loss of sales and/or increased operating costs for commercial businesses. While some individual businesses would have adverse effects, these businesses represent a relatively small portion of the overall regional economy. Therefore, the overall effect on the region is expected to be minor and there would be no adverse effect on the region.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Geology, Soils and Paleontological Resources (Exposure to Seismic Hazards)	As identified in NPM GEO-1, construction would comply with the Metro Rail Design Criteria, which includes detailed requirements for planning and conducting a geotechnical investigation, geotechnical design methodologies, and reporting, such as the preliminary geotechnical investigation conducted in 2025 that included 108 explorations within the Study Area. Specific structural engineering recommendations identified in the geotechnical investigations required under NPM GEO-1 would be incorporated into the final design plans consistent with standard practice. The Build Alternative would also comply with California Department of Transportation design criteria for aerial structures and the Los Angeles County Building Code requirements for structures as set forth in NPM GEO-1. Thus, there would be no adverse effect.	No Adverse Effect	NPM GEO-1 - Geotechnical Investigation	No Adverse Effect
Geology, Soils and Paleontological Resources (Soil Erosion)	The implementation of erosion control best management practices as identified in NPM HWQ-2 would prevent substantial soil erosion or the loss of topsoil from exposed soils during construction. At the close of construction, areas of exposed soil that were previously paved would be repaved. Thus, there would be no adverse effect.	No Adverse Effect	NPM HWQ-2 - Construction Best Management Practices for Water Resources	No Adverse Effect
Geology, Soils and Paleontological Resources (Soil Stability)	Construction would comply with regulatory requirements, as described in NPM GEO-1, and recommendations in a site-specific geotechnical investigation to avoid adverse effects from soil stability, including related to excavation and tunneling and dewatering. Thus, there would be no adverse effect.	No Adverse Effect	NPM GEO-1 - Geotechnical Investigation	No Adverse Effect
Geology, Soils and Paleontological Resources (Expansive Soils)	Construction would comply with regulatory requirements, as described in NPM GEO-1, and recommendations in a site-specific geotechnical investigation to avoid adverse effects from expansive soil. Thus, there would be no adverse effect.	No Adverse Effect	NPM GEO-1 - Geotechnical Investigation	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Geology, Soils and Paleontological Resources (Paleontological Resources)	As discussed in **Section 3.7** (Geology, Soils, Seismic and Paleontological Resources), the findings of fossil locality searches conducted by the Natural History Museum of Los Angeles County in 2019 provide an assumption that soils included in the Study Area are associated with old alluvial fan sediments and could be categorized as high paleontological potential. Potential damage or loss of paleontological resources could occur during tunnel construction with the use of tunnel boring machines which would likely prevent the discovery of fossil resources. Inadvertent discovery protocols and fossil recovery measures would help preserve the scientific value of fossils that may be present in these areas (NMM GEO-1 through NMM GEO-4). In addition, a review of published and unpublished literature of known paleontological resources was conducted to determine if there is a presence of paleontological resources. The literature search yielded no records of fossil localities near the Build Alternative. With implementation of NMM GEO-1 through NMM GEO-4, the potential adverse effects on paleontological resources during construction would be reduced to not adverse.	Adverse Effect	NMM GEO-1 - Retaining a Qualified Paleontologist and a Qualified Paleontological Monitor NMM GEO-2 - Ability to Readily Salvage Fossils and Samples of Sediment NMM GEO-3 - Ability to Identify and Permanently Preserve Specimens NMM GEO-4 - Ability to Curate Specimen to a Professional Accredited Museum Repository	No Adverse Effect
Visual Resources (Scenic Vistas)	Construction activities would not substantially obstruct views of the San Gabriel Mountains, Puente Hills, or downtown Los Angeles skyline. Any obstruction associated with construction equipment, temporary structures, or demolition activities would be temporary, intermittent, and localized, and limited to the immediate construction area. Long-range views would remain largely available from surrounding public locations during construction.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Visual Resources (Visual Character and Quality)	Construction activities would result in temporary visual changes associated with building demolition, excavation, construction equipment, staging areas, and temporary surface disturbances. These changes would be most noticeable near locations where existing commercial parcels are acquired and demolished to accommodate new stations, station plazas, surface parking, electrical equipment, or MSF facilities. Although demolition would temporarily alter the visual character of these parcels, such changes would be short term and transitional in nature. Construction staging areas would be fenced, screened where feasible, and managed to minimize visual nuisance and avoid substantial degradation of visual character and quality in adjacent areas. Dust control measures required under South Coast Air Quality Management District Rule 403 would reduce visible dirt and dust on public roadways and nearby properties. Overall, while construction would introduce temporary visual contrast within the corridor, these effects would not result in a substantial or long-term degradation of the visual environment.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Hazardous Materials (Transportation, Storage, Use and Disposal of Hazardous Materials)	The Build Alternative could expose the public or the environment to hazardous materials from the use of typical construction equipment and vehicles containing fuel, oil, and grease; hazardous building materials such as asbestos and lead based paint that could be encountered during demolition; and the use and transport of limited quantities of certain hazardous materials such as paints, solvents, and glues used during construction. NPM HAZ-2, NPM HAZ-4, and NPM HAZ-5 would implement construction best management practices for Hazardous materials. NMM HAZ-2 - Soil and Groundwater Management Plan would address potential handling and disposal of contaminated soil and groundwater, NMM HAZ-3 – Metro's Contractor Specifications would provide guidance if soil and groundwater contamination is encountered, NMM HAZ-4 - Safety Manuals and Construction Work Plans would address worker health and safety and NMM HAZ-5 - Hazardous Building Survey and Abatement would require investigation into building materials or equipment that contains hazardous materials. Compliance with NMM HAZ-2 through NMM HAZ-5 to reduce adverse effects related to the use and/or storage of hazardous materials, transport of hazardous materials, and disposal of hazardous waste to no adverse effect. See **Appendix J** for more detailed analysis of construction effects.	Adverse Effect	NPM HAZ-2 - Construction Best Management Practices for Hazardous Materials NPM HAZ-4 - Construction Best Management Practices for Maintenance and Storage Facility for Hazardous Materials NPM HAZ-5 - Construction Best Management Practices for Commerce/Citadel station for Hazardous Materials NMM HAZ-2 - Soil and Groundwater Management Plan NMM HAZ-3 – Metro's Contractor Specifications NMM HAZ-4 - Safety Manuals and Construction Work Plans NMM HAZ-5 - Hazardous Building Survey and Abatement	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Hazardous Materials (Release of Hazardous Materials)	While it is anticipated that construction of the Build Alternative would not create a significant hazard to the public or the environment involving the release of hazardous materials into the environment, this construction analysis presents the potential possibilities of such a risk. Potentially affected parcels may have subsurface contamination from undocumented releases associated with historical use of the property (see **Table 3.9-1**, Affected Properties with Previous Document Releases). Construction of the Build Alternative would require grading and tunneling activities that would potentially expose construction workers and the public to hazardous conditions through disturbance of contaminated soil and/or groundwater. The FONSI would include a formal commitment to remediate affected sites to State regulatory standards for its intended use. Phase II ESA findings may necessitate a re-evaluation or supplemental environmental review. NMM HAZ-1 would require an investigation into potential soil and ground contamination. NMM HAZ-2 - Soil and Groundwater Management Plan would address potential handling and disposal of contaminated soil and groundwater, NMM HAZ-3 – Metro's Contractor Specifications would provide guidance if soil and groundwater contamination is encountered, NMM HAZ-4 - Safety Manuals and Construction Work Plans would address worker health and safety and NMM HAZ-5 - Hazardous Building Survey and Abatement would require investigation into building materials or equipment that contains hazardous materials. The Build Alternative would adhere to existing federal and state regulations related to hazardous materials and implement NMM HAZ-1 through NMM HAZ-5 and would have no adverse effect. See **Appendix J** for more detailed analysis of construction effects.	Adverse Effect	NMM HAZ-1 - Phase I Environmental Site Assessment [ESA] and Phase II ESA NMM HAZ-2 - Soil and Groundwater Management Plan NMM HAZ-3 - Metro's Contractor Specifications for Hazardous Materials NMM HAZ-4 - Safety Manuals and Construction Work Plans NMM HAZ-5 - Hazardous Building Survey and Abatement	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Hazardous Materials (Hazardous Materials Sites)	Disturbance of existing soil contamination from hazardous materials release sites or other sources could pose a health risk to construction workers, the public, and/or the environment if not characterized, handled, and disposed of properly, and therefore would result in an adverse effect. NPM HAZ-4 and NPM HAZ-5 would implement construction best management practices for the Build Alternative. NMM HAZ-1 would require an investigation into potential soil and ground contamination. NMM HAZ-2 - Soil and Groundwater Management Plan would address potential handling and disposal of contaminated soil and groundwater, NMM HAZ-3 – Metro's Contractor Specifications would provide guidance if soil and groundwater contamination is encountered, NMM HAZ-4 - Safety Manuals and Construction Work Plans would address worker health and safety and NMM HAZ-5 - Hazardous Building Survey and Abatement would require investigation into building materials or equipment that contains hazardous materials. Construction would adhere to existing federal and state regulations related to hazardous materials as set forth in NPM HAZ-4 and NPM HAZ-5 and would implement NMM HAZ-1 through NMM HAZ-5 to reduce adverse effects related to listed hazardous materials sites to no adverse effect. See **Appendix J** for more detailed analysis of construction effects.	Adverse Effect	NPM HAZ-4 - Construction Best Management Practices for Maintenance and Storage Facility for Hazardous Materials NPM HAZ-5 - Construction Best Management Practices for Commerce/Citadel station for Hazardous Materials NMM HAZ-1 - Phase I Environmental Site Assessment [ESA] and Phase II ESA NMM HAZ-2 - Soil and Groundwater Management Plan NMM HAZ-3 - Metro's Contractor Specifications NMM HAZ-4 - Safety Manuals and Construction Work Plans NMM HAZ-5 - Hazardous Building Survey and Abatement	No Adverse Effect
Water Resources (Water Quality and Erosion)	Construction activities could increase erosion and sedimentation and release pollutants that could affect water quality. Construction would comply with the National Pollution Discharge Elimination System Construction General Permit and associated stormwater pollution prevention plan and best management practices, as identified in NPM HWQ-2. The Study Area is relatively flat, which would minimize the risk of erosion and sedimentation. Areas of exposed soil that were previously paved would be repaved post construction. If encountered, groundwater contaminated with hazardous materials could spread into nearby surface water and groundwater, resulting in an adverse effect. Construction would adhere to applicable Waste Discharge Requirements and implement NMM HAZ-2, a Soil and Groundwater Management Plan to address handling and disposal of contaminated groundwater, and NMM HAZ-3, Metro's Contractor Specifications for exposed soil and groundwater. Implementation of mitigation would reduce adverse effects to not adverse.	Adverse Effect	NPM HWQ-2 - Construction Best Management Practices for Water Resources NMM HAZ-2 - Soil and Groundwater Management Plan NMM HAZ-3 – Metro's Contractor Specifications	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Water Resources (Groundwater Resources)	There would be no construction within the Rio Hondo Spreading Grounds where most of the groundwater recharge in the vicinity occurs. The groundwater depth near the underground guideway is approximately 120 feet or greater below ground surface (Diaz-Yourman and Associates 2021) and the depth of the tunnel would be approximately 60 feet below ground surface. Since the water table would likely be below or at the lower level of construction activities, the amount of water that would need to be extracted, cleaned, and disposed of during construction would be minimal. Thus, there would be no adverse effect.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Water Resources (Drainage)	Construction would comply with the Construction General Permit and associated Stormwater Pollution Prevention Plan best management practices, as identified in NPM HWQ-2. Drainage systems would be constructed and connected to municipal systems per Metro Rail Design Criteria and jurisdictional permits. Metro/Metro's contractor would be responsible for preparing the drainage and grading plans and obtaining approval of the plans before construction. Thus, there would be no adverse effect.	No Adverse Effect	NPM HWQ-2 - Construction Best Management Practices for Water Resources	No Adverse Effect
Water Resources (Floodplain and Wetlands)	The Build Alternative, including the MSF site options, is not within any floodplains or wetlands, as discussed in **Section 3.10** (Water Resources).	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Effect
Land Use and Development (Land use compatibility[1] for short-term street and sidewalk closures during construction)	Lane and/or road closures during construction would result in temporary periodic movement limitations for pedestrians, cyclists, and vehicles within and between local communities. Additionally, truck access to businesses along Washington Boulevard, and Acco Street and Yates Avenue for MSF Sites 1 and 2 respectively, would be disrupted during construction activities. Construction of MSF Site 3 is not expected to impact businesses. Disruptions to the communities would be minimized using jurisdiction-coordinated scheduling, advanced notification, and wayfinding signage, as set forth in NPM TRA-2. As identified in NPM TRA-4, access would be maintained to all properties surrounding the MSF. However, there would be an adverse effect from road and lane closures during construction. As required by NMM TRA-2, a Traffic Management Plan would minimize disruptions during construction and reduce adverse effects to no adverse effect.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Land Use and Development (Land use compatibility for property acquisition and construction easements)	Temporary construction easements would be required for some construction activities. This would be limited to properties currently zoned for commercial or industrial uses, and relocation assistance and benefits would be provided per legal requirement and Metro policies. Properties under temporary construction easements would retain their original land use designation and zoning classifications and, upon termination of the construction easement, would likely return to their original use. Any change in use would have to comply with the local permitting process and zoning regulations.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Land Use and Development (Land use compatibility for MSF Site 1 and lead tracks)	Construction activities would require full closure of Acco Street for MSF Site 1, temporary lane closures on Yates Avenue for MSF Site 2, and other temporary changes to traffic circulation and controls. Effects would be minor and localized. As identified in NPM TRA-4, access would be maintained to all properties surrounding the MSF site options. Disruptions to communities would be minimized by coordinating with affected jurisdictions, implementing advanced notification, and wayfinding signage as set forth in NPM TRA-2. As required by NMM TRA-2, a Traffic Management Plan would minimize disruptions during construction and reduce adverse effects to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Land Use and Development (Land use compatibility for MSF Site 2 and lead tracks)	Construction of the MSF and lead tracks would primarily occur within the right-of-way and properties to be acquired. MSF Site 2 and the surrounding area is industrialized with limited pedestrian and bicycle activity. Construction activities could require the temporary closure of some local bicycle facilities. Additionally, truck access for local businesses along Yates Avenue may be disrupted by construction staging areas. However, as identified in NPM TRA-4, access would be maintained to all properties surrounding MSF Site 2. Disruptions to communities and businesses would be minimized using jurisdiction-coordinated scheduling, advanced notification, and wayfinding signage as forth in NPM TRA-2. As required by NMM TRA-2, a Traffic Management Plan would minimize disruptions during construction and reduce adverse effects to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Land Use and Development (Land use compatibility for MSF Site 3 and lead tracks)	MSF Site 3 and the surrounding area is industrialized. The site would be used for construction staging and the tunnel boring machine launch site. Properties under construction easements would retain their original land use designation and zoning classifications and, upon termination of the construction easement, would likely return to their original use. Any change in use would have to comply with the local permitting process and zoning regulations. As identified in NPM TRA-4, access would be maintained to all properties surrounding MSF Site 3. Any disruptions to communities and businesses would be minimized using jurisdiction coordinated scheduling, advanced notification, and wayfinding signage as set forth in NPM TRA-2. As required by NMM TRA-2, a Traffic Management Plan would minimize disruptions during construction and reduce adverse effects to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Acquisitions and Relocations (Acquisition, Displacement, Replacement and Relocation - Temporary)	Construction activities could require some property acquisitions in the form of temporary construction easements to allow construction staging on public sidewalks, streets, and if necessary, private property. Temporary construction easements would include temporary staging areas (including tunnel boring machine launch site), materials and equipment storage, contractor site offices during the construction period, and areas for cut and cover activities. The properties used for temporary construction easements would be returned to their original owners; however, these temporary construction easements could last the duration of construction (60 to 84 months) and could result in an adverse effect on property and businesses. In addition, short-term street and sidewalk closures during construction activities could result in temporary limitations on movement for vehicles, cyclists, and pedestrians, which could affect access to properties and businesses near the construction activities. Some temporary construction easements, and lane and road closures could result in adverse effects on property and businesses. As set forth in NPM TRA-2, best management practices would be implemented during construction to address pedestrian and vehicle access and minimize disruption from construction work zones. For the MSF, as identified in NPM TRA-4, access would be maintained to all surrounding properties throughout the course of construction. In addition, NMM TRA-2 would be implemented to develop a Traffic Management Plan that specifies measures to minimize disruption during construction, such as establishing detour routes and coordinating with local property and business owners and would reduce adverse effects to no adverse effect. Additionally, Metro has existing pilot programs that provide financial assistance to small businesses along rail corridors that are under construction. See **Appendix M** for more detailed analysis of construction effects.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Noise (Noise)	The Build Alternative would have adverse noise effects from the use of construction equipment near properties and sensitive receptors. Options have been identified for the construction staging area for the one relocated and three new stations that would be constructed under the Build Alternative. The potential construction noise effects are identified below. ▪ Atlantic/Pomona station - construction staging area options could have an adverse noise effect on adjacent properties. ▪ Atlantic/Whittier station - construction staging area options could have an adverse noise effect on adjacent properties. ▪ Commerce/Citadel station - construction staging area options could not have a construction noise effect on adjacent properties because there are no noise sensitive receptors. ▪ Greenwood station - construction staging area options could have an adverse impact effect on adjacent properties. ▪ The tunnel boring machine launch site, which is also the MSF Site 3 location, would be in an industrial area where the nearest sensitive receptors are more than the identified FTA screening distance with intervening buildings (Appendix L). However, noise levels could exceed the FTA criteria for commercial or industrial receivers of 100 A-weighted decibel through the day or 100 A-weighted decibel at night at the buildings immediately adjacent to the site. ▪ MSF Sites 1 and 2 are in an industrial area where the nearest sensitive receptors are located more than the identified FTA screening distance of 650 feet away with intervening buildings (**Appendix L**). However, noise levels would exceed the FTA criteria for commercial or industrial receivers of 100 A-weighted decibel through the day or 100 A-weighted decibel at night at one industrial building immediately adjacent to the MSF 1 site. As set forth in NPM NOI-2, construction activities would be carried out in compliance with Metro's Construction Noise and Vibration Control baseline specifications. Implementation of NMM NOI-1 through NMM NOI-10 would reduce the potential adverse effects during construction to no adverse effect. NMM NOI-1 would require implementation of a noise control plan and construction monitoring plan. NMM NOI-2 would require Metro's contractor to use cast-in-drilled hole or drilled piles rather than impact pile drivers where necessary. NMM NOI-3 would require the construction contractor to erect temporary noise barriers between noisy activities and noise sensitive receptors. NMM NOI-4 would require Metro's contractor to locate construction equipment and material staging areas away from sensitive receptors where practicable. NMM NOI-5 would require construction traffic and haul route routing in areas without noise-sensitive receptors where practicable. NMM NOI-6 would require contractors to use best available control technologies to limit excessive noise	Adverse Effect	NMM NOI-1 - Construction Noise Plan and Noise Monitoring Plan NMM NOI-2 - Cast-in-Drilled-Hole Construction Methodology NMM NOI-3 - Noise Barriers NMM NOI-4 - Construction Staging Area NMM NOI-5 - Haul Routes NMM NOI-6 - Best Available Control Technologies NMM NOI-7 - Construction Working Hours NMM NOI-8 - Public Notification of Construction Operations and Schedules NMM NOI-9 - Truck Staging NMM NOI-10 - Tunnel Vent Fans Away From Residences	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
	when working near residences where practicable. NMM NOI-7 would require Metro to establish a Construction Hotline to resolve noise issues arising from construction activities. NMM NOI-8 and NMM NOI-9 would lessen noise associated with spoil removal where necessary, and NMM NOI-10 would require ventilation fans to be placed away from sensitive receptors. See **Appendix L**.			
Noise and Vibration (Vibration)	The distances at which an exceedance of the FTA vibration damage criterion of 0.2 inches per second would occur (for typical timber and masonry residences) ranging from approximately 15 feet for trucks, 20 feet for cast-in-drilled hole piling (based on caisson drilling) and bulldozers, and 35 feet for vibratory rollers and sonic pile drivers and 60 feet from impact pile drivers. As set forth in NPM NOI-2, construction activities would be carried out in compliance with Metro's Construction Noise and Vibration Control baseline specifications. The following mitigation measures would be implemented to reduce the potential vibration adverse effects during construction to no adverse effect. NMM NOI-2 would require Metro/Metro's contractor to use cast-in-drilled-hole or drilled piles rather than impact pile drivers to reduce excessive vibration where necessary to meet performance criteria. NMM NOI-4 would require Metro/Metro's contractor to locate construction equipment and material staging areas away from sensitive receptors. NMM NOI-5 would require Metro/Metro's contractor to route construction traffic and haul routes away from sensitive receptors where practicable. NMM NOI-7 would require Metro/Metro's contractor to establish a Construction Hotline to resolve vibration issues. NMM NOI-8 would require using a spoil removal conveyor for the tunnel boring machine (TBM) where necessary to reduce vibration. NMM NOI-13 would require Metro/Metro's contractor to identify properties that may be susceptible to vibration damage within 100 feet of the alignment to provide data for monitoring vibration effects and developing the construction vibration control plan and monitoring plan described in NMM NOI-14. NMM NOI-14 would require Metro/Metro's contractor to develop a construction vibration control plan and a construction vibration monitoring plan to minimize vibration effects and reduce the risk of damage to susceptible structures. See **Appendix L**.	Adverse Effect	NPM NOI-2 - Construction Noise and Vibration Control NMM NOI-2 - Cast-in-Drilled-Hole Construction Methodology NMM NOI-4 - Construction Staging Area NMM NOI-5 – Haul Routes NMM NOI-7 – Construction Working Hours NMM NOI-8 - Public Notification of Construction Operations and Schedules NMM NOI-13 – Identify Vibration Susceptible Properties NMM NOI-14 - Vibration Pre-Construction Survey and Control Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Safety and Security (Safety)	Disruption during construction, including the introduction of large on-site construction equipment and trucks hauling excavated material, would create potential safety hazards for pedestrians, bicyclists, bus riders, and motorists. Implementation of safety measures such as signage, partial lane closures, construction barriers, and supervision by safety and security personnel; compliance with safety requirements, including Occupational Safety and Health Administration, California Occupational Safety and Health Administration, and Metro safety and security programs, as identified in NPM TRA-2 would be implemented. Additionally, implementation of NMM TRA-2, requiring a Traffic Management Plan, would reduce adverse effects from road and lane closures to no adverse effect.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Safety and Security (Security)	The presence of construction equipment and use of construction staging could result in security incidents, such as theft and vandalism. For security purposes, construction staging areas would be equipped with a combination of fences, lighting, security cameras, and/or guards. Additionally, construction would comply with Metro guidelines pertaining to security and the implementation of standard site security practices identified in NPM TRA-2. Thus, there would be no adverse effect on security related to construction activities.	No Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Safety and Security (Emergency Response)	The potential for incidents of crime and terrorism could occur at construction sites and staging areas and could pose threats to human life and safety. Construction sites would be secured to prevent intrusion and illegal activities during construction as identified in NPM TRA-2. Emergency access could temporarily be obstructed by construction activities that could include temporary lane closures and obstruction of driveway access. Specifically: ▪ Access to the East Los Angeles Sheriff's Station on 3rd Street. ▪ Access to Los Angeles County Fire Department Station 50 at 2327 Saybrook Avenue in the City of Commerce (construction of the alignment and MSF Site 3 if selected). ▪ Construction related street closures on Smithway Street at the Commerce/Citadel station. ▪ MSF Site 1: Elimination of through access on Acco Street to Vail Avenue. ▪ MSF Site 2: Temporary obstruction of driveways on Yates Avenue during aerial guideway construction. As identified in NPM TRA-2, lane and/or road closures are scheduled to minimize disruptions, and Metro would coordinate with staff of the East Los Angeles Sheriff's Station and Fire Station 50 in advance of any construction activities to preserve station access. For the MSF, alternative routes would be available for any streets requiring closure, as set forth in NPM TRA-4. However, there would be an adverse effect due to lane closures. Implementation of NMM TRA-2 would require development of a Traffic Management Plan, which would reduce adverse effects related to street closures to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Transportation and Traffic (Transit)	Construction activities could disrupt the circulation system through temporary roadway closures, lane closures, bus stops, and sidewalk closures. These closures would cause a reduction in capacity of the affected roads. This reduction in capacity would likely cause vehicular traffic to divert to parallel facilities, thus increasing congestion, which may cause adverse effects by decreasing bus operating speeds along these streets. As a result, construction of the Build Alternative would result in a temporary adverse effect on transit operation. Implementation of a Traffic Management Plan through NMM TRA-2 would reduce this potential adverse effect on transit to not adverse. See **Appendix O** for more detailed analysis of construction effects.	Adverse Effect	NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Transportation and Traffic (Travel Patterns)	Construction could temporarily generate additional VMT related to construction work activities and the transport of excavated materials and construction equipment and supplies. Given the temporary nature of construction-related VMT and that construction-related traffic circulation changes (e.g., detours) would generally be localized to the work area as identified in NPM TRA-2, construction of the Build Alternative would not result in a substantial change in regional travel patterns or increase VMT. Therefore, construction of the Build Alternative would not result in an adverse effect related to regional transportation.	No Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation	No Adverse Effect
Transportation and Traffic (Local Roadway Circulation)	Construction activities for the Build Alternative would include temporary closures and detours that could temporarily cause a reduction in capacity along affected roads, particularly along Washington Boulevard, which is an important truck route. Construction activities would be temporary and localized to the work area and would follow best management practices for transportation, as set forth in NPM TRA-2 and NPM TRA-4. However, there would be an adverse effect on circulation from road and lane closures. Implementation of NMM TRA-2, a Traffic Management Plan, would reduce this adverse effect on pedestrians and bicyclists to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Transportation and Traffic (Parking)	Off- and on-street parking facilities may be utilized for construction activities, such as staging for the storage of construction materials and equipment, temporary offices for field personnel, parking for field personnel, and fabrication of construction materials. Although temporary, the potential effects on parking could result in a temporary adverse effect from construction of the Build Alternative. There would be available on-street parking nearby (refer to **Appendix O** for amount of parking available). Additionally, implementation of a Traffic Management Plan through NMM TRA-2 would require coordination with businesses, emergency providers and local jurisdictions, which would reduce this potential adverse effect on parking to not adverse.	Adverse Effect	NMM TRA-2 - Traffic Management Plan	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Transportation and Traffic (Pedestrian and Bicyclists)	Temporary lane closures would affect north-south bicycle routes at the proposed station locations. Bicycle traffic movements would be maintained during construction, but lane reductions and street closures could inhibit the flow of bicycle traffic and require detours. Construction of the Build Alternative could result in a potential temporary adverse effect related to bicycle and pedestrian circulation. NPM TRA-2 would be implemented during construction of the Build Alternative to address pedestrian and vehicle access and minimize disruption from construction work zones. As set forth in NPM TRA-4, site access to the MSF and surrounding properties will be retained and meet design requirements during construction. However, there would be an adverse effect from road and lane closures. Implementation of NMM TRA-2, a Traffic Management Plan, would reduce this adverse effect on pedestrians and bicyclists to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NPM TRA-4 - Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Transportation and Traffic (Emergency Access)	Construction activities for the Build Alternative could potentially temporarily increase fire and police protection response times as a result of periodic construction-related street closures or detours. During construction, pedestrians, bicyclists, and motorists could experience temporary safety hazards localized around construction activities in the industrial area where the Build Alternative would be built. As identified in NPM TRA-2, Metro would coordinate with staff of the Los Angeles County Sheriff's Department and Los Angeles County Fire Department Station 50 in advance of any construction activities to preserve emergency access, and construction activities would occur in compliance with Occupational Safety and Health Administration, California Division of Occupational Safety and Health Administration, and Metro safety and security programs. However, there would be an adverse effect on circulation from road and lane closures. Implementation of NMM TRA-2, a Traffic Management Plan, would reduce this potential adverse effect on emergency access to not adverse.	Adverse Effect	NPM TRA-2 - Construction Best Management Practices for Transportation NMM TRA-2 - Traffic Management Plan	No Adverse Effect
Utilities (Water Supplies and Facilities)	Construction would require minimal water, mostly for dust control, which would be temporary and intermittent. Use of water would not necessitate the relocation or expansion of potable water infrastructure and would be compliant with Metro's Water Use and Conservation Policy (Metro 2009). Construction of the MSF could include relocation of domestic water and fire water pipelines to accommodate project elements. Relocation of any water appurtenances (e.g., fire hydrants and water meters) would be near existing facilities, which would minimize impacts from ground disturbance. The relocated water appurtenances would connect to existing pipelines and would not create new demand for water that would exceed the capacity of the water supply system.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Utilities (Wastewater Treatment Facilities and Capacity)	Construction activities would generate wastewater through the use of temporary worker restrooms, may require relocation of sewer service feeds, and would require new sewer line connections for the MSF. No construction activities would exceed sewer capacity, generate significant wastewater, or necessitate the relocation or expansion of wastewater facilities.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Utilities (Stormwater Facilities)	Runoff could be generated by construction activities, such as dewatering and vegetation removal. Compliance with National Pollution Discharge Elimination System Construction General Permit and implementation of best management practices, as identified in NPM HWQ-2, would control runoff from construction. Thus, construction would not create or contribute runoff water that would exceed the capacity of the stormwater drainage system.	No Adverse Effect	NPM HWQ-2 - Construction Best Management Practices for Water Resources	No Adverse Effect
Utilities (Electric Power)	The Build Alternative would require installation of a power line to energize the tunnel boring machine. The line would connect to an existing Southern California Edison substation and extend along Yates Avenue to the proposed tunnel boring machine launch site. Installation of the underground power line would generally be conducted in the following sequence: excavation to the depth of the proposed utility line, laying of the conduit, tie-in, and then backfilling of the utility line. Utility relocations often entail temporary service interruptions during tie-in, which are typically planned for periods of minimum use (such as nights or weekends) when outages have the least effect on users. The underground trench would be excavated about 20 feet deep with maintenance holes every few hundred feet. Trench lines would be supported with support of excavation in conformance with California Occupational Safety and Health and covered with steel plates to maintain traffic use. Demand impacts related to this new power service feed would be temporary and would not result in a substantial change in usage of the service providers (i.e., Southern California Edison). Most of the light rail transit guideway tunnel would be constructed using a tunnel boring machine that would require electricity. The electricity used to power the tunnel boring machine would be sourced through a local substation and is not expected to exceed the capacity of the substation. Metro would coordinate with Southern California Edison prior to construction. Construction of the MSF would include the relocation and installation of electric lines to accommodate the site layout. The Build Alternative would not have significant environmental effects related to relocation or construction of electric power.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect

Topic	Description of Effects	Effects Before Implementation of Measure(s)	Proposed Measure	Effects After Implementation of Measure(s)
Utilities (Natural Gas)	Construction would consume minimal, temporary, and intermittent natural gas for construction equipment. Construction activities for the light rail transit guideway and stations would mostly take place within existing public right-of-way, and no natural gas facilities have been identified in the construction zone that would require relocation. Construction of the MSF would include the relocation and installation of gas pipelines, which would not have significant environmental effects. The relocated natural gas pipelines would connect to existing pipelines and would not create new demand for natural gas that would exceed the capacity of the SoCal Gas supply system.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Utilities (Telecommunication)	Construction may require the relocation of telecommunication facilities (e.g., cell towers and 5G-enabled small cell antennas). If relocated, the telecommunication facilities would be relocated in close proximity to their previous location. Construction would not require or result in any notable expansion of possible relocated telecommunication facilities or construction of new facilities.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect
Utilities (Solid Waste)	Construction would involve the generation and removal of solid waste associated with the various demolition and construction activities. This would result in an incremental and temporary increase in solid waste disposal at landfills and other waste disposal facilities. While it is anticipated that some excavated soil would be reused on-site, the remaining materials would be hauled off-site for disposal at any of the area landfills that accept and/or recycle construction/demolition materials in compliance with Assembly Bill 939. Waste would be brought to transfer stations in batches throughout the construction period. There are multiple transfer stations in Los Angeles County where this waste could be collected and transferred to the landfill. Construction of the Build Alternative would not generate solid waste in excess of state or local standards or in excess of the capacity of the local infrastructure or otherwise impair the attainment of solid waste reduction goals. The County anticipates adequate solid waste disposal capacity to be available over the next 15-year planning period (2019 to 2034) (LACDPW 2021). Therefore, there would be adequate capacity available in Los Angeles County to handle anticipated solid waste generation during the construction period.	No Adverse Effect	No avoidance, minimization, or mitigation measures are needed to address construction effects on this resource.	No Adverse Effect

Source: CDM Smith/AECOM JV 2026.

Note:

[1] Related construction effects for land use compatibility include construction staging, temporary right-of-way encroachments, and temporary access disruptions within or to adjacent existing land uses (e.g., residences, businesses, and other commercial uses). Temporary access disruption refers to a short-term, planned or unplanned interruption in the usual access to facilities, services, or areas. The disruption is typically intended to be resolved within a limited timeframe, after which normal access is restored.

Table 3.17-3 Avoidance, Minimization, and Mitigation Measures During Construction

Resource	Project Measures and Mitigation Measures
Biological Resources	**NMM BIO-1: (Nesting Birds).** Prior to the implementation of construction activities (e.g., demolition of structures, excavation, grading, construction of access roads) that would result in removal of or disturbances to vegetation providing bird nesting habitat, prior to pile driving near active bird nests, and prior to tree trimming during the maintenance period, the following shall occur: ▪ If construction is scheduled to occur during the bird nesting season (generally February 15 through September 15, and as early as January 1 for some raptors), vegetation that will be impacted by the Project shall be removed in advance of the construction activities and outside the nesting season, if feasible, to avoid take of birds, including raptors, or their eggs. If this is not feasible, prior to the implementation of construction activities, one nesting bird survey shall be conducted up to 72 hours prior to construction or maintenance that shall remove or disturb suitable nesting habitat during the breeding season. The survey shall be performed by a biologist with experience conducting breeding bird surveys. The biologist shall prepare a survey report within 24 hours of conducting the survey, documenting the presence or absence of any active nest of a migratory bird. If an active nest is located, an appropriate no-work buffer shall be established by the project biologist and vegetation removal within the buffer shall be postponed until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. If vegetation is not removed within 72 hours of a nesting bird survey, a qualified biologist will conduct one updated nesting bird survey.
Historic, Archaeological, and Tribal Resources	**NMM CUL-1: (Protection Measures – Differential Settlement/Vibration/ Tunnel Boring Machine [TBM] Specification for CVS Pharmacy [CVS]/Golden Gate Theater).** ▪ Metro/Metro's contractor shall conduct a pre-construction baseline survey and building protection report, implement building protection measures as specified in the building protection report, and conduct a post-construction survey of the CVS/Golden Gate Theater in relation to Guideway Alignment construction adjacent to the historic property. Building protection measures shall be implemented in conjunction with NMM NOI-1 through NMM NOI-14. ▪ Metro/Metro's contractor shall conduct a pre-construction survey to establish baseline, pre-construction conditions and to assess the building category and the potential for ground-borne vibration to cause damage. Geotechnical investigations shall be undertaken to evaluate soil, groundwater, seismic, and environmental conditions along the alignment. This analysis shall inform the development of appropriate support mechanisms for cut and fill construction areas or areas that could experience differential settlement as a result of using a TBM in proximity to the historic property. An architectural historian or historical architect who meets the Secretary of the Interior's Professional Qualification Standards (36 Code of Federal Regulation [CFR] Part 61) shall review final design documents prior to implementation of measures. ▪ Metro/Metro's contractor shall implement building protection measures as identified in the building protection report to protect the structure from vibration damage. This may include methods such as underpinning, soil grouting, or other forms of ground improvement, as well as lower vibration equipment and/or construction techniques. If the building protection report determines the historic property has the potential to be impacted by differential settlement caused by TBM construction, appropriate building protection measures shall be identified and implemented such as the use of an earth pressure balance or slurry shield TBM. The implementation of the required measures and their effectiveness shall be documented in a post-construction survey. ▪ A post-construction survey shall also be undertaken to ensure that damage has not occurred to historic properties. An architectural historian or historical architect who meets the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61) shall prepare an assessment of the implementation of the mitigation measures.

Resource	Project Measures and Mitigation Measures
Historic, Archaeological, and Tribal Resources	**NMM CUL-2: (Unknown Archaeological Resources).** ▪ Prior to any ground-disturbing activities, all construction personnel involved in ground-disturbing activities shall be provided with project/site specific cultural resources training conducted by a qualified archaeologist that meets the standards of the Secretary of the Interior. The training shall instruct the personnel regarding the legal framework protecting cultural resources, typical kinds of cultural resources that may be found within the Project area, proper procedures and notifications to implement if cultural resources are inadvertently discovered, and that removal of cultural resources can result in legal action. ▪ In addition, Metro shall retain a qualified archaeologist that meets the standards of the Secretary of the Interior to prepare a Project-wide Cultural Resources Monitoring and Mitigation Plan (CRMMP) that shall be implemented during construction. This document shall address areas where potentially significant precontact and historic archaeological deposits are likely to be located within the APE based on background research and a geoarchaeological analysis. ▪ The CRMMP shall include a detailed precontact and historic context that clearly demonstrates the themes under which any identified subsurface deposits would be determined significant. Should significant deposits be identified during earth-moving activities, avoidance is the preferred method of mitigation. If avoidance is not feasible, the CRMMP shall address methods for data recovery, anticipated artifact types, artifact analysis, report writing, repatriation of human remains and associated grave goods, and curation of historic materials. If any potentially eligible resources are identified, FTA will be notified. ▪ The CRMMP shall also require that a qualified Archaeologist in precontact and historical archaeology (36 Code of Federal Regulation Part 61) be retained prior to ground-disturbing activities. The CRMMP shall be a guide for monitoring activities. If buried cultural resources, such as flaked or ground stone, historic debris, building foundations, or non-human bone, are discovered during ground-disturbing activities, halt work in that area and within 50 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. As detailed in NMM TCP-2, a Native American monitor shall be retained if treatment involves work at a precontact site, or to monitor ground disturbing activities at other locations determined appropriate during Native American consultation. An archaeological monitor shall be retained for work at locations identified as sensitive during Native American consultation that require a tribal monitor or other locations identified as likely to contain archaeological resources. Identified areas shall be monitored by, or under the supervision of, the qualified Archaeologist, in accordance with the Project CRMMP. The CRMMP shall include the proper procedures and applicable regulations to follow in the event of discovery of human remains. If during cultural resources monitoring the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.
Historic, Archaeological, and Tribal Resources	**NMM TCP-1: (Tribal Cultural Places [TCP] Training).** Prior to any ground-disturbing activities, all construction personnel involved in ground-disturbing activities shall be provided with project/site specific TCP training conducted by a qualified archaeologist or Native American Monitor. The training shall instruct the personnel regarding the legal framework protecting TCPs, typical kinds of TCPs that may be found within the project area, and proper procedures and notifications if TCPs are inadvertently discovered.

Resource	Project Measures and Mitigation Measures
Historic, Archaeological, and Tribal Resources	**NMM TCP-2: (Retain a Native American Monitor).** A Native American monitor shall be retained for work at locations identified as sensitive during Native American consultation and agreed upon between Metro and the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government. The monitor shall only be present on-site during the construction phases that involve ground disturbing activities where areas of ground disturbance and/or removed spoils are visible for inspection. If during cultural resources monitoring by a qualified archaeologist or Native American Monitor determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist or Native American Monitor can recommend that monitoring be reduced or eliminated.
Historic, Archaeological, and Tribal Resources	**NMM TCP-3: (Unknown Tribal Cultural Places [TCP]).** Metro shall retain a qualified archaeologist to prepare a project-wide Cultural Resources Monitoring and Mitigation Plan (CRMMP) that shall be implemented during construction. This document shall address areas where potentially significant precontact and historic archaeological deposits, and TCPs are likely to be located within the Area of Direct Impact (ADI) based on background research, a geoarchaeological analysis, and Native American consultation. The CRMMP shall encompass both archaeological and TCPs and shall be kept confidential. Preparation of the CRMMP shall necessitate the completion of pedestrian survey of the private property parcels in the Area of Potential Effects with direct impacts that were not accessible during the preparation of the Environmental Assessment. The CRMMP shall include a detailed precontact and historic context that clearly demonstrates the themes under which any identified resources shall be determined significant. Should significant deposits be identified during earth-moving activities, avoidance is the preferred method of mitigation. If avoidance is not feasible, the CRMMP shall address methods for data recovery, anticipated artifact types, artifact analysis, report writing, repatriation of human remains and associated grave goods, or other methods of disposition in consultation with the Tribe. The CRMMP shall also require that an archaeologist qualified in precontact and historical archaeology and a Native American monitor who is both approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and is listed under the Native American Heritage Commission's Tribal Contact list for the area of the project location be retained prior to ground-disturbing activities. The CRMMP shall be a guide for monitoring activities. If buried TCPs or cultural resources, such as flaked or ground stone, historic debris, building foundations, or non-human bone, are discovered during ground-disturbing activities, work shall stop in that area and within 50 feet of the find until a qualified archaeologist and Native American Monitor can assess the significance of the find and, if necessary, develop appropriate treatment measures. Metro shall assess the evidence of the find in consultation with affiliated Native American groups and make a determination on whether is meets criteria to be considered a TCP. If resources are Native American in origin and may also be TCPs, treatment of these resources shall be determined during Native American consultation. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. The CRMMP shall include the proper procedures and applicable regulations to follow in the event of discovery of human remains.
Economic Impacts	**NPM EFI-1: (Metro Joint Development Program and Metro Pilot Local Hiring Initiative). Project measures to address fiscal and economic impacts include the following:** ▪ Upon completion of construction, property needed for construction but not required to maintain the physical infrastructure or necessary for access shall be evaluated for inclusion in the Metro Joint Development Program for possible income restricted housing development or other transit supportive land use, or included in a report to Metro Real Estate Asset Management for Surplus Land Act (SLA) requirements before sale. Any subsequent development shall be environmentally cleared separately from this Project and would undergo its own community input process. ▪ Project work shall comply with the Metro Pilot Local Hiring Initiative (effective May 21, 2021), which requires contractors working on Metro construction projects to comply with certain targeted hiring requirements, including prioritizing local workers from Los Angeles County.

Resource	Project Measures and Mitigation Measures
Geology, Soils, and Paleontological Resources	**NPM GEO-1: (Geotechnical Investigation).** The Project shall be designed and constructed per the Metro Rail Design Criteria (MRDC). The MRDC incorporates various design specifications from the Federal Highway Administration (FHWA), California Department of Transportation (Caltrans), the State of California, the County of Los Angeles, and other sources by reference. Key compliance sections of the MRDC relative to geology and soils are Section 5.3, Section 5.4, Section 5.6, and MRDC Section 5 Appendix, Metro Supplemental Seismic Design Criteria. Section 5.6 of the MRDC provides detailed requirements for planning and conducting a geotechnical investigation, geotechnical design methodologies, and reporting. In addition, Caltrans and the Los Angeles County Building Code (based on the California Building Code [CBC]) have independent design criteria for aerial structures (Caltrans) and building structures (County of Los Angeles) that are also required. In accordance with the MRDC, geotechnical report recommendations shall be incorporated into the project plans and specifications. These recommendations shall be a product of final design and shall address potential subsurface hazards. Without these report recommendations, the project plans and specifications shall not be approved and the Project shall not be allowed to advance into the final design stage or into construction.
Geology, Soils, and Paleontological Resources	**NMM GEO-1: (Retaining a Qualified Paleontologist and a Qualified Paleontological Monitor).** Metro shall retain a qualified paleontologist, meeting the Society of Vertebrate Paleontology (2010) education guidelines, to supervise a qualified paleontological monitor to carry out the following tasks: Prepare a Paleontological Resource Mitigation and Monitoring Plan (PRMMP) that includes identification and mapping of the areas of high sensitivity to be monitored during construction. The PRMMP will be written by a qualified paleontologist. These areas are defined as all areas within the Older alluvium in the project site where planned excavation will exceed three feet below the surface or three feet into undisturbed sediments and all areas within the Younger alluvium in the project site where planned excavation will exceed 10 feet below the surface or 10 feet into undisturbed sediments. The qualified paleontologist shall supervise the qualified paleontological monitor to monitor excavation in areas identified as likely to contain paleontological resources with the exception of tunnel boring machines (TBM) excavation, where monitoring is infeasible. The qualified paleontologist shall retain the option to reduce monitoring if, in his or her professional opinion, sediments being monitored are previously disturbed. Monitoring may also be reduced if the potentially fossiliferous units are determined to have low potential to contain fossil resources.
Geology, Soils, and Paleontological Resources	**NMM GEO-2: (Ability to Readily Salvage Fossils and Samples of Sediment).** Monitoring for paleontological resources and salvage of fossils shall occur in compliance with the Paleontological Resource Mitigation and Monitoring Plan (PRMMP) required by mitigation measure NMM GEO-1. The PRMMP shall specify that the qualified paleontologist and the qualified paleontological monitor are equipped to salvage fossils and samples of sediment as they are unearthed to avoid construction delays and empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Since Older alluvium yields small fossil specimens (microvertebrate fossils) likely to go unnoticed during typical large-scale paleontological monitoring, the PRMMP shall identify that matrix samples shall be collected and processed to determine the potential for small fossils to be recovered prior to substantial excavations in those sediments. If this sampling indicates that these units do possess small fossils, a matrix sample of 6,000 pounds shall be collected at various locations, to be specified by the paleontologist, within the construction area. These matrix samples shall also be processed for small fossils.
Geology, Soils, and Paleontological Resources	**NMM GEO-3: (Ability to Identify and Permanently Preserve Specimens).** The Paleontological Resource Mitigation and Monitoring Plan (PRMMP) required under mitigation measure NMM GEO-1 shall specify procedures for the discovery, recovery, preparation, and analysis of significant paleontological resources encountered during construction, in accordance with standards for recovery, reporting, and curation established by the Society of Vertebrate Paleontology (SVP). The qualified paleontologist shall make certain that recovered specimens be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrate and vertebrate fossils.

Resource	Project Measures and Mitigation Measures
Geology, Soils, and Paleontological Resources	**NMM GEO-4: (Ability to Curate Specimen to a Professional Accredited Museum Repository).** Curation of specimens shall occur in compliance with the Paleontological Resource Mitigation and Monitoring Plan (PRMMP) required by mitigation measure MM GEO-1. The PRMMP shall identify criteria for identifying specimens to be curated into a professional accredited museum repository with permanent retrievable storage and a curation agreement with the repository will be in place. A report of findings, with an appended itemized inventory of specimens, shall be prepared. The report and inventory, when submitted to the professional accredited museum repository, shall signify completion of the program to mitigate impacts to paleontological resources.
Hazardous Materials	**NPM HAZ-2: (Construction Best Management Practices for Hazardous Materials).** Construction best management practices (BMPs) for the Build Alternative shall include but not be limited to: ▪ Metro/Metro's contractor shall be required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases in accordance with the United States Environmental Protection Agency (USEPA), State Water Resources Control Board (SWRCB), Department of Toxic Substances Control (DTSC), California Division of Occupational Safety and Health Administration (Cal/OSHA), and the South Coast Air Quality Management District (SCAQMD). ▪ Development of a stormwater pollution prevention plan (SWPPP) in accordance with the SWRCB Construction Clean Water Act Section 402 General Permit conditions, and subject to regular inspections by applicable jurisdiction(s) to ensure compliance. The SWPPP shall include specifications for the following but not be limited to: o Maintain proper working conditions for vehicles and equipment to minimize potential fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. o Conduct servicing, refueling, and staging of construction equipment only at designated areas where a spill would not flow to drainages. Conduct equipment washing, if needed, only in designated locations where water would not flow into drainage channels. Implement drainage BMPs to protect water quality, such as oil/water separators, catch basin inserts, storm drain inserts, media filtration, and catch basin screens. Keep spill cleanup materials (e.g., rags, absorbent materials, and secondary containment) at the work site when handling materials. o Report hazardous spills to the designated Certified Unified Program Agency (CUPA) (i.e., Los Angeles County Fire Department Health Hazardous Materials Division or Santa Fe Springs Department of Fire-Rescue) and implement clean up immediately and proper disposal of contaminated soil at a licensed facility. o Establish properly designed, centralized storage areas to keep hazardous materials fully contained. o Keep spill cleanup materials (e.g., rags, absorbent materials, and secondary containment) at the work site when handling materials. o Implement monitoring program by the construction site supervisor that includes both dry and wet weather inspections. ▪ Transportation of hazardous materials shall comply with State regulations governing hazardous materials transporting included in the California Vehicle Code (Title 13 of the California Code of Regulations), the State Fire Marshal Regulations (Title 19 of the California Code of Regulations), and Title 22 of the California Code of Regulations. This includes: o Require all motor carrier transporters of hazardous materials to have a Hazardous Materials Transportation license issued by the California Highway Patrol. o Require the transport of hazardous materials via routes with the least overall travel time.

Resource	Project Measures and Mitigation Measures
	○ Prohibit the transportation of hazardous materials through residential neighborhoods. ○ Require transporters to take immediate action to protect human health and the environment in the event of a spill, release, or mishap. ○ Incorporate restrictions on haul routes into the construction specifications according to local permitting requirements. ▪ Contaminated soils and hazardous building materials and wastes shall be disposed of in accordance with federal, state, and local requirements at landfills serving the Los Angeles County region. ▪ Traffic control during construction shall follow local jurisdiction guidelines. For specialized construction tasks, it may be necessary to work during nighttime hours to minimize traffic disruptions. ▪ Standard practices shall be followed that include scheduling of lane and/or road closures to minimize disruptions and preparation of a Traffic Management Plan (see NMM TRA-2) that is approved with authorities having jurisdiction in coordination with local fire and police departments prior to construction.
Hazardous Materials	**NPM HAZ-4: (Construction Best Management Practices for Maintenance and Storage Facility for Hazardous Materials).** Construction best management practices (BMP) for the maintenance and storage facility (MSF) shall include but shall not be limited to: ▪ Both the federal Occupational Safety and Health Administration (OSHA) and California Division of Occupational Safety and Health Administration (Cal/OSHA) regulate worker exposure during construction activities that disturb lead-based paints (LBP). Any asbestos-containing material (ACM), if present, requires appropriate abatement of identified asbestos prior to demolition pursuant to the South Coast Air Quality Management District (SCAQMD) Rule 1403. ▪ Polychlorinated biphenyls (PCB)-containing fluorescent light fixtures and electrical transformers that are not labeled “No PCBs,” shall be assumed to contains PCBs, and shall be removed prior to demolition activities and be disposed of by a licensed and certified PCB removal contractor, in accordance with local, State, and federal regulations. The removal and disposal of the electrical transformers shall be the responsibility of the utility owner.
Hazardous Materials	**NPM HAZ-5: (Construction Best Management Practices for Commerce/Citadel station for Hazardous Materials).** Construction best management practices (BMP) for the Commerce/Citadel station only may include but not be limited to: ▪ Metro’s contractor shall sample soil suspected of contamination (obvious signs of contamination includes indicators such as odors, stains, or other suspect materials) for the purpose of classifying material and determining disposal requirements. If excavated soil is suspected or known to be contaminated, Metro’s contractor shall: ○ Segregate and stockpile the excavated material in a way that will facilitate measurement of the stockpile volume. ○ Spray the stockpile with water or a South Coast Air Quality Management District (SCAQMD) approved vapor suppressant and cover the stockpile with a heavy-duty plastic (i.e., Visqueen) to prevent soil volatilization in the atmosphere or exposure to nearby workers. ▪ Existing groundwater monitoring wells shall remain under ongoing groundwater investigations associated with off-site sources.

Resource	Project Measures and Mitigation Measures
Hazardous Materials	**NMM HAZ-1: (Phase I Environmental Site Assessment [ESA] and Phase II ESA).** Consistent with Metro's standard practice, prior to the start of construction of the Project, the contractor must provide Phase I ESAs in accordance with standard ASTM methodologies, to assess the land use history of each parcel that would be acquired/utilized for the Project. The determination of parcels that require a Phase II ESA (i.e., soil, groundwater, soil vapor subsurface investigations) would be evaluated after the Phase I ESAs have been completed and would be based on the results of the Phase I ESAs. Specifically, if the Phase I ESAs identify suspected contamination in the soil, soil vapor, or groundwater, a Phase II ESA would be conducted to determine whether the suspect contamination had resulted in soil, groundwater, or soil vapor contamination exceeding regulatory action levels. If the Phase II ESA concludes that the site is contaminated, remediation or corrective action (e.g., removal of contamination, in-situ treatment, capping) would be conducted prior to or during construction under the oversight of federal, state, and/or local agencies (e.g., United States Environmental Protection Agency (USEPA), Department of Toxic Substances Control (DTSC), Los Angeles Regional Water Quality Control Board (LARWQCB), Los Angeles County) and in full compliance with current and applicable federal and state laws and regulations. Additionally, Voluntary Cleanup Agreements may be used for parcels where remediation or long-term monitoring is necessary. Before any ground disturbance occurs on or near the properties with active documented releases, Metro shall hire a qualified environmental professional to conduct a Phase II ESA to determine the potential presence of petroleum hydrocarbons, metals, (i.e., lead that was aerially deposited and lead chromate) that exceed thresholds established by the California Health and Safety Code and Title 22, and volatile organic compounds (VOC) in soil and/or groundwater in accordance with the findings and recommendations of the Draft Final Initial Site Assessment (ISA) Report prepared for the Build Alternative (Kleinfelder 2022). The Phase II ESA shall include sufficient soil and groundwater sampling and laboratory analysis to identify the types of chemicals and their respective concentrations. The Phase II ESA shall compare soil and groundwater sampling results against applicable environmental screening levels developed by the LARWQCB and/or the DTSC. If the Phase II ESA identifies contaminant concentrations above the screening levels, a site-specific soil and groundwater management plan shall be prepared and implemented as described in Mitigation Measure NMM HAZ-2. Metro shall consult with the LARWQCB, DTSC, and/or other appropriate regulatory agencies to ensure sufficient minimization of risk to human health and the environment is completed.

Resource	Project Measures and Mitigation Measures
Hazardous Materials	**NMM HAZ-2: (Soil and Groundwater Management Plan).** Prior to excavation, a site-specific soil and groundwater management plan shall be prepared by Metro's contractor to address handling and disposal of contaminated soil and groundwater prior to demolition, excavation and construction activities. Metro shall consult with the Los Angeles Regional Water Quality Control Board (LARWQCB), Department of Toxic Substances Control (DTSC), and/or other appropriate regulatory agencies to ensure sufficient minimization of risk to human health and the environment is completed. The soil and groundwater management plan shall specify all necessary procedures to ensure the safe handling and disposing of excavated soil, groundwater, and/or dewatering effluent in a manner that is protective of human health and in accordance with federal and state hazardous waste disposal laws, and with state and local stormwater and sanitary sewer requirements. At a minimum, the plan shall include the following: ▪ Identification and delineation of contaminated areas and procedures for limiting access to such areas to properly trained personnel; ▪ Step-by-step procedures for handling, excavating, characterizing, and managing excavated soils and dewatering effluent including procedures for containing, handling, and disposing of hazardous waste, procedures for containing, handling, and disposing of groundwater generated from construction dewatering, the method used to analyze excavated materials and groundwater for hazardous materials likely to be encountered at specific locations, appropriate treatment and/or disposal methods; ▪ Procedures for notification and reporting, including notifying and reporting to internal management and to local agencies; ▪ Minimum requirements for safety manuals and construction work plans, to protect the general public and workers in the construction area. ▪ Prior to excavation, Metro/ Metro's contractor shall prepare the Soil and Groundwater Management Plan and the results of environmental sampling shall be provided to Metro's contractors who shall be responsible for developing their own construction worker safety manuals and construction work plans and training requirements, per NMM HAZ-4. ▪ Metro's contractor shall sample groundwater suspected of contamination. If any contaminated groundwater is encountered during construction, Metro's contractor will stop work in the vicinity, cordon off the area, and contact Metro and will immediately notify the LARWQCB. In coordination with the LARWQCB, an investigation and remediation plan will be developed in order to protect public health and the environment. Any hazardous or toxic materials will be disposed according to local, state, and federal regulations.
Hazardous Materials	**NMM HAZ-3: (Metro's Contractor Specifications).** Metro shall include in Metro's contractor specifications the following requirement relating to hazardous materials: ▪ During all ground-disturbing activities, Metro's contractor(s) shall inspect the exposed soil and groundwater for obvious signs of contamination, such as odors, stains, or other suspect materials. Qualified personnel shall monitor for volatile organic compounds and other subsurface gases for concentrations exceeding United States Environmental Protection Agency (USEPA) Regional Screening Levels and/or California Department of Toxic Substances Control (DTSC) Screening Levels with a Photoionization Detector. Should signs of unanticipated contamination be encountered, work shall be halted and materials tested. An investigation shall be designed and performed to verify the presence and extent of contamination at the site, and a site-specific soil and groundwater management plan, as described under NMM HAZ-2 above, shall be prepared and implemented.

Resource	Project Measures and Mitigation Measures
Hazardous Materials	**NMM HAZ-4: (Safety Manuals and Construction Work Plans).** Metro/Metro's contractor shall prepare site-specific safety manuals and construction work plans that address worker health and safety to protect the general public and workers in the construction area for Metro's review and approval. The safety manuals and construction work plans shall be prepared in accordance with State, California Division of Occupational Safety and Health (Cal/OSHA), and federal Occupational Safety and Health Administration (OSHA) regulations. Copies of the plans shall be made available to construction workers for review during their orientation and/or regular health and safety meetings. The plans shall identify chemicals of concern, potential hazards, worker training requirements, personal protective equipment and devices, decontamination procedures, the need for personal or area monitoring, and emergency response procedures. The plans shall be amended, as necessary, if new information becomes available that could affect implementation of the plan.
Hazardous Materials	**NMM HAZ-5: (Hazardous Building Survey and Abatement).** Prior to demolition activities of any structures, Metro shall retain a California Division of Occupational Safety and Health Administration (Cal/OSHA) certified contractor to determine the presence or absence of building materials or equipment that contains hazardous materials, including asbestos, lead-based paint, and polychlorinated biphenyls (PCB)-containing equipment. If such substances are found to be present, Metro/Metro's contractor shall prepare and submit a workplan to the relevant oversight agency to demonstrate how these hazardous materials would be properly removed and disposed of in accordance with federal and state law, including South Coast Air Quality Management District (SCAQMD) Rule 1403 (Asbestos Emissions from Renovation/Demolition Activities). Following completion of removal activities, Metro shall submit documentation to the relevant oversight agency verifying that all hazardous materials were properly removed and disposed of.

Resource	Project Measures and Mitigation Measures
Water Resources	**NPM HWQ-2**: (**Construction Best Management Practices for Water Resources).** Construction best management practices (BMP) (may include but shall not be limited to): ▪ Establishment of an erosion and sediment control plan prior to the initiation of construction activities that includes BMPs such as: o Use of natural drainage, detention ponds, sediment ponds, or infiltration pits to allow runoff to collect and to reduce or prevent erosion. o Use of barriers to direct and slow the rate of runoff and to filter out large-sized sediments. o Use of downdrains or chutes to carry runoff from the top of a slope to the bottom. o Control of the use of water for irrigation so as to avoid off-site runoff. ▪ Development of a stormwater pollution prevention plan (SWPPP) in compliance with the State Water Resources Control Board (SWRCB) Construction General Permit, subject to regular inspections by applicable jurisdictions to ensure compliance. The SWPPP shall include specifications for the following, but shall not be limited to: o Good site management, or "housekeeping" measures related to managing construction materials, waste, vehicles and equipment, and other materials that could impact water quality. These include developing spill and leak prevention measures and a response plan, in accordance with law. Example measures include: – Designing centralized storage areas to keep hazardous materials fully contained – Containing and securely protecting stockpiled waste material from wind and precipitation unless actively being used – Keeping spill cleanup materials (e.g., rags, absorbent materials, and secondary containment) at the work site when handling materials o Sediment and erosion controls outlined in the SWRCB Construction General Permit, such as: – Implementing BMPs designed to reduce erosion of exposed soil such as soil stabilization controls, water for dust control, perimeter silt fences, placement of straw wattles, and sediment basins – Using weed-free material for erosion control – Minimizing the amount of exposed soil and disturbance where feasible – Establishing and maintaining effective perimeter controls – Stabilizing construction entrances and exits to control erosion and sedimentation from the site o Monitoring program to be implemented by the construction site supervisor that includes both dry and wet weather inspections. ▪ Implementation of drainage BMPs designed to protect water quality such as catch basin inserts, storm drain inserts, and catch basin screens.

Resource	Project Measures and Mitigation Measures
Noise and Vibration	**NPM NOI-2**: (**Construction Noise and Vibration Control).** Construction activities shall comply with Metro's baseline specifications Section 01 56 19, Construction Noise and Vibration Control. Although Metro, as a state-chartered transportation agency, is exempt from local noise ordinances, the agency is committed to consistency with local construction noise limits whenever feasible and reasonable in accordance with its own construction specifications. Metro/Metro's contractor shall utilize control measures from Metro's specifications that effectively minimize noise and vibration impacts in the community. Some mitigation measures for Noise and Vibration are based on the provisions set forth in Section 01 56 19 and are refined to have more specificity towards the Project-related impacts concerning noise and vibration. Under NPM NOI-2, the Project shall comply with the entirety of Metro's baseline specifications Section 01 56 19 and Metro/Metro's contractor shall utilize control measures from its own specifications that effectively minimize noise and vibration impacts in the community, such as: ▪ Conducting at-grade construction activities adjacent to residential neighborhoods during the daytime whenever practicable. ▪ Requiring special permits for construction within a specified distance and a specified time period for residential zones during the nighttime and weekends. ▪ Using construction equipment with effective noise-suppression devices whenever feasible. ▪ Using noise control measures, such as enclosures and noise barriers, as necessary to protect the public and achieve compliance with Metro's noise limits. ▪ Conducting all operations in a manner that will minimize, to the greatest extent practicable, disturbance to the public in areas adjacent to the construction activities and to occupants of nearby buildings.
Noise and Vibration	**NMM NOI-1**: (**Construction Noise Plan and Noise Monitoring Plan).** Metro shall require the Contractor to develop a construction noise control plan and a construction noise monitoring plan to minimize noise impacts. The construction noise plan shall include construction noise performance criteria. At a minimum, the performance criteria shall prohibit construction noise from exceeding the Federal Transit Administration (FTA) general assessment construction noise criteria of 80 A-weighted decibels (dBA) for nighttime work and 90 dBA for daytime work at residential properties, or 100 dBA at commercial or industrial properties for daytime or nighttime work. These criteria shall be measured at the boundary of any occupied property where the noise is being received.
Noise and Vibration	**NMM NOI-2**: (**Cast-in-Drilled-Hole Construction Methodology).** Metro shall require the Contractor to use construction methods that avoid pile-driving at locations containing noise- and vibration-sensitive receptors, such as residences, schools, and hospitals where practicable. Metro's Contractor shall use cast-in-drilled hole (CIDH) or drilled piles rather than impact pile drivers if necessary to meet construction noise performance criteria established in the construction noise control plan and construction noise monitoring plan.
Noise and Vibration	**NMM NOI-3**: (**Noise Barriers).** Metro shall require the Contractor to erect temporary noise barriers between noisy activities and noise sensitive receptors as necessary to ensure compliance with applicable construction noise performance criteria as specified in the construction noise monitoring plan developed under NMM NOI-1. During construction, Metro shall perform audits to monitor the effectiveness of the noise barriers.
Noise and Vibration	**NMM NOI-4**: (**Construction Staging Area).** Metro shall require the Contractor to locate construction equipment and material staging areas away from sensitive receptors where practicable.
Noise and Vibration	**NMM NOI-5: (Haul Routes).** Metro shall require the Contractor to route construction traffic and haul routes along roads in areas without receptors sensitive to noise and vibration, where practicable.

Resource	Project Measures and Mitigation Measures
Noise and Vibration	**NMM NOI-6: (Best Available Control Technologies).** Metro shall require contractors to use best available control technologies to limit excessive noise when working near residences (e.g., piling noise shrouds) where practicable.
Noise and Vibration	**NMM NOI-7: (Construction Working Hours).** Metro shall notify the public, including schools, of construction operations and schedules. Metro shall provide a construction-alert publication and set up a Construction Hotline that shall reply to complaints within 2 working days.
Noise and Vibration	**NMM NOI-8: (Public Notification of Construction Operations and Schedules).** Metro shall require the Contractor to comply with Federal Transit Administration (FTA) ground-borne noise and vibration criteria confirmed in the construction noise monitoring plan for tunnel construction, including spoil removal and transport of segmental tunnel lining. This shall include, where necessary, methods such as installation of temporary tunnel track with smooth rail and wheels, and/or car speeds that limit structure-borne noise and vibration, or use of spoil removal conveyor.
Noise and Vibration	**NMM NOI-9: (Truck Staging).** Metro shall require the Contractor to not stage trucks in residential areas.
Noise and Vibration	**NMM NOI-10: (Tunnel Vent Fans Away From Residences).** Metro shall require temporary and permanent tunnel vent fans to be located away from residences. Metro shall require that noise from these shall be attenuated to comply with the noise control plan and local code requirements for fixed stationary heating, ventilation, and air conditioning (HVAC) or other machinery noise.
Noise and Vibration	**NMM NOI-13: (Identify Vibration Susceptible Properties).** Metro shall identify selected properties that may be susceptible to vibration damage within 100 feet of the alignment to determine the baseline structural integrity and condition of walls and joints using methods such as photographic documentation of the interior walls and/or exterior façade as a basis for comparison after construction is completed.
Noise and Vibration	**NMM NOI-14: (Vibration Pre-Construction Survey and Control Plan).** Metro shall require the Contractor to develop a construction vibration control plan and a construction vibration monitoring plan to minimize vibration impacts and reduce the risk of damage to susceptible structures. The construction vibration control plan shall specify implementation of vibration control measures to ensure that vibration during construction activities shall not exceed peak particle velocity (ppv) 0.2 inches per second (ips) at any non-engineered timber and masonry building.

Resource	Project Measures and Mitigation Measures
Transportation	**NPM TRA-2: (Construction Best Management Practices for Transportation).** Construction best management practices (BMP) for the Build Alternative shall include the following: ▪ Cooperation with corridor cities and the County shall occur throughout the construction process. Restrictions on haul routes may be incorporated into the construction specifications according to local permitting requirements. ▪ Pedestrian access to adjacent properties along the Project shall be maintained during construction. ▪ Construction-related traffic circulation changes shall generally be localized to the work area. ▪ Construction activities shall comply with Occupational Safety and Health Administration (OSHA), California Division of Occupational Safety and Health Administration (Cal/OSHA), and Metro safety and security programs. ▪ Safety for pedestrians, multi-use trail users (i.e., hikers, bicyclists, equestrians), and motorists shall be maintained during construction; methods may include signage, partial lane closures, and construction barriers. ▪ Access to Los Angeles Fire Department (LACFD) Station 50 on Saybrook Avenue shall be maintained during construction activities, including construction of MSF Site 3 (if selected), and the launch of the tunnel boring machine (TBM). ▪ Metro shall coordinate with staff of the Los Angeles County Sheriff's Department and LACFD Station 50 in advance of any construction activities to preserve station access. ▪ Lane and/or road closures shall be scheduled to minimize disruptions, including detour routes, in coordination with authorities having jurisdiction and local fire and police departments prior to construction. The nearest local first responders shall be notified, as appropriate, of traffic control measures in the Traffic Management Plan (see NMM TRA-2) during construction to coordinate emergency response routing. ▪ The Project shall be designed and constructed per applicable state, Metro, and city design criteria and standards, including adherence to design codes and standards such as OSHA, Cal/OSHA, California Public Utilities Commission (CPUC), California Manual of Uniform Traffic Control Devices (MUTCD), and Metro safety and security programs and standards (i.e., Metro Rail Design Criteria [MRDC] and Metro Systemwide Station Design Standards Policy).
Transportation	**NPM TRA-4**: (**Construction Best Management Practices for the Maintenance and Storage Facility Regarding Transportation).** Construction best management practices (BMP) for the maintenance and storage facility (MSF) must include but is not limited to: ▪ Access to nearby properties shall be maintained throughout the course of construction, and alternative routes shall be available for any streets requiring a full closure (e.g., use of Acco Street shall be routed to Flotilla Street or Washington Boulevard).
Transportation	**NMM TRA-2**: (**Traffic Management Plan).** Metro shall prepare a Traffic Management Plan as needed to facilitate the flow of traffic in and around construction zones. The Traffic Management Plan shall include, at minimum, the following measures: ▪ Where feasible, schedule construction-related travel (i.e., deliveries) during off-peak hours and maintain two-way traffic circulation along affected roadways during peak hours. ▪ Designated routes for project haul trucks shall be located along the Project corridor right-of-way (ROW) and/or major streets connecting to construction staging areas and the nearest freeways (e.g., State Routes (SR)-60 and Interstate (I)-5). Major streets may include Atlantic Boulevard, Saybrook Avenue, Telegraph Road, Washington Boulevard, and Whittier Boulevard. In cooperation with jurisdictions along the alignment and implemented throughout the construction process, these routes shall be consistent with local land use and mobility plans and situated to minimize noise, vibration, and other possible impacts.

Resource	Project Measures and Mitigation Measures
	▪ Metro shall maintain safe and convenient pedestrian routes to school by ensuring project haul routes and construction traffic, to the greatest extent possible, avoid any published and unofficial school pedestrian routes. ▪ Develop detour routes to facilitate traffic movement through construction zones without significantly increasing cut-through-traffic in adjacent residential areas. ▪ Develop and implement an outreach program and public awareness campaign in coordination with transit agencies to inform the general public about the construction process and planned roadway closures, potential impacts, and mitigation measures, including temporary bus stop relocation. ▪ Develop and implement a program with business owners to minimize effects to businesses during construction activity, including but not limited to signage programs and identification of detours (particularly for truck access). ▪ Where feasible, temporarily restripe roadways to maximize the vehicular capacity at locations affected by construction closures. ▪ Where feasible, temporarily remove on-street parking to maximize the vehicular capacity at locations affected by construction closures. ▪ Traffic control officers at major intersections during peak hours shall be provided as required by the Traffic Management Plan and Worksite Traffic Control Plans if delays are related to construction activities. ▪ Provide wayfinding signage, lighting and access to specify pedestrian safety amenities (such as handrails, fences, and alternative walkways) during construction. ▪ Where construction encroaches on sidewalks, walkways, crosswalks, and multi-use trails, special pedestrian safety measures shall be used, such as detour routes and temporary pedestrian shelters. ▪ Provide detour routes and signage to address temporary effects to multi-use trails and bicycle circulation, and minimize inconvenience (e.g., lengthy detours) to minimize users potentially choosing less safe routes if rerouted. ▪ Regular communication with school administrators shall be maintained to ensure sufficient notice is provided of construction activities and/or detours that could affect pedestrian routes to schools. ▪ Construction flaggers shall be implemented any time a construction ingress or egress is located within 200 feet of a schools' student entrance during school hours. ▪ Metro's construction outreach efforts shall include reaching out to local school district administrators to provide advanced information regarding construction activities and/or detours if construction activities will affect bus routes and stops to schools. ▪ Access to adjacent businesses and schools (including access to passenger loading areas for student drop-offs at schools) shall be provided via existing or temporary driveways or loading zones during business and school hours throughout the construction period.

Source: CDM Smith/AECOM JV 2026.