CROSSINGS CAMPUS PROJECT
8825 NATIONAL BOLUEVARD, CULVER CITY

Noise, Air Quality, and Lighting Report for Off-Hours Construction

Prepared for
Culver Crossings Properties LLC
2221 Rosecrans Avenue, Suite 200
El Segundo, CA 90245

August 2023

ESA

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EXECUTIVE SUMMARY

The City of Culver City evaluated environmental impacts for the Crossing Campus Project (the Project) in the *Crossings Campus Environmental Impact Report* (EIR) (State Clearinghouse No. 2021110079), which was prepared in accordance with the California Environmental Quality Act (CEQA). A Notice of Determination was filed on December 13, 2022.

Chapter 9.07 of the City of Culver City Municipal Code (CCMC) provides specific noise restrictions and exemptions for noise sources within the City. CCMC noise regulations state that construction activity shall be prohibited, except between the hours of 8:00 a.m. and 8:00 p.m. Mondays through Fridays; 9:00 a.m. and 7:00 p.m. Saturdays; 10:00 a.m. and 7:00 p.m. Sundays. The EIR included an evaluation of extended construction hours, with construction beginning at 7:00 a.m. and lasting through 10:00 p.m.

Culver Crossings Properties LLC (Applicant) proposes off-hours construction activities for the Project located at 8825 National Boulevard in Culver City, CA. For the purposes of this report, the Project refers to the off-hours construction activities. The Applicant is submitting an application to Culver City (City) to obtain a temporary use permit (TUP) to allow for off-hours concrete pours at the Project site beginning at 2:00 a.m. and grading/excavation and soils export beginning at 5:00 a.m., instead of 7:00 a.m. No change to the construction end time of 10:00 p.m., as was analyzed in the EIR, is being requested. The Applicant is proposing an off-hours construction work plan to the City to obtain a TUP to the City's noise ordinance to conduct project construction activities outside of the allowable construction hours specified the City's noise ordinance.

The Applicant is requesting permission for the off-hours construction activities to ensure the highest quality of the concrete structure and to reduce the overall impact to the surrounding communities through a shortened construction duration and peak activities. The off-hours work would result in limiting the number of mat foundation pours to yield maximum strength of the material and prevent cracking, and reduce the potential for concrete spoiling in concrete truck during delivery. Most importantly, extended hours will reduce the number of days required for mat foundation activities.

The off-hours construction activities would also include soil excavation and haul truck export of the excavated material. The off-hours work would result in reducing the number of days required to excavate the site and export the soil. The extended hours will reduce the number of days and duration for excavation and export activities.

This report has been prepared to support the City's environmental review process regarding potential noise and other environmental impacts associated with the proposed off-hours Project's construction. This analysis is required as part of the Project's proposed off-hours construction

work plan to be submitted to the City to obtain a TUP allowing an exception to the City' noise ordinance to work outside of the City's allowable construction hours. The noise analysis will estimate the noise levels generated by the proposed off-hours activities including the noise attenuation provided by the distance between noise sources and receptors and whether the noise levels would exceed applicable City noise standards or substantially increase existing ambient noise levels at the adjacent noise sensitive receptors (i.e., residential uses in the surrounding area).

This report summarizes the Project off-hours construction noise levels generated on-site and attenuated by distance and the existing sound wall to the nearest noise sensitive receptors off-site, and the potential for the Project to conflict with the applicable Culver City noise regulations, standards, and thresholds. The Project would incorporate and implement all applicable project design features (PDFs) and mitigation measures that were included in the *Crossings Campus* EIR to reduce noise impacts. The results of the analysis for on-site construction noise sources are summarized in **Table ES-1**. As shown therein, accounting for exterior-to-interior noise attenuation[1] and with implementation of applicable PDFs and mitigation measures, construction noise impacts from on-site sources associated with the off-hours construction activities would not exceed Culver City noise regulations, standards, and thresholds for any sensitive receptors.

TABLE ES-1
OFF-HOURS CONSTRUCTION NOISE LEVELS AT OFFSITE NOISE-SENSITIVE RECEPTORS

Construction Phases Sensitive Receptors	**Estimated Unmitigated Average Construction Noise Levels (dBA L_{eq}) [a]**	**Estimated Mitigated Average Construction Noise Levels (dBA L_{eq})**	**Noise Threshold (Ambient + 5 dBA) [a b]**	**Exceeds Threshold?**
Grading/Excavation				
R1 – Ground Floors	53.4	35.4	60.7	No
R1 – Upper Floors	53.4	45.4	60.7	No
R2 – Ground Floors	61.1	43.1	68.7	No
R2 – Upper Floors	61.1	53.1	68.7	No
R3 – Ground Floors	53.9	35.9	64.4	No
R3 – Upper Floors	53.9	45.9	64.4	No
R4	49.3	31.3	64.4	No
Foundations/Concrete Pour				
R1 – Ground Floors	51.8	33.8	54.6	No
R1 – Upper Floors	51.8	43.8	54.6	No
R2 – Ground Floors	59.2	41.2	58.7	No
R2 – Upper Floors	59.2	51.2	58.7	No
R3 – Ground Floors	52.5	34.5	57.5	No
R3 – Upper Floors	52.5	44.5	57.5	No
R4	48.1	30.1	57.5	No

[1] Per the LAX South Airfield Improvement Project EIR (SCH 2004081039), buildings with windows open would provide approximately 13 dBA exterior/interior noise reduction.

Construction Phases Sensitive Receptors	Estimated Unmitigated Average Construction Noise Levels (dBA L_{eq}) [a]	Estimated Mitigated Average Construction Noise Levels (dBA L_{eq})	Noise Threshold (Ambient + 5 dBA) [a b]	Exceeds Threshold?
Tower Crane Erection/ Disassembly				
R1 – Ground Floors	46.5	28.5	54.6	No
R1 – Upper Floors	46.5	38.5	54.6	No
R2 – Ground Floors	54.1	36.1	58.7	No
R2 – Upper Floors	54.1	46.1	58.7	No
R3 – Ground Floors	47.0	29.0	57.5	No
R3 – Upper Floors	47.0	39.0	57.5	No
R4	42.4	24.4	57.5	No

[a] Per the LAX South Airfield Improvement Project EIR (SCH 2004081039), buildings with windows open would provide approximately 13 dBA exterior/interior noise reduction.

[b] Existing measured ambient levels at the project and receptor site boundary, as shown in Table 1, already exceed these standards; therefore, the existing ambient levels (plus 5 dBA) are assumed to be the standards not to exceed (e.g., 62 dBA Leq measured on a weekday from 7:00 a.m. to 8:00 a.m. is greater than the City's daytime standard of 50 dBA Leq, therefore, the adjusted day standard for this weekday off-hour would be 67 dBA Leq).

[c] R4 is assumed to have a similar ambient noise environment as R3 and uses the same noise threshold.

SOURCE: ESA, 2023, Culver City 2015.

The results of the analysis for off-site construction noise sources are summarized in **Table ES-2**. As shown therein, with implementation of applicable PDFs and mitigation measures, off-site construction noise impacts associated with the off-hours construction activities would not exceed Culver City noise regulations, standards, and thresholds (same finding as the *Crossings Campus* EIR).

TABLE ES-2
EXISTING AND EXISTING PLUS PROJECT CONSTRUCTION VEHICULAR TRAFFIC NOISE LEVELS

		Leq (dBA) [a, b]		
Roadway Segment	**Adjacent Land Use**	**Existing[c]**	**Existing + Construction[d]**	**Increase over Existing**
Venice Boulevard				
Between Cattaraugus Ave and La Cienega Blvd	Commercial / Residential	49.6	53.6	4.0
Between Helms Ave and Cattaraugus Ave	Commercial / Residential	49.6	53.6	4.0
Between La Cienega Blvd and I-10 Westbound Off-Ramp/Cadillac Ave	Commercial / Residential	49.6	53.6	4.0
Between National Blvd and Helms Ave	Commercial / Residential	49.6	53.6	4.0
East of I-10 Westbound Off-Ramp/Cadillac Ave	Commercial / Residential	49.6	53.6	4.0

[a] Calculated based on existing traffic volumes provided by Fehr & Peers, July 2022. Values are rounded to the nearest tenth decimal place. The distance from roadside receiver traffic noise level to roadway centerline was estimated using Web-based satellite imaging for each roadway segment analyzed.

[b] Residential roadway segments where haul trucks would not travel were removed.

[c] The existing traffic noise level is represented by the lowest hourly average noise level at receptor R1, which is the closest receptor to the haul route.

[d] The traffic noise levels from off hours construction include a 13 dBA reduction from exterior-to-interior noise attenuation for buildings with windows open.

SOURCE: ESA, 2023.

As demonstrated above, the TUP to allow extended nighttime construction hours would not result in adverse noise impacts to ground floor sensitive receptors or to upper floor receptors during construction activities.

The off-hours construction would extend the construction day and result in a relatively small increase in daily air pollutant emissions. An air quality analysis was conducted to determine the maximum daily emissions from the off-hours construction combined with the maximum daily construction emissions identified in the *Crossing Campus* EIR. With implementation of mitigation measures identified in the *Crossing Campus* EIR, the off-hours construction would not result in an exceedance of the South Coast Air Quality Management District significance thresholds for daily regional emission or localized emissions for all applicable criteria pollutants and ozone precursors. Therefore, impacts would continue to be less than significant with mitigation, as was determined in the *Crossing Campus* EIR. Therefore, the TUP to allow extended nighttime construction hours would not result in adverse air quality impacts.

The Project would involve lighting to support nighttime construction. However, the lighting analysis provided herein has demonstrated that no significant lighting impacts would occur at the nearby residential locations. Therefore, the TUP to allow extended nighttime construction hours would not result in adverse lighting impacts.

SECTION 1
Introduction

1.1 Purpose

The City of Culver City evaluated environmental impacts in the *Crossings Campus Environmental Impact Report* (EIR) (State Clearinghouse No. 2021110079), which was prepared in accordance with the California Environmental Quality Act (CEQA). A Notice of Determination was filed on December 13, 2022.

Chapter 9.07 of the City of Culver City Municipal Code (CCMC) provides specific noise restrictions and exemptions for noise sources within the City. CCMC noise regulations state that construction activity shall be prohibited, except between the hours of 8:00 a.m. and 8:00 p.m. Mondays through Fridays; 9:00 a.m. and 7:00 p.m. Saturdays; 10:00 a.m. and 7:00 p.m. Sundays. The EIR included an evaluation of extended construction hours, with construction beginning at 7:00 a.m. and lasting through 10:00 p.m.

Culver Crossings Properties LLC (Applicant) proposes off-hours construction activities for the proposed Crossings Campus development located at 8825 National Boulevard in Culver City, CA (Project). This report considers the potential noise, lighting, and air quality impacts from the extended construction hours. This report has been prepared to support the City's environmental review process regarding potential noise and other environmental impacts associated with the proposed off-hours construction. This analysis is required as part of the Crossings Campus Project's proposed off-hours construction work plan to be submitted to the City to obtain a Temporary Use Permit (TUP) allowing an exception to allow work outside of the City's allowable construction hours specified in the City's noise ordinance.

This report identifies applicable City noise regulations and evaluates potential noise, lighting, and air quality impacts associated with the proposed off-hours construction of the Project. Information used to prepare this analysis includes the environmental analyses in the *Crossings Campus Environmental Impact Report* (EIR), the City's General Plan Noise Element and Municipal Code noise ordinance, off-hours construction data provided by the Applicant, and other sources identified herein.

1.2 Project Location

The Culver City Parcel is located to the east of the Downtown District of Culver City and in the Washington National Transit Oriented Development District. The Los Angeles Parcel is located in the West Adams–Baldwin Hills–Leimert Community Plan area of Los Angeles. Primary regional access is provided by two freeways; the Santa Monica Freeway (I-10) located approximately 630

feet north of the Project Site and the San Diego Freeway (1-405), located approximately 2.09 miles west of the Project Site. See **Figure 1**, *Regional and Project Vicinity Locations*, for the location of the Project Site. The Project Site is also served by the Los Angeles County Metropolitan Transportation Authority (Metro) "E" Line and multiple Metro and local bus lines that provide service along Venice, National, and Washington Boulevards.

1.3 Surrounding Land Uses

The area surrounding the Project Site is developed primarily with a mix of commercial and residential uses. Land uses located adjacent to the Project Site include: a two-story office building to the north (across Venice Boulevard), the Helms Bakery Complex single-story warehouse and retail building to the east, the 8777 Washington four-story office building and the Access Culver City five-story mixed use residential building to the south (across Washington Boulevard), and the six to seven-story Ivy Station mixed-use project consisting of office, residential, hotel, and retail uses to the west across National Boulevard. Existing buildings on the Project are set back approximately 24 feet from the Helms Bakery Building and are only approximately 2 feet off the property line at Venice Boulevard. See **Figure 2**, *Project Location – Aerial Photograph*, for an aerial image of the Project Site and surrounding development.

The parcels surrounding the Project Site in Culver City have a General Plan land use designation of General Corridor. The parcels surrounding the Project Site in the City of Los Angeles are designated by the West Adams–Baldwin Hills–Leimert Community Plan for Hybrid Industrial, Neighborhood Commercial, Limited Industrial, and Open Space land uses (i.e., Venice Boulevard landscaped median), and are within the CM-2D-CPIO (Commercial Manufacturing), C2-2D-CPIO (Commercial), and (Q)M1-2D and M1-1 (Limited Industrial) and OS-1XL (Open Space) zones.

SOURCE: Open Street Map, 2021

Crossings Campus

Figure 1
Regional and Project Vicinity Locations

ESA

SOURCE: Nearmap, 2021

Crossings Campus

Figure 2
Project Location - Aerial Photograph

ESA

SECTION 2
Project Description

2.1 Project Understanding

The proposed off-hours Project construction activities are based on information and data provided to ESA from the Applicant and General Contractor (Hathaway Dinwiddie) via email and phone conversations, and Project Site observations via Google Earth. To ensure the highest quality of the concrete structure and to reduce the overall impact to the surrounding communities during peak hours activities, the Applicant requests permission and provides justification for the Project construction activities described below to be performed off-hours. The extended hours would minimize impact to the project area during peak hours by reducing construction related traffic. Refer to the summary discussion below in Section 2.2 and additional details in **Appendix A** for a description and justification for the off-hours construction activities.

The City's Municipal Code (noise ordinance) states that construction activity shall be prohibited, except between the hours of 7:00 a.m. and 7:00 p.m. Mondays through Fridays; 9:00 a.m. and 7:00 p.m. Saturdays. The Project's off-hours activities would occur from 5:00 a.m. to 7:00 p.m. on weekdays and 7:00 a.m. to 7:00 p.m. Saturdays for soils export and from 2:00 a.m. to 7:00 p.m. on weekdays and 7:00 a.m. to 7:00 p.m. Saturdays for foundations and concrete pours. Therefore, the Applicant is proposing an off-hours construction work plan to the city to obtain a TUP to the City's noise ordinance to conduct project construction activities outside of the allowable construction hours of City's noise ordinance. The Applicant has requested that ESA assist in the submittal by completing an off-hours noise study and updated environmental review of the proposed off-hours construction work to support submittal of the TUP application to the City for approval at the soonest possible bi-monthly City Council Hearing.

2.2 Description of Off-Hours Construction

The proposed off-hours Project construction activities are detailed in Hathaway Dinwiddie Construction Company Construction Management submitted to the City of Culver City requesting an extended hours permit. The off-hours mat foundation pours, elevated deck concrete pours and export of mass excavations would include the operation of a 5-yard loader, bottom dump truck and trailer transporter, concrete pumps, concrete trucks, a crane and generators. The off-hours tower crane erections/disassemble would include the operation of a mobile crane, forklift, and flatbed delivery truck(s). The off-hours construction activities would require additional artificial lighting equipment (e.g., portable light towers) during off-hours at the Project Site, as the lighting provided by the existing streetlights and natural sunlight (sunrise at approximately 5:30 – 6:50 a.m. September 2023 – September 2025 (time and date per project

schedule 6/13/23)) would not be sufficient lighting for the off-hours work, as determined by the Contractor.

The off-hours Project construction work would occur within the designated work off Venice Boulevard adjacent to the Project Site. The mat foundation and elevated deck concrete pours would include a total of 12 active concrete trucks at the Project Site for mat foundations, 4 active concrete trucks for elevated concrete decks with two or six trucks (depending type of placement) at the hopper discharging concrete and two or four (depending type of placement) waiting in the queue, and one to three concrete pumps at any given time within the designated work area of each placement. The tower crane would be erected and disassembled within the designated work area of Venice Boulevard. The Project off-hours construction activities would occur over variable day events beginning at 2:00 a.m. for concrete pours and 5:00 a.m. for soils export during the week and 7:00 a.m. for all activities during the weekend. Off-hour construction would happen sequentially without overlap between mass excavation, concrete foundation pours, elevated deck pours, or tower crane erection and disassembly.

- Mass Excavation (5:00 a.m. Start Only):
  - Phase 1: 85 Days; estimated 75 trucks per day
  - Phase 2: 147 Days; estimated 89 trucks per day
- Concrete foundation pours
  - Total Mat Pours
    - Phase 1: 4 Days; estimated 200 concrete trucks per day
    - Phase 2: 7 Days; estimated 200 concrete trucks per day
- Elevated Deck Pours
  - Total Elevated Deck Pours
    - Phase 1: 30 Days; estimated 40 concrete trucks per day
    - Phase 2: 54 Days; estimated 40 concrete trucks per day
- Tower Crane Erection and Dismantle
  - Phase 1: 6 days (3 days continuous activity for erection and dismantle)
  - Phase 2: 6 days (3 days continuous activity for erection and dismantle)
  - Requires partial and/or full closure of Venice Blvd for staging.

SECTION 3
Environmental and Regulatory Setting

3.1 Noise Characteristics and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as unwanted sound (i.e., loud, unexpected, or annoying sound). Acoustics is defined as the physics of sound. In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. Acoustics addresses primarily the propagation and control of sound.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound. Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted, consisting of a range of frequency from 20 to 20,000 Hz.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. Sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements.

3.1.1 Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily

the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

CNEL: The Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dB to measured noise levels between the hours of 7:00 a.m. to 10:00 p.m. and after an addition of 10 dB to noise levels between the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

3.1.2 Noise Effects on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep. With regard to the subjective effects, the responses of individuals to similar noise events are diverse and are influenced by many factors, including the

type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change in noise levels is considered to be a barely perceivable difference;
- A change in noise levels of 5 dBA is considered to be a readily perceivable difference; and
- A change in noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the dB scale. The human ear perceives sound in a non-linear fashion hence the dB was developed. Because the dB scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. Under the dB scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.

3.1.3 Noise Attenuation

When noise propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on factors such as the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern; therefore, this type of propagation is referred to as "spherical spreading." Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for acoustically "hard" sites and 7.5 dBA for acoustically "soft" sites for each doubling of distance from the reference measurement as their energy is continuously spread out over a spherical surface. Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth

bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft Sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites.

Roadways and highways consist of several localized noise sources on a defined path, and hence are treated as "line" sources, which approximate the effect of several point sources. Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading." Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[2] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

Additionally, receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

3.2 Existing Conditions

The Project is currently under construction with the extended hours of 7:00 a.m. to 10:00 p.m., which was assessed for noise impacts in the *Crossings Campus* EIR. The predominant source of noise in the vicinity of the Project Site is vehicle traffic from roadways adjacent to the Project Site, primarily Washington Boulevard, National Boulevard, and Venice Boulevard. Secondary noise sources include commercial activities such as loading docks and trash and recycling collections, and residential activities, such as landscaping.

3.2.1 Noise Sensitive Receptors

Noise sensitive receptors are defined as those specific land uses that have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Typically, residences, hospitals, and schools are considered noise sensitive, as their land uses of sleeping, recuperation, and concentration, can be adversely affected by noise.

The noise sensitive land uses nearest to the Project Site are as follows:

- R1: Existing single-family residences located in the City of Los Angeles approximately 250 feet to the north of the Project Site and north of Venice Boulevard
- R2: Existing multi-family residential uses located in the City of Culver City approximately 100 feet to the west of the Project Site and west of National Boulevard.

[2] California Department of Transportation (Caltrans), *Technical Noise Supplement* (TeNS). September, 2013.

- R3: Existing residential uses located in the City of Culver City approximately 120 feet to the south of the Project Site and south of Washington Boulevard, east of National Boulevard.

- R4: Existing residential uses located in the City of Culver City approximately 430 feet to the east of the off-hours construction Project Site area and south of Washington Boulevard, west of Helms Avenue.

These represent the nearest sensitive receptors to the off-hours construction on and adjacent to the Project Site, and, therefore, illustrates the worst-case scenario for potential noise impacts from the off-hours construction activities of the Project. All other sensitive receptors are located at a further distance and impacts would be less than those disclosed herein.

3.2.2 Existing Ambient Noise Levels

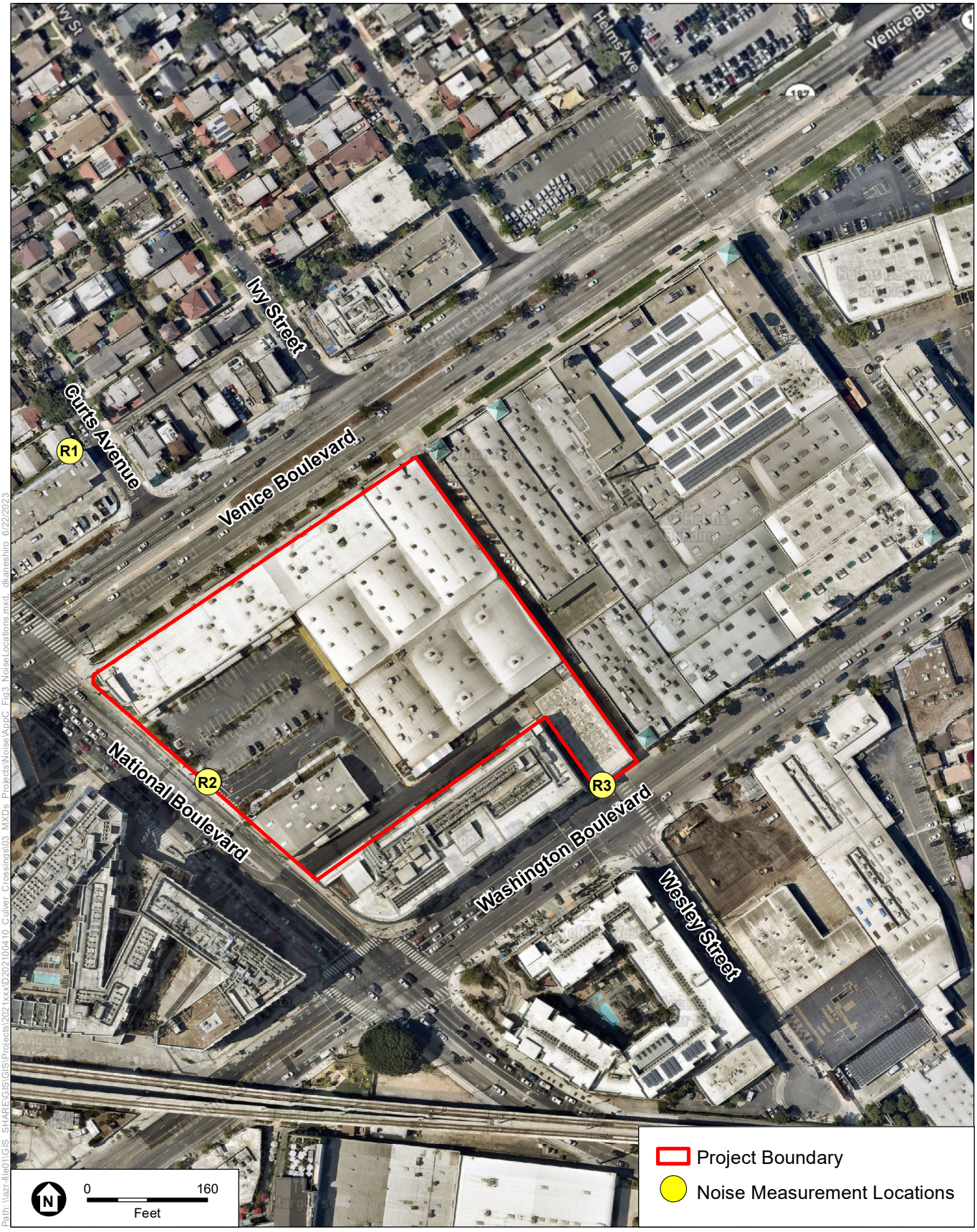
To characterize the existing ambient noise levels for the off-hours construction, noise measurements were conducted during a 5-hour period from 2:00 a.m. to 7:00 a.m. on Wednesday, May 31, 2023 at the noise sensitive receptors listed above in Section 3.2.1, A summary of the noise measurement data is provided in **Table 1**, *Summary of Ambient Noise Measurements*. **Figure 3**, *Noise Measurement Locations*, shows the locations of the ambient noise measurements. Ambient noise measurement data sheets are provided in **Appendix B**.

TABLE 1
SUMMARY OF AMBIENT NOISE MEASUREMENTS

Location, Day of the Week, Date, and Hours	Lowest Hourly Average Noise Levels, dBA L_{eq} [a] (2:00 a.m. to 7:00 a.m. / 5:00 a.m. to 7:00 a.m.)
R1 – Residences on Curts Ave 5/31/2023 2:00 a.m. to 7:00 a.m.	49.6 / 55.7
R2 – Multi-family residences/hotel along National Blvd 5/31/2023 2:00 a.m. to 7:00 a.m.	53.7 / 63.7
R3 – Multi-family residences along Washington Blvd 5/31/2023 2:00 a.m. to 7:00 a.m.	52.5 / 59.4
R4 – Single-family residences along Helms Avenue 5/31/2023 2:00 a.m. to 7:00 a.m.	52.5[b] / 59.4

[a] The lowest hourly average noise level between 2:00 a.m. and 7:00 a.m. was used for the foundations/concrete pour and tower crane erection/disassembly phases. The lowest hourly average noise level between 5:00 a.m. and 7:00 a.m. was used for grading/excavation since this phase would not start util 5:00 a.m. at the earliest.
[b] Location R4 has a similar ambient noise environment as R3 during nighttime hours and the ambient noise level is based on data collected at Location R3.

SOURCE: ESA, 2023.



SOURCE: Nearmap, 2021

Crossings Campus

Figure 3
Noise Measurement Locations

ESA

3.3 Regulatory Setting

3.3.1 Culver City General Plan Noise Element

The Noise Element of the General Plan identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals, policies, and programs to ensure that City residents are protected from excessive noise (Culver City 1995). The noise goals and policies of the Noise Element applicable to the Project off-hours construction activities include:

Policy 2.A Create a comprehensive ordinance establishing noise regulation criteria, and standards for noise sources and receptors to include but not be limited to the following:

- Noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses, such as schools, hospitals, convalescent homes, and libraries.
- Temporary sound barrier installation at construction site if construction noise is impacting nearby noise sensitive land uses.
- Noise abatement and acoustical design criteria for construction and operation of any new development.

The City's noise standards are contained in the City's 1995 General Plan Noise Element, which establishes a daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hourly average noise level limit of 55 dBA L_{eq} and 50 dBA L_{eq}, respectively, and a maximum noise level limit of 70 dBA L_{max} and 65 dBA L_{max} based on the 70 dBA L_{eq} (daytime) and 65 dBA L_{eq} (daytime) for a duration of one minute at the residential property line, as shown in **bold** in **Table 2**, *Culver City Noise Standards*.

TABLE 2
CULVER CITY NOISE STANDARDS

Daytime levels 7:00 AM – 10:00 PM	Nighttime Levels 10:00 PM – 7:00 AM	Duration
55 dBA – Leq	**50 dBA – Leq**	**30 minute**
60 dBA - Leq	55 dBA - Leq	15 minute
65 dBA - Leq	60 dBA - Leq	5 minute
70 dBA - Leq	**65 dBA - Leq**	**1 minute**
75 dBA - Leq	70 dBA - Leq	Never

Source: Culver City 1995.

3.3.2 Culver City Municipal Code

Chapter 9.07 of the City of Culver City Municipal Code (CCMC) provides specific noise restrictions and exemptions for noise sources within Culver City. Culver City's noise regulations state that construction activity shall be prohibited, except between the hours of 8:00 a.m. and 8:00 p.m. Mondays through Fridays; 9:00 a.m. and 7:00 p.m. Saturdays; 10:00 a.m. and 7:00 p.m. Sundays.

SECTION 4
Impacts and Mitigation Measures

This section describes the impact analysis relating to noise impacts for the Project including the methodology, applicable impact thresholds used to determine the impacts of the Project. If impact thresholds are exceeded, mitigation measures are proposed to reduce noise impacts.

4.1 Methodology

Project off-hours construction activity noise levels at the noise sensitive receptors were estimated using the Federal Highway Administration (FHWA)'s Roadway Construction Noise Model (RCNM) and equipment noise levels at the source, and construction equipment information and on-site activity locations provided by the Applicant (see **Appendix A** for details). The off-hours noise levels were calculated based on the number and type of equipment operating simultaneously for each of the activities (i.e., mat foundation concrete pour, grading/excavation), and their location relative to the noise sensitive uses, as shown in the noise calculations provided in **Appendix C**. Potential off-hours construction noise levels from the off-hours construction activities were attenuated by distance and intervening barriers (i.e., existing temporary site perimeter construction sound wall, and/or the extent of the Project building construction height and density (as a barrier) at the time of each activity). These assumptions represent the worst-case off-hours noise scenario for the noise sensitive receptors. The estimated Project off-hours construction activity noise levels at the receptors were then analyzed against the off-hours construction noise standards established by Culver City, to determine whether an exceedance of allowable noise levels would occur.

4.2 Impact Thresholds

The off-hours construction noise level limits are based on Culver City noise standards for nighttime (10:00 p.m. to 7:00 a.m.). Therefore, the Project off-hours construction maximum construction noise (L_{eq}), estimated at the property line of the nearest noise sensitive receptor in Culver City, shall not exceed 50 dBA L_{eq} (Culver City 1995) during the nighttime hours, as previously shown in Table 2. However, the measured hourly average ambient levels at R1 through R3 already exceeds the Culver City's nighttime standard of 50 dBA L_{eq}.[3] As established in the *Crossings Campus* EIR, the applicable limit for construction noise is 5 dB over the existing ambient noise level.

[3] Sensitive Receptor location R1 is located in the City of Los Angeles while locations R2 through R4 are located in Culver City. Nonetheless, impacts at R1 are analyzed using the same criteria as R2 through R4.

4.3 Project Impact Analysis

4.3.1 Noise

Project Design Features

Project design features (PDFs) NOI-PDF-1 through NOI-PDF-5 were identified previously in the *Crossings Campus* EIR and would reduce construction noise impacts. NOI-PDF-6 was added as a condition of off hours construction activities. The Project is subject to these PDFs and the noise analysis for off-hours construction activity noise incorporates implementation of the PDFs.

NOI-PDF-1 (Project Construction Schedule): Prior to issuance of a building permit, notice of the Project construction schedule will be provided to abutting property owners and occupants. Evidence of such notification will be provided to the appropriate department of City of Culver City and City of Los Angeles. The notice will identify the commencement date and proposed timing for all construction phases (demolition, grading, excavation/shoring, foundation, rough frame, plumbing, roofing, mechanical and electrical, and exterior finish).

NOI-PDF-2 (Use of Impact Pile Driver): The Project will not require or allow the use of impact pile drivers. Lower noise- and vibration-generating vibratory pile drivers and drills will be used.

NOI-PDF-3 (Construction Rules Sign): During all phases of construction, a "Construction Rules Sign" that includes contact names and telephone numbers, with 24-hour availability, of the Applicant, Property Owner, construction contractor(s) will be posted on the Property in a location that is visible to the public. In addition, appropriate staff person at both City of Los Angeles and City of Culver City will be notified for such incidences. These names and telephone numbers will also be made available to adjacent property owners and occupants to the satisfaction of the appropriate department (Planning Manager and/or Building Official) of both cities.

NOI-PDF-4 (Compliance with Noise Element): The following noise standards from Policy 2.A of the City's General Plan Noise Element shall be complied with at all times:

A. No construction equipment will be operated without an exhaust muffler, and all such equipment will have mufflers and sound control devices (i.e., intake silencers and noise shrouds) that are no less effective than those provided on the original manufacturer supplied equipment;

B. All construction equipment will be properly maintained to minimize noise emissions;

C. If any construction vehicles are serviced at an on-site location, the vehicle(s) will be setback from any street and other property lines so as to maintain a distance of at least 100 feet from the public right-of-way and from Noise Sensitive Receptors;

D. Noise levels from stationary sources (i.e., mechanical equipment, ventilators, and air conditioning units) will be minimized by proper selection of equipment and the installation of parapets or other acoustical shielding as approved by the Planning Manager; and

E. The Project will not allow any delivery truck idling for more than 5 minutes in the loading area. Signs will be posted prohibiting such idling.

NOI-PDF-5 (Neighborhood Streets): No construction haul trucks, including concrete trucks, will be allowed to travel through neighborhood streets that are primarily residential uses.

NOI-PDF-6 (Use of Impact Pile Driver): Any drilling and shoring activities needed to conduct off-hours grading/excavation would be completed during the prior daytime and evening periods as was analyzed in the Crossings Campus EIR. Similarly, the foundations/concrete pour activities would utilize a vibratory pile driver during daytime and evening construction activities, but a vibratory pile driver would not be used during the off-hours time period. Any vibratory pile driving activities needed to conduct off-hours foundations/concrete pour activities would be completed during the prior daytime and evening periods as was analyzed in the Crossings Campus EIR

Project Mitigation Measures

The following noise mitigation measures were identified previously in the *Crossings Campus* EIR and would reduce construction noise impacts. The Project is subject to these mitigation measures and the noise analysis for off-hours construction activity noise incorporates the noise reductions from implementation of the mitigation measures.

NOI-MM-1: Prior to the commencement of demolition, the Project shall provide a temporary 12-foot-tall construction fence equipped with noise blankets rated to achieve sound level reductions of at least 10 dBA along the northern and western boundaries of the Project Site, between the Project Site and the surrounding residences to the north and west. In addition, a temporary 6-foot-tall construction fence equipped with noise blankets rated to achieve sound level reductions of at least 5 dBA along the southern boundary along Washington Boulevard, between the Project Site and the residences to the south and east of the Project Site. Temporary noise barriers shall be used to block the line-of-sight between the construction equipment and the nearby noise-sensitive receptors during the duration of construction activities to the extent feasible. Standard construction protective fencing with green screen or pedestrian barricades for protective walkways shall be installed along property lines facing streets or commercial buildings. All temporary barriers, fences, and walls shall have gate access as needed for construction activities, deliveries, and site access by construction personnel. At Plan Check at City of Culver City and City of Los Angeles, the Applicant shall provide a study conducted by a noise expert that demonstrates the sound barriers would achieve these required dBA reductions. The study will include a fencing/sound barrier plan for City review.

NOI-MM-2: Contractors shall ensure that all construction equipment, fixed or mobile, are equipped with properly operating and maintained noise shielding and muffling devices, consistent with manufacturers' standards. The construction contractor shall keep documentation on-site demonstrating that the equipment has been maintained in accordance with the manufacturers' specifications. Most of the noise from construction equipment originates from the intake and exhaust portions of the engine cycle. According to FHWA, use of adequate mufflers systems can achieve reductions in noise levels of up to 10 dBA.[4] The contractor shall use muffler systems that provide a minimum reduction of 8 dBA compared to the same equipment without an installed muffler system, reducing

[4] FHWA, *Special Report – Measurement, Prediction, and Mitigation*, Chapter 4 Mitigation, last updated June 28, 2017, https://www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm20. Accessed July 13, 2022.

maximum construction noise levels. The contractor shall also keep documentation on-site prepared by a noise consultant verifying compliance with this measure.

On-Site Construction Noise

The proposed off-hours construction activities would include grading/excavation and foundations/concrete pouring activities. The proposed off-hours construction activities would generally utilize fewer pieces and fewer types of construction equipment than was analyzed in the *Crossings Campus* EIR for the daytime and evening construction activities. For instance, while daytime and evening construction activities for grading/excavation would, at times, include the use of a drill rig for drilling and shoring purposes, a drill rig would not be used during the off-hours time period. Any drilling and shoring activities needed to conduct off-hours grading/excavation would be completed during the prior daytime and evening periods as was analyzed in the *Crossings Campus* EIR. Similarly, the foundations/concrete pour activities would utilize a vibratory pile driver during daytime and evening construction activities, but a vibratory pile driver would not be used during the off-hours time period. Any vibratory pile driving activities needed to conduct off-hours foundations/concrete pour activities would be completed during the prior daytime and evening periods as was analyzed in the *Crossings Campus* EIR. Construction activity noise levels on the Project site and at the nearest receptor would vary depending on the particular type, number, duration of use, and location (distance and elevation) of the equipment for the concrete pours and grading/excavation activities.

Table 3, *Off-Hours Construction Equipment Reference Noise Levels*, shows the construction equipment type and number that would be used during off-hours construction activities, the reference noise level of the equipment, and the acoustical usage factor of the equipment, which are based on FHWA's RNCM User's Guide.[5]

TABLE 3
OFF-HOURS CONSTRUCTION EQUIPMENT REFERENCE NOISE LEVELS

Construction Phase Equipment Type	No. of Equip.	Reference Noise Level at 50ft, L_{max}	Acoustical Usage Factor (%)
Grading/Excavation			
Excavator	2	81	40%
Vacuum Street Sweeper	2	82	10%
Foundations/Concrete Pour			
Crane	1	81	16%
Forklift	1	75	10%
Concrete Mixer Truck	2	79	40%
Generator	1	81	50%
Tower Crane Erection/Disassembly			
Crane	1	81	16%
Forklift	1	75	10%
Pickup Truck	1	75	40%

SOURCE: FHWA 2006, Culver Crossings Properties LLC, 2023.

5 Federal Highway Administration (FHWA), Roadway Construction Noise Model User's Guide, 2006.

During off-hours construction activities, the offsite noise sensitive receptor locations R1 through R4 would be exposed to the Project's construction noise. The highest noise levels would be generated when multiple pieces of construction equipment are being operated simultaneously for the off-hours activities. The Project's estimated off-hours construction noise levels were calculated for the maximum equipment required to operate simultaneously during the off-hours construction activities shown in Table 3.[6]

Table 4, *Off-Hours Construction Noise Levels at Offsite Noise-Sensitive Receptors*, shows the estimated construction noise levels that would occur at the nearest offsite noise sensitive uses (residential uses) at locations R1 through R4 during the off-hours construction activities at the Project site. The noise analysis incorporates noise attenuation provided by the distance between the Project site and the offsite noise sensitive uses and noise reduction from implementation of the mitigation measures in the *Crossings Campus* EIR.

TABLE 4
OFF-HOURS CONSTRUCTION NOISE LEVELS AT OFFSITE NOISE-SENSITIVE RECEPTORS

Construction Phases Sensitive Receptors	**Estimated Unmitigated Average Construction Noise Levels (dBA L_{eq}) [a]**	**Estimated Mitigated Average Construction Noise Levels (dBA L_{eq}) [a]**	**Noise Threshold (Ambient + 5 dBA) [b c]**	**Exceeds Threshold?**
Grading/Excavation				
R1 – Ground Floors	53.4	35.4	60.7	No
R1 – Upper Floors	53.4	45.4	60.7	No
R2 – Ground Floors	61.1	43.1	68.7	No
R2 – Upper Floors	61.1	53.1	68.7	No
R3 – Ground Floors	53.9	35.9	64.4	No
R3 – Upper Floors	53.9	45.9	64.4	No
R4	49.3	31.3	64.4	No
Foundations/Concrete Pour				
R1 – Ground Floors	51.8	33.8	54.6	No
R1 – Upper Floors	51.8	43.8	54.6	No
R2 – Ground Floors	59.2	41.2	58.7	No
R2 – Upper Floors	59.2	51.2	58.7	No
R3 – Ground Floors	52.5	34.5	57.5	No
R3 – Upper Floors	52.5	44.5	57.5	No
R4	48.1	30.1	57.5	No

6 Per the LAX South Airfield Improvement Project EIR, buildings with windows open would provide approximately 13 dBA exterior/interior noise reduction. The Crossings Campus EIR conservatively analyzed the impacts of construction activities of exterior sensitive receptors on upper floor balconies during daytime and evening hours as they could be regularly used during these time periods. This analysis assumes that during nighttime hours, the upper floor balconies would not be regularly used during the planned off hours construction activities between 2:00 a.m. and 5:00 a.m. With windows closed, the minimum exterior-to-interior noise attenuation for typical structures in California is approximately 25 to 30 dBA or potentially more with improved noise abatement materials or techniques. See: Gordon, C.G., W.J. Galloway, B.A. Kugler, and D.L. Nelson. NCHRP Report 117: Highway Noise: A Design Guide for Highway Engineers. Washington, D.C.: Transportation Research Board, National Research Council, 1971. This analysis uses the 13 dBA exterior/interior noise reduction for buildings with windows open.

Construction Phases Sensitive Receptors	Estimated Unmitigated Average Construction Noise Levels (dBA L_{eq}) [a]	Estimated Mitigated Average Construction Noise Levels (dBA L_{eq}) [a]	Noise Threshold (Ambient + 5 dBA) [b c]	Exceeds Threshold?
Tower Crane Erection/ Disassembly				
R1 – Ground Floors	46.5	28.5	54.6	No
R1 – Upper Floors	46.5	38.5	54.6	No
R2 – Ground Floors	54.1	36.1	58.7	No
R2 – Upper Floors	54.1	46.1	58.7	No
R3 – Ground Floors	47.0	29.0	57.5	No
R3 – Upper Floors	47.0	39.0	57.5	No
R4	42.4	24.4	57.5	No

[a] Construction noise levels accounts for an exterior-to-interior noise attenuation rate of 13 dBA for buildings with windows open.

[b] Existing measured ambient levels at the project and receptor site boundary, as shown in Table 1, already exceed these standards; therefore, the existing ambient levels (plus 5 dBA) are assumed to be the standards not to exceed (e.g., 62 dBA Leq measured on a weekday from 7:00 a.m. to 8:00 a.m. is greater than the City's daytime standard of 50 dBA Leq, therefore, the adjusted day standard for this weekday off-hour would be 67 dBA Leq).

[c] R4 is assumed to have a similar ambient noise environment as R3 and uses the same noise threshold.

SOURCE: ESA, 2023, Culver City 2015.

The Project off-hours construction noise levels were compared to the measured ambient noise levels to estimate the increase in ambient noise levels at the noise sensitive receptors at locations R1 through R4. As shown in Table 4, with implementation of applicable PDFs and mitigation measures, construction noise impacts from on-site sources associated with the off-hours construction activities would not exceed Culver City noise regulations, standards, and thresholds for any sensitive receptors, and impacts would be less than significant.

Off-Site Construction Noise

Construction haul trucks for demolition material and soil hauling would generate haul truck travel between the Project Site and the Azusa Land Reclamation Landfill, or one of a number of inert debris engineered fill operations that are located throughout the County. Note that any contaminated soil that is found during excavation is assumed to be diverted to the nearest available landfill that accepts such soil. Construction workers would also generate trips when arriving and departing the site. During off-hour nighttime construction, haul trucks and workers would travel to and from the site via I-10 to Venice Boulevard and would enter/exit the site along Venice Boulevard. To represent existing traffic noise levels during off-hours construction, the lowest hourly average noise level at receptor R1 was used.

As indicated in **Table 5**, *Existing and Existing Plus Project Construction Vehicular Traffic Noise Levels*, the Project's concrete truck, vendor truck, and haul truck trips would increase existing traffic noise levels by a maximum of 4.0 dBA Leq along Venice Boulevard where noise-sensitive uses (e.g., residential uses) are located within a "normally acceptable" or "conditionally acceptable" category. This increase would be less than the significance threshold of an increase of 5 dBA Leq for construction noise. Note that the Project will also implement Project Design Feature NOI-PDF-5 from the *Crossings Campus* EIR, which would not allow construction haul trucks, concrete trucks, and vendor trucks to travel through neighborhood streets that are

primarily residential uses. As demonstrated above, an exception to the Culver City Noise Ordinance for the Project's night construction would not result in adverse noise impacts.

TABLE 5
EXISTING AND EXISTING PLUS PROJECT CONSTRUCTION VEHICULAR TRAFFIC NOISE LEVELS

		Leq (dBA) [a, b]		
Roadway Segment	**Adjacent Land Use**	**Existing[c]**	**Existing + Construction[d]**	**Increase over Existing**
Venice Boulevard				
Between Cattaraugus Ave and La Cienega Blvd	Commercial / Residential	49.6	53.6	4.0
Between Helms Ave and Cattaraugus Ave	Commercial / Residential	49.6	53.6	4.0
Between La Cienega Blvd and I-10 Westbound Off-Ramp/Cadillac Ave	Commercial / Residential	49.6	53.6	4.0
Between National Blvd and Helms Ave	Commercial / Residential	49.6	53.6	4.0
East of I-10 Westbound Off-Ramp/Cadillac Ave	Commercial / Residential	49.6	53.6	4.0

[a] Calculated based on existing traffic volumes provided by Fehr & Peers, July 2022. Values are rounded to the nearest tenth decimal place. The distance from roadside receiver traffic noise level to roadway centerline was estimated using Web-based satellite imaging for each roadway segment analyzed.

[b] Residential roadway segments where haul trucks would not travel were removed.

[c] The existing traffic noise level is represented by the lowest hourly average noise level at receptor R1, which is the closest receptor to the haul route.

[d] Per the LAX South Airfield Improvement Project EIR, buildings with windows open would provide approximately 13 dBA exterior/interior noise reduction.

SOURCE: ESA, 2023.

Sleep Disturbance

This noise analysis is carried out to address the potential sleep disturbance using the Sound Exposure Level (SEL). The SEL noise descriptor is a metric that represents all the acoustic energy (a.k.a. sound pressure) of an individual noise event as if that event had occurred within a one-second time period. SEL captures both the level (magnitude) and the duration of a sound event in a single numerical quantity, by "squeezing" all the noise energy from an event into one second. This provides a uniform way to make comparisons among noise events of various durations.[7] It should be noted that the SEL analysis with respect to potential sleep disturbance is mainly applicable to aviation related noises. However, the potential for sleep disruption from noise is based on the noise level, and not the source of the noise, the SEL analysis is applicable to nighttime construction noise. Currently, the City has no noise standard, or limit, to address traffic noise impacts on sleep (sleep disturbance), using the SEL noise descriptor. Therefore, the recommended SEL noise limit from the LAX South Airfield Improvement Project EIR (LAX EIR) was used to evaluate potential sleep disturbance for the Project, which specified a maximum 81 dBA SEL at the interior of the residence. Per the LAX EIR, buildings with windows open would provide approximately 13 dBA exterior/interior noise reduction.[8] Therefore, based on the

[7] Federal Aviation Administration, Fundamentals of Noise and Sound, March 29, 2022. https://www.faa.gov/regulations_policies/policy_guidance/noise/basics, accessed August 21, 2023.

[8] With windows closed, the minimum exterior-to-interior noise attenuation for typical structures in California is approximately 25 to 30 dBA or potentially more with improved noise abatement materials or techniques. See: Gordon, C.G., W.J. Galloway, B.A. Kugler, and D.L. Nelson. NCHRP Report 117: Highway Noise: A Design

interior noise limit of 81 dBA SEL and typical noise reduction of building with window open of 13 dBA, the maximum exterior noise limit would be 94 dBA SEL, threshold for the sleep disturbance to occur. The estimated SEL was estimated by using the calculated L_{max} noise levels associated with concurrent operation of offroad construction equipment and haul/concrete trucks by each construction phase (grading/excavation and foundations/concrete pour). As shown in **Table 6**, *Off-Hours Construction Noise Levels at Offsite Noise-Sensitive Receptors – SEL Analysis*, the estimated SEL at the interior of the residence, with the window opens (worst-case noise scenario) would be approximately 46.8 to 75.1 dBA SEL with mitigation incorporated, which would be below the 81 dBA SEL interior noise limits. Therefore, no adverse sleep disturbance impacts would occur.

TABLE 6
OFF-HOURS CONSTRUCTION NOISE LEVELS AT OFFSITE NOISE-SENSITIVE RECEPTORS – SEL ANALYSIS

Construction Phases Sensitive Receptors	**Estimated Unmitigated Average Construction Noise Levels (dBA L_{max}) [a]**	**Estimated Mitigated Average Construction Noise Levels (dBA L_{max})**	**Noise Threshold (SEL Interior) [b, c]**	**Exceeds Threshold?**
Grading/Excavation				
R1 – Ground Floors	58.3	40.3	81.0	No
R1 – Upper Floors	58.3	58.3	81.0	No
R2 – Ground Floors	65.3	47.3	81.0	No
R2 – Upper Floors	65.3	65.3	81.0	No
R3 – Ground Floors	59.5	41.5	81.0	No
R3 – Upper Floors	59.5	59.5	81.0	No
R4	55.5	37.5	81.0	No
Foundations/Concrete Pour				
R1 – Ground Floors	56.5	38.5	81.0	No
R1 – Upper Floors	56.5	56.5	81.0	No
R2 – Ground Floors	63.5	45.5	81.0	No
R2 – Upper Floors	63.5	63.5	81.0	No
R3 – Ground Floors	57.3	39.3	81.0	No
R3 – Upper Floors	57.3	57.3	81.0	No
R4	53.3	35.3	81.0	No
Tower Crane Erection/ Disassembly				
R1 – Ground Floors	54.5	36.5	81.0	No
R1 – Upper Floors	54.5	54.5	81.0	No
R2 – Ground Floors	62.1	44.1	81.0	No
R2 – Upper Floors	62.1	62.1	81.0	No
R3 – Ground Floors	56.0	38.0	81.0	No
R3 – Upper Floors	56.0	56.0	81.0	No
R4	51.2	33.2	81.0	No

Guide for Highway Engineers. Washington, D.C.: Transportation Research Board, National Research Council, 1971.

[a] Per the LAX South Airfield Improvement Project EIR, buildings with windows open would provide approximately 13 dBA exterior/interior noise reduction.

[b] Existing measured ambient levels at the project and receptor site boundary, as shown in Table 1, already exceed these standards; therefore, the existing ambient levels (plus 5 dBA) are assumed to be the standards not to exceed (e.g., 62 dBA Leq measured on a weekday from 7:00 a.m. to 8:00 a.m. is greater than the City's daytime standard of 50 dBA Leq, therefore, the adjusted day standard for this weekday off-hour would be 67 dBA Leq).

[c] R4 is assumed to have a similar ambient noise environment as R3 and uses the same noise threshold.

SOURCE: ESA, 2023, Culver City 2015.

4.3.2 Air Quality

In addition to noise, the Project's night construction would generate air pollutant emissions associated with the night construction activities (i.e., concrete pours, soil excavation and hauling, and crane assembly and dismantling). The analysis below estimates the emissions from the night construction activities and the potential to result in air quality impacts, when combined with the daily emissions estimated in the *Crossings Campus* EIR.

Air Quality Background

Air Quality and Public Health

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of an overall endeavor to prevent further deterioration and to facilitate improvement in air quality. The National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been set at levels considered safe to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly with a margin of safety, and to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.[9] As the scientific methods for the study of air pollution health effects have progressed over the past decades, adverse effects have been shown to occur at lower levels of exposure. For some pollutants, no clear thresholds for effects have been demonstrated. New findings over time have, in turn, led to the revision and lowering of NAAQS which, in the judgment of the U.S. Environmental Protection Agency (USEPA), are necessary to protect public health. Ongoing assessments of the scientific evidence from health studies continue to be an important part of setting and informing revisions to federal and state air quality standards.[10]

At the regional level, the SCAQMD is the regulatory agency responsible for improving air quality for large areas of Los Angeles, Orange County, Riverside and San Bernardino Counties, including the Coachella Valley.[11] Culver City and Los Angeles are located within the South Coast Air Basin (Air Basin) which is a distinct geographic subarea within the SCAQMD's jurisdiction. The SCAQMD, together with the Southern California Association of Governments (SCAG), has the responsibility for ensuring that national and State ambient air quality standards are achieved and maintained for the Air Basin. Failure to comply with these standards puts State and local agencies at risk for penalties in the form of lawsuits, fines, a federal takeover of state

9 USEPA, NAAQS Table, https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed July 8, 2022.
10 South Coast Air Quality Management District (SCAQMD), Final 2016 AQMP, 2017. Appendix I-69.
11 SCAQMD, Map of Jurisdiction, 1999.

implementation plans, and a loss of funds from federal agencies such as the Federal Highway Administration and Federal Transit Administration.

To meet the air quality standards, regional plans are developed, including the SCAQMD's AQMP, which incorporates regional demographic projections and integrated regional land use and transportation strategies from SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). These plans work together to examine multiple pollutants, cumulative effects, and transport issues related to attaining healthful air quality in the region. In addition, a host of regulatory standards at the federal, State, regional, and local level function to identify and limit exposure of air pollutants and toxic air contaminants (TACs).

Local Air Quality and Air Pollution Sources

As mentioned previously, Culver City and Los Angeles are located South Coast Air Basin, which is an approximately 6,745-square-mile area bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and San Diego County to the south. The Air Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the Coachella Valley area in Riverside County. The regional climate within the Air Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the Air Basin is primarily influenced by meteorology and a wide range of emissions sources, such as dense population centers, heavy vehicular traffic, and industry.

The Air Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid to late afternoons on hot summer days. Winter inversions frequently break by midmorning.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problem is the accumulation of carbon monoxide (CO) and nitrogen oxides (NO_X) due to low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

Air pollutant emissions within the Air Basin are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and include such sources as residential and commercial water

heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

Project Mitigation Measure

The following air quality mitigation measure was identified previously in the *Crossings Campus* EIR and would reduce construction air quality impacts. Project construction, including construction during the extended hours, is subject to the following mitigation measure, and the air quality analysis for off-hours construction activity incorporates the emissions reductions from implementation of the mitigation measure.

> **AQ-MM-1: Construction Equipment Features.** The Project shall implement the following construction equipment features for equipment operating at the Project Site. These features shall be included in applicable bid documents, and successful contractor(s) must demonstrate the ability to supply such equipment. Construction features shall include the following:
>
> - During plan check, the Project's representative shall make available to the lead agency and South Coast Air Quality Management District (SCAQMD) a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that shall be used during any of the construction phases. The inventory shall include the horsepower rating, engine production year, and certification of the specified Tier standard. A copy of each such unit's certified tier specification, best available control technology (BACT) documentation, and CARB or SCAQMD operating permit shall be maintained on-site at the time of mobilization of each applicable unit of equipment. Off-road diesel-powered equipment equal to or greater than 50 horsepower that will be used during any portion of the construction activities shall meet or exceed the Tier 4 Final standards. Such equipment will be outfitted with Best Available Control Technology (BACT) devices, including a CARB-certified Level 3 Diesel Particulate Filter or equivalent. Alternate construction equipment may be used if the construction contractor can document that the equipment would achieve the same or greater NOx reductions compared to Tier 4 Final standards. Construction contractors supplying heavy duty diesel equipment greater than 50 horsepower shall be encouraged to apply for SCAQMD SOON funds. Information including the SCAQMD website shall be provided to each contractor which uses heavy duty diesel for on-site construction activities.
>
> - During demolition, site preparation, and grading and excavation activities, the contractor shall provide notification and documentation that haul truck drivers have received training regarding idling limitations specified in Title 13 California Code of Regulations, Section 2485. During construction, trucks and vehicles in loading and unloading queues shall have their engines turned off after 5 minutes when not in use, to reduce vehicle emissions.
>
> - Contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. All construction equipment must be properly tuned and

maintained in accordance with the manufacturer's specifications. The contractor shall keep documentation on-site demonstrating that the equipment has been maintained in accordance with the manufacturer's specifications. Tampering with construction equipment to increase horsepower or to defeat emission control devices shall be prohibited.

- Construction activities shall be discontinued during an Air Quality Index (AQI) of 151 or more (unhealthy level). A record of any AQI at an unhealthy level and of discontinued construction activities as applicable shall be maintained by the Contractor on-site.

Construction Emissions

Regional Emissions

A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or State non-attainment pollutant. The Air Basin is currently in non-attainment for O_3, PM10, PM2.5, and lead (which is only in non-attainment for the Los Angeles County portion of the Basin).[12] SCAQMD methodology recommends that significance thresholds be used to determine the potential cumulative impacts to regional air quality along with a project's consistency with the current AQMP.

SCAQMD has established numerical significance thresholds for construction activities. The numerical thresholds are based on the recognition that the Air Basin is a distinct geographic area with a critical air pollution problem for which ambient air quality standards have been promulgated to protect public health.[13] Given that construction impacts are temporary and limited to the construction phase, SCAQMD has established numerical significance thresholds specific to construction activity. Based on the thresholds in the SCAQMD CEQA Air Quality Handbook, the Project would potentially result in a significant impact of a federal or State non-attainment pollutant if emissions of O_3 precursors (VOC and NOx), PM10, or PM2.5 would exceed the values shown in **Table 7**, *SCAQMD Regional Emissions Thresholds (pounds per day)*.[14]

TABLE 7
SCAQMD REGIONAL EMISSIONS THRESHOLDS (POUNDS PER DAY)

Activity	VOC	NOx	CO	SO2	PM10	PM2.5
Construction	75	100	550	150	150	55

SOURCE: SCAQMD, SCAQMD Air Quality Significance Thresholds, April 2019.

Table 8, *Estimated Maximum Mitigated Regional Construction Emissions (Pounds per Day)*, shows the combined regional daily emissions from daytime and evening construction, as analyzed

12 SCAQMD has the Partial Nonattainment designation – Los Angeles County portion of the Basin resulted from localized emissions from the two sources in the City of Vernon and the City of Industry that are no longer in operation. It is expected that this area would receive redesignation to attainment based on current monitoring data. SCAQMD, National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin.

13 SCAQMD, CEQA Air Quality Handbook 1993, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). Accessed August 1, 2023.

14 SCAQMD, Air Quality Significance Thresholds, April 2019.

in the *Crossings Campus* EIR, and off-hours construction activities. As shown in Table 8, the off-hours construction, when combined with daytime and evening construction. would not result in an exceedance of regional emissions thresholds for any criteria pollutant, and impacts would be less than significant.

TABLE 8
ESTIMATED MAXIMUM MITIGATED REGIONAL CONSTRUCTION EMISSIONS (POUNDS PER DAY) [a]

Source	VOC	NO_X	CO	SO2	PM10[b]	PM2.5[b]
Construction Sub-Phases						
Grading/Excavation	1	3	12	<0.1	3	<1
Foundations/Concrete Pour	1	1	10	<0.1	1	<1
Tower Crane Erection/Disassembly	<0.1	<1	3	<0.1	<0.1	<0.1
Maximum Daily Emissions – EIR (Overlapping Phases)	38	92	125	<1	8	4
Combined Emissions						
Maximum Daily Emissions – EIR + Grading/Excavation	39	95	137	<1	11	4
Maximum Daily Emissions – EIR + Foundations/Concrete Pour	39	93	135	<1	9	4
Maximum Daily Emissions – EIR + Tower Crane Erection/Disassembly	38	92	128	<1	8	4
Maximum Daily Emissions – EIR + Off-Hours Construction	**39**	**95**	**137**	**<1**	**11**	**4**
SCAQMD Thresholds of Significance	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

[a] Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix D.

[b] Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

SOURCE: ESA, 2023.

Localized Significance Thresholds

In addition, SCAQMD has developed a methodology to assess the potential for localized emissions to cause an exceedance of applicable ambient air quality standards or ambient concentration limits. Impacts would be considered significant if the following would occur:

- Maximum daily localized emissions of NOx and/or CO during construction or operation are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the Project Site greater than the most stringent ambient air quality standards for NO_2 of 0.18 ppm over one hour and 0.03 ppm annually and/or CO of 20 ppm over one hour and nine ppm over eight hours.[15]
- Maximum daily localized emissions of PM10 and/or PM2.5 during construction are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the Project Site to exceed 10.4 $\mu g/m^3$ over 24 hours (SCAQMD Rule 403 control requirement).

[15] SCAQMD, Final Localized Significance Threshold Methodology, June 2003 and revised July 2008.

- Maximum daily localized emissions of PM10 and/or PM2.5 during operation are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the Project Site to exceed 2.5 μg/m^3 over 24 hours (SCAQMD Rule 1303 allowable change in concentration).
- The following conditions would occur at an intersection or roadway within one-quarter mile of a sensitive receptor:
  - The Project would cause or contribute to an exceedance of the CAAQS one-hour or eight-hour CO standards of 20 or 9.0 ppm, respectively.
  - Where the CO standard is exceeded at the intersection, a project would result in a significant impact if the incremental increase due to the project is equal to or greater than 1.0 ppm for the California one-hour CO standard, or 0.45 ppm for the eight-hour CO standard.

SCAQMD has established screening criteria that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance thresholds and therefore not cause or contribute to an exceedance of the applicable ambient air quality standards or ambient concentration limits without project-specific dispersion modeling.[16] This analysis uses the screening criteria to evaluate impacts from localized emissions where applicable.

Table 9, *Estimated Maximum Unmitigated Localized Construction Emissions (Pounds per Day)*, shows the combined localized daily emissions from daytime construction, as analyzed in the EIR, and off-hours construction activities. As shown in Table 9, the off-hours construction, when combined with daytime and evening construction would not result in any exceedance of localized emissions thresholds for any criteria pollutant and impacts would be less than significant.

TABLE 9
ESTIMATED MAXIMUM UNMITIGATED LOCALIZED CONSTRUCTION EMISSIONS (POUNDS PER DAY) [a]

Source	NO_X	CO	PM10[b]	PM2.5[b]
Construction Phases				
Grading/Excavation	1	7	2	<1
Foundations/Concrete Pour	<1	5	1	<1
Tower Crane Erection/Disassembly	<1	3	<1	<1
Maximum Daily Emissions - EIR (overlapping construction)	88	90	6	4
Combined Emissions				
Maximum Daily Emissions – EIR + Grading/Excavation	89	97	8	4
Maximum Daily Emissions – EIR + Foundations/Concrete Pour	88	95	7	4
Maximum Daily Emissions – Tower Crane Erection/Disassembly	88	93	6	4
Maximum Daily Emissions – EIR + Off-Hours Construction	89	97	8	4
SCAQMD Thresholds of Significance [c]	208	1,404	12	6
Exceeds Thresholds?	**No**	**No**	**No**	**No**

16 SCAQMD, Final Localized Significance Threshold Methodology, June 2003 and revised July 2008.

Source	NO_X	CO	PM10[b]	PM2.5[b]

[a] Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix D.

[b] Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

[c] The SCAQMD LSTs are based on Source Receptor Area 2 (Northwest Los Angeles County Coastal) for a 4.46-acre site with sensitive receptors with the nearest sensitive receptor within 25 meters from the Project Site.

SOURCE: ESA, 2023.

4.3.3 Lighting

In addition to noise, the Project's night construction would include lighting equipment (i.e., tower portable lights) associated with the night construction activities (i.e., concrete pours and soil excavation).

Lighting Terminology

Lighting is defined as the state of illumination. Illuminance is the measure of emitted light falling on a surface; luminance is the measure of light reflected or emitted by it. The intensity of outdoor artificial lighting is selected based on its designed use (i.e., security, safety, visibility, or construction/maintenance) during periods of low or no natural light. Illuminance is typically measured in units of light intensity as foot-candles (fc)—the illuminance of one candle on a one square foot surface, located one foot away.

Glare is defined as offensive or undesirable light resulting from an excessively high contrast between a light source and its surrounding background. Glare can result in visual discomfort and reduce the ability to see objects. Glare usually results from a direct line-of-sight with an unshielded lighting source (lamp) from vehicles, streets, parking areas, building and site security, or entertainment/sporting venues. Glare can be controlled by proper design, location, and height of light fixtures and their light output.

Light trespass or spill light is unwanted light outside of the area intended to be illuminated by the lighting source. Light trespass is typically an undesirable condition, where surface illumination extends beyond the designed area of illumination; e.g., light spills from the source property onto an adjacent property. Like glare, light trespass can be controlled by the location and height of the lighting pole in addition to the shielding and glare control of the light source.

Lighting Design Considerations

The proposed lighting design contains design performance measures to reduce glare and light trespass, including appropriate lighting pole height and location, and lamp shielding. **Appendix E**, Lighting Calculation Report, of this report illustrates the proposed lighting program components and temporary lighting locations. As discussed therein, twelve (12) 35'-0" tall poles would be located on the sides of the Project Site, as shown on page 2, View 1_Project Illuminance Plan. Each pole would consist of (5) LED 21 beam floodlights, each at 303 watts and 33316 lumens and 180° glare shield. Fixtures would be tilted between 30 and 70 degrees above nadir. The construction area would be illuminated to an average of 10 footcandles or

higher. Temporary fencing around the construction area was considered in the analysis. The Project would provide a temporary 12-foot-tall construction fence along the northern and western boundaries of the Project Site. In addition, a temporary 6-foot-tall construction fence would be located along the southern boundary along Washington Boulevard, between the Project Site and the residences to the south and east of the Project Site.

Pole heights for the Project's night construction would meet industry standards for lighting this type of activity. Strategic placement of the poles in relation to the activities (concrete pouring) is key to the proper lighting of the site in relation to the neighboring properties. Lamp sources would vary in multiple combinations based on the luminance level requirements of the site facilities. The proposed lighting would include external shielding reflectors to provide light shielding and glare control, decreasing the visibility of these high intensity lamps. The reflector and visor system would reduce light spill by 50 percent. Lighting would be strategically located and aimed toward the targeted construction areas of the project site with visor shields. The lighting calculation figures for the Project are provided in Appendix E.

Lighting Analysis

As discussed above, the proposed lighting plan would use appropriate lighting design controls, including lamp type, pole location and height, and light shields and visors, that would reduce the potential for light trespass and glare off-site. Project lighting fixtures would direct light toward the interior of the site. The lighting design would prevent disability glare (i.e., reduction of the ability to see or identify objects). Glare and light spill would be minimized based on the design criteria.

The Project's construction lighting equipment may generate light trespass and/or glare on the project site; however, the glare, light trespass and illuminance at the nearest residence in Culver City would be very low and lighting levels would not surpass the light trespass illuminance limit of 0.74 fc at a residential property line, established in Cal Green's 2016 lluminating Engineering Society of North America (IESNA) handbook, 10th Edition, Table 4-2 Lighting Zone 3. This threshold is used to determine lighting impacts in absence of a quantitative threshold by the City of Culver City for temporary construction-related lighting. As shown in Appendix D, the maximum off-site lighting level at a residential property would be 0.71 fc (across National Boulevard to the southwest), which is below the 0.74 fc threshold.

Also, it is acknowledged that the Project meets the criteria set forth in PRC Section 21099(d) and per Senate Bill (SB) 743, making it exempt from findings of significance related to aesthetic impacts, including light and glare impacts as described in the CEQA Guidelines Appendix G questions used by the City as thresholds of significance related to aesthetics.

Based on the above, a TUP allowing an exception from the Culver City Noise Ordinance for the Project's night construction would not result in adverse lighting impacts.

SECTION 5
References

Alice Sutter and Associates, 2002. *Construction Noise: Exposure Effects, and the Potential for Remediation: A Review and Analysis*. Table V. Median 1-min Sound Levels in Leq by Equipment/Tool. AIHA Journal (63), November/December. Available at https://www.osha.gov/SLTC/noisehearingconservation/construction.html.

Culver City (Culver City), 1995. General Plan Noise Element.

Gordon, C.G., W.J. Galloway, B.A. Kugler, and D.L. Nelson. NCHRP Report 117: Highway Noise: A Design Guide for Highway Engineers. Washington, D.C.: Transportation Research Board, National Research Council, 1971

Environmental Science Associates (ESA), 2017. *8825 National Boulevard Mitigated Negative Declaration*, March.

Federal Highway Administration (FHWA), 2006. *Roadway Construction Noise Model User's Guide*.

Federal Transit Administration (FTA), 2018. *Transit Noise and Vibration Impact Assessment Manual*, September.

Los Angeles World Airports (LAWA), 2005. *South Airfield Improvement Project EIR*, August. Available at: https://www.lawa.org/-/media/lawa-web/lawa-our-lax/saip_draftier_volume-1.ashx

Timeanddate.com, 2019. Culver City, California – Sunrise, Sunset, and Daylength. Available at https://www.timeanddate.com/sun/usa/culver-city?month=2&year=2020

Wilson Ihring Acoustics, Noise & Vibration (Wilson Ihrig) 2018. *Brick and Machine Development Project 8825 National Boulevard, Culver City Draft Construction Nosie and Vibration Monitoring Plan, Revision B,* May 20.

Appendix A
Off-hours Scope of Work

Project Understanding

The proposed off-hours Project construction activities are based on information and data provided to ESA from the Applicant and General Contractor (Hathaway Dinwiddie) via email and phone conversations, and Project Site observations via Google Earth. To ensure the highest quality of the concrete structure and to reduce the overall impact to the surrounding communities during peak hours activities, the Applicant requests permission and provides justification for the Project construction activities described below to be performed off-hours. The extended hours would minimize impact to the project area during peak hours by reducing construction related traffic. Hathaway Dinwiddie requests permission for the following Project construction activities to be performed off-hours:

- Mass Excavation (5:00 a.m. Start Only):
  - Phase 1: 85 Days; estimated 75 trucks per day
  - Phase 2: 147 Days; estimated 89 trucks per day
- Concrete foundation pours
  - Total Mat Pours
    - Phase 1: 4 Days; estimated 200 concrete trucks per day
    - Phase 2: 7 Days; estimated 200 concrete trucks per day
- Elevated Deck Pours
  - Total Elevated Deck Pours
    - Phase 1: 30 Days; estimated 40 concrete trucks per day
    - Phase 2: 54 Days; estimated 40 concrete trucks per day
- Tower Crane Erection and Dismantle
  - Phase 1: 6 days (3 days continuous activity for erection and dismantle)
  - Phase 2: 6 days (3 days continuous activity for erection and dismantle)
  - Requires partial and/or full closure of Venice Blvd for staging.

The extended hours would minimize impact to the project area during peak hours by significantlyreducing construction related traffic.

The City's Municipal Code (noise ordinance) states that construction activity shall be prohibited, exceptbetween the hours of 7:00 A.M. and 7:00 P.M. Mondays through Fridays; 9:00 A.M. and 7:00 P.M. Saturdays City of Culver City. The Project's off-hours activities would occur from 5:00am for soils export to 7:00 p.m. on weekdays and 7:00 a.m. to7:00 p.m. Saturdays. Therefore, the Client is proposing an off-hours construction work plan to the city to obtain a TUP to the City's noise ordinance to conduct project construction activities outside of the allowable construction hours of City's noise ordinance. The Client has requested that ESA assist in the submittal by completing an off-hours noise study and updatedenvironmental review of the proposed off-hours construction work to support submittal of the TUP application to the City for approval at the soonest possible bi-monthly City Council Hearing.

The Project's off-hours work would generate noise similar during the City's daytime period. To mitigate noise levels at adjacent residential locations (including the Ivy Station development) contractor will implement the following temporary measures (see Exhibit A) during construction to reduce to reduce

project construction noise (by 10 dB or more) generated on the Project Site to the nearest noise sensitive receptors. The noise impact analysis is based on the City's established noise level limits of the Noise Element of the City's 1975 General Plan, which establishes a daytime (7:00 a.m. to 10:00 p.m.) hourly average noise level limit of 55 dBA L_{eq} and a maximum noise level limit of 70 dBA L_{max} at a residential property line (City 1975). (see Appendix A):

- Install a 12'H temporary pedestrian covered walkway with STC 25 sound wall blankets located atat the West Elevation (National Blvd.).

- Install 12'H tall perimeter barricade at the South elevation (adjacent to 8777 Washington Blvd.)w/ STC 25 sound wall blankets.

- Install 12'H tall perimeter barricade at the North elevation (Venice Blvd) w/ STC 25 sound wallblankets w/ access gates.

- Install 6'H tall perimeter barricade at the South Elevation (partial Washington Blvd.) w/ STC 25sound wall blankets.

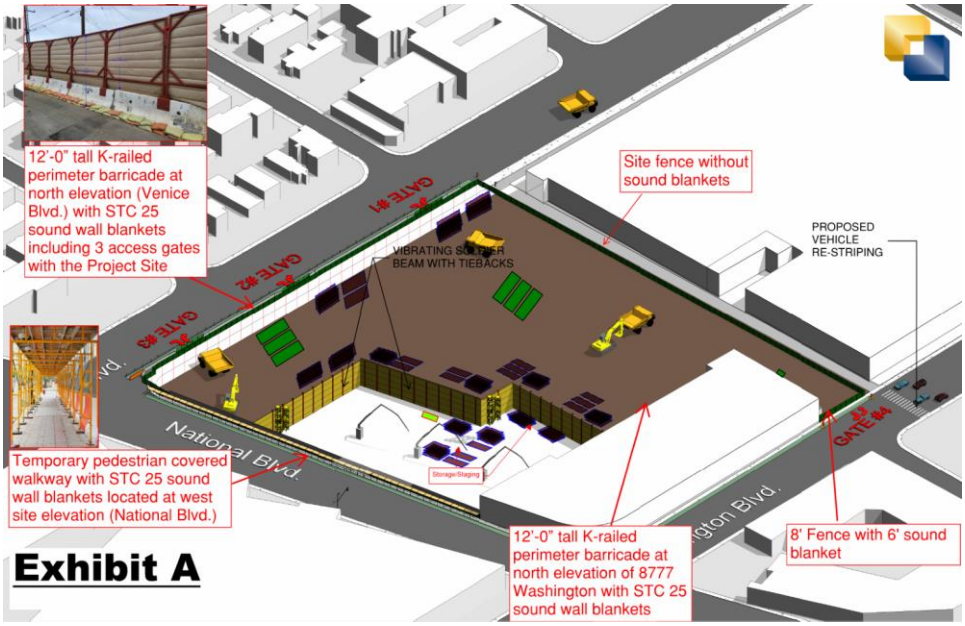
Project Description

The proposed off-hours Project construction activities are detailed in Hathaway Dinwiddie Construction Company Construction Management submitted to the City of Culver City requesting an extended hours permit. The off-hours mat foundation pours, elevated deck concrete pours and export of mass excavations would include the operation of a 5-yard loader, bottom dump truck and trailer transporter, concrete pumps, concrete trucks, a crane and generators. The off-hours tower crane erections/disassemble would include the operation of a mobile crane, forklift, and flatbed delivery truck(s). The off-hours construction activities would require additional artificial lighting equipment (e.g., portable light towers) during off-hours at the Project Site, as the lighting provided by the existing streetlights and natural sunlight (sunrise at approximately 5:30 – 6:50 a.m. September 2023 – September 2025 (time and date per project schedule 6/13/23)) would not be sufficient lighting for the off-hours work, as determined by the Contractor.

The off-hours Project construction work would occur within the designated work off Venice Blvd. adjacent to the Project Site as discussed and shown in Exhibit A. The mat foundation and elevated deck concrete pours would include a total of 12 active concrete trucks at the Project Site for mat foundations, 4active concrete trucks for elevated concrete decks with two or six trucks (depending type of placement) atthe hopper discharging concrete and two or four (depending type of placement) waiting in the queue, and

one to three concrete pumps at any given time within the designated work area of each placement. The tower crane would be erected and disassembled within the designated work area of Venice Boulevard.

The Project off-hours construction activities would occur over variable day events beginning at 7:00 a.m.or 9:00 a.m., depending upon the day of the week (weekday or weekend) and the activity (mass excavation, mat foundation concrete pours, elevated deck concrete pours, and tower crane erection/disassembly).


12'-0" tall K-railed perimeter barricade at north elevation (Venice Blvd.) with STC 25 sound wall blankets including 3 access gates with the Project Site
Site fence without sound blankets
PROPOSED VEHICLE RE-STRIPING
VIBRATING SOLDIER BEAM WITH TIEBACKS
GATE #1
GATE #2
GATE #3
GATE #4
National Blvd.
Temporary pedestrian covered walkway with STC 25 sound wall blankets located at west site elevation (National Blvd.)
12'-0" tall K-railed perimeter barricade at north elevation of 8777 Washington with STC 25 sound wall blankets
8' Fence with 6' sound blanket
Exhibit A

Appendix B

Ambient Noise Measurements at Nearest Noise Sensitive Receptor

Summary

File Name on Meter	R1
File Name on PC	LxT_0007058-20230530 190837-LxT_Data.016.ldbin
Serial Number	0007058
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	Curts Avenue & Venice Booulevard
Job Description	
Note	

Measurement

Description	
Start	2023-05-30 19:08:37
Stop	2023-05-31 07:10:36
Duration	12:01:59.3
Run Time	12:01:59.3
Pause	00:00:00.0
Pre-Calibration	2023-05-30 13:29:25
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1		
Microphone Correction	Off		
Integration Method	Exponential		
Overload	143.7 dB		
	A	**C**	**Z**
Under Range Peak	**99.6**	96.6	101.6 dB
Under Range Limit	**36.8**	36.5	43.5 dB
Noise Floor	27.7	27.4	34.4 dB
	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	57.5 dB		
LASE	103.9 dB		
EAS	2.707 mPa^2h		
EAS8	1.799 mPa^2h		
EAS40	8.997 mPa^2h		
$LA_{peak\ (max)}$	2023-05-30 19:08:40	103.5 dB	
LAS_{max}	2023-05-30 22:52:46	89.6 dB	
LAS_{min}	2023-05-31 03:27:38	39.4 dB	
SEA	-99.9 dB		
	Exceedance Counts	**Duration**	
LAS > 85.0 dB	1	2.6 s	
LAS > 115.0 dB	0	0.0 s	
LA_{peak} > 135.0 dB	0	0.0 s	
LA_{peak} > 137.0 dB	0	0.0 s	
LA_{peak} > 140.0 dB	0	0.0 s	
LC_{Seq}	68.0 dB		
LA_{Seq}	57.5 dB		
LC_{Seq} - LA_{Seq}	10.5 dB		
LAI_{eq}	60.3 dB		
LA_{eq}	57.5 dB		
LAI_{eq} - LA_{eq}	2.8 dB		

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L_{eq}	57.5					
$L_{S(max)}$	89.6	2023/05/30 22:52:46				
$L_{S(min)}$	39.4	2023/05/31 3:27:38				
$L_{Peak(max)}$	103.5	2023/05/30 19:08:40				

Overload Count	0	
Overload Duration	0.0	s

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results			
Dose	-99.94	0.01	%
Projected Dose	-99.94	0.01	%
TWA (Projected)	-99.9	20.6	dB
TWA (t)	-99.9	23.5	dB
Lep (t)	59.3	59.3	dB

Statistics		
LAS 5.00	61.9	dB
LAS 10.00	60.5	dB
LAS 33.30	56.5	dB
LAS 50.00	54.3	dB
LAS 66.60	51.5	dB
LAS 90.00	45.6	dB

Summary

File Name on Meter	LxT_Data.001.s
File Name on PC	LxT_0007057-20230530 143856-LxT_Data.001.ldbin
Serial Number	0007057
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	R2
Job Description	
Note	

Measurement

Description	
Start	2023-05-30 14:38:56
Stop	2023-05-31 14:23:48
Duration	23:44:52.2
Run Time	23:44:52.2
Pause	00:00:00.0
Pre-Calibration	2020-08-03 23:14:37
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT2B		
Microphone Correction	Off		
Integration Method	Exponential		
Overload	144.5 dB		
	A	**C**	**Z**
Under Range Peak	**100.8**	97.8	102.8 dB
Under Range Limit	**39.1**	38.6	45.5 dB
Noise Floor	29.9	29.5	36.3 dB

	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	66.3 dB		
LASE	115.6 dB		
EAS	40.521 mPa²h		
EAS8	13.651 mPa²h		
EAS40	68.253 mPa²h		
$LA_{peak\ (max)}$	2023-05-31 13:33:09	110.7 dB	
LAS_{max}	2023-05-31 13:58:36	97.1 dB	
LAS_{min}	2023-05-31 04:00:23	46.0 dB	
SEA	-99.9 dB		

	Exceedance Counts	**Duration**
LAS > 85.0 dB	13	35.6 s
LAS > 115.0 dB	0	0.0 s
LA_{peak} > 135.0 dB	0	0.0 s
LA_{peak} > 137.0 dB	0	0.0 s
LA_{peak} > 140.0 dB	0	0.0 s

LC_{Seq}	74.6 dB
LA_{Seq}	66.3 dB
LC_{Seq} - LA_{Seq}	8.3 dB
LAI_{eq}	68.2 dB
LA_{eq}	66.3 dB
LAI_{eq} - LA_{eq}	1.9 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L_{eq}	66.3					
$L_{S(max)}$	97.1	2023/05/31 13:58:36				
$L_{S(min)}$	46.0	2023/05/31 4:00:23				
$L_{Peak(max)}$	110.7	2023/05/31 13:33:09				

Overload Count	0	
Overload Duration	0.0	s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.02	0.18	%
Projected Dose	0.01	0.06	%
TWA (Projected)	22.1	36.6	dB
TWA (t)	29.9	44.4	dB
Lep (t)	71.0	71.0	dB

Statistics

LAS 5.00	72.9	dB
LAS 10.00	70.8	dB
LAS 33.30	63.1	dB
LAS 50.00	60.2	dB
LAS 66.60	57.7	dB
LAS 90.00	51.7	dB

Summary

File Name on Meter	LxT_Data.239.s
File Name on PC	LxT_0004983-20230530 150756-LxT_Data.239.ldbin
Serial Number	0004983
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	R3
Job Description	
Note	

Measurement

Description	
Start	2023-05-30 15:07:56
Stop	2023-05-31 14:37:28
Duration	23:29:32.6
Run Time	23:29:32.6
Pause	00:00:00.0
Pre-Calibration	2023-05-30 13:40:25
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxT1		
Microphone Correction	Off		
Integration Method	Exponential		
Overload	143.2 dB		
	A	**C**	**Z**
Under Range Peak	99.1	96.1	**101.1** dB
Under Range Limit	**36.4**	36.0	43.1 dB
Noise Floor	27.3	26.9	33.9 dB
	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	62.5 dB	
LASE	111.8 dB	
EAS	16.710 mPa^2h	
EAS8	5.690 mPa^2h	
EAS40	28.452 mPa^2h	
$LZ_{peak\ (max)}$	2023-05-31 12:15:08	116.1 dB
LAS_{max}	2023-05-31 13:03:14	93.4 dB
LAS_{min}	2023-05-31 03:24:24	45.8 dB
SEA	-99.9 dB	

	Exceedance Counts	**Duration**
LAS > 85.0 dB	2	18.9 s
LAS > 115.0 dB	0	0.0 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

LC_{Seq}	69.9 dB
LA_{Seq}	62.5 dB
LC_{Seq} - LA_{Seq}	7.4 dB
LAI_{eq}	64.0 dB
LA_{eq}	62.5 dB
LAI_{eq} - LA_{eq}	1.5 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L_{eq}	62.5					
$L_{S(max)}$	93.4	2023/05/31 13:03:14				
$L_{S(min)}$	45.8	2023/05/31 3:24:24				
$L_{Peak(max)}$					116.1	2023/05/31 12:15:08

Overload Count	0	
Overload Duration	0.0	s

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results			
Dose	0.03	0.08	%
Projected Dose	0.01	0.03	%
TWA (Projected)	23.0	31.1	dB
TWA (t)	30.8	38.9	dB
Lep (t)	67.2	67.2	dB

Statistics		
LAS 5.00	67.2	dB
LAS 10.00	65.9	dB
LAS 33.30	61.6	dB
LAS 50.00	58.5	dB
LAS 66.60	55.1	dB
LAS 90.00	48.6	dB

Appendix C
Off-Hours Noise Calculations

Project: Culver Crossing

Construction Noise Impact on Sensitive Receptors - Unmitigated

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				R1					R2					R3					R4				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Grading/Excavation					***58.2***	***53.4***				***65.3***	***61.1***				***59.0***	***53.9***				***55***	***49.3***		
Excavator	2	81	40%	250.0	57.0	53.1	56.1	13.0	100.0	65.0	61.0	64.0	13.0	240.0	57.4	53.4	56.4	13.0	430	52	48.3	51	13.0
Vacuum Street Sweeper	2	82	10%	500.0	52.0	42.0	45.0	13.0	400.0	53.9	43.9	46.9	13.0	400.0	53.9	43.9	46.9	13.0	500	52	42.0	45	13.0
Foundations/Concrete Pour					***55.6***	***51.8***				***62.4***	***59.2***				***56.6***	***52.5***				***53***	***48.1***		
Crane	1	81	16%	500.0	48.0	40.0	43.0	13.0	400.0	49.9	42.0	45.0	13.0	400.0	49.9	42.0	45.0	13.0	500	48	40	43	13.0
Forklift	1	75	10%	500.0	42.0	32.0	35.0	13.0	400.0	43.9	33.9	36.9	13.0	400.0	43.9	33.9	36.9	13.0	500	42	32	35	13.0
Concrete Mixer Truck	2	79	40%	750.0	45.5	41.5	44.5	13.0	600.0	47.4	43.4	46.4	13.0	600.0	47.4	43.4	46.4	13.0	900	44	40	43	13.0
Generator	1	81	50%	250.0	54.0	51.0	54.0	13.0	100.0	62.0	59.0	62.0	13.0	240.0	54.4	51.4	54.4	13.0	430	49	46	49	13.0
Tower Crane Erection/Disassembly					***54.4***	***46.5***		**0.0**		***62.1***	***54.1***		**0.0**		***54.9***	***47.0***		**0.0**		***50.3***	***42.4***		**0.0**
Crane	1	81	16%	250.0	54.0	46.1	49.1	13.0	100.0	62.0	54.0	57.0	13.0	240.0	54.4	46.4	49.4	13.0	430.0	49.3	41.4	44.4	13.0
Forklift	1	75	10%	500.0	42.0	32.0	35.0	13.0	400.0	43.9	33.9	36.9	13.0	400.0	43.9	33.9	36.9	13.0	500.0	42.0	32.0	35.0	13.0
Pickup Truck	1	75	40%	750.0	38.5	34.5	37.5	13.0	600.0	40.4	36.4	39.4	13.0	600.0	40.4	36.4	39.4	13.0	900.0	36.9	32.9	35.9	13.0

Source for Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

Assumes a 13 dBA reduction from exterior-to-interior noise attenuation

Project: Culver Crossing

Construction Noise Impact on Sensitive Receptors (Lower Floors) - Mitigated

Parameters

Leq to L10 factor	3

				R1					R2					R3					R4				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Grading/Excavation					***40.2***	***35.4***				***47.3***	***43.1***				***41.0***	***35.9***				***37***	***31.3***		
Excavator	2	81	40%	250.0	39.0	35.1	38.1	31.0	100.0	47.0	43.0	46.0	31.0	240.0	39.4	35.4	38.4	31.0	430	34	30.3	33	31.0
Vacuum Street Sweeper	2	82	10%	500.0	34.0	24.0	27.0	31.0	400.0	35.9	25.9	28.9	31.0	400.0	35.9	25.9	28.9	31.0	500	34	24.0	27	31.0
Foundations/Concrete Pour					***37.6***	***33.8***				***44.4***	***41.2***				***38.6***	***34.5***				***35***	***30.1***		
Crane	1	81	16%	500.0	30.0	22.0	25.0	31.0	400.0	31.9	24.0	27.0	31.0	400.0	31.9	24.0	27.0	31.0	500	30	22	25	31.0
Forklift	1	75	10%	500.0	24.0	14.0	17.0	31.0	400.0	25.9	15.9	18.9	31.0	400.0	25.9	15.9	18.9	31.0	500	24	14	17	31.0
Concrete Mixer Truck	2	79	40%	750.0	27.5	23.5	26.5	31.0	600.0	29.4	25.4	28.4	31.0	600.0	29.4	25.4	28.4	31.0	900	26	22	25	31.0
Generator	1	81	50%	250.0	36.0	33.0	36.0	31.0	100.0	44.0	41.0	44.0	31.0	240.0	36.4	33.4	36.4	31.0	430	31	28	31	31.0
Tower Crane Erection/Disassembly					***36.4***	***28.5***		**0.0**		***44.1***	***36.1***		**0.0**		***36.9***	***29.0***		**0.0**		***32.3***	***24.4***		**0.0**
Crane	1	81	16%	250.0	36.0	28.1	31.1	31.0	100.0	44.0	36.0	39.0	31.0	240.0	36.4	28.4	31.4	31.0	430.0	31.3	23.4	26.4	31.0
Forklift	1	75	10%	500.0	24.0	14.0	17.0	31.0	400.0	25.9	15.9	18.9	31.0	400.0	25.9	15.9	18.9	31.0	500.0	24.0	14.0	17.0	31.0
Pickup Truck	1	75	40%	750.0	20.5	16.5	19.5	31.0	600.0	22.4	18.4	21.4	31.0	600.0	22.4	18.4	21.4	31.0	900.0	18.9	14.9	17.9	31.0

Source for Ref. Noise Levels: FHWA RCNM, 2005

Assumes a 13 dBA reduction from exterior-to-interior noise attenuation

Project: Culver Crossing

Construction Noise Impact on Sensitive Receptors (Upper Floors) - Mitigated

Parameters

Leq to L10 factor	3

				R1					R2					R3				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Grading/Excavation					***50.2***	***45.4***				***57.3***	***53.1***				***51.0***	***45.9***		
Excavator	2	81	40%	250.0	49.0	45.1	48.1	21.0	100.0	57.0	53.0	56.0	21.0	240.0	49.4	45.4	48.4	21.0
Vacuum Street Sweeper	2	82	10%	500.0	44.0	34.0	37.0	21.0	400.0	45.9	35.9	38.9	21.0	400.0	45.9	35.9	38.9	21.0
Foundations/Concrete Pour					***47.6***	***43.8***				***54.4***	***51.2***				***48.6***	***44.5***		
Crane	1	81	16%	500.0	40.0	32.0	35.0	21.0	400.0	41.9	34.0	37.0	21.0	400.0	41.9	34.0	37.0	21.0
Forklift	1	75	10%	500.0	34.0	24.0	27.0	21.0	400.0	35.9	25.9	28.9	21.0	400.0	35.9	25.9	28.9	21.0
Concrete Mixer Truck	2	79	40%	750.0	37.5	33.5	36.5	21.0	600.0	39.4	35.4	38.4	21.0	600.0	39.4	35.4	38.4	21.0
Generator	1	81	50%	250.0	46.0	43.0	46.0	21.0	100.0	54.0	51.0	54.0	21.0	240.0	46.4	43.4	46.4	21.0
Tower Crane Erection/Disassembly					***46.4***	***38.5***		**0.0**		***54.1***	***46.1***		**0.0**		***46.9***	***39.0***		**0.0**
Crane	1	81	16%	250.0	46.0	38.1	41.1	21.0	100.0	54.0	46.0	49.0	21.0	240.0	46.4	38.4	41.4	21.0
Forklift	1	75	10%	500.0	34.0	24.0	27.0	21.0	400.0	35.9	25.9	28.9	21.0	400.0	35.9	25.9	28.9	21.0
Pickup Truck	1	75	40%	750.0	30.5	26.5	29.5	21.0	600.0	32.4	28.4	31.4	21.0	600.0	32.4	28.4	31.4	21.0

Source for Ref. Noise Levels: FHWA RCNM, 2005

Assumes a 13 dBA reduction from exterior-to-interior noise attenuation

Project: Culver Crossing

Construction Noise Impact on Sensitive Receptors - Sound Exposure Levels (SEL) - Unmitigated

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				R1					R2					R3					R4				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Grading/Excavation					***58.3***	***53.5***				***65.3***	***61.1***				***59.5***	***54.4***				***55.5***	***49.8***		
Excavator	2	81	40%	250.0	57.0	53.1	56.1	13.0	100.0	65.0	61.0	64.0	13.0	240.0	57.4	53.4	56.4	13.0	430.0	52.3	48.3	51	13.0
Dump Truck	1	76	40%	750.0	39.5	35.5	38.5	13.0	600.0	41.4	37.4	40.4	13.0	241.0	49.3	45.4	48.4	13.0	431.0	44.3	40.3	43	13.0
Vacuum Street Sweeper	2	82	10%	500.0	52.0	42.0	45.0	13.0	400.0	53.9	43.9	46.9	13.0	400.0	53.9	43.9	46.9	13.0	500.0	52.0	42.0	45	13.0
Foundations/Concrete Pour					***56.5***	***52.6***				***63.5***	***60.1***				***57.3***	***53.3***				***53.3***	***48.7***		
Crane	1	81	16%	500.0	48.0	40.0	43.0	13.0	400.0	49.9	42.0	45.0	13.0	400.0	49.9	42.0	45.0	13.0	500.0	48.0	40	43	13.0
Forklift	1	75	10%	500.0	42.0	32.0	35.0	13.0	400.0	43.9	33.9	36.9	13.0	400.0	43.9	33.9	36.9	13.0	500.0	42.0	32	35	13.0
Dump Truck	1	76	40%	250.0	49.0	45.0	48.0	13.0	100.0	57.0	53.0	56.0	13.0	240.0	49.4	45.4	48.4	13.0	430.0	44.3	40	43	13.0
Concrete Mixer Truck	2	79	40%	750.0	45.5	41.5	44.5	13.0	600.0	47.4	43.4	46.4	13.0	600.0	47.4	43.4	46.4	13.0	900.0	43.9	40	43	13.0
Generator	1	81	50%	250.0	54.0	51.0	54.0	13.0	100.0	62.0	59.0	62.0	13.0	240.0	54.4	51.4	54.4	13.0	430.0	49.3	46	49	13.0
Tower Crane Erection/Disassembly					***54.5***	***46.8***		**0.0**		***62.1***	***54.2***		**0.0**		***56.0***	***49.3***		**0.0**		***51.2***	***44.5***		**0.0**
Crane	1	81	16%	250.0	54.0	46.1	49.1	13.0	100.0	62.0	54.0	57.0	13.0	240.0	54.4	46.4	49.4	13.0	430.0	49.3	41.4	44.4	13.0
Dump Truck	1	76	40%	750.0	39.5	35.5	38.5	13.0	600.0	41.4	37.4	40.4	13.0	241.0	49.3	45.4	48.4	13.0	431.0	44.3	40.3	43.3	13.0
Forklift	1	75	10%	500.0	42.0	32.0	35.0	13.0	400.0	43.9	33.9	36.9	13.0	400.0	43.9	33.9	36.9	13.0	500.0	42.0	32.0	35.0	13.0
Pickup Truck	1	75	40%	750.0	38.5	34.5	37.5	13.0	600.0	40.4	36.4	39.4	13.0	600.0	40.4	36.4	39.4	13.0	900.0	36.9	32.9	35.9	13.0

Source for Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

Project: Culver Crossing

Construction Noise Impact on Sensitive Receptors - Sound Exposure Level - Mitigated

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				R1					R2					R3					R4				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Grading/Excavation					***40.3***	***35.5***				***47.3***	***43.1***				***41.5***	***36.4***				***37.5***	***31.8***		
Excavator	2	81	40%	250.0	39.0	35.1	38.1	31.0	100.0	47.0	43.0	46.0	31.0	240.0	39.4	35.4	38.4	31.0	430.0	34.3	30.3	33	31.0
Dump Truck	1	76	40%	750.0	21.5	17.5	20.5	31.0	600.0	23.4	19.4	22.4	31.0	241.0	31.3	27.4	30.4	31.0	431.0	26.3	22.3	25	31.0
Vacuum Street Sweeper	2	82	10%	500.0	34.0	24.0	27.0	31.0	400.0	35.9	25.9	28.9	31.0	400.0	35.9	25.9	28.9	31.0	500.0	34.0	24.0	27	31.0
Foundations/Concrete Pour					***38.5***	***34.6***				***45.5***	***42.1***				***39.3***	***35.3***				***35.3***	***30.7***		
Crane	1	81	16%	500.0	30.0	22.0	25.0	31.0	400.0	31.9	24.0	27.0	31.0	400.0	31.9	24.0	27.0	31.0	500.0	30.0	22	25	31.0
Forklift	1	75	10%	500.0	24.0	14.0	17.0	31.0	400.0	25.9	15.9	18.9	31.0	400.0	25.9	15.9	18.9	31.0	500.0	24.0	14	17	31.0
Dump Truck	1	76	40%	250.0	31.0	27.0	30.0	31.0	100.0	39.0	35.0	38.0	31.0	240.0	31.4	27.4	30.4	31.0	430.0	26.3	22	25	31.0
Concrete Mixer Truck	2	79	40%	750.0	27.5	23.5	26.5	31.0	600.0	29.4	25.4	28.4	31.0	600.0	29.4	25.4	28.4	31.0	900.0	25.9	22	25	31.0
Generator	1	81	50%	250.0	36.0	33.0	36.0	31.0	100.0	44.0	41.0	44.0	31.0	240.0	36.4	33.4	36.4	31.0	430.0	31.3	28	31	31.0
Tower Crane Erection/Disassembly					***36.5***	***28.8***		**0.0**		***44.1***	***36.2***		**0.0**		***38.0***	***31.3***		**0.0**		***33.2***	***26.5***		**0.0**
Crane	1	81	16%	250.0	36.0	28.1	31.1	31.0	100.0	44.0	36.0	39.0	31.0	240.0	36.4	28.4	31.4	31.0	430.0	31.3	23.4	26.4	31.0
Dump Truck	1	76	40%	750.0	21.5	17.5	20.5	31.0	600.0	23.4	19.4	22.4	31.0	241.0	31.3	27.4	30.4	31.0	431.0	26.3	22.3	25.3	31.0
Forklift	1	75	10%	500.0	24.0	14.0	17.0	31.0	400.0	25.9	15.9	18.9	31.0	400.0	25.9	15.9	18.9	31.0	500.0	24.0	14.0	17.0	31.0
Pickup Truck	1	75	40%	750.0	20.5	16.5	19.5	31.0	600.0	22.4	18.4	21.4	31.0	600.0	22.4	18.4	21.4	31.0	900.0	18.9	14.9	17.9	31.0

Source for Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

TRAFFIC NOISE ANALYSIS TOOL

Project Name: Culver Crossing
Analysis Scenario: Existing + Construction Trucks
Source of Traffic Volumes: Fehr Peers; Project Applicant for Construction Trucks.

Segment	Ground Type	Distance from Roadway to Receiver (feet)	Speed (mph)			Peak Hour Volume			Peak Hour Noise Level (Leq(h) dBA)
			Auto	MT	HT	Auto	MT	HT	
Existing Noise Levels (R1 at 3 AM)									
Venice Blvd. between Cattaraugus Ave. and La Cienega Blvd.	Hard	50	40	40	35				49.6
Venice Blvd. between Helms Ave. and Cattaraugus Ave.	Hard	50	40	40	35				49.6
Venice Blvd. between La Cienega Blvd. and I-10 WB Off-Ramp/Cadillac Ave.	Hard	50	40	40	35				49.6
Venice Blvd. between National Blvd. and Helms Ave.	Hard	50	40	40	35				49.6
Venice Blvd. e/o I-10 WB Off-Ramp/Cadillac Ave.	Hard	50	40	40	35				49.6
Construction Noise Levels									
Venice Blvd. between Cattaraugus Ave. and La Cienega Blvd.	Hard	50	40	40	35	60	0	63	51.4
Venice Blvd. between Helms Ave. and Cattaraugus Ave.	Hard	50	40	40	35	60	0	63	51.4
Venice Blvd. between La Cienega Blvd. and I-10 WB Off-Ramp/Cadillac Ave.	Hard	50	40	40	35	60	0	63	51.4
Venice Blvd. between National Blvd. and Helms Ave.	Hard	50	40	40	35	60	0	63	51.4
Venice Blvd. e/o I-10 WB Off-Ramp/Cadillac Ave.	Hard	50	40	40	35	60	0	63	51.4
Existing + Construction Noise Levels									
Venice Blvd. between Cattaraugus Ave. and La Cienega Blvd.	Hard	50	40	40	35				53.6
Venice Blvd. between Helms Ave. and Cattaraugus Ave.	Hard	50	40	40	35				53.6
Venice Blvd. between La Cienega Blvd. and I-10 WB Off-Ramp/Cadillac Ave.	Hard	50	40	40	35				53.6
Venice Blvd. between National Blvd. and Helms Ave.	Hard	50	40	40	35				53.6
Venice Blvd. e/o I-10 WB Off-Ramp/Cadillac Ave.	Hard	50	40	40	35				53.6

Model Notes:
The calculation is based on the methodology described in FHWA Traffic Noise Model Technical Manual (1998).
The peak hour noise level at 50 feet was validated with the results from FHWA Traffic Noise Model Version 2.5.
Accuracy of the calculation is within ±0.1 dB when comparing to TNM results.
Noise propagation greater than 50 feet is based on the following assumptions:
For hard ground, the propagation rate is 3 dB per doubling the distance.
For soft ground, the propagation rate is 4.5 dB per doubling the distance.
Vehicles are assumed to be on a long straight roadway with cruise speed.
Roadway grade is less than 1.5%.

Appendix D

Air Quality Modeling and Calculations

Emissions Summary - Onroad and Off-Road Emissions

	Regional Emissions (pounds/day)									
	ROG	NOX	CO	SO2	PM10 Dust	PM10 Exh	Total PM10	PM2.5 Dust	PM2.5 Exh	Total PM2.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.39	0.39	5.08	0.01	1.23	0.01	1.24	0.31	0.01	0.31
Total (Includes Off-Road)	**0.55**	**2.49**	**12.36**	**0.02**	**3.08**	**0.02**	**3.10**	**0.51**	**0.02**	**0.53**
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.39	0.39	5.08	0.01	1.23	0.01	1.24	0.31	0.01	0.31
Total (Includes Off-Road)	**0.56**	**1.27**	**10.35**	**0.02**	**1.23**	**0.04**	**1.27**	**0.31**	**0.04**	**0.34**
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.03	0.03	0.34	0.00	0.08	0.00	0.08	0.02	0.00	0.02
Total (Includes Off-Road)	**0.08**	**0.27**	**2.69**	**0.01**	**0.08**	**0.01**	**0.09**	**0.02**	**0.01**	**0.03**

Off-Road Emissions - CalEEMod

CalEEMod

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	lb/day										
Fugitive Dust						1.8446	0	1.8446	0.1992	0	0.1992
Off-Road		0.1566	2.1055	7.276	9.61E-03		0.0157	0.0157		0.0157	0.0157
Total		**0.1566**	**2.1055**	**7.276**	**9.61E-03**	**1.8446**	**0.0157**	**1.8604**	**0.1992**	**0.0157**	**0.2149**

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	lb/day										
Off-Road		0.1706	0.8814	5.2712	9.56E-03		0.0309	0.0309		0.0309	0.0309
Total		**0.1706**	**0.8814**	**5.2712**	**9.56E-03**		**0.0309**	**0.0309**		**0.0309**	**0.0309**

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	lb/day										
Off-Road		0.06	0.24	2.35	0.00		0.01	0.01		0.01	0.01
Total		**0.06**	**0.24**	**2.35**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**

Culver Crossing Off-Hours Construction
Total Emissions

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Idling per Day (minutes)	Regional Emissions (pounds/day) ROG	NOX	CO	SO2	PM10 Dust	PM10 Exh	Total PM10	PM2.5 Dust	PM2.5 Exh	Total PM2.5	(MT/yr) Total CO2e
Grading/Excavation	2024															
Total Haul Trips	0															
Hauling	0	1	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	0	0.39	0.39	5.08	0.01	1.23	0.01	1.24	0.31	0.01	0.31	0.55
Foundations/Concrete Pour	2024															
Total Haul Trips	0															
Hauling	0	1	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	0	0.39	0.39	5.08	0.01	1.23	0.01	1.24	0.31	0.01	0.31	0.55
Tower Crane Erection/Disassemb	2024															
Total Haul Trips	0															
Hauling	0	1	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	8	1	8	14.7	0	0.03	0.03	0.34	0.00	0.08	0.00	0.08	0.02	0.00	0.02	0.04

Culver Crossing Off-Hours Construction

Running Emissions

			Running Emissions Factor (grams/mile)						Running Emissions Factor (grams/mile)		
			ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM2.5_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
2024	2024Hauling	Hauling	0.01506835	1.736594392	0.53415245	0.01416079	0.0242504	0.02319665	1559.36414	0.08218565	0.24859598
2024	2024Vendor	Vendor	0.01969384	1.266700708	0.44120439	0.01277308	0.01665469	0.01592783	1377.97499	0.04535619	0.19361282
2024	2024Worker	Worker	0.01832772	0.079436569	1.06108625	0.00300255	0.00168421	0.00155002	303.73836	0.00437904	0.00668737
0		GWP	N/A	N/A	N/A	N/A	N/A	N/A	1	25	298

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Regional Emissions (pounds/day) ROG	NOX	CO	SO2	PM10	PM2.5	Regional Emissions (MT/year) CO2	CH4	N2O	CO2e
Grading/Excavation	2024													
Total Haul Trips	0													
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	0.07	0.31	4.13	0.01	0.01	0.01	0.54	0.00	0.00	0.54
Foundations/Concrete Pou	2024													
Total Haul Trips	0													
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	0.07	0.31	4.13	0.01	0.01	0.01	0.54	0.00	0.00	0.54
Tower Crane Erection/Disa	2024													
Total Haul Trips	0													
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	8	1	8	14.7	0.00	0.02	0.28	0.00	0.00	0.00	0.04	0.00	0.00	0.04

Culver Crossing Off-Hours Construction

Mitigated Start Emissions

		Start Emissions Factor (grams/trip)						Start Emissions Factor (grams/trip)		
		ROG_STREX	NOX_STREX	CO_STREX	SOx_STREX	PM10_STREX	PM2.5_STREX	CO2_STREX	CH4_STREX	N2O_STREX
2024	2024Hauling Hauling	0.001177904	2.678708512	0.00389032	4.71408E-07	1.22813E-06	1.12922E-06	0.04768432	8.04833E-08	1.77648E-05
2024	2024Vendor Vendor	0.083332265	1.993917438	0.65284372	5.81177E-05	6.41901E-05	5.90205E-05	5.8787779	0.005800972	0.004228255
2024	2024Worker Worker	1.204441519	0.294577037	3.61543143	0.000749137	0.002326538	0.002139187	75.777476	0.07927821	0.033955746
	GWP		N/A					1	25	298

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Regional Emissions (pounds/day) ROG	NOX	CO	SO2	PM10	PM2.5	Regional Emissions (MT/year) CO2	CH4	N2O	CO2e
Grading/Excavation	2024													
Total Haul Trips	0													
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	0.32	0.08	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Foundations/Concrete Pou	2024													
Total Haul Trips	0													
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	0.32	0.08	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Tower Crane Erection/Disa	2024													
Total Haul Trips	0													
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	8	1	8	14.7	0.02	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Culver Crossing Off-Hours Construction

Idling Emissions

			Idling Emissions Factor (grams/minute)						Idling Emissions Factor (grams/minute)		
			ROG_IDLEX	NOx_IDLEX	CO_IDLEX	SOx_IDLEX	PM10_IDLEX	PM2.5_IDLEX	CO2_IDLEX	CH4_IDLEX	N2O_IDLEX
2024	2024Hauling	Hauling	0.07437494	0.917247169	1.17434618	0.00164618	0.00051387	0.00049064	186.584742	0.03775081	0.02998659
2024	2024Vendor	Vendor	0.05574475	0.97932101	1.04113291	0.00173608	0.0012437	0.00118901	192.388064	0.03141797	0.03004254
2024	2024Worker	Worker	0	0	0	0	0	0	0	0	0
		GWP	N/A	N/A	N/A	N/A	N/A	N/A	1	25	290

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	Idling minutes per Day	Regional Emissions (pounds/day) ROG	NOX	CO	SO2	PM10	PM2.5	Regional Emissions (MT/year) CO2	CH4	N2O	CO2e
Grading/Excavation	2024													
Total Haul Trips	0													
Hauling	0	1	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foundations/Concrete Pour	2024													
Total Haul Trips	0													
Hauling	0	1	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tower Crane Erection/Disa	2024													
Total Haul Trips	0													
Hauling	0	1	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	8	1	8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Culver Crossing Off-Hours Construction
Road Dust, Break Wear, and Tire wear Emissions

			Emission Factors (grams/mile)					
			PM10			PM2.5		
			RD	PM10_PMBW	PM10_PMTW	RD	PM2.5_PMBW	PM2.5_PMTW
2024	2024Hauling	Hauling	0.29984991	0.082315236	0.03527902	0.07359952	0.02881033	0.00881975
2024	2024Vendor	Vendor	0.29984991	0.062716793	0.02363951	0.07359952	0.02195088	0.00590988
2024	2024Worker	Worker	0.29984991	0.009001983	0.008	0.07359952	0.00315069	0.002

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Regional Emissions (pounds/day)					
					PM10			PM2.5		
					RD	BW	TW	RD	BW	TW
Grading/Excavation	2024									
Total Haul Trips	0				2.41	0.07	0.06	0.59	0.03	0.02
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	1.17	0.04	0.03	0.29	0.01	0.01
Foundations/Concrete Pou	2024									
Total Haul Trips	0									
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	120	1	8	14.7	1.17	0.04	0.03	0.29	0.01	0.01
Tower Crane Erection/Disa	2024									
Total Haul Trips	0									
Hauling	0	1	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	1	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	8	1	8	14.7	0.08	0.00	0.00	0.02	0.00	0.00

Date: 8/8/2023 2:25 PM

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Culver Studios Off-Hours Construction - Crane Erection/Disassembly

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	536.00	1000sqft	4.46	536,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage of site

Construction Phase - Ran for one day to capture daily emissions

Off-road Equipment - See assumptions

Fleet Mix - lpl

Consumer Products -

Area Coating -

Construction Off-road Equipment Mitigation - based on EIR mitigation for Tier 4 final >50 hp

Area Mitigation - ghjgjkg

Date: 8/8/2023 2:25 PM

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	1
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	1
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	50	1
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	50	1
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	1.00
tblConstructionPhase	PhaseEndDate	1/1/2025	1/1/2024
tblConstructionPhase	PhaseStartDate	2/15/2024	1/1/2024
tblFleetMix	HHD	8.0890e-003	0.00
tblFleetMix	LDA	0.54	1.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	6.3840e-003	0.00
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.3350e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.2900e-004	0.00
tblFleetMix	SBUS	7.0600e-004	0.00
tblFleetMix	UBUS	5.9700e-004	0.00
tblLandUse	LotAcreage	12.30	4.46
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Tower Crane Erection/Disassembly	Building Construction	1/1/2024	1/1/2024	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Tower Crane Erection/Disassembly	Cranes	1	5.00	231	0.29
Tower Crane Erection/Disassembly	Forklifts	1	5.00	89	0.20
Tower Crane Erection/Disassembly	Generator Sets	0	0.00	84	0.74
Tower Crane Erection/Disassembly	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Tower Crane Erection/Disassembly	Welders	0	0.00	46	0.45

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Tower Crane Erection/Disassembly - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2662	2.7424	1.8213	4.5600e-003		0.1230	0.1230		0.1132	0.1132		441.7739	441.7739	0.1429		445.3458
Total	**0.2662**	**2.7424**	**1.8213**	**4.5600e-003**		**0.1230**	**0.1230**		**0.1132**	**0.1132**		**441.7739**	**441.7739**	**0.1429**		**445.3458**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0561	0.2430	2.3506	4.5600e-003		7.4800e-003	7.4800e-003		7.4800e-003	7.4800e-003	0.0000	441.7739	441.7739	0.1429		445.3458
Total	**0.0561**	**0.2430**	**2.3506**	**4.5600e-003**		**7.4800e-003**	**7.4800e-003**		**7.4800e-003**	**7.4800e-003**	**0.0000**	**441.7739**	**441.7739**	**0.1429**		**445.3458**

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Culver Studios Off-Hours Construction

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	536.00	1000sqft	4.46	536,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on assumptions for both PA1 and PA2 combined

Construction Phase - Modeled one day of off-hours construction phases for grading/excavation and foundations/concrete pour

Off-road Equipment - Based on expected off-hours equipment provided by Trammell Crowe. Hours adjusted to 5 hours to cover time period from 2 am to 7 am

Off-road Equipment - Based on expected off-hours equipment provided by Trammell Crowe. Hours adjusted to 5 hours to cover time period from 2 am to 7 am

Grading - Based on total acreage of site

Trips and VMT - Done outside of CalEEMod

Vehicle Trips - No ops component

Construction Off-road Equipment Mitigation - AQ-MM-1 requires Tier 4 for all equipment >50 hp

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Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	230.00	1.00
tblConstructionPhase	NumDays	8.00	1.00
tblConstructionPhase	PhaseEndDate	1/1/2025	1/1/2024
tblConstructionPhase	PhaseEndDate	2/14/2024	1/1/2024
tblConstructionPhase	PhaseStartDate	2/15/2024	1/1/2024
tblConstructionPhase	PhaseStartDate	2/3/2024	1/1/2024
tblGrading	AcresOfGrading	0.00	4.46
tblLandUse	LotAcreage	12.30	4.46
tblOffRoadEquipment	LoadFactor	0.46	0.46

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Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblTripsAndVMT	VendorTripNumber	88.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	172.00	0.00
tblVehicleTrips	ST_TR	2.21	0.00
tblVehicleTrips	SU_TR	0.70	0.00
tblVehicleTrips	WD_TR	9.74	0.00

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2024	1/1/2024	5	1	
2	Foundations/Concrete Pour	Building Construction	1/1/2024	1/1/2024	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4.46

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Sweepers/Scrubbers	2	5.00	64	0.46
Foundations/Concrete Pour	Cement and Mortar Mixers	2	5.00	9	0.56
Foundations/Concrete Pour	Cranes	1	5.00	231	0.29
Grading	Excavators	2	5.00	158	0.38
Foundations/Concrete Pour	Forklifts	1	5.00	89	0.20
Foundations/Concrete Pour	Generator Sets	1	5.00	84	0.74
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Foundations/Concrete Pour	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Foundations/Concrete Pour	Welders	0	8.00	46	0.45

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7298	0.0000	4.7298	0.5107	0.0000	0.5107			0.0000			0.0000
Off-Road	0.4387	3.7454	6.4552	9.6100e-003		0.2075	0.2075		0.1909	0.1909		930.1088	930.1088	0.3008		937.6292
Total	**0.4387**	**3.7454**	**6.4552**	**9.6100e-003**	**4.7298**	**0.2075**	**4.9374**	**0.5107**	**0.1909**	**0.7017**		**930.1088**	**930.1088**	**0.3008**		**937.6292**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.8446	0.0000	1.8446	0.1992	0.0000	0.1992			0.0000			0.0000
Off-Road	0.1566	2.1055	7.2760	9.6100e-003		0.0157	0.0157		0.0157	0.0157	0.0000	930.1088	930.1088	0.3008		937.6292
Total	**0.1566**	**2.1055**	**7.2760**	**9.6100e-003**	**1.8446**	**0.0157**	**1.8604**	**0.1992**	**0.0157**	**0.2149**	**0.0000**	**930.1088**	**930.1088**	**0.3008**		**937.6292**

3.3 Foundations/Concrete Pour - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5178	4.7930	4.4966	9.5600e-003		0.2101	0.2101		0.2003	0.2003		894.3159	894.3159	0.1652		898.4457
Total	**0.5178**	**4.7930**	**4.4966**	**9.5600e-003**		**0.2101**	**0.2101**		**0.2003**	**0.2003**		**894.3159**	**894.3159**	**0.1652**		**898.4457**

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Culver Studios Off-Hours Construction - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1706	0.8814	5.2712	9.5600e-003		0.0309	0.0309		0.0309	0.0309	0.0000	894.3159	894.3159	0.1652		898.4457
Total	**0.1706**	**0.8814**	**5.2712**	**9.5600e-003**		**0.0309**	**0.0309**		**0.0309**	**0.0309**	**0.0000**	**894.3159**	**894.3159**	**0.1652**		**898.4457**

Appendix E

Night Construction Lighting Calculations

LIGHTING CALCULATION REPORT

Date:8/14/2023

FRANCIS KRAHE & ASSOCIATES

CULVER CROSSINGS
CONSTRUCTION SITE LIGHTING
LIGHT TRESPASS ILLUMINATION ANALYSIS AT
NEAREST RESIDENTIAL PROPERTIES

LIGHT TRESPASS ILLUMINANCE LIMIT: 0.74 MAX AT RESIDENTIAL PROPERTY LINE
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 4.2 LIGHTING ZONE 3)

LIGHTING ILLUMINANCE CRITERIA: 10 FC AVERAGE TARGET
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 30.2

The Lighting Calculation evaluated the illuminance light trespass from the Project with the following assumptions:

1. Twelve (12) 35'-0" tall poles located on the sides of the project site, as shown on page 2, View 1_Project Illuminance Plan.

2. Each pole consists of (5) LED 21 beam floodlights, each at 303 watts and 33316 lumens and 180° glare shield. Fixtures are tilted between 30 and 70 degrees above nadir.

3. The construction area is illuminated to an average of 10 footcandles or higher.

4. Temporary fencing around the construction area was considered in this analysis. The Project shall provide a temporary 12-foot-tall construction fence along the northern and western boundaries of the Project Site. In addition, a temporary 6-foot-tall construction fence is located along the southern boundary along Washington Boulevard, between the Project Site and the residences to the south and east of the Project Site.

5. If different pole or light fixture configurations are specified for the project, the height of the pole should be no higher than 35'-0", and the light fixture total output should not exceed the total output in this report.

Site Diagram

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Project Site	Illuminance	Fc	10.02	90.0	0.3	33.40	300.00
VP-N_Side_3	Illuminance	Fc	0.55	0.69	0.37	1.49	1.86
VP-S_Side_1	Illuminance	Fc	0.44	0.66	0.23	1.91	2.87
VP-W2_Side_1	Illuminance	Fc	0.33	0.68	0.02	16.50	34.00
VPW1_Side_1	Illuminance	Fc	0.43	0.71	0.04	10.75	17.75

Luminaire Schedule						
Symbol	Qty	Label	Total Lamp Lumens	LLF	Description	Lum. Watts
⊙	60	84521_71101_BEGA_IES	N.A.	1.000	300 21 Degree + glare shield	336

LIGHTING CALCULATION REPORT

Date:8/14/2023

FRANCIS KRAHE & ASSOCIATES

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CONSTRUCTION SITE LIGHTING
LIGHT TRESPASS ILLUMINATION ANALYSIS AT
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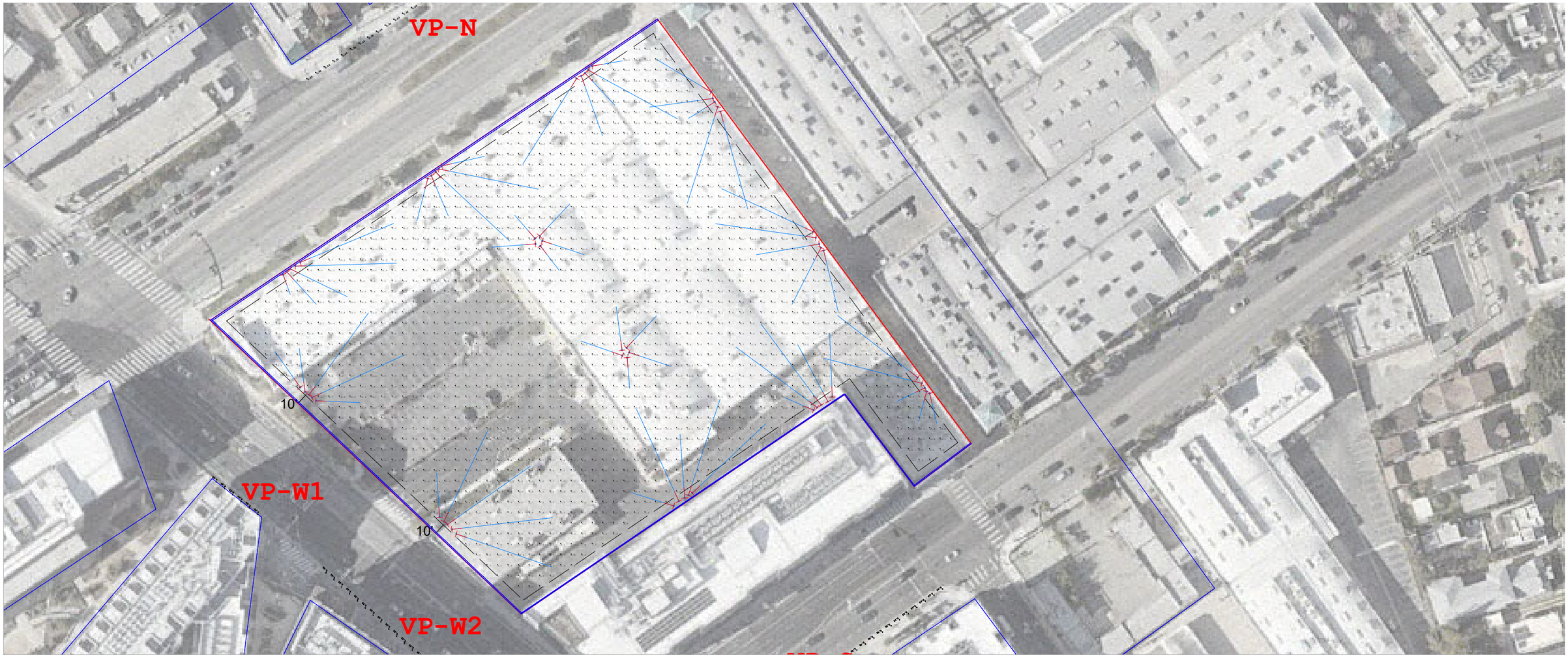
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 4.2 LIGHTING ZONE 3)

LIGHTING ILLUMINANCE CRITERIA: 10 FC AVERAGE TARGET
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 30.2



View_1:Project Illuminance Plan

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Project Site	Illuminance	Fc	10.02	90.0	0.3	33.40	300.00

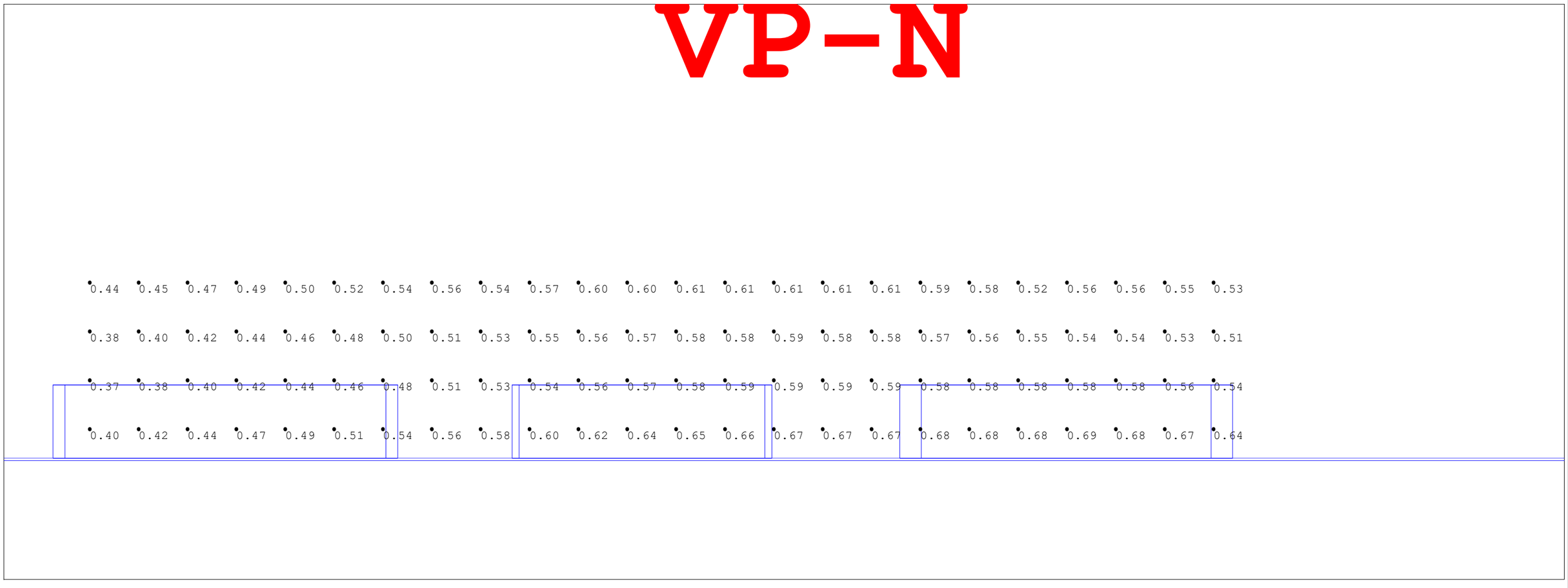
LIGHTING CALCULATION REPORT

Date:8/14/2023

CULVER CROSSINGS
CONSTRUCTION SITE LIGHTING
LIGHT TRESPASS ILLUMINATION ANALYSIS AT
NEAREST RESIDENTIAL PROPERTIES

LIGHT TRESPASS ILLUMINANCE LIMIT: 0.74 MAX AT RESIDENTIAL PROPERTY LINE
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 4.2 LIGHTING ZONE 3)

LIGHTING ILLUMINANCE CRITERIA: 10 FC AVERAGE TARGET
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 30.2



View_1:Vertical Calculation Plane_North
Calculation Plane Dimensions: 240' Wide x 42' Tall

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Obs Y
VP-N_Side_3	Illuminance	Fc	0.55	0.69	0.37	1.49	1.86	N.A.

LIGHTING CALCULATION REPORT

Date:8/14/2023

CULVER CROSSINGS
CONSTRUCTION SITE LIGHTING
LIGHT TRESPASS ILLUMINATION ANALYSIS AT
NEAREST RESIDENTIAL PROPERTIES

LIGHT TRESPASS ILLUMINANCE LIMIT: 0.74 MAX AT RESIDENTIAL PROPERTY LINE
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 4.2 LIGHTING ZONE 3)

LIGHTING ILLUMINANCE CRITERIA: 10 FC AVERAGE TARGET
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 30.2

View_1:Vertical Calculation Plane_South
Calculation Plane Dimensions: 270' Wide x 100' Tall

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Obs Y
VP-S_Side_1	Illuminance	Fc	0.44	0.66	0.23	1.91	2.87	N.A.

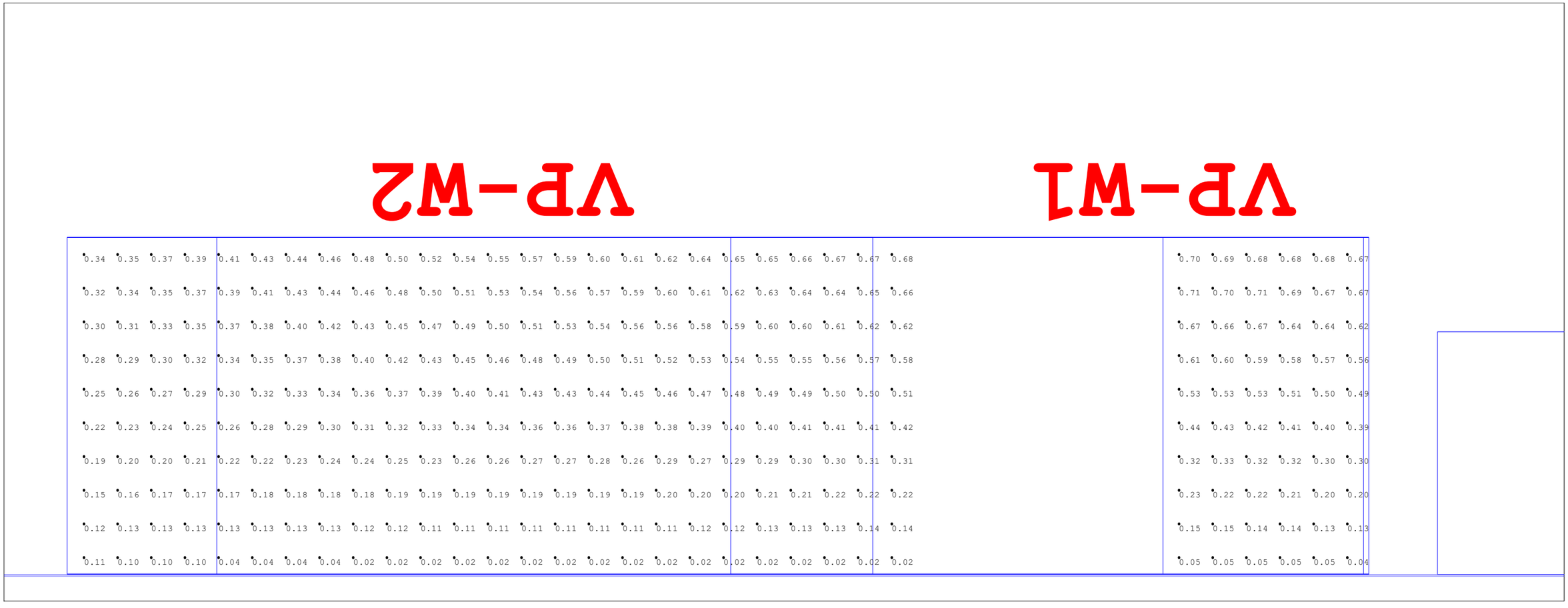
LIGHTING CALCULATION REPORT

Date:8/14/2023

CULVER CROSSINGS
CONSTRUCTION SITE LIGHTING
LIGHT TRESPASS ILLUMINATION ANALYSIS AT
NEAREST RESIDENTIAL PROPERTIES

LIGHT TRESPASS ILLUMINANCE LIMIT: 0.74 MAX AT RESIDENTIAL PROPERTY LINE
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 4.2 LIGHTING ZONE 3)

LIGHTING ILLUMINANCE CRITERIA: 10 FC AVERAGE TARGET
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 30.2



View_1:Vertical Calculation Plane_West
Calculation Plane Dimensions: VPW-1 : 60' Wide x 100' Tall, VPW-2 : 250' Wide x 100' Tall

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Obs Y
VP-W2_Side_1	Illuminance	Fc	0.33	0.68	0.02	16.50	34.00	N.A.
VPW1_Side_1	Illuminance	Fc	0.43	0.71	0.04	10.75	17.75	N.A.

LIGHTING CALCULATION REPORT

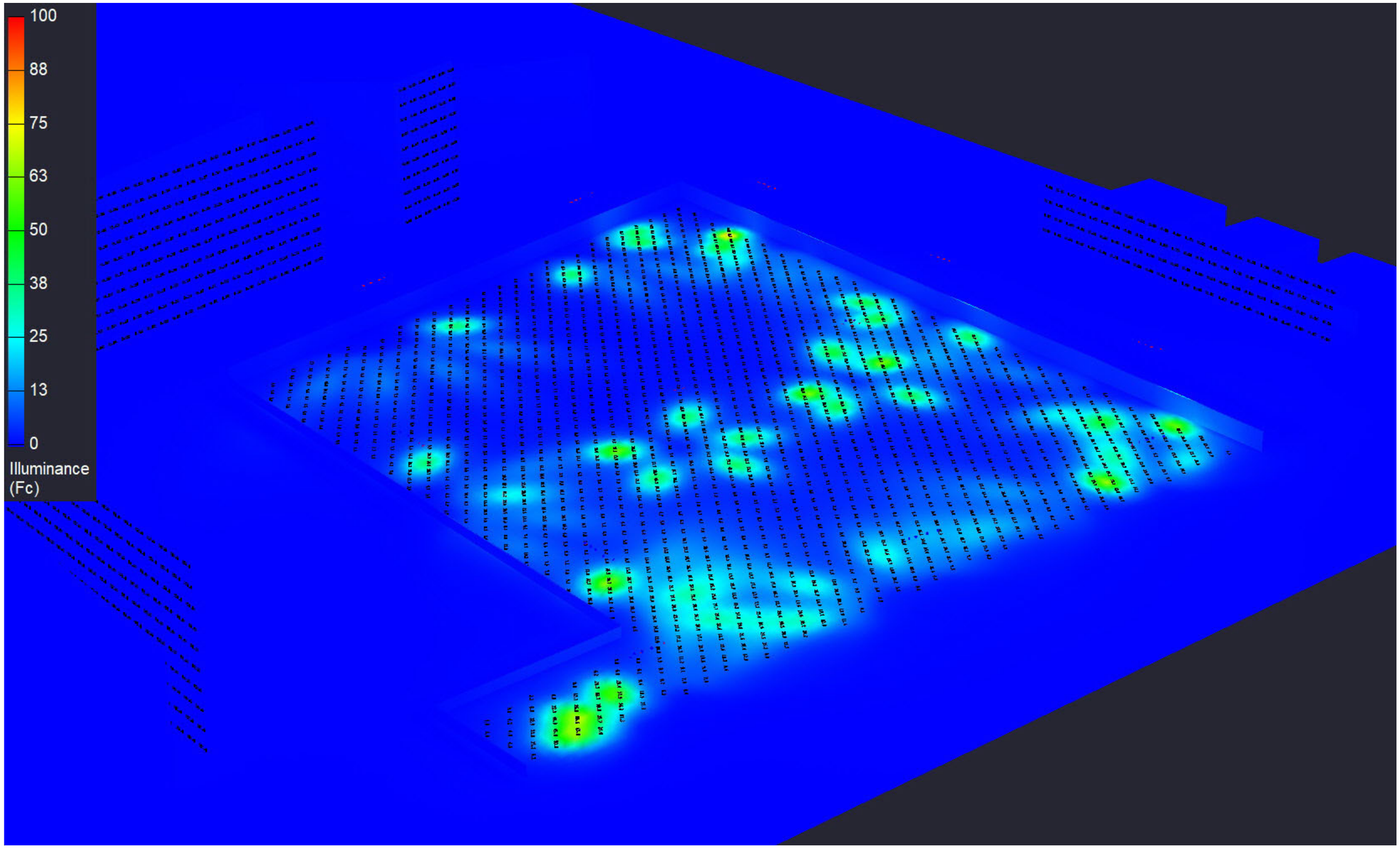
Date:8/14/2023

FRANCIS KRAHE & ASSOCIATES

CULVER CROSSINGS
CONSTRUCTION SITE LIGHTING
LIGHT TRESPASS ILLUMINATION ANALYSIS AT
NEAREST RESIDENTIAL PROPERTIES

LIGHT TRESPASS ILLUMINANCE LIMIT: 0.74 MAX AT RESIDENTIAL PROPERTY LINE
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 4.2 LIGHTING ZONE 3)

LIGHTING ILLUMINANCE CRITERIA: 10 FC AVERAGE TARGET
(SOURCE: IESNA HANDBOOK 10TH EDITION, TABLE 30.2



Pseudo Color Illuminance Rendering