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PLANNING DEPARTMENT RESPONSE TO APPEAL OF FINAL MITIGATED NEGATIVE DECLARATION

570 MARKET STREET

Date:	November 10, 2025
To:	San Francisco Board of Supervisors
From:	Lisa Gibson, Environmental Review Officer – (628) 652-7571 Tania Sheyner, Principal Environmental Planner – (628) 652-7578 Ryan Shum, Senior Planner – ryan.shum@sfgov.org, (628) 652-7542
RE:	Appeal of Final Mitigated Negative Declaration of 570 Market Street Planning Case No. 2019-017622ENV and 2019-017622APL
Hearing Date:	November 18, 2025
Project Sponsor:	Frontier Group, LLC c/o 229 Ellis Holdings, LLC Attn: Melinda Sarjapur, msarjapur@reubenlaw.com, (415) 567-9000
Appellants:	Brian Flynn, Lozeau Drury LLP on behalf of BCal 44 Montgomery Property LLC and Anna Shimko, Burke, Williams & Sorensen, LLP on behalf of CPH 54, LP
Attachments:	Attachment A – Health Risk Assessment Attachment B – Updated Construction Noise Tables Attachment C – Vibration Monitoring Supplemental Information

Introduction

This memorandum is in response to two letters of appeal to the board of supervisors (the board) filed on October 10, 2025 regarding the planning department's (the department) issuance of a final mitigated negative declaration (FMND) under the California Environmental Quality Act (CEQA) for the proposed 570 Market Street project.

The department, pursuant to section 21064.5 of the CEQA Statute (Public Resources Code 21000-21189), issued a mitigated negative declaration for the proposed project on October 30, 2024, finding that the project would not result in a significant effect on the environment. The appellants filed appeals of the preliminary mitigated negative declaration (PMND) and the planning commission heard the PMND appeals on May 1, 2025, where it denied the PMND appeal and affirmed the decision to prepare a MND; the project approvals

were continued to a subsequent hearing. The FMND was issued on May 19, 2025. On September 11, 2025, the planning commission held a public hearing on the project approvals and approved the downtown project authorization and conditional use authorization.

The decision before the board is whether to affirm or reverse the Planning Commission's decision to issue a MND. If the board reverses the decision of the Planning Commission, it shall remand the MND to the department for further action consistent with the board's findings. In the event the board determines that a project may have a significant effect on the environment that cannot be avoided or mitigated to a less than significant level and, therefore, an EIR is required, it shall reverse the Planning Commission's decision to issue a MND and the Planning Department shall prepare an EIR.

Site Description and Existing Use

The 7,045-square-foot project site is located on the north side of Market Street within the triangular block bound by Market Street to the southeast, Sutter Street to the north, and Montgomery Street to the west, in the Financial District neighborhood. The project site is currently occupied by two separate two-story commercial buildings over a shared one-story basement level of approximately 16,195-gross-square feet. The project site does not contain any off-street vehicle or bicycle parking. The project site is relatively flat and does not have any curb cuts. There are currently two sidewalk trees on the project's Market Street frontage. The project site is in a C-3-O (Downtown Office) use district and a 300-S height and bulk district.

One of the appellants, Mr. Flynn, represents BCal 44 Montgomery Property LLC, which is the owner of 44 Montgomery Street located adjacent to a portion of the project's western property line. The other appellant, Ms. Shimko, represents CPH 54, LP, which is the owner of 564 Market Street (also known as the Chancery Building) located adjacent to the project's eastern property line. The 44 Montgomery Street building contains a 43-story commercial office tower constructed in 1966 and three-story commercial office building constructed in 1967. The Chancery Building is a seven-story commercial office building.

Project Description

The proposed project would demolish the two existing two-story-over-basement buildings and construct a 29-story, approximately 300-foot-tall building containing hotel uses. The new building, which would extend over the entire parcel, would provide approximately 3,400 gross square feet of retail space on the ground floor and mezzanine levels fronting Market Street and an approximately 123,000-square-foot hotel space that would accommodate about 211 guest rooms. The project would provide approximately 4,200 gross square feet of privately owned public open space (POPOS), which would include a 2,300-square-foot outdoor terrace and 1,900 square feet of indoor support space for the dedicated public entrance and elevator lobby to the POPOS. The project would be supported on a hybrid foundation that would consist of a four-foot mat slab supporting the approximate southern half of the building. The remaining building portion would be supported by a 6- to 10-foot foundation bearing on 6-foot-diameter piles that would be drilled approximately 40 feet into bedrock, for a total length of around 160 feet under the mat slab.

Project construction is anticipated to last approximately 24 months and would require excavation of the total site footprint (7,045 square feet) to approximately 7 to 13 feet below ground surface (bgs). Overall, excavation of the basement levels would require removal of approximately 3,900 cubic yards of soil.

The project received the following approvals from the Planning Commission:

- A Conditional Use Authorization from the planning commission under Planning Code section 303 to permit hotel uses.
- A Downtown Project Authorization under Planning Code section 309 for projects within a C-3 zoning district greater than 50,000 square feet in area or 75 feet in height and for granting exceptions to the requirements of certain sections of the Planning Code.

Background

The following is a chronological summary of the various actions documented in the record related to the proposed project that have occurred since October 2019, when the project sponsor filed an application for the proposed project:

- On October 1, 2019, the project sponsor filed a project application with the department for the project.
- On October 30, 2024, the department issued a PMND for the project determining that the proposed project could not have a significant impact on the environment with implementation of mitigation measures.
- On November 20, 2024, Brian Flynn, on behalf of BCal 44 Montgomery Property LLC, and Edward Shaffer, on behalf of CPH 54, LP, owner of the adjacent 564 Market Street (also known as the Chancery Building) (appellants), filed separate appeals of the PMND.
- On November 20, 2024, the 20-day appeal period ended. However, at the time of PMND publication, two technical appendices were inadvertently not available for public review on the department website. As a result, the comment period was extended by an additional 20 days to December 12, 2024.
- On December 11, 2024, Mr. Shaffer filed a supplemental appeal letter.
- On December 12, 2024, the appeal hearing was continued to February 27, 2025.
- On February 27, 2025, the appeal hearing was continued to April 3, 2025.
- On March 19, 2025, Mr. Flynn filed another supplemental appeal letter and Mr. Shaffer filed two additional supplemental letters.
- On April 3, 2025, the PMND appeal hearing was continued to May 1, 2025.
- On May 1, 2025, the planning commission denied the appeal of the PMND and affirmed the decision to prepare a MND. The project approvals were continued to a future hearing.

- On September 11, 2025, the planning commission approved the downtown project authorization and conditional use authorization for the project.

- On October 10, 2025, Brian Flynn of Lozeau Drury LLP on behalf of BCal 44 Montgomery Property LLC and Anna Shimko of Burke, Williams & Sorensen, LLP on behalf of CPH 54, LP submitted separate appeals of the FMND.

- On November 7, 2025, Mr. Flynn submitted a supplemental appeal letter. Given limited timing, this response does not fully address this November 7 letter. However, planning department will respond to the assertions brought up in this submittal, as appropriate, either in writing or verbally at the November 18, 2025 BOS hearing.

Planning Department Responses

The Planning Department's responses to concerns raised in the appeal letters are provided below, organized by topic. For the reasons provided, the appellants have not met the legal burden of proof of providing substantial evidence supporting a fair argument that the project may have a significant environmental impact, and therefore requires an environmental impact report.

Response 1 (Geology and Soils): The FMND appropriately concludes that the potential environmental effects of the proposed project related to geology and soils would not be significant, including impacts on surrounding structures.

The appellants contend that the FMND fails to evaluate the geotechnical impacts of project construction on surrounding buildings, including impacts related to soil settlement, dewatering, and liquefaction. The appellants have submitted supporting materials, including memoranda by structural engineering firm MKM & Associates, and contend that there is a fair argument that the project would have significant geotechnical impacts. However, these materials do not constitute substantial evidence because they are speculative and highlight general potential risks applicable to all development projects. They do not explain how the proposed project, specifically, could result in significant impacts with the application of required compliance with state and local building codes. As further explained below, detailed geotechnical design and review occurs after the environmental review process and the submitted documents do not acknowledge or address this. Therefore, the contention of the appellants regarding the inadequacy of the FMND is incorrect.

The FMND analysis correctly accounts for the city's entire review process, with environmental review being one of the initial steps of that process. During the environmental review process, the department considers whether the construction of a proposed project could have substantial adverse effects on soils or geologic features on the project site, and whether a project could be feasibly constructed and supported by the underlying site conditions. This information is typically summarized in a preliminary geotechnical report. The function of a geotechnical report is to provide recommendations by a licensed geotechnical professional to a project's engineer of record, who must then incorporate those recommendations into building permit-level drawings and construction documents, to ensure that the proposed structure can be supported on the proposed foundation system.

Subsequent to the environmental review process, the building department undertakes structural review to ensure that a building can be safely constructed in accordance with all applicable state and local codes. At this stage, the building department reviews more detailed structural plans, which are typically not available, nor required, during the environmental review phase. Instead, environmental review for a project is generally based on a project's architectural plans in combination with the findings of the preliminary geotechnical report.

In compliance with these building requirements, the project sponsor submitted a geotechnical report prepared by a licensed geotechnical engineer to the planning and building departments. This report investigated site, soil, geologic, and groundwater conditions of the subject property, and made geotechnical recommendations pertaining to the project's construction.[1] These recommendations address site preparation and grading, seismic design, foundation types, shoring and protection of adjacent buildings, and more. The California Building Code also includes specific provisions, including Protection of Adjoining Properties (section 3307), which must be addressed in the project's structural plans.[2]

The preliminary geotechnical report concluded that the proposed development is feasible from a geotechnical standpoint, but also acknowledged the need for a design-level geotechnical investigation once more detailed permit-level project drawings are available. As such, the department addressed the limited question before it, and correctly concluded that the project could feasibly be constructed on the project site and would not result in any significant impacts related to geology or soils. This is a typical process outcome for geotechnical issues during the environmental review phase, when more detailed plans are not available (nor required).

Administrative Bulletin 082 and Impacts to Adjacent Structures

The project's compliance with state and local codes would ensure that the project would not result in a significant geotechnical impact, including to adjacent building foundations, because the building department would review project construction plans and techniques to ensure that existing adjacent structures are protected. This requirement is set forth in building department Administrative Bulletin 082 (AB 082), Guidelines and Procedures for Structural Design Review, which applies to the proposed project and specifies the guidelines and procedures for independent structural and geotechnical design review during the application review process for a building permit. The scope of services for geotechnical engineering review required under AB 082 includes assessment of the project's proposed foundation system and its appropriateness for the structure and ground conditions on the site, the potential effects of construction activities, the predicted foundation settlement, and the project's potential long-term interaction with foundations of existing adjacent and nearby structures.

AB 082 also outlines how the director of the building department would resolve any disputes between the structural design reviewer and the project's structural and geotechnical engineers of record. The building department would review the final building plans (construction plans) for conformance with

1 Langan. *Preliminary Geotechnical Evaluation: 570 Market St.* August 27, 2019.
2 *Ibid*.

recommendations of the site-specific, design-level geotechnical evaluation to ensure compliance with state and local building codes, including AB 082.

The building permit application review process would occur prior to the issuance of construction permits and would ensure that the proposed project would not result in any significant geology and soils impacts, including significant adverse impacts to existing nearby structures. Specifically, as part of this process, qualified professionals would identify specific means and methods to construct the project in a way that meets all applicable building code requirements. In this context, those means and methods would constitute performance standards that would be met to avoid any significant impacts related to the building's structural integrity. Thus, the project's compliance with all required state and local codes during the building permit application process, combined with specific means and methods that would be employed to meet code requirements, would ensure that such impacts remain less than significant.

In summary, the project is required to comply with the City's project review process, which would entail detailed, design-level geotechnical and structural review by the building department. Compliance with all mandatory provisions of the California Building Code and San Francisco Building code would ensure that the project would not result in significant geology or soils impacts. Therefore, no mitigation measures are required. During the environmental review stage, the department addresses the limited question of whether a project can feasibly be constructed on the project site based on the site's underlying soil conditions and site context. Based on the project's preliminary geotechnical report, the department has correctly determined that the project is feasible and would not result in any significant impacts to geology or soils.

The appellants have not provided substantial evidence to support a fair argument that the project would result in significant geology and soils impacts, given compliance with state and local building codes. As noted above, they cite general risks common to all development projects, but do not explain how this specific project could result in significant impacts despite required code compliance. A fair argument must be supported by expert opinion and factual evidence, which are lacking here. Specifically, CEQA Guidelines Section 15384 define "substantial evidence," in part, as "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." Given that the appellants' assertions do not address the project site or the proposed 570 Market Street project, their claims remain speculative.

Response 2 (Air Quality): Substantial evidence provided in the FMND and additional health risk analysis conducted since then, establishes that the proposed project would not result in any significant impacts related to air quality.

The appellants contend that demolition and construction activities will expose the public to significant adverse levels of air pollution, including from asbestos and lead-based paints and construction dust. Additionally, the appellants contend that construction activities could increase cancer risks for people living and working in the area, and that nearby office workers should be treated as sensitive receptors.

Construction Dust

With regards to construction dust impacts, studies have shown that the application of best management practices at construction sites significantly control fugitive dust and reduce fugitive dust by up to 98 percent,

as described on page 50 of the FMND.[3,4] As such, they are an effective strategy for controlling construction-related fugitive dust. As described on pages 54 and 55 of the FMND, the project would be required to comply with the city's Construction Dust Control Ordinance and implement best management practices to reduce control construction dust. Such measures include wetting down areas around soil improvement operations, placement of upwind and downwind particulate dust monitors, limiting areas subject to excavation, grading, and other demolition or construction activities at any given time, and the like. These measures would be required as a matter of law already applicable to the proposed project. Accordingly, this impact was determined to be less than significant and no mitigation measure is required.

Construction and Operational Air Quality Impacts

The project's construction and operational air pollution impacts are discussed under Impact AQ-4, starting on page 57 of the FMND. The FMND evaluated the air quality health risk impact of the project to sensitive receptors near the project site, with the closest analyzed receptor located approximately 395 feet away from the project site. Following the publication of the FMND, a more detailed health risk assessment was prepared to evaluate construction and operational health risk impacts to receptors in the immediate vicinity of the project site, including worker receptors directly adjacent to the project site (see FMND text revisions – Exhibit C).[5] Thus, the FMND addresses worker receptors as sensitive receptors and presents results of toxic air pollutants on workers located in office buildings located adjacent to the project site. The health risk assessment modeled project-specific emissions based on the proposed land uses, construction schedule, construction equipment list and construction trip information, as provided by project sponsor.

The health risk assessment determined that, with the implementation of mitigation measure M-AQ-4a: Clean Off-Road Construction Equipment, which would be required as condition of project approval, the construction of the proposed project would not exceed the air district's or city's health risk thresholds for chronic hazard index, cancer risk, or $PM_{2.5}$.[6] As described in the FMND, the use of clean construction equipment can reduce construction emissions by 93 to 96 percent as compared to fleet average. Therefore, as concluded in the FMND and substantiated through additional health risk emissions modeling, the proposed project would result in a less-than-significant impact to nearby sensitive receptors related to construction toxic air contaminants, including the adjacent office building abutting the project site.

The project-specific health risk assessment also determined that operation of the project would result in a less-than-significant impact to residential or worker receptors with the implementation of mitigation measure M-AQ-4b: Clean Diesel Generators for Building Operations, including to receptors adjacent to the project site.

The internal air circulation system of nearby buildings, which one of the appellants brings up in their letter, is not within the purview of the proposed project. The project site is located in the existing air pollutant

3 Western Regional Air Partnership. *2006. WRAP Fugitive Dust Handbook.* September 7, 2006. This document is available online at https://www.env.nm.gov/wp-content/uploads/sites/2/2017/02/WRAP_FDHandbook_Rev_06.pdf, accessed January 15, 2025.
4 San Francisco Planning Department. *Air Quality and Greenhouse Gas Analysis Guidelines.* February 2025.
5 Ramboll. *Air Quality Health Risk Assessment Methodology and Results Memo: 570 Market Street, San Francisco, CA.* January 2025.
6 Unless otherwise stated, health risk assessments assume no filtration effects or benefits from mitigation measures when calculating potential risks to receptors.

exposure zone and sensitive receptors within the zone already experience elevated levels of air emissions; the City cannot, through mitigation measures or otherwise, require that the proposed project solve an existing problem that it has not caused. However, as described in the FMND and reiterated above, implementation of air quality mitigation measures and best management practices to reduce construction dust would ensure that the proposed project would not make a considerable contribution to existing significant cumulative health risk impacts in the area.

Lead and Asbestos
With respect to lead and asbestos, these impacts are described in the hazards and hazardous materials section of the FMND on pages 96 through 98. Lead and asbestos handling and removal are regulated in accordance with local and state regulations, as well as air district, California Department of Toxic Substances Control, Cal/OSHA, and California Department of Health Services requirements. Specifically, California Health and Safety Code section 19827.5, adopted January 1, 1991, requires that local agencies not issue demolition or alteration permits until a project sponsor has demonstrated compliance with the notification requirements under applicable federal regulations regarding hazardous air pollutants, including lead and asbestos.

The California Legislature vests the local air district, in this case the Bay Area Air District, with the authority to regulate airborne pollutants, including asbestos-containing material, through both inspection and law enforcement. The air district is to be notified 10 days in advance of any proposed demolition or abatement work. Any disturbance of asbestos-containing material at the project site would be subject to the requirements of air district Regulation 11, Rule 2, Hazardous Materials—Asbestos Demolition, Renovation, and Manufacturing. The local office of Cal/OSHA must also be notified of asbestos abatement. Asbestos abatement contractors must follow state regulations contained in California Code of Regulations title 8, section 1529 and sections 341.6 through 341.14, when their work involves 100 gross square feet or more of asbestos-containing material. Pursuant to California law, the building department would not issue the required permit until the project sponsors have complied with the requirements described above.

Work that could result in any disturbance of lead-based paint must comply with San Francisco Building Code section 3423, Work Practices for Lead-Based Paint on Pre-1979 Buildings and Steel Structures. Section 3423 identifies prohibited practices that may not be used when removing lead-based paint, as well as notification requirements. Where work would disturb or remove lead-based paint on the exterior of a building, or the interior of occupied buildings built prior to or on December 31, 1978 – such as the existing structure at 570 Market Street – section 3407 requires specific notification and work standards and identifies prohibited work methods and penalties. The demolition would also be subject to the Cal/OSHA lead in construction standard (California Code of Regulations title 8, section 1532.1). This standard requires development and implementation of a lead compliance plan when materials containing lead are disturbed during construction. The plan must describe activities that could emit lead, methods that would be used to comply with the standard, safe work practices, and a plan to protect workers from exposure to lead during construction. Cal/OSHA would require 24-hour notification if more than 100 square feet of lead-containing material would be disturbed.

Based on mandatory compliance with existing regulatory requirements, as concluded on page 98 of the FMND, the proposed project would not result in a significant hazard to the public or environment from hazardous materials such asbestos and lead-based paint and the proposed project would result in a less-than-significant impact related to these substances.

In summary, the appellants have not provided a fair argument supported by substantial evidence that the proposed project would result in significant air quality impacts. The FMND's analysis of air quality impacts are accurate and sufficient. No further analysis is required.

Response 3 (Noise and Vibration): Based on substantial evidence provided in the FMND, the proposed project would not result in significant impacts related to noise and vibration.

The appellants contend that project construction would have significant noise impacts on nearby office workers and would result in significant vibration impacts on nearby historic structures. Their arguments, however, do not meet the legal standard of providing substantial evidence in support of a fair argument that such a significant impact would occur, for the reasons described below.

Construction Noise

The project's noise impacts during construction are discussed in the FMND beginning on page 37. Consistent with the *Governor's Office of Planning and Research's General Plan Guidelines 2017*, noise sensitive receptors are defined as: residences, hospitals, convalescent homes, schools, churches and sensitive wildlife habitat (e.g., nesting birds, marine mammals, protected fish species). The planning department also considers hotels and motels as noise sensitive receptors, and commercial and industrial uses are considered noise sensitive uses if they are exposed to noise levels of 100 dBA or higher.

In the appeal letter submitted by Ms. Shimko dated October 10, 2025, the appellant contends that professional offices fall under Category 3 – Noise-Sensitive Uses in accordance with the Federal Transit Administration Transit Noise and Vibration Assessment Manual (FTA manual). However, the FTA manual defines Category 3 as institutional land uses, which generally includes schools, libraries, theaters, and churches where it is important to avoid interference with activities as speech, meditation, and concentration on reading material. The FTA manual elaborates that "most commercial or industrial uses are not considered noise-sensitive because activities within these buildings are generally compatible with higher noise levels." 7 Therefore, the nearby office uses, including the Chancery Building, do not meet the definition of Category 3 – Institutional Uses. As discussed below, the FMND does analyze the construction noise impacts to determine if the noise levels would exceed 100 dBA at commercial uses, and the noise analysis determined that construction of the project would not exceed those levels.

The appellants also contend that the noise impacts should be assessed in accordance with Occupational Health and Safety Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH) noise standards. The OSHA and NIOSH standards are assessed over an eight-hour time-weighted average period and noisy environments over 85 dBA would entail continuous operation of very loud pieces of

7 Federal Transit Administration. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. – (Table 4-3, p. 23)

equipment or large sporting events or nightclubs. It is extremely unlikely, and therefore speculative, that construction equipment would be in continuous operation for an extended period such that the eight-hour weighted average would exceed 85 dBA (Salter, Alex, phone call, November 7, 2025). The appellant has also not provided evidence that construction of the proposed project would result in noise levels in excess of 85 dBA over an eight-hour time-weighted average. Therefore, the contention is speculative.

Construction noise is regulated by the San Francisco Police Code, article 29, section 2907. Police Code section 2907 requires that noise levels from individual pieces of construction equipment, other than impact tools, not exceed 80 dBA at 100 feet from the source. Impact tools are not subject to the equipment noise limit provided that impact tools and equipment would have intake and exhaust mufflers recommended by the manufacturers and are approved by the Director of Public Works or the Director of Building Inspection as best accomplishing maximum noise attenuation. Table 7 on page 38 of the FMND describes the typical noise levels of construction equipment anticipated to be used at the site. As dictated by the city's noise ordinance, a default reference distance of 100 feet between the construction equipment and noise receptor was used.

The appellants contend that the planning department only relied on compliance with the noise ordinance to determine the construction noise impacts would not generate a significant noise impact. That is not accurate. The planning department also analyzes the construction noise using guidance provided in the Construction Noise Assessment of the FTA manual. Specifically, the planning department uses the general assessment daytime residential noise limit of 90 dBA at residential receptors or 100 dBA at commercial or industrial receptors as developed by the Federal Transit Administration. This assessment results in a reasonable worst-case scenario because it is based on the assumption that the two noisiest pieces of equipment would operate simultaneously. If any of the above criteria are exceeded (10 dB increase in ambient noise levels, 90 dBA at noise-sensitive receptors or 100 dBA at commercial and industrial receptors), the planning department would evaluate the temporal frequency, duration, and intensity of the exceedance when determining whether construction noise could result in a substantial temporary increase in ambient noise levels.

For informational purposes and to ascertain potential noise levels on the adjacent office uses (as raised in one of the appeal letters), the FMND included typical noise levels of construction equipment at a shorter distance of 20 feet between the equipment and the noise receptor to better simulate the distance between project construction equipment and nearby receptors in adjacent structures (see Table 7, p. 38).

At a reference distance of 20 feet, no construction equipment would exceed 100 dbA (see FMND Table 8, p. 39). This calculation takes into account the simultaneous operation of the two noisiest pieces of equipment during a given phase consistent with the FTA manual. As a result, construction noise impacts to commercial uses in the area would be considered less than significant, which is consistent with the findings in the FMND.

Additionally, as discussed in the FMND on page 40, construction noise is generally the most substantial during the initial phases of the project, which include demolition, site preparation, and grading, and generally decreases in the latter phases. Construction equipment noise is also intermittent and would occur in limited intervals at a time. Furthermore, the analysis provided in the FMND and above is conservative

because it assumes that no acoustic shielding or attenuation from building walls, windows, or other measures would occur.

In the supplemental appeal letter submitted by Mr. Flynn dated March 19, 2025, this appellant contends that the construction noise analysis is inaccurate because it improperly applied the general assessment methodology provided by the FTA Manual. The appellant contends that the analysis should have employed an equipment usage factor[8] of 1 (i.e., 100 percent), instead of a range between 16 to 50 percent as the FMND did, and a noise attenuation factor of 3 dB per doubling of distance, instead of 6 dB per doubling of distance. The appellant contends that by calculating construction noise levels with those assumptions, there could be potentially significant construction noise impacts at the nearest residential and commercial receptors.

However, the appellant's analysis is inaccurate and misleading because it conflates two different methodologies. While the FTA Manual general assessment methodology does recommend a usage factor of 1, the general assessment guidelines state that a noise attenuation factor equating to a 6 dB reduction per doubling of distance should be used, not 3 dB as the appellant claims. Thus, the appellant's construction noise calculations are misleading.

Typically, construction noise analysis is a multi-step process that first entails a more conservative analysis with broad assumptions as a screening-level analysis, and subsequently a more refined methodology if the initial analysis finds that a project could result in significant impacts. The FTA Manual general assessment methodology also allows for an adjustment of the usage factor based on the amount of time that construction equipment would be used during the day, and based on more refined analysis and project. The usage factor is based on FTA methodology and reflects the fact that most construction equipment is generally used intermittently and is not used throughout the day, thereby reducing its noise levels over the course of a workday.[9] Consequently, the FMND noise analysis used a more refined usage factor of 16 to 50 percent per guidance by the Federal Highway Administration (FHA) to better reflect the frequency of use of the construction equipment.[10] This more refined methodology determined that project construction would not result in significant noise impacts to nearby residential and commercial receptors, as described above.

For informational purposes, supplemental noise analysis was conducted in accordance with the FTA Manual general assessment methodology (i.e., using a conservative equipment usage factor of 1, meaning that a piece of equipment is assumed to operate 100 percent of the time, and a noise attenuation factor equating to a 6 dB reduction per doubling of distance).[11] While employing a usage factor of 1 is not realistic, it is appropriate to use for purposes of noise screening. As noted in Table 1 below (and as Table 8, p. 39, in the FMND), construction noise levels still would not exceed construction noise thresholds at the nearest residential and commercial receivers when using recommended assumptions of the FTA general assessment methodology.

8 The usage factor is the percent of time a piece of construction equipment is used throughout the day.
9 *Ibid*., p. 12-3.
10 Based on the US EPA document, "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances" 1971, noise data from Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide, 2006, and data from other Salter Projects.
11 Salter, Inc. *570 Market Street Acoustical Response to Appeal of Preliminary MND.* April 4, 2025.

Table 1: Calculated Noise Levels at Nearest Off-Site Sensitive Use from Daytime Construction

Phase	Loudest Two Noise Sources	Estimated Construction Noise Level (dBA) at Nearest Residential Receiver (450 feet)	Exceeds 90 dBA Residential Standard?	Estimated Construction Noise Level (dBA) at Nearest Commercial Receiver (20 feet)	Exceeds 100 dBA Commercial Standard?
1	CSM Rig, Jackhammer	68	No	95	No
2	Concrete Saws, Jackhammer	72	No	99	No
3	Concrete Pump, Excavator	65	No	92	No
4	Drill Rig, Cranes	67	No	94	No
5	Pressure Washer, Cranes	67	No	94	No

In the appeal letter submitted by Ms. Shimko dated October 10, 2025, the appellant contends that ambient noise would be increased by up to 34 dBA from 65 dBA to between 92 to 99 dBA based on the estimated construction noise level calculation at the nearest commercial receiver. However, this contention is incorrect. Ambient noise is a measure of average noise level over a period of time. An instance of loud noise, such as the temporary use of construction equipment, would not substantially raise average ambient noise levels. The FTA general construction assessment criterion of 100 dBA 1-hour Leq looks at the construction noise from the loudest hour of project-related construction throughout the day. These noise levels would be temporary during construction and especially limited to construction of the exterior work including grading, foundation, and exterior framing. In addition, the 10 dBA criterion applies to construction noise at noise sensitive uses (i.e., residences, hospital, convalescent homes, schools) and not commercial uses. Therefore, as discussed above, there would be loud periods of construction during the noisiest phases of construction that would increase noise in the surrounding areas; however, it would not exceed the 100 dBA criteria to commercial uses, or the 90 dBA 1-hr Leq and 10 dBA above ambient levels criterion that applies to sensitive receptors.

The appellant further contends that due to the presence of mid- to high-rise buildings in the vicinity, construction noise has the potential to reflect off neighboring buildings and amplify sound. However, the neighboring buildings are oriented in such a way that construction noise from the project site would likely be reflected away from the nearest sensitive receptor (i.e., residences at 333 Bush Street approximately 450 feet away) and is unlikely to be amplified – see Figure 1. The appellant has not explained how the surrounding buildings would amplify sound to the nearest sensitive receptor. The appellants have also not provided any substantial evidence or noise calculations to demonstrate how sound might be amplified at nearby commercial receptors; such a calculation would involve numerous variables such as what the composition of nearby building materials, the location of the construction sound source relative to the receptor, the angle of

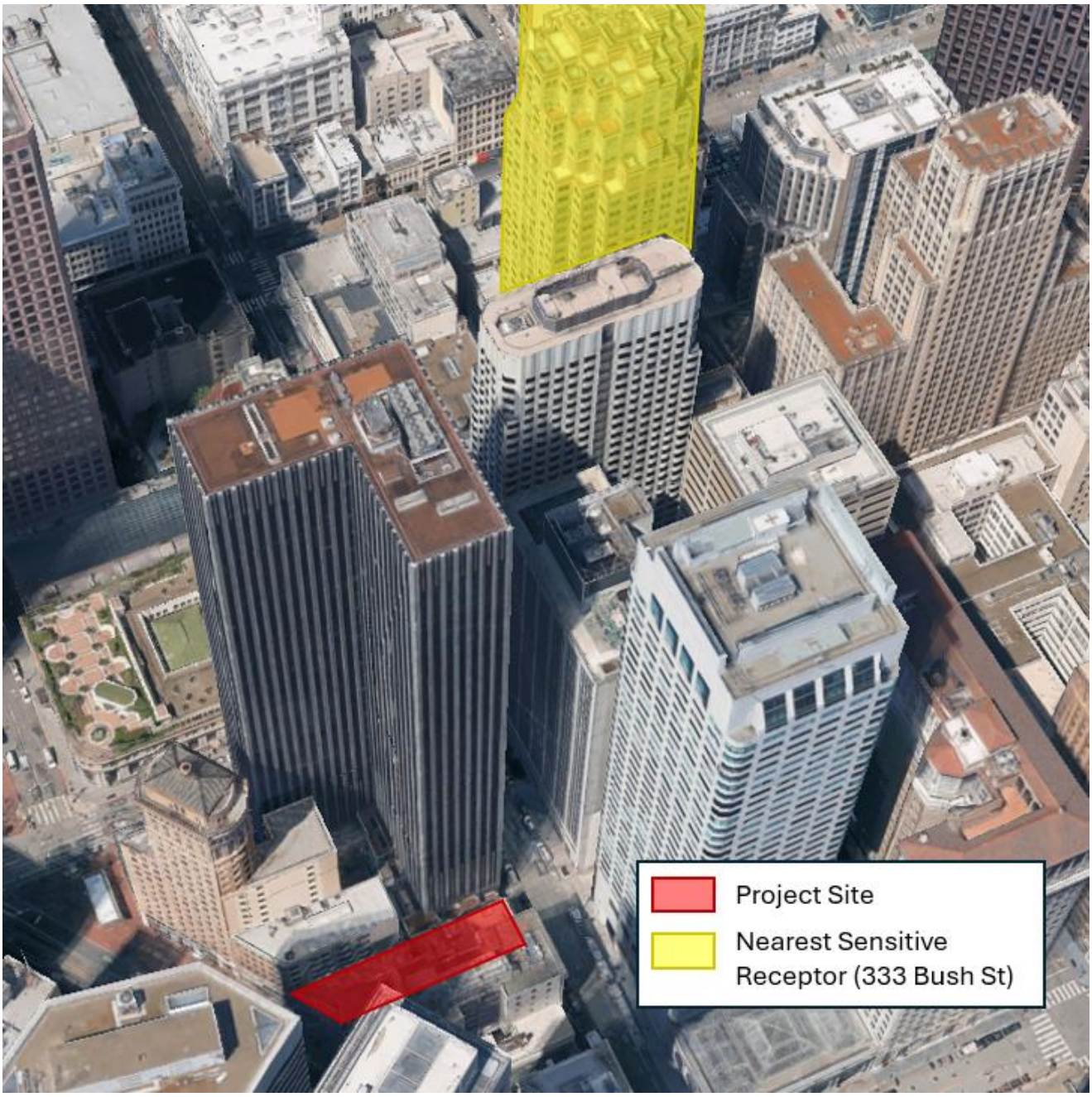

Figure 1: Satellite view of surrounding mid- to high-rise development.

nearby buildings that could reflect sound, and more. Therefore, the appellant's contention is speculative and does not support a fair argument.

In summary, the FMND noise analysis employed a multi-step process; it properly calculated the project's construction noise impacts to the nearest sensitive receptor and properly evaluated ambient noise levels at nearby commercial receptors. The supplemental analysis evaluated construction noise levels against the FTA

criterion of 100 dBA for commercial and industrial receptors and confirmed that projects construction noise would not exceed those levels. The appellant's contention that the FMND noise analysis is inaccurate because it should have used the more generalized FTA guidance is misleading, and the appellant's noise calculation is also misleading because it does not use a 6 dB per doubling of distance noise attenuation factor as provided by the FTA general assessment methodology. Noise analysis using the more conservative FTA general assessment methodology, shown in Table 1 above and incorporated in FMND Table 8, further supports the FMND conclusion that the project would not result in significant construction noise impacts. The appellants' contentions regarding construction noise are general in nature and speculative, and do not constitute substantial evidence in support of a fair argument. A fair argument requires expert opinion supported by facts, which have not been presented.

Construction Vibration

The project's vibration impacts during construction are discussed in the FMND beginning on page 44. With regards to construction vibration impacts, the FMND identified that the 566 Market Street, 576 Market Street, and 44 Montgomery Street buildings could be susceptible to ground-borne vibration from demolition and construction activities of the proposed project, which would be a significant impact. Therefore, the FMND identified Mitigation Measure M-NO-2, Protection of Adjacent Buildings/Structures and Vibration Monitoring During Construction, which would be required before and during construction in order to reduce the impact to a less-than-significant level. The project sponsor agreed to implement this measure, which was made a condition of project approval.

The primary purpose of the mitigation measure is to prevent damage to nearby structures. It requires that all feasible means to avoid damage to potentially affected buildings be identified in the project's Vibration Management and Monitoring Plan (Monitoring Plan) and employed. Examples of avoidance measures that could be employed include using alternative pieces of construction equipment or techniques and adjusting the buffer zones of equipment. The Monitoring Plan would also include procedures to actively monitor vibration levels at the construction site to ensure that they do not exceed the established standards identified in the plan. As described in the mitigation measure, the project would be required to retain a qualified structural engineer and historic preservation professional to conduct periodic inspections of adjacent buildings for signs of vibration-induced damage during vibration-generating construction activities, and to immediately notify the planning department if any damage is visible and incorporate alternative construction techniques to reduce further effects. At the time that the Monitoring Plan is prepared, the structural engineer and planning department would also have the discretion to reclassify nearby buildings to meet stricter vibration standards based on additional information on structural conditions of the building, as appropriate; for example, 44 Montgomery Street may be reclassified from "modern industrial/commercial buildings" to "historic and some older buildings," as appropriate.[12]

The appellant's contention that catastrophic, irreparable damage could occur even with stop-work provisions required by vibration monitoring plans is speculative; the appellant has not provided substantial evidence to demonstrate how the project could result in significant vibration impacts despite the project's

12 This classification is for the purposes of construction vibration monitoring only, and how a building is classified is independent of a building's actual historic status.

requirement to comply with construction vibration mitigation measures and applicable provisions of the building code. Based on planning department's consultation with Municon West Coast, Inc. (a firm with extensive experience in vibration monitoring throughout the west coast, including in San Francisco), real-time vibration monitoring and timely engineering interventions protect adjacent structures by ensuring that vibration levels remain below established thresholds (see memorandum provided by Municon West Coast, Inc. in Attachment C, Vibration Monitoring Supplemental Information). As part of this monitoring, the contractor is alerted immediately if vibration approaches threshold levels, allowing the construction team to adjust equipment or methods before exceedances occur. This reduces the potential for cosmetic or structural damage to nearby buildings. As noted in the Municon West Coast, Inc. memorandum, vibration monitoring services help control the impacts of vibrations from construction operations such as heavy demolition and blasting, pile driving, deep dynamic compaction, tunneling, and deep excavations in urban, often zero lot-line settings, including on parcels adjacent or nearby historic structures.

While the City has not adopted any thresholds for construction or operational groundborne vibration impacts, the FMND vibration analysis uses the vibration criteria established in Caltrans' Transportation and Construction Vibration Guidance Manual document to evaluate the impact of vibration on buildings. It is important to note that the Caltrans vibration standards are guidelines for assessing potential vibration damage and not brightline thresholds, contrary to the appellants' assertions. The Caltrans standards are guidelines because all buildings are constructed in slightly different ways using different construction techniques and materials, and with different underlying soil conditions and surroundings. As a result, construction-induced vibration interacts with buildings in varying degrees and there is no brightline threshold upon which vibration impacts are certain to occur. The Caltrans standards reflect this and offer guidance of when vibration impacts *may* start to occur, and an exceedance does not guarantee that an adverse impact would occur. Therefore, the appellant's contention is incorrect.

As a final protective measure, in the event that all feasible avoidance measures are employed and damage does occur, the damage would be detected early due to active monitoring requirements per the Monitoring Plan and thus kept to a minimum. The project sponsor would be required repair any damage to its preconstruction state. Any damage to a historic building would require the remediation to be overseen by a qualified preservation professional and planning department preservation staff. See Response 4 for more information on the project's impacts on historic resources.

Mitigation measure M-NO-2 outlines clear steps and performance measures for the monitoring and potential repair of any vibration-induced damage. Construction-level details are often not determined yet at the time of environmental and architectural review, and minor changes often occur at the time of structural building permit review and once construction starts; the vibration monitoring plan and mitigation measures are adaptable to the conditions of the project site at the time of construction. The project would be required to implement the measures described in mitigation measure M-NO-2. The FMND, therefore, is not deferring any mitigation or analysis of vibration impacts. With implementation of this mitigation measure, the FMND determined that the impacts from construction vibration would reduce any potential damage to adjacent structures from construction to a less-than-significant level.

The appellants have not offered any substantial evidence to support their contention that construction vibration could result in significant adverse impacts to historic buildings.

Response 4 (Historic Resources): Based on substantial evidence provided in the FMND, the proposed project would not result in a significant impact to historic resources. The appellants have not provided substantial evidence supporting a fair argument that this determination is not correct.

The appellants contend that the project could have potentially significant impacts on nearby historic buildings due to the mass and scale of the proposed building, vibration from demolition and construction, ground settlement from dewatering and increased soil stresses, and increased lateral loads. The appellants also contend that the project block should be evaluated as a historic district. The appellants have not offered any substantial evidence to support these assertions. By contrast, the FMND provides substantial evidence to support the conclusion that significant impacts of this nature would not occur. As discussed on pages 15 through 17 of the FMND, the project site is not within a designated historic district and construction of the proposed project would not affect the historic significance of any of the following nearby historic buildings: the 44 Montgomery Street building, the Chancery Building located at 562-566 Market Street, the Finance Building located at 576-580 Market Street, the Hobart Building located at 582-590 Market Street, the Flatiron Building located at 540-548 Market Street, the three commercial buildings located on the project block at 550, 554 and 560 Market Street, or the Crocker Bank Building located at 1 Sansome Street located on the adjacent block to the north.

As described in the department-prepared Historic Resources Evaluation Report (HRER) for the project, "the subject property does not appear to be part of a significant concentration of historically or architecturally unified buildings such that it would rise to the level of an eligible historic district." As such, the potential of the project block to be designated as a historic district and the subject property to be included in said district was already evaluated in the project HRER. The architectural cohesion of Market Street is not relevant in the context of the project's historic resource evaluation because the subject property is not part of a historic district.

The significance of a historical resource is materially impaired when a project "demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance…"[13] As discussed in the PMND and under Response 1, above, compliance with all mandatory provisions of the California Building Code and San Francisco Building code would ensure that the project is constructed in a way that minimizes adverse impacts to existing nearby structures . Generally, substantial damage to a building would have to occur in order to materially impair its character-defining features to the extent that it would no longer be able to convey historical significance. For example, the HRE for the 44 Montgomery Street building notes that its character-defining features are based on its "Miesian" International/Corporate Moderne style and include the primary entrance sequence along Montgomery Street frontage, the vertical box massing (supported by steel columns, allowing the tower to appear to float), glass curtain wall systems, and honed marble panels, among others.[14] Similarly, the character-defining features of

13 CEQA Guidelines 15064.5(b)(2)(A).
14 San Francisco Planning Department, *Preservation Team Review Form, 2-8 and 44 Montgomery Street*, November 16, 2018.

the Chancery Building at 562-566 Market Street, as noted in the 1976 Survey field form, are its rusticated terra cotta facade featuring a three part composition with Renaissance/Baroque ornamental references, and the Hobart Building at 582-590 Market Street is noted in its 1976 Survey field form to be most notable for its massing and the positioning of its tower.[15,16] It is highly unlikely that any of these character-defining features would be impacted by the construction of the proposed project in a way that would render those buildings as no longer able to convey their historical significance. This would be the case irrespective of Mitigation Measures M-NO-2, Protection of Adjacent Buildings/Structures and Vibration Monitoring During Construction.

Additionally, the appellant is incorrect in their assertion that 44 Montgomery Street was not classified as a historic resource and evaluated accordingly in the FMND. Contrary to the appellant's contentions, 44 Montgomery Street was evaluated as a historic resource in the project's cultural resource analysis as evidenced by its inclusion in the list of adjacent historic resources in the HRER. The proposed project would not affect the physical features that convey the historical significance of nearby historic resources, including 44 Montgomery Street.

Moreover, in response to one of the appellants' assertion that the proposed project's aesthetic impacts should have been further analyzed because "[a]ctions that visibly alter a historic resource should also be analyzed for potential aesthetic impacts," since the project site is not in a historic district, this additional analysis is not required. Specifically, the MND is not required to evaluate the project's aesthetic impacts on the surrounding environment because the surrounding setting is not a character-defining feature that contributes to the individual historic status of the individual historic buildings. The project's compatibility with nearby historic resources is also not relevant because the project site and surrounding properties are not in a historic district. Likewise, new shadows caused by the project would not affect historic character defining features of nearby properties.

Response 5 (Freight Loading): As discussed in the FMND, the proposed project would not result in any significant impacts related to transportation, including secondary impacts resulting from insufficient loading facilities.

One of the appellants, Mr. Flynn, contends that the project could exacerbate congestion on Sutter Street due to secondary impacts resulting from insufficient loading facilities. The appellant has submitted photographs of a commercial loading zone on Sutter Street to support their contention, but the loading zone in the photographs is on the 44 Montgomery Street frontage, east of the project site, and does not show the loading conditions in front of the proposed project site at 570 Market Street. Furthermore, the photographs do not demonstrate that adverse secondary impacts are occurring.

As discussed on page 30 of the FMND, the project is anticipated to average 12 daily freight loading occurrences spread throughout the day, and average approximately two loading occurrences during the peak hour of loading activity. Freight deliveries would primarily be comprised of smaller vehicles such as

15 San Francisco Planning Department, *DCP 1976 Survey Field Form*, 564 Market Street, January 1, 1976.
16 San Francisco Planning Department, *DCP 1976 Survey Field Form*, 582 Market Street, January 1, 1976.

light trucks and panel vans. Given the length of the existing on-street loading zones, there would be sufficient loading space to accommodate the project's peak hour loading demand of two trucks. Therefore, no secondary transportation impacts resulting from inadequate loading supply are expected. The appellant has not submitted substantial evidence supported by facts that the existing loading zones would be unable to support the anticipated loading demand of the proposed project.

Response 6 (Shadow): As discussed in the FMND, the proposed project would not result in any significant impacts related to shadow.

The appellants contend that the project would have adverse shadow impacts on privately owned public open space (POPOS) in the area, but do not offer any substantial evidence supporting a fair argument of how the project would result in significant shadow impacts. As discussed on page 68 of the FMND, the project would cast some new shadow on POPOS in the area, including the One Sansome Street courtyard, One Bush Plaza, the plaza at 333 Market Street, and the plazas at 425 and 525 Market Street. However, these shadows would be intermittent, and the net new shadow would not substantially affect the use and enjoyment of these POPOS. Furthermore, POPOS are not protected open spaces under Planning Code section 295, and the appellants have provided no evidence that the proposed project would increase shadow to any open space protected under Planning Code section 295. The shadow impact analysis on nearby POPOS provided in the FMND is provided for informational purposes only, and is not a requirement to be analyzed under CEQA or the Planning Code. Therefore, no additional analysis is required.

Response 7 (Feasible Mitigation Measures): The FMND identifies feasible mitigation measures with performance standards that satisfy CEQA requirements.

The appellants claims that the FMND inappropriately defers mitigation of potential impacts to historic resources, geology and soils, and hazardous materials by relying on future reports and recommendations from those reports without specifying performance standards. However, the appellants' statements are not consistent with the analysis or mitigation measures contained in the FMND, or CEQA's requirements.

CEQA Guidelines section 15126.4(a)(1)(B) permits the department to further refine the details of mitigation measures after the project's approval if the environmental document (1) commits the project sponsor to the mitigation, (2) adopts specific performance standards the mitigation will achieve, and (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard and that will be considered, analyzed, and potentially incorporated in the mitigation measure. The mitigation measures cited by the appellants meet all of these requirements and are, therefore, legally adequate in the context of CEQA review.

The FMND does not, as appellant claims, defer "formulation of mitigation measures." All of the mitigation measures contained in the FMND contain detailed performance standards that ensure their effectiveness and specify the timing of any required actions. For example, mitigation measure M-NO-2 requires the project sponsor to avoid or reduce project-related construction vibration damage to adjacent buildings and/or structures and to ensure that any damage is documented and repaired. The mitigation measure also establishes quantified maximum vibration levels that may not be exceeded and for which the project site

will be monitored. Thus, the mitigation measure specifies the components for a monitoring plan, timing, guidelines, approval process, and responsible professionals who may determine corrective measures based on construction activity and the character of adjacent buildings.

Similarly, mitigation measure M-AQ-4a requires the project to use clean off-road construction equipment and provides specific details related to engine eligibility requirements, the use of waivers, and detailed requirements for the preparation of a construction emission minimization plan. Specifically, this mitigation measure states that "[A]ll off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall have engines that meet or exceed U.S. Environmental Protection Agency (EPA) Tier 4 Interim or Tier 4 Final off-road emission standards." Similarly, requirements regarding the construction emission minimization plan state that "[the]plan shall include estimates of the construction timeline by phase, with a description of each piece of off-road equipment required for every construction phase. As reasonably available, the description may include, but is not limited to: equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel use and hours of operation. For off-road equipment using alternative fuels, the description shall also specify the type of alternative fuel being used." These specific requirements ensure that this mitigation measure would be implementable, measurable, and would reduce impacts to a less-than-significant level as concluded in the FMND on page 57 to 59.

The mitigation measures outlined in the project's Mitigation Monitoring and Reporting Program (MMRP)were made a condition of approval of the project by the Planning Commission.

With regard to the FMND analysis of geology and soils and hazardous materials, as discussed in Response 1, above, state and local regulations that are uniformly applied to all projects would require the project to meet standards that would ensure that the project would not result in a significant impact. For these types of impacts – where existing regulations ensure that no significant impacts would result - no additional mitigation measures are required.

The appellants have not provided any substantial evidence to support their assertion that the mitigation measures inappropriately defer mitigation or do not specify performance standards or implementation timing requirements.

Conclusion

For the reasons provided in this appeal response, the department has determined, based on substantial evidence in the record, that the proposed project would not have significant impacts with implementation of the feasible mitigation measure identified in the FMND; an environmental impact report is not required. The appellants have not provided substantial evidence supporting a fair argument that the proposed project would have significant impacts on the environment. The department therefore respectfully recommends that the board affirms the Planning Commission's decision to affirm the FMND and deny the appeals.

RAMBOLL

ENVIRONMENT
& HEALTH

MEMO

Date: **February 13, 2025**

To: **Tania Sheyner, Josh Pollak & Ryan Shum, Environmental Planning, San Francisco Planning Department**

From: **Sarah Manzano**
Kylie Rasmussen

Subject: **AIR QUALITY HEALTH RISK ASSESSMENT METHODOLOGY AND RESULTS MEMO**
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At the request of the San Francisco Planning Department (planning department), Ramboll performed a health risk assessment (HRA) of the construction and operation of the proposed 29-story hotel and retail Project at 570 Market Street in San Francisco, California. The methods and results from the health risk assessment are presented herein.

PROJECT UNDERSTANDING

The Project site is located at 570 Market Street within the triangular block bound by Market Street to the southeast, Sutter Street to the north, and Montgomery Street to the west, in the Financial District neighborhood. The Project site is located within the C-3-O Downtown-Office district. Commercial land uses, including office and retail uses, are adjacent to the Project site in all directions and the nearest residential land uses are located approximately 400 feet from the Project site to the northwest. The Project site is located in an air pollutant exposure zone (APEZ) as identified in the 2025 Air Quality and Greenhouse Gas Analysis Guidelines.[1] The site currently contains two existing two-story commercial buildings over a shared one-story basement level of approximately 16,195-gross-square feet.

The Project Sponsor, 229 Ellis Holdings, LLC., proposes to demolish the two-story-over-basement building and construct a 29-story, approximately 300-foot-tall building (320 feet total, including rooftop mechanical equipment and screening). The new building, which would extend over the entire parcel, would provide approximately 3,400-gross-square feet of retail space on the ground floor and mezzanine levels fronting Market Street and an approximately 123,000-square-foot hotel space that would accommodate about 211 guest rooms fronting Sutter Street. The proposed Project would provide approximately 4,211 gross square feet of privately owned public open space (POPOS), which would include a 2,343-square-foot outdoor terrace and 1,868 square feet of indoor support space for the dedicated POPOS entrance and elevator lobby. Construction of the proposed Project is expected to last approximately 24 months. Excavation and site preparation activities would disturb approximately 7,054 square feet of soil to

[1] San Francisco Planning. 2025. Air Quality and Greenhouse Gas Analysis Guidelines. Available at: https://sfplanning.org/air-quality

a depth of 13 feet below ground surface, which would require excavation of approximately 3,900 cubic yards of material.

Overall, the proposed Project would demolish two two-story commercial buildings and construct approximately 126,333 square feet of hotel and retail space. The Project would add a 126 horsepower (hp) diesel emergency generator located on the roof of the 300-foot-tall building.

Ramboll understands that SF Environmental Planning has prepared a Preliminary Mitigated Negative Declaration (PMND) after conducting an Initial Study. The PMND calculated criteria air pollutant (CAP) emissions from construction and operations, which are not covered further in this report.

METHODOLOGY

Ramboll conducted a construction, operational, and cumulative health risk assessment to determine the health risk impacts from the proposed Project.

Two thirty-year exposure scenarios were modeled:

1. Construction + Operations: Off-site receptors' exposure beginning at the start of construction in 2023 followed by operations of the generator.
2. Operations Only: Off-site and on-site receptors' exposure to the generator beginning at the start of Project occupancy in 2025.

Construction Health Risk Assessment

Ramboll used project-specific construction information provided by the Project Sponsor and methodologies from California Emissions Estimator Model (CalEEMod®) for the development of construction emissions inventory. The Project land uses, construction schedule, construction equipment list, and construction trip information, presented in **Table 1** through **Table 4**, were used to develop the emissions inventory.

As shown in **Table 3**, all equipment that would be used during the project's construction phase was assumed to be diesel powered. Therefore, the HRA was based off the emissions of respirable particulate matter PM_{10}, assuming all PM_{10} from construction equipment is diesel particulate matter (DPM), and emissions of $PM_{2.5}$. Emissions of DPM include exhaust from off-road construction equipment and on-road construction vehicles. Emissions of $PM_{2.5}$ include exhaust from off-road construction equipment, exhaust from on-road construction vehicles, and fugitive dust from on-road vehicles.

Ramboll used equipment activity information provided by the Project Sponsor and emission factors from CalEEMod® to estimate DPM and $PM_{2.5}$ emissions from diesel off-road construction equipment. For off-road construction equipment, Ramboll used emission factors for Tier 4 interim equipment, consistent with the requirements that the Project would be subject to as part of the Sponsor's conditions of approval, which requires all pieces of construction equipment exceeding 25 hp that would operate for more than 20 hours total to meet the Tier 4 emission standards. [2]

For on-road emissions, Ramboll used trip assumptions from **Table 4** and the modeled haul route to determine the local vehicle miles travelled (VMT) from worker, vendor, and hauling trips for each construction subphase.[3] Emission factors from EMFAC2021 were used to estimate local DPM and $PM_{2.5}$ emissions from the exhaust of on-road construction vehicles. [4] For on-road fugitive dust emissions, **Table 5**

[2] Pursuant to PMND Mitigation Measure M-AQ-4a.
[3] The modeled haul route distance of 0.19 miles is determined by measuring the trip distance from the Project site to the 1,000-ft buffer boundary.
[4] CARB. 2024. EMFAC. Available at: https://arb.ca.gov/emfac/

shows the emission factor used to calculate the road dust within 1,000 feet of the Project boundary along the hauling route.

Ramboll estimated annualized toxic air contaminant (TAC) emission rates of DPM and $PM_{2.5}$, as summarized in **Table 6**, to estimate health risk impacts and $PM_{2.5}$ concentrations. The annualized emission rates are consistent with the hours considered in the air dispersion modeling, representing the hours in the day emissions may occur. This is 365 days per year and 13 hours per day according to the City of San Francisco's allowed hours of construction from 7:00am to 8:00pm.[5]

Ramboll conducted the HRA in accordance with SF Planning's Air Quality and Greenhouse Gas Analysis Guidelines and the Bay Area Air Quality Management District's (BAAQMD) California Environmental Quality Act (CEQA) Air Quality Guidelines.[6,7] Ramboll used AERMOD, a Gaussian air dispersion model recommended by the United States Environmental Protection Agency (EPA), California Air Resources Board (CARB), and BAAQMD for use in preparing the environmental documentation for stationary or construction sources. Model parameters for the construction area, shown in **Figure 1**, are summarized in **Table 7**. Based on the results of the dispersion modeling, Ramboll has evaluated the excess lifetime cancer risk, noncancer hazard indices, and $PM_{2.5}$ concentration. For nearby sensitive receptors, Ramboll used exposure parameters recommended by SF Planning's Air Quality and Greenhouse Gas Analysis Guidelines and the BAAQMD's CEQA Air Quality Guidelines, as summarized in **Table 8**, and toxicity values for DPM presented in **Table 9**.

The construction health risk assessment includes health impacts from operations starting after the end of construction. The operational health risk assessment is discussed below, and the exposure parameters for operations as part of the construction health risk assessment are shown in **Table 8**.

Operational Health Risk Assessment

The Project would include one emergency generator located on the roof during Project operations. Therefore, Ramboll modeled the operational health risk impacts of the proposed generator to both on-site and nearby off-site receptors. Ramboll assumed the generator will meet Tier 4 interim standards and will operate for a maximum of 50 hours per year for testing and maintenance.[8] **Table 10** summarizes the generator emission factors and emission rates used in the health risk assessment. Model parameters for the emergency generator stationary source are presented in **Table 11**.

The Project would generate 465 vehicle trips per day, which is less than 1,150 vehicles per day, the traffic volume recommended for further analysis in the SF Planning's Air Quality and Greenhouse Gas Analysis Guidelines.[9] Therefore, no operational mobile sources were modeled for the operational health risk assessment.

Similar to the construction health risk assessment, Ramboll used AERMOD to perform dispersion modeling from the generator in order to evaluate the excess lifetime cancer risk, noncancer hazard indices, and $PM_{2.5}$ concentration from only Project operations on both on-site and off-site receptors. As shown in **Figure 1**, all receptors were modeled with a flagpole height of 1.8 meters, consistent with the San Francisco Citywide

[5] City and County of San Francisco Article 29: Regulation of Noise Guidelines. Section 2908. Construction Work at Night. Available at: 21_CACOSF_2023_Article29RegulationofNoiseGuidelines.pdf

[6] San Francisco Planning. 2025. Air Quality and Greenhouse Gas Analysis Guidelines. Available at: https://sfplanning.org/air-quality

[7] BAAQMD, 2023. 2022 Guidelines, Appendix E, Recommended Methods for Screening and Modelling Local Risks and Hazards. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-e-recommended-methods-for-screening-and-modeling-local-risks-and-hazards_final-pdf.pdf?la=en. Revised on April 25.

[8] Pursuant to PMND Mitigation Measure M-AQ-4a.

[9] The daily trip generation was determined using the 2019 San Francisco Transportation Impact Analysis Guidelines.

HRA.[10] However, due to the nature of the proposed generator being located on the roof with an assumed release height of 312 feet (95 meters) and the presence of surrounding tall buildings, Ramboll also modeled additional receptors at higher flagpole heights. For the Project building and the immediately surrounding buildings, Ramboll modeled receptors at the first 3 stories and then at intervals of 15 meters (approximately 5 stories) depending on the building height.

Cumulative Health Risk Assessment

Cumulative health risks and $PM_{2.5}$ concentrations were also evaluated by summing the maximum Project risks with the background risks from the 2020 San Francisco Citywide Health Risk Assessment. The Project site is located in an APEZ. Therefore, Ramboll has provided the Project contribution risk values that can be compared to APEZ criteria thresholds and the total cumulative values. Future foreseeable development projects can also contribute to cumulative impact. Figure 15 from the PMND indicates there are several cumulative projects within a 0.25-mile radius; however, none of these Projects are closer than 650 feet to the Project and are unlikely to create any additional significant cumulative impact since impacts drastically decrease as the distance from the source increases.

RESULTS

The maximum cancer risk, noncancer hazard index, and $PM_{2.5}$ concentration at the maximally exposed individual receptors (MEIR) locations are shown in **Table 12.** The off-site MEIR would be exposed to both construction and operational emissions, whereas the on-site MEIR is only exposed to operational emissions since there would be no on-site occupancy during construction. A summary of the maximum off-site and on-site health risks are shown below in **Table A.** Both the on-site MEIR and off-site MEIR are worker receptors.

Table A: Summary of Health Risk Assessment Results

Health Impact	Cancer Risk (in a million)	Chronic HI	$PM_{2.5}$ ($\mu g/m^3$)	MEIR Location (UTMx, UTMy)
Off-site MEIR	1.9	0.019	0.10	552724, 4182656
On-site MEIR	1.5	0.0012	0.0059	552712, 4182667

Cumulative HRA results for cancer risk and $PM_{2.5}$ concentrations are shown in **Table 13** and are summarized in **Table B** and **Table C** below. The Citywide HRA was used to determine if the off-site or on-site receptors would meet APEZ criteria of exceeding 100 in a million excess cancer risk or a $PM_{2.5}$ concentration of 10.0 $\mu g/m^3$. The proposed Project maximally exposed receptors meet APEZ criteria for both cancer risk and $PM_{2.5}$ concentration since their cancer risks are above 100. Therefore, the Project contribution should be compared to the APEZ criteria for cancer risk and $PM_{2.5}$.

[10] San Francisco Department of Public Health. 2025. San Francisco Citywide Health Risk Assessment: Technical Support Documentation. Available at: https://sfplanning.org/air-quality

Table B: Summary of Cumulative Cancer Risk

MEIR	Cumulative Excess Lifetime Cancer Risk (in a million)	Project Contribution of Excess Lifetime Cancer Risk (in a million)	MEIR Location (UTMx, UTMy)
Project Max (Off-site Worker)	573	1.9	552724, 4182656

Table C: Summary of Cumulative $PM_{2.5}$ Concentration

MEIR	Cumulative $PM_{2.5}$ Concentration ($\mu g/m^3$)	Project Contribution of $PM_{2.5}$ Concentration ($\mu g/m^3$)	MEIR Location (UTMx, UTMy)
Project Max (Off-site Worker)	13	0.10	552724, 4182656

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TABLES

Table 2
Construction Phasing Schedule
570 Market Street
San Francisco, CA

Phase[1]	Start Date	End Date	Number of Work Days	Days per Week
Demolition	3/6/2023	4/28/2023	40	5
Site Preparation	5/1/2023	5/26/2023	20	5
Grading	5/29/2023	6/9/2023	10	5
Building Construction	6/12/2023	3/31/2025	471	5
Architectural Coating	12/1/2023	3/31/2025	347	5

Notes:
1. Construction schedule was provided by the Project Sponsor.

Table 3
Construction Equipment
570 Market Street
San Francisco, CA

Phase	Equipment[1]	Fuel[2]	Number[1]	Horsepower[1]	Daily Usage[3] (hours/day)	Tier[4]
Demolition	Concrete/Industrial Saws	Diesel	1	81	8	Tier 4
	Rubber Tired Dozers	Diesel	1	247	1	Tier 4
	Tractors/Loaders/Backhoes	Diesel	2	97	6	Tier 4
Site Preparation	Graders	Diesel	1	187	8	Tier 4
	Tractors/Loaders/Backhoes	Diesel	1	97	8	Tier 4
Grading	Graders	Diesel	1	187	6	Tier 4
	Rubber Tired Dozers	Diesel	1	247	6	Tier 4
	Tractors/Loaders/Backhoes	Diesel	1	97	7	Tier 4
Building Construction	Cranes	Diesel	1	231	4	Tier 4
	Forklifts	Diesel	2	89	6	Tier 4
	Tractors/Loaders/Backhoes	Diesel	2	97	8	Tier 4
Architectural Coating	Air Compressors	Diesel	1	78	6	Tier 4

Notes:

1. Equipment list was provided by the Project Sponsor, informed by equipment types from CalEEMod User's Guide Appendix G.
2. All equipment is conservatively assumed to be diesel-fueled.
3. Construction equipment would operate an average daily usage hours spread over 7AM to 8PM, consistent with the City of San Francisco guidelines.
4. All pieces of constuction equipment were assumed to be Tier 4 to be consistent with the requirements that the project would be subject to as part of the Sponsor's conditions of approval under Mitigation Measure M-AQ-4a, which requires all pieces of construction equipment exceeding 25 horsepower that would operate for more than 20 hours total to meet the Tier 4 emission standards.

Abbreviations:

CalEEMod® - California Emissions Estimator Model®

References:

California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model (CalEEMod®), Version 2022.1. Available online at http://www.caleemod.com/

Table 4
Construction Trips
570 Market Street
San Francisco, CA

Phase	Year	Construction Days	Worker Trip Rates[1] (one-way trips/day)	Vendor Trip Rates[1] (one-way trips/day)	Hauling Trip Number[1] (one-way trips/phase)
Demolition	2023	40	10	0	74
Site Preparation	2023	20	5.0	0	0
Grading	2023	10	8.0	0	488
Building Construction	2023	145	52	20	0
	2024	262	52	20	0
	2025	64	52	20	0
Architectural Coating	2023	22	10	0	0
	2024	261	10	0	0
	2025	64	10	0	0

EMFAC Data[2]

Trip Type	EMFAC Settings	Fleet Mix	Fuel Type
Worker	San Francisco County Calendar Years 2023-2025 Annual Season Aggregated Model Year EMFAC2021	25% LDA, 50% LDT1, 25% LDT2	Gasoline
Vendor		50% MHDT, 50% HHDT	Diesel
Hauling		100% HHDT	Diesel

Notes:

1. Worker, vendor and hauling daily trip rates are provided by the Project Sponsor, informed by CalEEMod default information. Grading trips are based on construction information provided by the Project Sponsor and CalEEMod defaults. Demolition trips assume 16,195 sqft building demolition and CalEEMod defaults.
2. EMFAC data is consistent with CalEEMod default information.

Abbreviations:

ARB - [California] Air Resources Board
CalEEMod® - California Emissions Estimator Model®
EMFAC - EMission FACtor Model
LDA - light-duty automobiles
LDT - light-duty trucks
HHDT - heavy-heavy duty trucks
MHDT - medium-heavy duty trucks
sqft - square feet
VMT - vehicle miles traveled

References:

California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model (CalEEMod®), Version 2022.1. Available online at http://www.caleemod.co
California Air Resources Board (ARB) 2021. EMFAC2021. Available at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools

Table 5
Emission Factors for Entrained Roadway Dust
570 Market Street
San Francisco, CA

Road Dust Equation[1]

E [lb/VMT] = k*(sL)^0.91 * (W)^1.02 * (1-P/4N)

Parameters	Value
E = annual average emission factor in the same units as k	[calculated]
k = particle size multiplier for particle size range	
$PM_{2.5}$ (lb/VMT)	3.3E-04
sL = roadway silt loading [grams per square meter - g/m^2]	0.50
W = average weight of vehicles traveling the road [tons]	2.4
P = number of "wet" days in county with at least 0.1 in of precipitation during the annual averaging period	42
N = number of days in the averaging period	365

Entrained Road Dust Emission Factors	
$PM_{2.5}$ Emission Factor [lb/VMT]	4.2E-04

Notes:

1. Road dust equation and parameters are from the California Air Resources Board's (ARB) 2021 Miscellaneous Process Methodology 7.9 for Entrained Road Travel, Paved Road Dust. The silt loading emission factor is assumed 0.5 g/m^3 according to BAAQMD CEQA Guidelines. The number of "wet" days is obtained from CalEEMod® Appendix G Table 2 for San Francisco Downtown. Other parameters (average weight of vehicles, size multipliers) are from ARB 2021. $PM_{2.5}$ is assumed to be 15% of PM_{10} based on paved road dust sampling in California (ARB Speciation Profile #471), which is a more representative fraction than provided in the older AP-42 fugitive dust methodology as discussed in ARB 2021 (page 10).

Abbreviations:

ARB - [California] Air Resources Board
CalEEMod® - California Emissions Estimator Model®
EMFAC - EMission FACtor Model
g - gram
lb - pound
m^2 - meter squared
$PM_{2.5}$ - particulate matter less than 2.5 microns
PM_{10} - particulate matter less than 10 microns
VMT - vehicle miles traveled

References:

California Air Resources Board. 2021. Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust. March. Available online at: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/2021_paved_roads_7_9.pdf

BAAQMD. 2023. California Environmental Quality Act Air Quality Guidelines. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

Table 6
Modeled Emission Rates from Proposed Project Construction Sources
570 Market Street
San Francisco, CA

Emissions Rates

Phase	Year	Construction Emissions Rates[1,4]				
		Offroad[2]		Onroad[3]		
		DPM	$PM_{2.5}$ Exhaust	DPM	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Fugitive
		g/s				
Demolition	2023	2.4E-05	2.4E-05	2.3E-08	3.0E-08	1.0E-06
Site Preparation	2023	1.1E-05	1.1E-05	0	2.1E-09	2.1E-07
Grading	2023	8.0E-06	8.0E-06	1.5E-07	1.5E-07	1.2E-06
Building Construction	2023	9.1E-05	9.3E-05	7.3E-07	8.6E-07	2.2E-05
	2024	1.6E-04	1.7E-04	1.2E-06	1.5E-06	4.0E-05
	2025	4.0E-05	4.1E-05	2.9E-07	3.4E-07	9.7E-06
Architectural Coating	2023	2.9E-06	3.0E-06	0	4.5E-09	4.6E-07
	2024	3.4E-05	3.5E-05	0	5.2E-08	5.5E-06
	2025	8.4E-06	8.6E-06	0	1.2E-08	1.3E-06

Notes:

1. Construction TAC emissions were estimated from on-site off-road and on-road emissions, where all PM_{10} tailpipe emissions from diesel fueled vehicles and equipment are conservatively assumed to be DPM. All construction equipment were assumed to be disel-powered.
2. Emission rates from off-road construction equipment were estimated using equipment activity provided by the Project Sponsor and Tier 4 emission factors to meet Mitigation Measure M-AQ-4a.
3. Emission rates from on-road construction vehicles were estimated using trip assumptions provided by the Project Sponsor. Exhaust emission rates were estimated using EMFAC2021 and fugitive dust emission rates were estimated using the emission factor in Table 5.
4. The annualized modeled emission rates are calculated assuming a construction schedule between 7AM - 8PM (13 hours) and 365 days per year.

Abbreviations:

DPM - diesel particulate matter
EMFAC - EMission FACtor Model
$PM_{2.5}$ - particulate matter less than 2.5 microns
TAC - toxic air contaminant
g/s - grams/second

Table 7
Construction Modeling Parameters
570 Market Street
San Francisco, CA

Construction Area Sources

Source[1]	Source Type	Number of Sources	Area Source Dimension (m^2)	Release Height[2] (m)	Initial Vertical Dimension[3] (m)
Construction Equipment - Exhaust	Area[2]	1	659	5	1.2

Construction Volume Sources

Source[1]	Source Type	Leg	Top of Plume[4] (m)	Width of Plume[4] (m)	Release Height[4] (m)	Initial Vertical Dimension[4] (m)	Initial Lateral Dimension[4] (m)
On-Road Haul Trucks	Volume	Market St	5.1	23	2.55	2.4	10
		2nd St	5.1	22	2.55	2.4	10

Notes:

1. Modeled emission rates for emission sources are 1 gram/second to generate unit dispersion factors.
2. Exhaust area source release height is assumed to be 5 meters, consistent with SCAQMD LST Guidance.
3. Consistent with USEPA's AERMOD guidance, the initial vertical dimension of the modeled construction equipment exhaust area sources is the release height divided by 4.3.
4. Consistent with 2022 BAAQMD CEQA Guidelines, the top of the plume was calculated as 1.7*the vehicle height, which was assumed to be 3 meters following SF Planning Air Quality and Greenhouse Gas Analysis Guidelines, and the width of the plume was calculated as the width of the roadway + 6 meters. 2022 BAAQMD CEQA Guidelines calculates the release height for haul trucks as 0.5 times the top of the plume. According to 2022 BAAQMD CEQA Guidelines, the initial vertical dimension can be calculated as the top of the plume divided by 2.15 and the initial lateral dimension can be calculated as the width of the plume divided by 2.15. 2.15 is derived from the standard deviation of the estimated Gaussian normally distributed plume concentration which is 4.3. Since these volume sources are adjacent to one another, the plume expansion happens in only one direction (i.e., 4.3/2 = 2.15).

Abbreviations:

m - meter
m^2 - square meter
AERMOD - Atmospheric Dispersion Modeling
SCAQMD - South Coast Air Quality Management District
LST - Localized Significance Thresholds
USEPA - United States Environmental Protection Agency

References:

SCAQMD. 2008. Final Localized Significance Threshold Methodology. July. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2

BAAQMD. 2023. Bay Area Air Quality Management District California Environmental Quality Act Air Quality Guidelines. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-5-project-air-quality-impacts_final-pdf.pdf?la=en

USEPA. 2022. User's Guide for the AMS/EPA Regulatory Model (AERMOD). U.S. EPA Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. Available at: https://gaftp.epa.gov/Air/aqmg/SCRAM/models/preferred/aermod/aermod_userguide.pdf

San Francisco Planning. 2024. Air Quality and Greenhouse Gas Analysis Guidelines. Available online at: https://sfplanning.org/air-quality

Table 8
Construction and Operational Exposure Parameters
570 Market Street
San Francisco, CA

Construction + Operation Scenario

Receptor Type	Project Phase	Year	Receptor Age Group	Exposure Parameters							
				Daily Breathing Rate (DBR)[1]	Exposure Duration (ED)[2]	Fraction of Time at Home (FAH)[3]	Exposure Frequency (EF)[4]	Age Sensitivity Factor[5]	Averaging Time (AT)[6]	Modeling Adjustment Factor[7]	Adjusted Intake Factor, Inhalation (IFinh)
				[L/kg-day]	[years]	[unitless]	[days/year]		[days]	[unitless]	[m^3/kg-day]
Resident	Construction	2023	3rd Trimester	361	0.30	1.0	350	10	25,500	1.0	0.015
			Age 0-<2	1,090	0.70	1.0		10		1.0	0.10
		2024	Age 0-<2	1,090	1.0	1.0		10		1.0	0.15
		2025	Age 0-<2	1,090	0.30	1.0		10		1.0	0.045
			Age 2-<16	572	0.70	1.0		3.0		1.0	0.016
	Operation	2025	Age 0-<2	1,090	0.30	1.0		10		1.0	0.045
			Age 2-<16	572	0.70	1.0		3.0		1.0	0.016
		2026+	Age 2-<16	572	13	1.0		3.0		1.0	0.31
			Age >16	261	14	0.73		1.0		1.0	0.036
Worker	Construction	2023	Age 16-70	230	1.0	--	250	1.0		4.2	0.0095
		2024	Age 16-70	230	1.0	--		1.0		4.2	0.0095
		2025	Age 16-70	230	1.0	--		1.0		4.2	0.0095
	Operation	2025	Age 16-70	230	1.0	--		1.0		4.2	0.0095
		2026+	Age 16-70	230	22	--		1.0		4.2	0.208

Operation Only Scenario

Receptor Type	Project Phase	Year	Receptor Age Group	Exposure Parameters							
				Daily Breathing Rate (DBR)[1]	Exposure Duration (ED)[2]	Fraction of Time at Home (FAH)[3]	Exposure Frequency (EF)[4]	Age Sensitivity Factor[5]	Averaging Time (AT)	Modeling Adjustment Factor[6]	Adjusted Intake Factor, Inhalation (IFinh)
				[L/kg-day]	[years]	[unitless]	[days/year]		[days]	[unitless]	[m^3/kg-day]
Resident	Operation	All	3rd Trimester	361	0.25	1.0	350	10	25,500	1.0	0.012
			Age 0-<2	1,090	2.0	1.0		10		1.0	0.30
			Age 2-<16	572	14	1.0		3.0		1.0	0.33
			Age 16-30	261	14	0.73		1.0		1.0	0.037
Worker	Operation	All	Age 16-70	230	25	--	250	1.0		4.2	0.237

Notes:

1. Daily breathing rates by receptor type and age bin are consistent with Table 34 of Appendix E of the 2022 BAAQMD CEQA Guidelines.
2. Annual exposure duration represents one full year. The exposure duration for all years is 1, as the health risk assessment is based on annual emissions. For the construction and operation scenario, residential receptors are assumed to begin the third trimester at the beginning of construction and continue exposure for 30 years after birth. For the operation-only scenario, exposure begins at the start of operations.
3. Fraction of time spent at home is conservatively assumed to be 1 (i.e., 24 hours/day) for age groups from the third trimester to less than 16 years old based on the recommendation from BAAQMD (BAAQMD 2022) and OEHHA (OEHHA 2015). The fraction of time at home for adults age 16-30 reflects default OEHHA guidance (OEHHA 2015) as recommended by BAAQMD (2022).
4. Exposure frequency is consistent with 2022 BAAQMD CEQA Guidelines and was determined as follows:
   Residents: reflects default residential exposure frequency from Cal/EPA
   Worker: reflects default worker exposure frequency, consistent with 2022 BAAQMD CEQA Guidelines.
5. Age Sensitive Factors account for an "anticipated special sensitivity to carcinogens" of infants and children as recommended in the OEHHA Technical Support Document and current OEHHA guidance. This is consistent with the 2022 BAAQMD CEQA Guidelines.
6. Modeling adjustment factors are calculated based on the methodology from OEHHA's Guidance Manual for Preparation of Health Risk Assessments (2015). For construction and operations, the MAF for the worker receptors are calculated to adjust from 24 hours/day to 8 hours/day and from 7 days/week to 5 days/week ([24 hours/8 hours] * [7 days/5 days] = 4.20); Resident types are expected to be exposed 24 hours/day and 7 days/week; as a result, the MAF is 1.

Table 8
Construction and Operational Exposure Parameters
570 Market Street
San Francisco, CA

Calculation:

IF_{inh} = DBR * FAH * EF * ED * CF / AT

CF = 0.001 (m^3/L)

$MAF=H_{Resident}/H_{Source}*D_{Resident}/D_{Source}*DF$

$DF=H_{Coin}/H_{Worker}*D_{Coin}/D_{Worker}$

Abbreviations:

AT - averaging time
BAAQMD - Bay Area Air Quality Management District
DBR - daily breathing rate
ED - exposure duration
EF - exposure frequency
FAH - fraction of time at home
$H_{Resident}$ - Hours per day of residential exposure (24 hours)
$D_{Resident}$ - Number of days per week that the resident is exposed (7 days)
DF - Discount Factor
H_{Coin} - Hour per day that the receptor's schedule coincides with when the source is emitting(hours)
D_{Worker} - Number of days that the receptor is at the site per week (days)
IF_{inh} - intake factor
kg - kilogram
L - liter
m^3 - cubic meter
OEHHA - Office of Environmental Health Hazard Assessment
MAF_{cancer} - Modeling Adjustment Factor for cancer risk
H_{Source} - Number of hours per day that the source operates (hours)
D_{Source} - Number of days per year that the source operates (days)
H_{Worker} - Hours that the receptor is at the site per day (hours)
D_{Coin} - Number of days per week that receptor's schedule coincides with when the source isemitting (days)

References:

OEHHA. 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. Available at https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

BAAQMD. 2022. Air Quality Guidelines Appendix E: Recommended Methods For Screening and Modeling Local Risks and Hazards. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-e-recommended-methods-for-screening-and-modeling-local-risks-and-hazards_final-pdf.pdf?la=en

Table 9
Toxicity Values
570 Market Street
San Francisco, CA

Chemical[1]	Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Chronic REL ($\mu g/m^3$)
Diesel PM	1.1	5.0

Notes:

1. Chemicals presented in this table reflect air toxic contaminants in the proposed fuel types that are expected from off-road equipment and on-road truck trips and the generator operation.

Abbreviations:

$\mu g/m^3$ - micrograms per cubic meter

ARB - [California] Air Resources Board

Cal/EPA - California Environmental Protection Agency

$(mg/kg\text{-}day)^{-1}$ - per milligram per kilogram-day

OEHHA - Office of Environmental Health Hazard Assessment

PM - particulate matter

REL - reference exposure level

Reference:

California Air Resources Board (ARB)/ California Office of Environmental Health Hazard Assessment (OEHHA). 2023. Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values. Updated on: May 1, 2023. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/toxics/healthval/contable05012023.pdf

Table 10
Estimated Emissions from Emergency Generator Operation
570 Market Street
San Francisco, CA

Emission Factors for Diesel Emergency Generator

Engine Type	Fuel	Engine Size Range (hp)		Engine Emission Factors[1] (g/bhp-hr)	
		Minimum	Maximum	PM_{10}	$PM_{2.5}$
Emergency Generator	Diesel	100	175	0.015	0.015

Emergency Generator Information[2]

Scenario	Engine Type	Annual Operation[3]	Load Factor	Size	Size
		hr/yr		kW	hp
Project Operation	Emergency Generator	50	0.74	94	126

Emergency Generator Emissions

Scenario	Engine Type	Size (hp)	Quantity	Emission Rate (g/s)	
				PM_{10}	$PM_{2.5}$
Project Operation	Emergency Generator	126	1	2.2E-06	2.2E-06

Notes:

1. Engine emission factors are based on BAAQMD BACT guidelines for Tier 4 engines.
2. Number, size, and fuel-type of emergency engine were provided by the Project Sponsor.
3. Operation for routine maintenance and testing was conservatively assumed to be 50 hours per year, the maximum allowable by the Airborne Toxics Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and based on SF Planning Air Quality and Greenhouse Gas Guidelines.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
BACT - Best Available Control Technology
CalEEMod® - CALifornia Emissions Estimator MODel®
g/bhp-hr - grams per brake horsepower hour
hp - horsepower
kW - kilowatt
NOx - oxides of nitrogen
PM_{10} - PM less than 10 microns in aerodynamic diameter
$PM_{2.5}$ - PM less than 2.5 microns in aerodynamic diameter
ROG - reactive organic gases
yr - year
hr - hour

References:

California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model (CalEEMod®), Version 2022.1. Available online at http://www.caleemod.com/

BAAQMD BACT Guidelines. Available online at https://www.baaqmd.gov/~/media/files/engineering/bact-tbact-workshop/combustion/96-1-3.pdf?rev=c824176c4d5340bd81b8e12b3408b526&sc_lang=en

San Francisco Planning. 2024. Air Quality and Greenhouse Gas Analysis Guidelines. Available online at: https://sfplanning.org/air-quality

Table 11
Emergency Generator Modeling Parameters
570 Market Street
San Francisco, CA

Source	Source Type	Number of Sources	Release Height[2]	Exit Temperature[2]	Exit Diameter[2]	Exit Velocity[2]	Annual Average Emission Rate[3]
			(m)	(K)	(m)	(m/s)	(g/s)
Generator[1]	Point	1	95	740	0.18	45	2.2E-06

Notes:

1. One generator (rated 126 horsepower) would be located at the proposed building.
2. Stack parameters for exit temperature, diameter, and velocity are based on generator defaults from the San Francisco Citywide HRA. Release height is specified by the Project Sponsor.
3. Annual emissions were based on 50 hours of non-emergency operation, as shown in Table 10.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
DPM - diesel particulate matter
g/s - grams per second
HRA - Health Risk Assessment
K - Kelvin
m - meter
m/s - meters per second
$PM_{2.5}$ - particulate matter less than 2.5 microns in diameter

References:

San Francisco Department of Public Health (SF DPH), San Francisco Planning Department (SF Planning), and Ramboll. 2020. San Francisco Citywide Health Risk Assessment: Technical Support Documentation. September.

Table 12
Maximum Project Excess Lifetime Cancer Risk, Chronic HI and $PM_{2.5}$
570 Market Street
San Francisco, CA

Source Category	Project Construction + Operation			Project Operation		
	Excess Lifetime Cancer Risk[1]	Chronic HI[2,3]	$PM_{2.5}$ Concentration[3]	Excess Lifetime Cancer Risk[1]	Chronic HI[2,3]	$PM_{2.5}$ Concentration[3]
	in a million	unitless ratio	µg/m³	in a million	unitless ratio	µg/m³
Construction	1.9	0.019	0.10	--	--	--
Emergency Generator	9.5E-04	--	--	1.5	0.0012	0.0059
Total	**1.9**	**0.019**	**0.10**	**1.5**	**0.0012**	**0.0059**
Receptor Type	Off-site Worker	Off-site Worker	Off-site Worker	On-site Worker	On-site Worker	On-site Worker
Receptor Height (meters)[4]	4.8	4.8	4.8	97.8	97.8	97.8
Year	--	2024	2024	--	All	All
UTMx	552724	552724	552724	552712	552712	552712
UTMy	4182656	4182656	4182656	4182667	4182667	4182667

Notes:

1. Excess lifetime cancer risks were estimated using the following equation:

   $Risk_{inh} = \Sigma C_i \times CF \times IF_{inh} \times CPF_i \times ASF$

   Where:

   $Risk_{inh}$ = Cancer Risk for the Inhalation Pathway (unitless)
   C_i = Annual Average Air Concentration for Chemical "i" ug/m³
   CF = Conversion Factor (mg/ug)
   IF_{inh} = Intake Factor for Inhalation (m³/kg-day)
   CPF_i = Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$
   ASF = Age Sensitivity Factor (unitless)

2. Chronic HI for each receptor was estimated using the following equation:

   $HI_{inh} = \Sigma C_i / cREL$

   Where:

   HI_{inh} = Chronic HI for the Inhalation Pathway (unitless)
   C_i = Annual Average Air Concentration for Chemical "i" (ug/m³)
   cREL = Chronic Reference Exposure Level (ug/m³)

3. $PM_{2.5}$ concentration and Non-Cancer Hazard Index values represent annual values.

4. All receptors were modeled with a flag-pole height of 1.8 m, consistent with the San Francisco Citywide HRA. Additional on-site and off-site receptors immediately surrounding the site were modeled at the first 3 stories and then at intervals of 15 meters (approximately 5 stories) depending on the building height.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
HI - Hazard Index
HRA - Health Risk Assessment
m³ - cubic meter
OEHHA - Office of Environmental Health Hazard Assessment
PM - particulate matter
µg - microgram
UTMx, UTMy - Universal Transverse Mercator coordinates

Reference:

BAAQMD. 2023. California Environmental Quality Act Air Quality Guidelines. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

OEHHA. 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. February.

Table 13
Construction and Operation Cumulative Risks and Hazards
570 Market Street
San Francisco, CA

Source	Off-site Worker Construction + Operation Lifetime Excess Cancer Risk (in a million)	Off-site Worker Construction + Operation $PM_{2.5}$ Concentration ($\mu g/m^3$)
2020 Citywide Background Risk[1]	571	13
Project Construction + Operations[2]	1.9	0.10
Foreseeable Future Projects	--	--
Cumulative Total[3]	**573**	**13**
Project Contribution[4]	**1.9**	**0.10**
Year	--	2024
UTMx	552724	552724
UTMy	4182656	4182656

Notes:

1. Background cancer risks concentrations for maximally exposed individual receptors (MEIRs) were obtained from the 2020 San Francisco Citywide HRA database.
2. Construction includes impacts from off-road construction equipment and on-road construction trips. Operation includes impacts from emergency generators.
3. Cumulative total health impacts are the sum of the Proposed Project impacts, background impacts included in the San Francisco Citywide HRA, and background impacts for future projects not included in the San Francisco Citywide HRA.

Abbreviations:

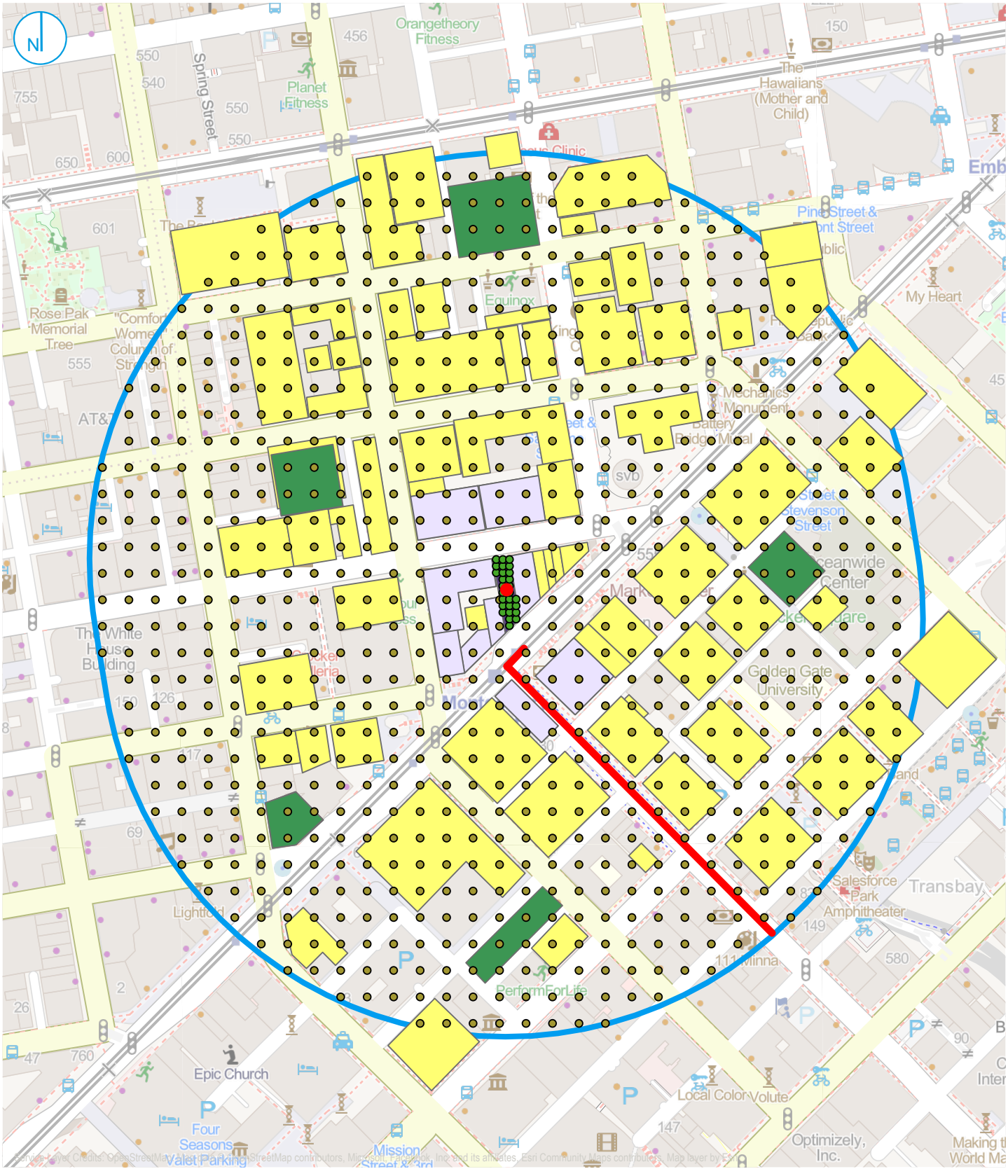
HRA - Health Risk Assessment
m - meter
MEIR - Maximally Exposed Individual Receptor
$PM_{2.5}$ - particulate matter 2.5 microns or less
SFDPH - San Francisco Department of Public Health
µg - microgram
UTMx, UTMy - Universal Transverse Mercator coordinates

References:

San Francisco Department of Public Health (SF DPH), San Francisco Planning Department (SF Planning), and Ramboll. 2020. San Francisco Citywide Health Risk Assessment: Technical Support Documentation. September.

San Francisco Planning. 2024. Air Quality and Greenhouse Gas Analysis Guidelines. Available online at: https://sfplanning.org/air-quality

FIGURES



Site
1,000ft Buffer Zone
Generator
On-site Receptors
Off-site Receptors
Construction Haul Route
Residential Areas
Buildings Included in Dispersion Modeling
Buildings with Receptors at Multiple Heights

0 250 500 Feet

MODEL SETUP CONFIGURATION

570 Market Street
San Francisco, CA

FIGURE 01

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

Table 1
Land Use Summary for Proposed Project
570 Market Street
San Francisco, CA

Project Land Use Type[1]	CalEEMod® Land Use Type	CalEEMod® Land Use Subtype	Value	Units	Square Footage
Hotel	Recreational	Hotel	211	Room	122,947
Retail	Retail	Convenience Market (24 hour)	3.4	1000sqft	3,386

Notes:

1. Project land use type and square footage provided by the Project Sponsor.

Abbreviations:

CalEEMod® - California Emissions Estimator Model®

sqft - square feet

References:

California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model (CalEEMod®), Version 2022.1. Available online at http://www.caleemod.com/

ATTACHMENT B - Construction Noise Supplemental Information

MEMORANDUM

DATE: 16 April 2025

NAME:	COMPANY:	EMAIL:
Ryan Shum	San Francisco Planning	ryan.shum@sfgov.org

FROM: Blake Wells, LEED GA and Alex Salter, PE

SUBJECT: 570 Market Street
Acoustical Response to Appeal of Preliminary MND

PROJECT: 21-0195

As the acoustical consultant for the initial project noise study, we have reviewed the Appeal of 570 Market Street Preliminary MND dated 19 March 2025.

As a firm, Salter consults on over 900 projects worldwide each year, from its headquarters in San Francisco and branch offices in San Jose, Los Angeles, Honolulu, and Seattle. In 1975, Charles Salter founded the company on principles of sound engineering, scientific process, inquisitive problem solving, and personal integrity. We are a team of Professional Engineers, LEED Accredited Professionals, Certified Technology Specialists, Registered Communications Distribution Designers, Fellows of the Audio Engineering Society, and Fellows of the Acoustical Society of America.

The following memo represents our acoustical responses to comments made by Wilson Irhig contained in the project appeal letter with respect to the expected construction noise and vibration at the project.

Construction Noise

Wilson Ihrig discusses the following two comments in the appeal letter.

Comment #1 – Usage Factor

To calculate the Project's construction-related noise levels, the PMND's Noise Analysis relied on the General Assessment criteria from the Federal Transit Administration Transit Noise and Vibration Assessment Manual ("FTA Manual'). (PMND, p. 38; Noise Analysis, p. 5.) Wilson Ihrig's comments in the appeal letter state that the Noise Analysis failed to properly apply the FTA Manual's criteria, thereby underestimating the Project's construction noise impacts and failing to identify and disclose the Project's significant noise impacts. (Ex. A, pp. 1-2.)

First, Wilson Ihrig found that the Noise Analysis failed to apply the proper "usage factor" for construction equipment, which is "[t]he percent of time a piece of equipment typically operates." (Ex. A, pp. 1-2.) Under the FTA Manual's criteria, a proper noise assessment assumes simultaneous, full-power operation (i.e., a usage factor of 100 percent) of the two loudest pieces of construction equipment for each construction phase. (FTA Manual, pp. 177-78; Ex. A, p. 2.) However, instead of applying a 100 percent usage factor, the PMND's Noise Analysis applied usage factors of 16 to 50 percent (Noise Analysis, Table 4, pp. 7-8), which "underestimates and, therefore, misrepresents expected construction noise levels." (Ex. A, p. 2.)

Response

The FTA manual includes the following equation (Eq. 7-1) to predict construction noise impacts for projects:

$$L_{eq.equip} = L_{emission} + 10\log(Adj_{Usage}) - 20\log(\frac{D}{50}) - 10G\log(\frac{D}{50}) \qquad \textbf{Eq. 7-1}$$

where:

$L_{eq,equip}$ = $L_{eq(t)}$ at a receiver from the operation of a single piece of equipment over a specified time period, dBA
$L_{emission}$ = noise emission level of the particular piece of equipment at the reference distance of 50 ft, dBA
Adj_{Usage} = usage factor to account for the fraction of time that the equipment is in use over the specified time period
D = distance from the receiver to the piece of equipment, ft
G = a constant that accounts for topography and ground effects

Furthermore, the FTA General Assessment method includes the following guidance on values to be used for Usage Factor and other parameters, such as Ground Effect, as follows. While the General Assessment indicates a usage factor of 1 (i.e., equipment operating 100% of the time), the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM), which is also referenced in the FTA document, includes usage factors for various equipment. These were used to further refine the General Assessment analysis.

Option A: General Assessment – Determine the quantities for Eq. 7-1 based on the following assumptions for a General Assessment of each phase of construction.

- **Noise emission level ($L_{emission}$)** – Determine the emission level at 50 ft according to noise from typical construction equipment described above and Table 7-1.
- **Usage factor (Adj_{Usage})** – Assume a usage factor of 1. This assumes a time period of one-hour with full power operation. Most construction equipment operates continuously for periods of one-hour or more during the construction period.

  Therefore, 10log(Adj_{usage}) = 0 and can be omitted from the equation.
- **Distance (D)** – Assume that all equipment operates at the center of the project, or centerline for guideway or highway construction project.
- **Ground effect (G)** – G = 0 assuming free-field conditions and ignoring ground effects. If ground effects are of specific importance to the assessment, consider using the Detailed Analysis procedure.

Only determine the $L_{eq.equip}$ for the two noisiest pieces of equipment expected to be used in each phase of construction. Then, sum the levels for each phase of construction using decibel addition.

With respect to criteria for predicting impacts, the FTA General Assessment criteria establish an A-weighted noise level threshold based on the category of receiving land-use and time of day as follows:

Option A: General Assessment – Compare the combined $L_{eq.equip(1hr)}$ for the two noisiest pieces of equipment for each phase of construction determined in Section 7.1, Step 3 to the criteria below. Then, identify locations where the level exceeds the criteria.

Table 7-2 General Assessment Construction Noise Criteria

Land Use	$L_{eq.equip(1hr)}$, dBA	
	Day	Night
Residential	90	80
Commercial	100	100
Industrial	100	100

In response to Wilson Ihrig's comments, we have recalculated the expected construction noise levels during each phase of construction without usage factors, per the General Assessment method above.

Table 1 shows the maximum noise levels (L_{max}) produced by various types of equipment proposed by the project sponsor at reference distances of 20 feet and 100 feet without associated usage factors.

Table 1: Project Construction Equipment Typical Noise Levels[1]

Equipment	Noise Level (dBA, L_{max}) at 20 Feet	Noise Level (dBA, L_{max}) at 100 Feet
Deep Foundations		
Drill Rig	92	78
Excavator	89	75
Cutter Soil Mix (CSM) Rig	91	77
After Foundations		
Cranes	89	75
Foundation and Deck Pours		
Concrete Pump	89	75
Demolition		
Jackhammer	93	79
Various		
Air Compressor	86	72
Cement Mixer	87	73
Concrete Saws	98	84
Generators	81	67
Pressure Washer	93	79
Skid Steer Loader	87	73
Welders	82	68

Table 2 shows the worst-case noise levels for each major phase of construction (i.e., the two loudest pieces of equipment from each construction phase operating simultaneously) at the nearest sensitive uses from daytime construction (333 Bush Street residences approximately 450 feet away;

[1] Based on the US EPA document, "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances" 1971, noise data from Federal Highway Administration (FHWA) *Roadway Construction Noise Model User's Guide*, 2006, and data from other Salter Projects.

44 Montgomery Street approximately 20 feet away[2]). It should be noted that this table assumes no ground effect and a 20*log distance drop-off (i.e., 6 dBA per doubling of distance) per the specific guidelines of the General Assessment method included above.

Table 2: Calculated Noise Levels at Nearest Off-Site Sensitive Use from Daytime Construction

Phase	Loudest Two Noise Sources	Estimated Construction Noise Level (dBA) at Nearest Residential Receiver (450 feet)	Exceeds 90 dBA Residential Standard?	Estimated Construction Noise Level (dBA) at Nearest Commercial Receiver (20 feet)	Exceeds 100 dBA Commercial Standard?
1	CSM Rig, Jackhammer	68	No	95	No
2	Concrete Saws, Jackhammer	72	No	99	No
3	Concrete Pump, Excavator	65	No	92	No
4	Drill Rig, Cranes	67	No	94	No
5	Pressure Washer, Cranes	67	No	94	No

As shown, construction noise levels are expected to range from 65 to 72 dBA at the nearest residential receptor at a distance of 450 feet, which is below the FTA General Assessment criterion of 90 dBA. Noise levels are also expected to range from 92 to 99 dBA at the nearest commercial receiver, which is below the FTA General Assessment criterion of 100 dBA. Therefore, no changes are required to the conclusions in the PNMD.

Comment #2

Section II.A claims that the calculated construction noise levels should use a factor of 3 dB of attenuation per doubling of distance.

> *Second, Wilson Ihrig found that the Noise Analysis's assumptions for how construction noise would attenuate over distance do not accurately reflect the conditions surrounding the Project site. (Ex. A, p. 2.) The Noise Analysis assumed that construction noise would attenuate at 6 dB per doubling of distance. (Ex. A, p. 2.) However, as Wilson Ihrig explains, sound would attenuate at a far lesser rate due to conditions in the Financial District:*

[2] Our original assessment used a distance of 25 feet, which is the centerline distance to the nearest property plane. We have updated the distance to the nearest commercial property to 20 feet, so that the analysis can be directly compared to WIA.

> *An adjustment of 6 dB per doubling of distance is only appropriate for calculations in the "free field." As described by Egan, "free-field conditions occur when sound waves are free from the influence of reflective surfaces (e.g., open areas outdoors, anechoic rooms)." The project site is located within the Financial District of San Francisco and is surrounded by six- to 43-story tall buildings. The facades of these buildings are all acoustically reflective, thereby making use of a "free field" calculation erroneous. On the contrary, the "canyons" of built-up downtowns can act as waveguides for noise, by reflecting and constraining sound to travel along them. This will lead to higher noise levels at receivers than would be calculated using free field conditions. At a minimum, a more conservative approach to attenuation over distance, such as 3 dBA per doubling of distance, should be used account for the reverberant nature of the Financial District.*

(Ex. A, p. 2 [citation omitted].) By relying on an overestimation of sound attenuation around the Project site, the Noise Analysis again underestimates the construction-related noise impacts of the Project.

Response

Our analysis follows Eq 7-1 of the FTA General Assessment, which includes a distance drop-off term of 20*log (see highlighted portions of Eq. 7-1, below). This equates to a 6 dB reduction per doubling of distance. Using a 10*log distance drop-off (i.e., 3 dB reduction per doubling of distance) would be a deviation from the FTA General Assessment method.

$$L_{eq.equip} = L_{emission} + 10\log(Adj_{Usage}) - 20\log(\frac{D}{50}) - 10G\log(\frac{D}{50}) \qquad \textbf{Eq. 7-1}$$

where:

$L_{eq,equip}$ = $L_{eq(t)}$ at a receiver from the operation of a single piece of equipment over a specified time period, dBA

$L_{emission}$ = noise emission level of the particular piece of equipment at the reference distance of 50 ft, dBA

Adj_{Usage} = usage factor to account for the fraction of time that the equipment is in use over the specified time period

D = distance from the receiver to the piece of equipment, ft

G = a constant that accounts for topography and ground effects

Furthermore, WIA's assumptions are speculative and are not based on actual measured data at the project site. The distance factor used in the PNMD is consistent with the FTA General Assessment method.

MUNICON
WEST COAST

November 11, 2025

Melinda Sarjapur
Reuben, Junius & Rose, LLP
msarjapur@reubenlaw.com

Subject: Municon Vibration Experience Memo

To Whom it May Concern:

Introduction to Municon West Coast, Inc:
Founded in 1991, Municon West Coast is a trusted structural and geotechnical instrumentation monitoring services provider with extensive experience in vibration monitoring in high-density urban settings. For over 25 years, Municon has provided monitoring services for both public and private projects to contractors, engineers, and other key stakeholders in the industry. We have provided documentation and instrumentation services on over 1,300 projects in California, Nevada, Washington and Western Canada for a wide range of public and private clients. We are pleased to continually work with many of the ENR top 100 heavy construction firms, such as Flatiron Construction, Kiewit Pacific, Tutor Saliba, Skanska, MCM Construction, Onni, Granite, CC Myers, Swinerton, Webcor and Clark Construction.

Services:
Municon specializes in providing advanced automated monitoring systems to help ensure the safety and integrity of buildings, excavations, dams, levees, bridges, mines, embankments, and slopes. Our cutting-edge technology and contemporary monitoring systems enable us to provide real-time data and analysis, ensuring that all parties have the information they need to manage the risk and ensure project success. Many of the urban buildings we monitor are in zero lot-line conditions and are located adjacent to historic properties.

Municon's California Licensed Geologist or Civil Engineer supervise all related work, including instrumentation layout, installation, project execution, final report, and oversee the instrumentation technicians.

Vibration Monitoring:
Municon provides vibration monitoring services for heavy construction operations on the West Coast. With over 130 general purpose construction monitoring seismographs, accelerometers and related technical equipment, we have provided vibration monitoring services to help control the impacts of vibrations from construction operations such as heavy demolition and blasting, pile driving, deep dynamic compaction, tunneling, and deep excavations in urban, often zero lot-line settings.

We offer both on-site active vibration monitoring and remote vibration monitoring. The on-site active monitoring, a qualified technician handles and operates the seismographs, perfect for short-term projects such as pile driving or blasting. For longer construction projects, such as tunneling, and deep excavation, remote monitors are installed and monitored for extended periods of time. Oftentimes, Municon is asked to monitor historical buildings adjacent to work sites to ensure we capture and pass along critical vibration

data to our clients in a near real-time fashion. With this monitoring data in-hand, timely engineering interventions can be executed to save important structures from damage.

The vibration monitors we use are industry standard construction monitoring seismographs with the following minimum features:

- Seismic range: 0.01 to 4 inches per second with accuracy of ± 5 percent of the measured peak particle velocity or better at frequencies between 10 Hz and 100 Hz, and with a resolution of 0.01 inch per second or less.
- Frequency response (± 3 dB points): 2 to 250 Hz.
- Three channels for simultaneous time-domain monitoring of vibration velocities in digital format on three perpendicular axes.
- Capable of being configured, read, and downloaded remotely via cellular modem.
- Two power sources: internal rechargeable battery and charger and 115 volts AC. The internal battery will be capable of supplying power to monitor vibrations continuously for at least three months. We will connect to AC power outlet where possible. We will install solar panels and/or external batteries to recharge batteries where necessary.
- Continuous monitoring mode capable of recording single-component peak particle velocities and recording waveforms in three axes of events over a specified threshold.

In our experience, vibration monitoring has provided the following benefits:

1. Protection of Adjacent Structures: Continuous monitoring ensures that vibration levels remain below established thresholds by alerting the contractor, reducing the potential for cosmetic or structural damage to nearby buildings.

2. Documentation and Transparency:
All measurements are time-stamped and stored, providing an objective record of vibration levels throughout construction. This documentation is critical for separating pre-existing conditions from construction-related impacts and supports fair and clear resolution of any community inquiries.

3. Real-Time Alerts and Adaptive Construction:
The system provides immediate notification if vibration approaches threshold levels. This allows the construction team to adjust equipment or methods before exceedances occur, minimizing risk to surrounding properties.

4. Community Confidence and Reduced Complaints:
Implementing monitoring shows that the Contractor is taking proactive steps to safeguard the neighborhood. This increases stakeholder confidence, reduces complaints, and supports constructive communication with adjacent property owners.

List of Representative Vibration Monitoring Projects:

- Coit Tower, San Francisco CA
- Pier 39, San Francisco CA
- 555 Bryant Street CEQA Mitigation Project, San Francisco CA
- Potrero Power Station, San Francisco CA

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- 900 Innes Ave, San Francisco, CA
- Monarch/Llewellyn project and Winchester Central project, Campbell CA
- San Francisco Oakland Bay Bridge West Approach
- San Francisco International Airport Expansion
- Underground Flow Equalization System (UFES), San Mateo CA
- Cypress Freeway Projects, Oakland CA
- Los Angeles City Hall Restoration and Seismic Retrofit
- Pacific Bell Park aka SBC Park aka AT&T Park
- I-5 widening project, Los Angeles
- Interstate Route 238/580/880 Improvement
- Lower American River Levee Repair, Sacramento CA
- UCSF Parnassus, San Francisco, CA
- Lower San Joaquin River Levee Repair, Stockton CA
- More project details are available upon request

Please contact us for additional information and we will be pleased to respond to your request.

Yours truly,

Austyn Crites
Operations Manager

Reviewed By

Marcus Pacheco, M.Sc.
Technical Director

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William "Tommy" Poole

SENIOR PROEJCT GEOLOGIST

Summary

Tommy Poole is a licensed geologist with 19 years' experience in oversight of environmental remediation, geotechnical instrumentation monitoring, noise and vibration monitoring, hydroacoustic monitoring, pre-/post-construction photo and video surveys and project management. As senior project geologist, he provides expertise for Municon's geotechnical instrumentation services.

Education

Bachelor of Arts, Geologic Sciences
University of Kentucky, Lexington

Employment History

Municon West Coast, San Francisco, California
Senior Project Geologist

Certifications

Professional Geologist, California
License Number 8921, Expiration Date September 30, 2025

Relevant Projects

McKinnly Water Vault, Sacramento, CA

- **2019-2021**
- **Vibration Monitoring**
- **Pre-construction survey**

Configured and installed in-place inclinometers to monitor slope stability of the shored excavation for a 6 Mgal. stormwater detention vault at McKinley Park. Coordinated and conducted pre-construction condition surveys and vibration monitoring of adjacent properties and haul routes. Responsible for configuration of data display website and for reporting instrumentation data.

Columbia Street Emergency Sewer Repair, Seattle, WA

- **2023**
- **Vibration Monitoring**
- **Settlement Monitoring**

Developed vibration and settlement monitoring program for a vibration sensitive water main adjacent to a deep excavation. Installed and configured Automated Motorized Total Station which monitored utility settlement prisms in near-real time.

Willamette Valley Water Transmission Pipeline, Portland, OR

- **2022-2023**
- **Vibration Monitoring**
- **Settlement Monitoring**

Prepared vibration risk analysis and conducted pre-construction condition surveys of properties near trenchless construction of the 66-in water transmission pipeline. Responsible for installation and monitoring settlement casings along a 2000 ft. long tunnel beneath the Tualatin River

New Irvington Tunnel, Sunol, CA

- **Vibration Monitoring**

Responsible for overseeing installation, monitoring and reporting of manual inclinometers, multipoint borehole extensometers, settlement casings, in-place inclinometers, vibrating wire piezometers, sound level meters and seismographs. Logged borings and observed installation with dataloggers. Conducted vibration and overpressure monitoring of blasting.

San Fransiquito Creek Flood Protection, East Palo Alto, CA

- **Pre-construction survey**
- **Vibration Monitoring**

Coordinated and conducted pre-construction photo surveys of 80 properties (primarily residential) adjacent to the levee realignment and flood wall construction. Responsible for installation, monitoring, and reporting of seismographs.

New Irvington Tunnel, Sunol, CA

- **Vibration and overpressure monitoring**

Responsible for overseeing installation, monitoring and reporting of manual inclinometers, multipoint borehole extensometers, settlement casings, in-place inclinometers, vibrating wire piezometers, sound level meters and seismographs. Logged borings and observed installation with dataloggers. Conducted vibration and overpressure monitoring of blasting.

Presidio Parkway Project, San Francisco, CA

- **Vibration Monitoring**

Conducted noise and vibration monitoring at 40 historical buildings adjacent to bridge replacements, roadway realignments, ground improvement zones and cut and cover tunnels.

I-880 / 5th Ave Bridge Replacement, Oakland, CA

- **Settlement Monitoring**
- **Vibration Monitoring**

Responsible for installation and monitoring of settlement plates and vibrating wire piezometers to record pre-load settlement rates during staged construction of embankments and bridge approaches. Conducted hydroacoustic monitoring and reporting during in-water pile driving for a temporary work platform.

Napa River Levee Restoration, Napa, CA

- **Inclinometer monitoring**
- **Vibration Monitoring**

Installed and maintained geotechnical instrumentation along levee improvements near historical waterfront properties. Municon provided near-real time monitoring of in-place inclinometer arrays, vibrating wire piezometers, seismographs and tilt meters.

San Francisco – Oakland Bay Bridge Replacement, San Francisco, CA

- **Vibration Monitoring**
- **Pre- and Post construction monitoring**

Responsible for installation and monitoring of seismographs and sound level meters during numerous phases of construction to replace the East Span of the SFOBB. Conducted pre- and postconstruction documentation at historic Navy buildings and US Coast Guard barracks on Yerba Buena Island. Installed and monitoring seismographs on piers of the new bridge during controlled blast demolition of marine foundations.

Oakland Airport BART Connector, Oakland, CA

- **Sound Level attenuation survey**
- **Vibration monitoring**

Performed sound level attenuation surveys, including deployment, reading, and reporting, during indicator pile installation to determine likely impacts of pile-driving on nearby residences and hotels. Installed remote reading seismographs and sound level meters at the site, and responsible for maintenance and reporting of the seismographs and sound level meters.

(415) 641-2570 San Francisco, CA marcus@municon.net

Marcus Pacheco

TECHNICAL DIRECTOR

Summary

Marcus Pacheco is a Geophysicist and Geologist with over 10 years of experience in Ground Penetrating Radar (GPR). As Technical Director, he designs work plans and manages geotechnical instrumentation projects, which include instruments such as seismographs, inclinometers, piezometers, settlement platforms, and Automated Total Stations. He also has conducted vibration and sound attenuation studies, downhole seismic surveys, and Multichannel Analyses of Surface Waves.

Education

2019 **Master of Science, Geology (with distinction)**
California State University, Fresno

2016 **Bachelor of Science, Geophysics**
Federal University of Pampa, Bage, RS, Brazil

Certificates

Certified Remote Pilot (Drone) – certified by the Department of Transportation - Federal Aviation Administration.

Certified Roadway Worker - certified by the BART District's Roadway Worker Protection (RWP) Certification Program. Oakland, CA, 2020

Employment History

2022 - Present **Municon West Coast,** San Francisco, California
Technical Director

2020 - 2022 **Municon West Coast,** San Francisco, California
Project Manager – Geophysicist

2019 - 2020 **Municon West Coast,** San Francisco, California
Geotechnical Instrumentation Technician

Master's Thesis and Publications

Surface Exposure Dating and Geophysical Tomography of the Royal Arches Meadow Rock Avalanche, Yosemite Valley, California

Relevant Projects

Pier 70 Redevelopment - San Francisco, CA
- **2019-2022**
- **18 Vibration monitors installed**
- **Pre-construction photo surveys**

Responsible for the vibration work during demolition and construction.

Lower American River - Sacramento, CA
- **October 2023 – December 2023**
- **31 Vibration monitors installed**
- **15 pre-and post-construction photo surveys done**

Caltrans 04-0A7714, Berkeley Pedestrian Crossing – Berkeley, CA
- August 2021 – April 2022
- **3 Vibration monitors installed**
- **1 Automated Motorized Total Station (AMTS) installed**

Responsible for surface movement monitoring and vibration work plans, installation, and monitoring.

Underground Flow Equalization System - San Mateo, CA
- **October 2020 – May 2024**
- **2 Vibration monitors installed**
- **9 vibrating-wire piezometers installed**
- **4 inclinometers installed**
- **1 extensometer installed**
- **20 Pre, Periodic and Post-construction surveys were done**

Responsible for geotechnical instrumentation, vibration, and photo documentation work. Geotechnical instrumentation included In-place Inclinometers, Automated Total Station, and Piezometers for shoring and surface monitoring during excavation and dewatering.

Alameda Landing Waterfront - Alameda, CA
- **2019 - 2020**
- **6 Vibration monitors installed**

Responsible for the vibration work during demolition and construction.

Marysville Ring Levee (MRL) Phase 2B - Marysville, CA
- **10 vibration monitors installed**

US101 / Blossom Hill Road - San Jose, CA
- **8 vibration monitors installed**
- **Responsible for the vibration and photo documentation work during demolition, pile driving, and construction.**

Mission Rock Phase 1, San Francisco, CA

- **2020**
- **4 vibration monitors installed**
- **3 sound level meters installed**

Performed vibration and sound attenuation studies for RIC work and indicator pile driving, to examine impacts on nearby residences and commercial structures.

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Marco Leimone

PROJECT MANAGER – GEOTECHNICAL INSTRUMENTATION

Summary

Marco Leimone is a geotechnical project manager with 5 years' experience in geotechnical instrumentation, construction monitoring, and project management. As geotechnical instrumentation project manager he provides expertise for Municon West Coast's condition surveys, geotechnical and structural instrumentation services. Marco's work experience includes installation, monitoring and maintenance of equipment including inclinometers, piezometers, tiltmeters, automated total stations, sound level meters, hydroacoustic meters and seismographs.

Education

A.A. Civil Engineering Technology
DMACC, Boone, Iowa

Employment History

2019 - Present **Municon West Coast,** San Francisco, California
Project Manager – Geotechnical Instrumentation

Relevant Projects

Marysville Ring Levee (MRL) Phase 2B - Marysville, CA
- **2023 – Current**
- **Vibration Monitoring**
- **10 vibration monitors installed**

Lower American River - Sacramento, CA
- **October -December**
- **Photo Documentation**
- **Vibration Monitoring**
- **31 Vibration monitors installed**
- **15 pre-and post-construction photo surveys done**

Pier 70 Redevelopment - San Francisco, CA
- **2020-2021**
- **Vibration Monitoring**
- **8 Vibration monitors installed**

Chrysler SWPS, Menlo Park
- **August 2023 – October 2024**
- **Vibration Monitoring**
- **5 vibration monitors installed**

Ohlone Creek Line D Naturalization - Newark, CA

- **August-November 2023**
- **Vibration Monitoring**
- **3 Vibration monitors installed**

Yerba Buena Island West-Side Bridge Structures Project - San Francisco, CA

- **October 2023 – August 2024**
- **3 Vibration monitors installed**
- **Vibration Monitoring**

555-585 Bryant Street - San Francisco, CA

- **2022-2023**
- **Vibration Monitoring**
- **2 Vibration monitors installed**

Caltrans 04-0A7714, Berkeley Pedestrian Crossing – Berkeley, CA

- **3 Vibration monitors installed**
- **1 Automated Motorized Total Station (AMTS) installed**

US101 / Blossom Hill Road - San Jose, CA

- **8 Vibration monitors installed**
- **Vibration Monitoring**

2225 Telegraph Ave. - Oakland, CA

- **2019**
- **3 Vibration monitors installed**
- **12 inclinometers installed**

Municon West Coast, Inc.

Client References and Testimonials

Christina Dikas

- **Role**: Principal | Cultural Resources Planning Studio
- **Company**: Page & Turnbull
- **Phone**: 415-593-3246
- **Email**: dikas@page-turnbull.com
- **Project(s)**: 555 Bryant Street CEQA Mitigation Project (Also Potrero Power Station, 900 Innes Ave and Watsonville City Plaza projects)
- **Project Location**: 555 Bryant St., San Francisco, CA 94107
- **Contract Amount:** $65,000
- **Estimated Construction Cost:** $220,000,000
- **Municon services performed:** Pre- and post-construction condition surveys, vibration monitoring, and crack monitoring.

Client Testimonial:

"Page & Turnbull is a historic preservation architecture firm and has worked with Municon on several projects that required vibration and crack monitoring during construction to ensure protection of historic buildings adjacent to the construction work. Projects we worked on with Municon as our subconsultant include Potrero Power Station, 555 Bryant Street, 531 Bryant Street, and 900 Innes Avenue in San Francisco and Watsonville City Plaza in Watsonville, California. Municon staff were responsive, had the tools and skills needed for the work, and provided the monitoring reports that were required in a timely manner."

Thomas Williams, PE

- **Role**: Senior Engineer
- **Company**: City of San Mateo, Public Works
- **Phone**: 650-522-7307

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- **Email**: twilliams@cityofsanmateo.org
- **Project**: Underground Flow Equalization System (UFES)
- **Project Location**: Near Bay Meadows Park, San Mateo, CA 94403
- **Contract Amount**: $480,000
- **Estimated Construction Cost**: $45,000,000
- **Municon services performed:** Pre- and post-construction conditions surveys and geotechnical monitoring:

  Vibration monitoring, settlement monitoring, groundwater monitoring, utility monitoring, building monitoring and crack monitoring.

Justin Gildemeister, PE

- **Role**: Project Manager
- **Company**: Nordic Industries, Inc.
- **Phone**: 530-742-7124
- **Email**: justin@nordicind.com
- **Project(s)**: Lower American River Erosion Contract 2 Sites 2-2, 2-3 (USACE)
- **Project Location**: 2 Cadillac Drive, Sacramento, CA 95825
- **Contract Amount**: $164,000
- **Estimated Construction Cost**: $32,000,000
- **Municon services performed:** 3D “digital twin” pre- and post-construction condition surveys, and vibration monitoring.

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William Reyes

- **Role**: Chief Field Engineer
- **Company**: Kiewit Infrastructure West Co.
- **Phone**: 707-299-9668
- **Email**: William.Reyes1@kiewit.com
- **Project(s)**: Oroville Dam and Tunnel (River Valve Outlet System Rehabilitation Project Contract No. C51625)
- **Project Location**: Butte County, CA
- **Contract Amount**: $45,000
- **Estimated Construction Cost**: N/A
- **Municon services performed:** Underground networked vibration monitors

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Doug Schwarm, P.E., G.E., P.Eng.

- **Role**: Chief Engineer
- **Company**: Atlas Geotechnical
- **Phone**: (808) 282-8314
- **Email**: dschwarm@atlasgeotechnical.com
- **Project(s)**: Runway Upgrade, Majuro
- **Project Location**: Majuro airport, Marshall Islands
- **Contract Amount**: $24,500
- **Estimated Construction Cost**: --
- **Municon services performed:** Air pressure monitoring and custom sensor development and installation.

Client testimonial:

"My foundation engineering practice operates in remote locations and often has unique requirements. The Municon crew are an invaluable resource, helping me develop the practical,

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reliable solutions that make our projects successful. They are available when I need them, responsive to requests, and contribute clever ideas about how I can better serve my clients. I recommend them to peers and clients without reservation because I know that they'll provide the type of seamless service that keeps construction projects moving forward."

Lori Miller

- **Role**: Project Manager – Land Development
- **Company**: Pulte Group
- **Phone**: (408) 417-0884
- **Email**: lori.miller@pultegroup.com
- **Project(s)**: Monarch/Llewellyn project and Winchester Central project
- **Project Location**: Campbell, CA
- **Contract Amount**: $42,750
- **Estimated Construction Cost**: --
- **Municon services performed:** 3D "digital twin" pre- and post-construction condition surveys, and vibration monitoring.

Client Testimonial:

"As a land developer, partnering with a Municon is one of the best decisions we can make for our in-fill projects. Their expertise in managing and mitigating vibrations and vibration monitoring ensure that our developments are non-impactful to surrounding structures. We have appreciated their consult and solutions-based approach, as well as their excellent response time and customer relationship building."

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Stephen R. Mimiaga, P.E

- **Role**: President
- **Company**: Mimiaga Engineering Group Inc.
- **Phone**: 805.231.1502
- **Email**: smimiaga@mimiaga-engineering.com
- **Project(s)**: Venture Outfall project
- **Project Location**: Ventura, CA
- **Contract Amount**: $76,150
- **Estimated Construction Cost**: --
- **Municon services performed:** 3D "digital twin" pre- and post-construction condition surveys, and vibration monitoring.

Client Testimonial:

"I enjoyed working with Municon and all Municon personnel that provided services on the project. Municon services were exemplary and staff were professional, on-time, and in all cases exceeded project scope of work expectations. I would absolutely work with Municon again where vibration monitoring and structure pre- and post-construction surveys were required."

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