APPENDIX G

Noise Technical Report

Noise Technical Report
for the
Alta Oceanside Project
City of Oceanside, California

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
Alta Oceanside Project	proposed project
Caltrans	California Department of Transportation
City	City of Oceanside
CNEL	Community Noise Equivalent Level
CNMP	construction noise management plan
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
ips	inches per second
L_{dn}	day–night average noise level
L_{eq}	equivalent noise level
L_{max}	maximum sound level
L_{min}	minimum sound level
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model

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1 Introduction and Background

This technical noise report evaluates the potential noise impacts during construction and operation of the proposed Alta Oceanside Project (proposed project). Land uses that generally surround the project site include a multifamily residential to the northwest, mobile homes to the south and southwest, hotel to the north and southeast, and commercial past North Coast Highway to the east of the site (Figure 1, Surrounding Land Uses).

Project Description

The project site is located in the northwestern portion of the City of Oceanside (City) in San Diego County, California (Figure 2, Project Location). The 5.3-acre site is generally located west of Interstate 5, south of the San Luis Rey River, east of the San Luis Rey River Trail, and north of the State Route 76 western terminus. More specifically, the site is located at the southwest corner of the North Coast Highway and Costa Pacifica Way intersection, at 939, 1003, 1009, and 1015 North Coast Highway.

The proposed project involves the construction of a mixed-use residential and commercial development, with demolition of the existing commercial uses on the site. The residential component would include 309 multi-family dwelling units comprised of one-, two-, and three-bedroom residences (Figure 3, Site Plan). These residential units would include 283 market-rate apartments and 26 affordable apartments. The commercial component would include approximately 5,422 square feet of restaurant, retail, and/or visitor uses on the ground floor along North Coast Highway. The proposed building is a five-story (maximum 65-foot-tall) apartment/commercial building that would wrap around a five-level parking garage. The proposed project would provide a minimum of 528 parking spaces to meet the peak shared parking demand for this mixed-use project, based on parking standards of the Oceanside Municipal Code, Oceanside Local Coastal Program, and State Density Bonus law. Parking would be provided via a parking garage located in the central area of the site and within a surface lot in the southwest area of the site.

Supporting amenities would include recreational uses, open space, and a leasing office. The proposed recreational amenities include a library, clubhouse, fitness center, pool, and bicycle storage. The proposed open space would be located within three courtyards, a street-oriented pedestrian plaza, the roof deck, balconies, and patios, as well as along the site perimeter. The amenity spaces may hold events for residents during the daytime hours (7 am to 10 pm). The proposed project would provide landscaping, including drought-tolerant species, along the site perimeter and within the exterior open space areas.

Noise Characteristics

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound-pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud (Caltrans 2013a). A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

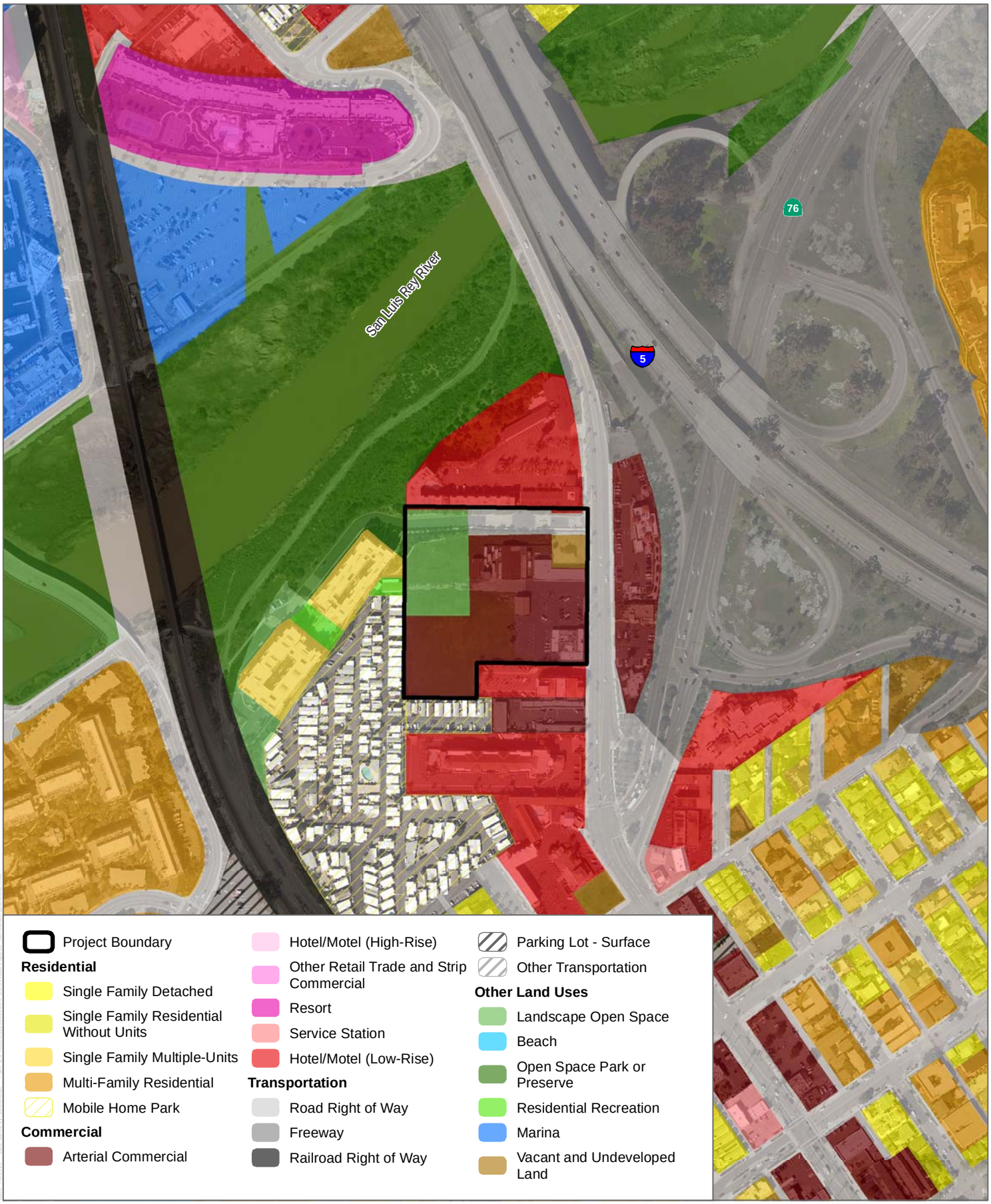
Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a decibel quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement of 60 dBA would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the *floor* of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). *Time weighted* refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding 5 dB, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5–1 dB, and are often considered or actually defined as being essentially equivalent by many jurisdictions.

Vibration Fundamentals

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and, unlike sound, can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB as a way to cast a large range of quantities into a more convenient scale. Vibration impacts to buildings are generally discussed in terms of inches per second (ips) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards. Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes (Caltrans 2013b), such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes. The maximum vibration level standard used by the California Department of Transportation (Caltrans) for the prevention of structural damage to typical residential buildings is 0.3 ips PPV (Caltrans 2013b).



SOURCE: SANDAG 2017

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0 175 350 Feet

FIGURE 1

Surrounding Land Uses

Noise Technical Report for the Alta Oceanside Project

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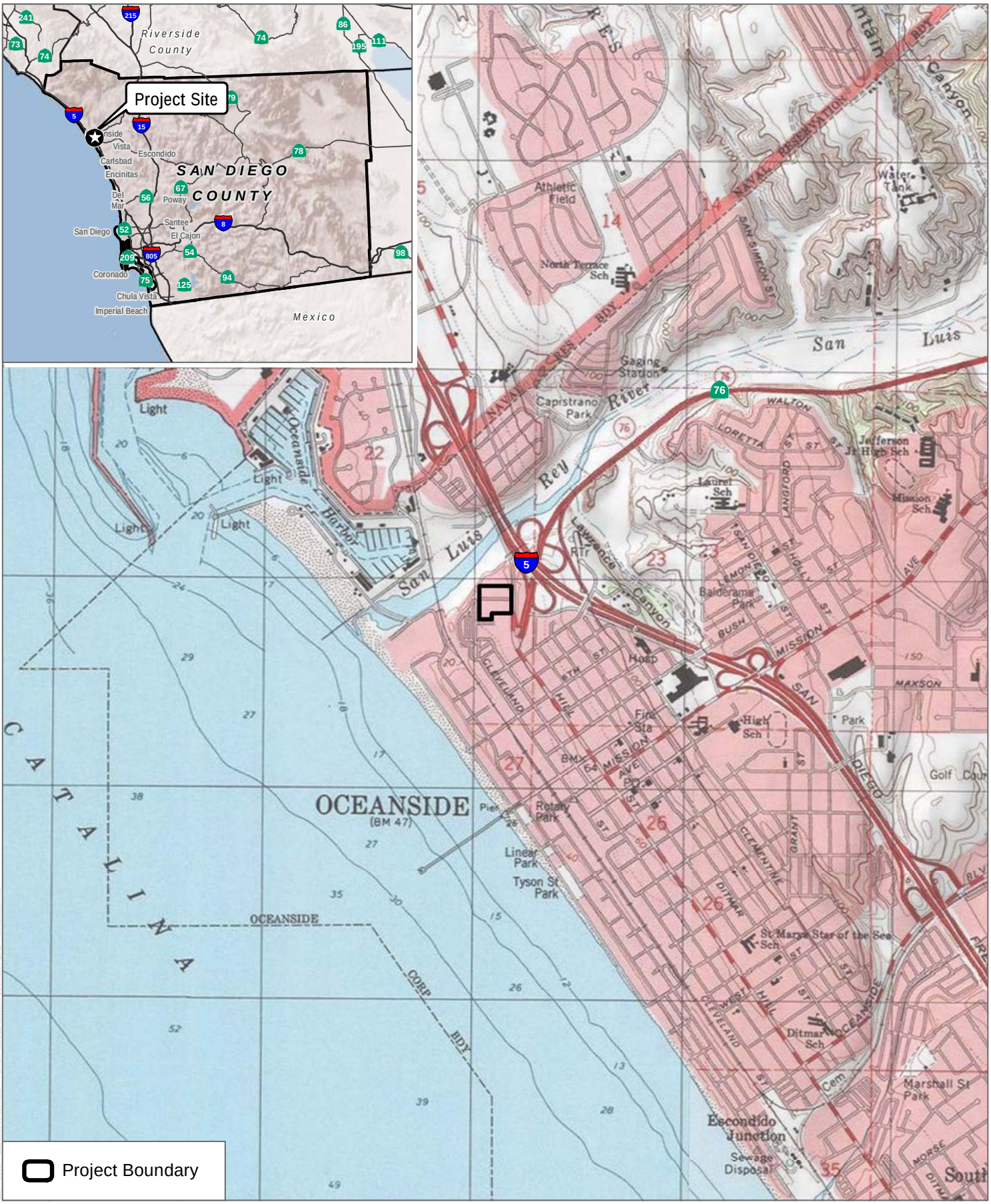

SOURCE: USGS 7.5-Minute Series Oceanside Quadrangle

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0 1,000 2,000 Feet

FIGURE 2

Project Location

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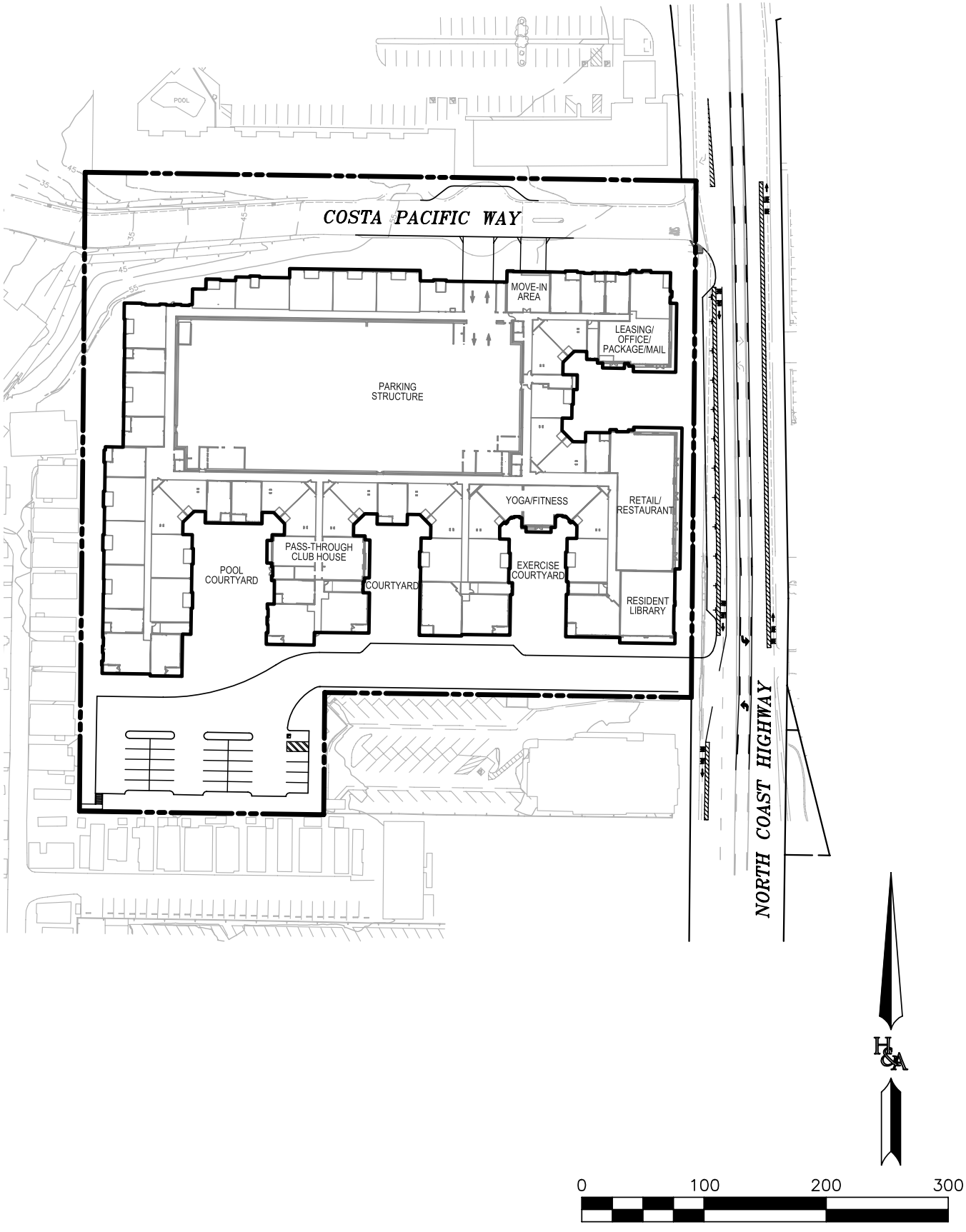

SOURCE: Architects Orange 2019

FIGURE 3

Site Plan

Technical Noise Report for the Alta Oceanside Project

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2 Regulatory Setting

Regulatory Setting

Federal

Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an 8-hour period (FTA 2006) when detailed construction noise assessments are performed to evaluate potential impacts to community residences surrounding a project. Although this FTA guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the state and local jurisdictional levels.

State

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations sets standards that new development in California must meet. According to Title 24 (Part 2, Volume 1, Chapter 12 – Interior Environment, Section 1206.4), interior noise levels attributed to exterior noise sources are not to exceed 45 dBA CNEL for any habitable rooms.

California Department of Health Services Guidelines

The California Department of Health Services has developed guidelines of community noise acceptability for use by local agencies (OPR 2003). Selected relevant levels are listed here:

- Below 60 dBA CNEL: normally acceptable for low-density residential use
- 50 to 70 dBA: conditionally acceptable for low-density residential use
- Below 65 dBA CNEL: normally acceptable for high-density residential use and transient lodging
- 60 to 70 dBA CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational, and medical facilities

The normally acceptable exterior noise level for high-density residential use is up to 65 dBA CNEL. Conditionally acceptable exterior noise levels range up to 70 dBA CNEL for high-density residential use.

California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual, Caltrans recommends a vibration velocity threshold of 0.2 ips PPV (Caltrans 2013b) for assessing annoying vibration impacts to occupants of residential structures. Although this Caltrans guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the local jurisdictional level. Similarly, thresholds to assess building damage risk due to construction vibration vary with the type of structure and its fragility, but tend to range between 0.2 ips and 0.3 ips PPV for typical residential structures (Caltrans 2013b).

Local

City of Oceanside Noise Level Compatibility Standards

The Noise Element of the *City of Oceanside General Plan* (City of Oceanside 1974) establishes target maximum noise levels in the City. The Noise Element provides the following limitations on construction noise:

1. It should be unlawful for any person within any residential zone of 500 feet there from to operate any pile driver, power shovel, pneumatic, power hoist, or other construction equipment between 8:00 p.m. and 7:00 a.m. generating an ambient noise levels of 50 dBA at any property line unless an emergency exists
2. It should be unlawful for any person to operate any construction equipment at a level in excess of 85 dBA at 100 feet from the source
3. It should be unlawful for any person to engage in construction activities between 6:00 p.m. and 7:00 a.m. when such activities exceed the ambient noise level by 5 dBA. A special permit may be granted by the Director of Public Works if extenuating circumstances exist

In addition, the Noise Element addresses nuisance noise and states that it should be unlawful for any person to make or continue any loud, unnecessary noise that causes annoyance to any reasonable person of normal sensitivity.

Noise Element Policies

The City's Noise Element outlines general goals, objectives, and relevant noise policies that include the following:

- Noise levels shall not be so loud as to cause danger to public health in all zones except manufacturing zones where noise levels may be greater
- Noise shall be controlled at the source where possible
- Noise shall be intercepted by barriers or dissipated by space where other controls fail or are impractical
- Noise levels shall be considered in any change to the Land Use and Circulation Elements of the General Plan
- Noise levels of City vehicles, construction equipment, and garbage trucks shall be reduced to acceptable levels

In a manner similar to the state's land use planning guidelines, the City's Noise Element also features an implementation recommendation (#5) that puts attention to the careful planning of future residents in areas "subjected to noise levels of 65 dBA or higher" (City of Oceanside 1974).

For interior noise, the Noise Element also refers to an earlier version of the California Title 24 noise insulation standard: 45 dBA CNEL as the maximum acceptable level for inhabited rooms when exterior noise levels are 60 dBA CNEL or more. This implies that if windows and doors are required to be closed to meet this standard, then mechanical ventilation (i.e., air conditioning) shall be included in the project design.

City of Oceanside Noise Ordinance

Section 38.12 of the Oceanside Municipal Code enumerates maximum 1-hour average sound levels for various land uses for operational noise (Table 1). The City's Noise Control Ordinance (Noise Ordinance) sets an allowed level for areas in the Downtown Base District zone to be 65 dBA L_{eq} from 7:00 a.m. to 9:59 p.m. (daytime), and 55 dBA L_{eq} from 10:00 p.m. to 6:59 a.m. (nighttime) (City of Oceanside 1990). As both the proposed project site and the existing residences immediately to the west and south are within the Downtown Base District zone, the arithmetic mean of the noise limits for such zones sharing a joint boundary would be the same values: 65 dBA L_{eq} (daytime) and 55 dBA L_{eq} (nighttime).

Table 1. City of Oceanside Exterior Noise Standards

Zone	Applicable Limit (decibels)	Time Period
Residential Estate, Single-Family Residential, Medium Density Residential, Agricultural, Open Space	50 45	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
High Density, Residential Tourist	55 50	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Commercial	65 60	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Industrial	70 65	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Downtown	65 55	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.

Source: Oceanside Municipal Code, Section 38.12.

Construction activities are subject to Section 38.17 of the Noise Ordinance, which specifically prohibits the operation of any pneumatic or air hammer, pile driver, steam shovel, derrick, steam, or electric hoist, parking lot cleaning equipment or other appliance, the use of which is attended by loud or unusual noise, between the hours of 10:00 p.m. and 7:00 a.m.

Section 38.16 prohibits nuisance noise as recommended in the General Plan Noise Element. It is unlawful for any person to make, continue, or cause to be made or continued, within the limits of the City of Oceanside, any disturbing, excessive, or offensive noise that causes discomfort or annoyance to reasonable persons of normal sensitivity.

City of Oceanside Engineering Manual

Construction noise in Oceanside is governed by the City Engineering Manual. Construction is normally limited to the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday. However, Saturday construction is allowed by permit. More specifically, the City Engineering Manual (Engineers Design and Processing Manual Appendix Construction Guidelines and Requirements) states the following on pages 139 and 159:

> All operations conducted on the premises, including the warming up, repair, arrival, departure, or running of trucks, earthmoving equipment, construction equipment, and any other associated equipment shall be limited to the period between 7:00 a.m. and 6:00 p.m. each day, Monday through Friday, and no earthmoving or grading operations shall be conducted on the premises on Saturdays, Sundays or legal holidays, unless waived by the City Engineer.
>
> Hours of Operation (515)(34): 7:00 am to 6:00 p.m. M-F; including equipment warm-up.
>
> Saturday Operation: Requires filing a permit by 2:30 p.m. on the preceding Thursday.

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3 Existing Conditions

Sound-pressure level measurements were conducted near the project site on May 28, 2019, to quantify and characterize the existing outdoor noise levels. Table 2 provides the location, date, and time at which these baseline noise level measurements were taken. The sound-pressure level measurements were performed by an attending Dudek field investigator using a Rion NL-52 sound level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the sound level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Three short-term noise level measurement locations (ST1–ST3) that represent existing sensitive receivers were selected on and near the project site. These locations are depicted as receivers ST1–ST3 on Figure 4, Noise Measurement Locations. The L_{eq} and L_{max} noise levels are provided in Table 2. The primary noise sources at the sites identified in Table 2 consisted of traffic along adjacent roadways, the sounds of leaves rustling, and birdsong. As shown in Table 2, the measured sound levels ranged from approximately 48.8 dBA L_{eq} at ST2 to 57.9 dBA L_{eq} at ST3. Noise measurement data is also included in Appendix A, Baseline Noise Measurement Field Data.

Table 2. Measured Baseline Outdoor Noise Levels

Receptor	Location/Address	Date (dd.mm.yy)	Time (hh:mm)	L_{eq} (dBA)	L_{max} (dBA)
ST1	Northwest parking lot of Coast Inn	05.28.19	11:20 a.m. – 11:30 a.m.	51.4	61.8
ST2	Northeastern property line of 1019 Costa Pacifica Way	05.28.19	10:30 a.m. – 10:45 a.m.	48.8	53.8
ST3	North of Costa Pacifica Way, approximately 90 feet west of North Coast Highway	05.28.19	10:50 a.m. – 11:00 a.m.	57.9	71.2

Source: Appendix A.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels; ST = short-term noise measurement locations.

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SOURCE: SANDAG 2017

DUDEK

0 100 200 Feet

FIGURE 4

Noise Measurement Locations

Noise Technical Report for the Alta Oceanside Project

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4 Thresholds of Significance

The following significance criteria are based on Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Impacts to noise would be significant if the proposed project would result in the following:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
b. Generation of excessive groundborne vibration or groundborne noise levels
c. Expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport)

In light of these above significance criteria, this analysis uses the following standards to evaluate potential noise and vibration impacts.

- Construction noise – Although Chapter 38 of the Oceanside Municipal Code does not quantify a threshold for allowable construction noise, the City's General Plan allows noise from construction equipment operation to be as high as 85 dBA at 100 feet from the source. Applying the principles of sound propagation for a point-type source, this level could be interpreted to mean 91 dBA at 50 feet, which is greater than the maximum sound levels of most operating construction equipment (DOT 2006) and would thus imply all but the loudest construction activities (e.g., pile driving) could be compliant with this standard. However, the apparent proximity of existing residential receptors to the southwest of the proposed project site suggests that source-to-receiver distances could be as short as 15 feet. Additionally, most construction equipment and vehicles on a project site do not operate continuously. Therefore, consistent with the FTA guidance mentioned in Section 2, Regulatory Setting, this analysis will use 80 dBA L_{eq} over an 8-hour period as the construction noise impact criterion during daytime hours (7:00 a.m. to 6:00 p.m.). If construction work were to occur outside these hours, the impact threshold would align with the City's General Plan requirement during such hours: no more than a 5 dBA increase over existing ambient noise levels.
- Off-site project-attributed transportation noise – For purposes for this analysis, a direct roadway noise impact would be considered significant if increases in roadway traffic noise levels attributed to the proposed project were greater than 3 dBA CNEL at an existing noise-sensitive land use.
- On-site project-attributed transportation noise – For purposes for this analysis, a direct roadway noise impact would be considered significant if increases in roadway traffic noise levels attributed to the proposed project were greater than 3 dBA CNEL at an existing noise-sensitive land use.

- Off-site project-attributed stationary noise – For purposes for this analysis, a noise impact would be considered significant if noise from typical operation of heating, ventilation, and air conditioning and other electro-mechanical systems associated with the proposed project exceeded 65 dBA hourly L_{eq} at the property line from 7:00 a.m. to 9:59 p.m., and 55 dBA hourly L_{eq} from 10:00 p.m. to 6:59 a.m. Note that these are the City's thresholds for the Downtown Base District zones that characterize the proposed project site and its existing immediately adjoining residential neighbors to the south and west. Section 38.19.d of the City's Noise Ordinance indicates that these same limits would also apply to entertainment hosted at the project site.
- Construction vibration – Guidance from Caltrans indicates that a vibration velocity level of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2013b). As for the receiving structure itself, aforementioned Caltrans guidance from Section 2 recommends that a vibration level of 0.3 ips PPV would represent the threshold for building damage risk.

For purposes of disclosure, since current CEQA noise criteria listed above do not consider it, this analysis also evaluates compatibility of on-site noise levels with the City of Oceanside exterior and interior noise standards of 65 dBA CNEL and 45 dBA CNEL, respectively.

5 Impact Discussion

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Short-Term Construction

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor.

Equipment that would be in use during construction would include, in part, graders, backhoes, rubber-tired dozers, loaders, cranes, forklifts, cement mixers, pavers, rollers, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 3. The listed maximum noise levels in Table 3 are, when downwardly adjusted by 6 dB to account for doubling the distance to 100 feet, all compliant with the 85 dBA at 100 feet criterion per the City's General Plan Noise Element. Note that the equipment noise levels presented in Table 3 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 3. Typical Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (L_{max}, dBA at 50 Feet)
Air compressor	78
Backhoe	78
Concrete pump truck	81
Grader	85
Crane	81
Dump Truck	76
Dozer	82
Generator	72
Front End Loader	79
Paver	77
Pneumatic tools	85
Water pump	77

Source: DOT 2006.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor: 1) from the nearest position of the construction site boundary and 2) from the geographic center of the construction site, which serves as the time-averaged location or geographic *acoustical centroid* of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in the FTA guidance for construction noise assessment, when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety

of) the construction site area. Because of this uncertainty, all the equipment for a construction phase is assumed to operate—on average—from the acoustical centroid. Table 4 summarizes these two distances to the apparent closest noise-sensitive receptor for each of the seven sequential construction phases. At the site boundary, this analysis assumes that up to only one piece of equipment of each listed type per phase will be involved in the construction activity for a limited portion of the 8-hour period. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate. For the acoustical centroid case, which intends to be a geographic average position for all equipment during the indicated phase, this analysis assumes that the equipment may be operating up to all 8 hours per day.

Table 4. Estimated Distances between Construction Activities and the Nearest Noise-sensitive Receptors

Construction Phase (and Equipment Types Involved)	Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet)	Distance from Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (Feet)
Demolition (dozer, excavator, concrete saw)	15	300
Site preparation (dozer, backhoe, front-end loader)	15	300
Grading (excavator, grader, dozer, front-end loader, backhoe, scraper)	15	300
Building construction (crane, man-lift, generator, backhoe, front-end loader, welder/torch)	25	300
Trenching (excavator, tractor)	15	300
Architectural finishes (air compressor)	25	300
Paving (paver, roller, other equipment)	15	300

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 3), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Appendix B, Construction Noise Modeling Input and Output, and produce the predicted results displayed in Table 5.

Table 5. Predicted Construction Noise Levels per Activity Phase

Construction Phase (and Equipment Types Involved)	8-Hour Leq at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA)	8-Hour Leq at Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (dBA)
Demolition (dozer, excavator, concrete saw)	88	72
Site preparation (dozer, backhoe, front-end loader)	87	68
Grading (excavator, grader, dozer, front-end loader, backhoe, scraper)	87	72
Building construction (crane, man-lift, generator, backhoe, front-end loader, welder/torch)	80	66
Trenching (excavator, tractor)	86	66
Architectural finishes (air compressor)	77	58
Paving (paver, roller, other equipment)	88	70

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 5, the estimated construction noise levels are predicted to be as high as 88 dBA L_{eq} over an 8-hour period at the nearest existing residences (as close as 15 feet away) when site preparation activities take place near the southwestern project boundaries. Note that these estimated noise levels at a source-to-receiver distance of 15 feet would only occur when noted pieces of heavy equipment would each operate for a cumulative period from 1 to 3 hours a day. By way of example, a grader might make multiple passes on site that are this close to a receiver; but, for the remaining time during the day, the grader is sufficiently farther away, performing work at a more distant location, or simply not operating. For these instances when operation of construction equipment and processes are sufficiently proximate to cause activity noise levels to exceed 80 dBA L_{eq}, which the FTA recommends as a daytime threshold for construction noise exposure over an 8-hour period at a residential receptor, mitigation measure **MM-N-1** shall be implemented as indicated site conditions may warrant. Proper application of temporary noise barriers or comparable sound abatement due to implementation of **MM-N-1** has the ability to reduce noise levels by 10 dB, which would correspondingly reduce the predicted 88 dBA 8-hour L_{eq} for the grading phase to 78 dBA L_{eq}, which would make the level compliant with the 80 dBA threshold.

Although nearby off-site residences would be exposed to elevated construction noise levels, the increased noise levels would typically be relatively short term. It is anticipated that construction activities associated with the proposed project would take place within the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday. In compliance with the Engineering Manual, the applicant would obtain a permit for Saturday construction.

If work were to occur outside of the allowable hours, annoyance or sleep disturbance could result from construction noise; also, the City's 5 dBA allowable increment over existing outdoor ambient sound level may be exceeded. For instance, if a concrete pour were to occur during the 6:00 p.m. to 7:00 a.m. period, and the equipment (comprising a concrete pump truck and a small lighting plant [less than 25 kVA]) was 300 feet from the nearest existing residential receptor, the hourly level would be 59 dBA L_{eq}, and thus risk exceeding the measured existing outdoor ambient sound levels presented in Table 2 by more than 5 dBA. Please see Appendix B for this sample calculation. Under such conditions, this nighttime activity would require **MM-N-1** to mitigate the noise and keep it compliant with the City's standard. Ultimately, it is assumed that the project construction would be limited from 7:00 a.m. to 6:00 p.m. Monday through Saturday.

In summary, typical construction noise during allowable daytime hours would not exceed the aforementioned FTA guidance-based standard. Nonetheless, there is potential for noise to exceed the 80 dBA L_{eq} 8-hour FTA

threshold at the nearest residential receiver on occasion. Thus, temporary construction-related noise impacts would be considered potentially significant unless mitigated. With implementation of **MM-N-1**, impacts would be reduced to **less than significant with mitigation**.

Long-Term Operational

Increase of Off-Site Roadway Traffic Noise

The proposed project would result in the creation of additional vehicle trips on local arterial roadways (i.e., North Coast Highway), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. Appendix C, Traffic Noise Modeling Input and Output, contains a spreadsheet with traffic volume data (average daily traffic) for North Coast Highway based on the Traffic Impact Assessment prepared for the proposed project (Dudek 2019). In particular, the proposed project would generate the most trips along North Coast Highway, which is shown in Table 6 below. .Potential noise effects from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model version 2.5 (FHWA 2004). Information used in the model included the roadway geometry, posted traffic speeds, and traffic volumes for the following scenarios: existing (year 2019), existing plus project, existing plus cumulative without project, existing plus cumulative plus project, buildout (2035), and buildout plus project. Refer to Table 6 for additional details.

Table 6. Traffic Volumes with Average Daily Traffic

Roadway Segment	Classification	Project Traffic	Existing	Existing plus Project	Existing plus Cumulative Projects	Existing plus Cumulative Projects plus Project	Buildout Year (2035)	Buildout Year (2035) plus Project
			Average Daily Traffic (ADT)					
North Coast Hwy, Harbor Dr. to Costa Pacifica Way	Collector Road (with TWLTL)	252	10,000	10,252	10,300	10,552	17,300	17,600
North Coast Hwy, Costa Pacifica Way to SR-76	Collector Road (with TWLTL)	2200	11,300	13,500	11,800	14,000	15,400	17,600
North Coast Hwy, Neptune Way to Windward Way	Secondary Collector	752	18,700	19,452	20,600	21,352	19,650	20,400

Source: Dudek 2019

The City's Noise Element establishes a policy for exterior sensitive areas to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor areas and 45 dBA CNEL for interior areas as the normally acceptable levels. For the purposes of this noise analysis, such impacts are considered significant when they cause an increase of 3 dB from existing noise levels. An increase or decrease in noise level of at least 3 dB is required before any noticeable change in community response would be expected (Caltrans 2013a). According to acoustical principles, the increase in traffic noise level relates directly to the increase in volumes by the following expression: $10*LOG(V_f/V_e)$, where V_f is the future traffic volume, V_e is the existing traffic volume, and vehicle speeds and proportion of vehicle types are essentially

unchanged. The project would have to roughly double the traffic volumes on North Coast Highway to increase traffic by 3 dBA. Based on the ADT values shown in Table 6, there are no traffic volume comparisons for the three indicated roadway segments where the estimated traffic noise increase would exceed 3 dBA.

Traffic noise levels were also modeled at representative noise-sensitive receivers ST1 through ST3, as shown in Figure 4. The receivers were modeled to be 5 feet above the local ground elevation. The noise model results are summarized in Table 7.

Table 7. Off-site Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Existing (2019) Noise Level (dBA CNEL)	Existing (2019) Plus Project Noise Level (dBA CNEL)	Existing Plus Cumulative without Project Noise Level (dBA CNEL)	Existing Plus Cumulative with Project Noise Level (dBA CNEL)	Buildout (2035) Noise Level (dBA CNEL)	Buildout (2035) Plus Project Noise Level (dBA CNEL)	Maximum Project-Related Noise Level Increase (dB)
ST1 (La Quinta Inn - just north of Costa Pacifica Way)	53.4	54	53.6	54.2	54.5	54.9	0.6
ST2 (Seacliff - southern project boundary)	48.4	51.2	48.5	51.3	49.2	51.7	2.8
ST3 (Rodeway Inn - western project boundary)	59.9	61.1	60	61.2	61.6	62.5	1.2

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Table 7 shows that at all three listed representative receivers, the addition of proposed project traffic to the roadway network would result in a CNEL increase of less than 3 dB, which is below the discernible level of change for the average healthy human ear. Thus, a **less-than-significant impact** is expected for proposed project-related off-site traffic noise increases affecting existing residences in the vicinity.

Table 8. On-Site Roadway Traffic Noise Modeling Results

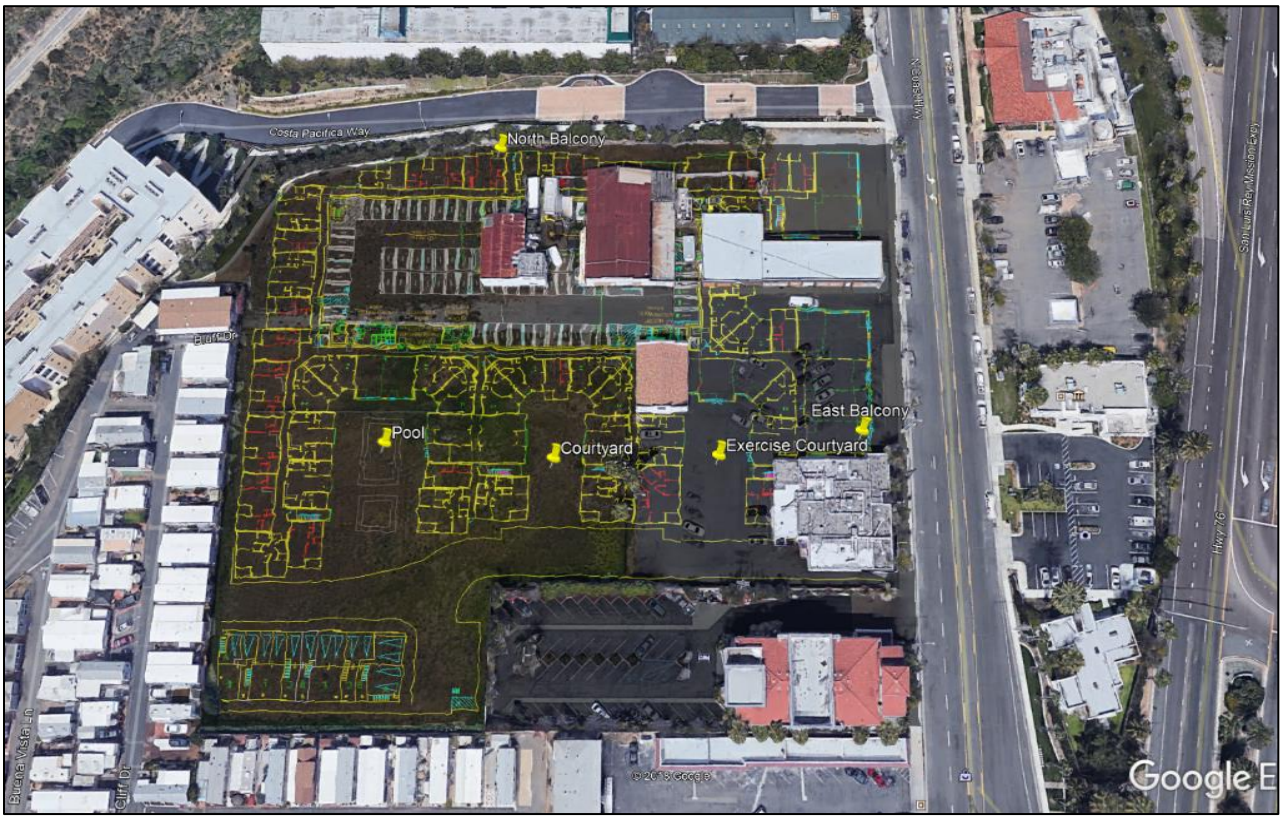
Modeled Receiver Tag (Location Description)	Buildout (2035) Plus Project Noise Level (dBA CNEL)
Pool	21.4
Courtyard	21.4
Exercise Courtyard	46.8
East Balcony 1st	63.6
East Balcony 2nd	63.7
East Balcony 3rd	63.3
East Balcony 4th	63
East Balcony 5th	62.8
North Balcony 1st	53.2
North Balcony 2nd	54.2
North Balcony 3rd	54.7

Table 8. On-Site Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Buildout (2035) Plus Project Noise Level (dBA CNEL)
North Balcony 4th	54.7
North Balcony 5th	54.6

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Figure 5 Sample On-Site Project Outdoor Areas



At all on-site exterior locations, the predicted CNEL values are less than 65 dBA, and thus compatible with the City's guidance for exterior noise levels.

Rail Operations Noise

Although not currently required by the California Environmental Quality Act, for informational purposes this noise assessment also predicted the potential exposure of new proposed project residential building occupants to passing railroad operations. The San Diego Northern Rail passes parallel to the nearest western façade of the proposed project at a distance of approximately 600 feet.

Existing rail activity on the San Diego Northern Rail was modeled using the CREATE railroad noise model (FRA 2006), which is based on the FTA General Transit Noise Assessment spreadsheet and uses inputs identical (or comparable) to those described in the FTA Transit Noise and Vibration Impact Assessment guidance manual (FTA 2006). Model assumptions include 44 commuter trains per day and four freight trains at night. To model the train whistle noise, a separate Grade Crossing Noise Model based on Federal Railroad Administration guidance was used (FRA 2003).

Using the CREATE rail noise model, with input parameter detail on existing rail traffic as shown in Appendix D, CREATE Rail Operations Noise Model Worksheet, exterior noise exposure at the nearest proposed project western façade would be 56 dBA CNEL and thus below the 60 dBA CNEL threshold considered normally acceptable for outdoor areas per the California State Planning Guidelines described in Section 2, Regulatory Setting.

Usage of the Federal Railroad Administration Grade Crossing Noise Model, shown in Appendix E, estimates that at a distance of 1,700 feet, representing the proximity of the Surfrider Way grade crossing south of the proposed project, the train whistle would be approximately 57 dBA CNEL; hence, this is also compliant with the 60 dBA CNEL guidance level. (This estimation assumes a conservative worst-case reference train horn noise level of 110 dBA L_{max} at 100 feet.) Logarithmically added together, the estimated 56 dBA CNEL from rail operations and estimated 57 dBA CNEL from horn noise levels would yield 60 dBA CNEL, which would also comply with the guidance level.

Although compliant with the CNEL criteria, predicted rail noise exposure may cause occupant annoyance during each pass-by event. However, with windows closed on the modern buildings planned for the proposed project, resultant occupied interior background sound levels resulting from rail noise intrusion should still be compliant with the 45 dBA CNEL interior standard as required by the California Building Code. This is expected due to the exterior-to-interior sound insulation properties of the proposed project building shell assemblies. According to the FHWA Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011), storm windows in a light-framed structure provide 25 dB of noise reduction. Since the proposed project building shell (apparent double-glazed windows in a framed assembly) would appear to match or exceed this example, the resulting interior background noise level would be the difference between the anticipated 60 dBA CNEL and this noise reduction: 60 - 25 = 35 dBA CNEL, which is well below the 45 dBA CNEL interior threshold.

On-Site Combined Roadway and Rail Noise

The City's compatibility standards apply to all sources of transportation-related noise, including roadway traffic noise and rail operations noise. Therefore, to quantitatively assess compliance with the 65 dBA CNEL standard, one should logarithmically combine the predicted on-site buildout traffic noise levels from Table 8 with the railway-attributed noise presented in the preceding paragraphs. Conservatively assuming the estimated combined rail-plus-horn noise level of 60 dBA CNEL is a contributor at all locations and ignores any building shielding or distance attenuation effects, the resulting logarithmic sums do not exceed a rounded-down level of 65 dBA CNEL. In actuality, the rail noise component of this logarithmic sum would be less, since the estimated level discussed in the preceding section is based on the closest project façade (i.e., west-facing) to the railway.

Since the proposed project building shell (apparent double-glazed windows in a framed assembly) as discussed in the preceding paragraphs would be expected to exhibit an exterior-to-interior noise reduction of 25 dB, the corresponding occupied interior noise levels would be 40 dBA CNEL (i.e., 65 - 25 = 40), and thus compliant with the City's interior noise standard.

Stationary Operations Noise

The incorporation of new multifamily homes and a mix of open space and recreational uses attributed to development of the proposed project will add a variety of noise-producing mechanical equipment that include those presented and discussed in the following paragraphs. Most of these noise-producing equipment or sound sources would be considered stationary, or limited in mobility to a defined area. Additionally, the open space and recreational uses would attract residents and their guests to enjoy proposed project facilities and thus create potential community noise relating to added aggregate speech and amplified music as appropriate or expected for the venue.

Residential Unit Heating, Ventilation, and Air Conditioning Noise

For purposes of this analysis, each of the new occupied residential units would be expected to feature a split-system type air-conditioning unit, with a refrigeration condenser unit mounted on the roof as currently depicted by the roof plan (dated May 10, 2019). Assuming each condenser unit has a sound emission source level of 74 dBA at 3 feet (Johnson Controls 2010), the roof plan suggests that these condenser units would be installed near the building perimeter but behind a parapet wall. Therefore, the closest existing noise-sensitive residential receptor to the west of the proposed project's westernmost building façade would be as close as 25 horizontal feet to as many as four condenser units. However, due to the building's roof height and the presence of the sight-occluding parapet wall, the predicted sound emission level from the combination of four condenser units at this single-story receptor would only be 43 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 55 dBA hourly L_{eq}. Please see Appendix F for quantitative details of this prediction. Under such conditions, the operation of residential air-conditioning units would result in **less-than-significant noise impacts**.

Parking Garage Ventilation

Because the parking garage of the proposed project is enclosed by the wings and corridors of the occupied mixed-use building, it will likely need to rely on exhaust fans to provide minimum levels of required ventilation: 0.75 cubic feet per minute for each gross square foot of usable parking area, per the International Mechanical Code (INTEC Controls 2015). For the approximate 87,000 gross square feet planned for parking, and assuming four tube-axial type fans delivering the airflow at 1-inch water gauge of static pressure, the total estimated fan sound power would be 97 dBA L_{eq}. Were one to be located at each corner of the roof parking level, the closest existing noise-sensitive receptor to the west would be as near as 75 horizontal feet. Vertically, these fans on the roof would be 65 feet above grade, and the fan discharge plane would be behind a parapet wall, like the aforementioned residential condenser units. The predicted sound emission level from the closest ventilation fan at this single-story receptor would be 45 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 55 dBA hourly L_{eq}. Please see Appendix F for quantitative details of this prediction. Under such conditions, the operation of parking garage ventilation units would result in **less-than-significant noise impacts**.

On-site Amplified Sound

As the proposed project envisions a number of outdoor amenities, including a pool surrounded by lounging areas, this noise assessment predicted outdoor noise emission from a likely entertainment activity scenario having the following features and characteristics:

- Three outdoor speakers are mounted at 10 feet above grade, with roughly one attached to the horizontal midpoint of each building façade exposed to the pool courtyard area. Each speaker emits pre-recorded music at a level not to exceed 94 dBA at a distance of 1 meter (3.28 feet), thus providing an audible signal over the background sound at the vicinity of the pool area while the event is in progress.
- A total attendance of up to 54 residents and their guests, with individual hourly average speech levels at 72 dBA L_{eq} at 3 feet each (i.e., *loud speaking* per Hayne et al. 2006), distributed around the proposed pool area. The average speech level means that for limited portions of a sample hour, some voices could be louder (84 dBA, comparable to a "shout") or quieter (60 dBA, "normal speaking level") (Hayne et al. 2006).
- The proposed project has an 8-foot-tall solid wall or barrier (including a 2.5-foot-tall concrete masonry unit wall topped by a 5.5-foot solid vinyl fencing as currently proposed) that blocks direct line of sight between the event in progress and the nearest existing residential receptors immediately to the south.

Under these conditions, including the aforementioned proposed project property boundary wall that would yield at least 5 dBA of noise reduction (FHWA 2011), an event of this type could occur during daytime hours (i.e., 7:00 a.m. through 9:59 p.m.) and comply with the City's Noise Ordinance of 65 dBA L_{eq}. Please see Appendix F for quantitative details of this daytime event prediction, which include a plot of predicted noise levels. As indicated in the project description, such events would be limited to daytime hours. Hence, anticipated noise impacts from such outdoor gatherings associated with operation of the proposed project would be considered less than significant.

However, if an event was permitted to continue into the nighttime period (i.e., between 10:00 p.m. and 6:59 a.m.), the outdoor speakers would need to be deactivated, but the event guests could continue speaking at the same average elevated levels (72 dBA L_{eq} at 1 meter each) and still comply with the City's nighttime noise limit of 55 dBA L_{eq} for Downtown land uses. Please see Appendix F for quantitative details of this nighttime event prediction, which include a plot of predicted noise levels. Hence, under these conditions, anticipated noise impacts from such outdoor gatherings at night and associated with operation of the proposed project would be considered less than significant.

Although not currently required by CEQA, for informational purposes this noise analysis also predicted the potential exposure of new proposed project residential building occupants to these on-site outdoor entertainment events. According to the FHWA Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011), storm windows in a light-framed structure provide 25 dB of noise reduction. Since the proposed project building shell (apparent double-glazed windows in a framed assembly) would appear to match or exceed this example, the resulting interior background noise level would be the difference between the anticipated outdoor noise level in the pool area and this noise reduction.

For example, if the outdoor noise level of the pool area impinging on the building façade was 82 dBA L_{eq} during daytime events, the resulting interior background level from this intrusion would be 57 dBA L_{eq} (i.e., 82 – 25 = 57). At this predicted elevated interior noise level, events at the pool area as described herein would need to be brief in order to yield an interior level of 45 dBA CNEL within the occupied new residence: approximately 1.5 hours during daytime hours (with speakers on), or 1.5 hours during nighttime hours (speakers off). Increasing the noise reduction performance of the building shell assembly (via upgrades in glazing) by 5 dB, or reducing the outdoor speaker volume by 5 dB during these daytime events, would extend these daytime or nighttime event durations to 4 hours.

Combined Stationary Noise Sources

While the preceding subsections have analyzed discrete types of anticipated project-attributed stationary noise emission, some off-site community receptors would be exposed to multiple concurrent sources. For example, the closest existing noise-sensitive residential receptor to the west of the proposed project's westernmost building façade (at a perpendicular distance of 25 feet) could receive the logarithmic combination of rooftop condenser noise (43 dBA L_{eq}), parking garage ventilation fan noise (45 dBA L_{eq}), and amplified sound from a nighttime event at the pool area (40 dBA L_{eq}). Taken together, the logarithmic sum is 48 dBA L_{eq} and thus still compliant with the nighttime limit of 55 dBA hourly L_{eq} for Downtown land uses. Neighboring residential receptors to the south might be exposed to higher pool event noise levels, as shown by Appendix F, but such locations would be more distant from the other two project-related stationary noise sources (rooftop condenser units and parking ventilation) and therefore receive less acoustical contribution from them, resulting in estimated aggregate stationary noise source levels that would comply with the 55 dBA hourly L_{eq} standard. By way of illustration, the predicted nighttime pool area event noise level would be 50 dBA L_{eq} at the nearest residential receptor immediately south of the project boundary wall. Separately predicted sound levels from the rooftop HVAC and parking garage ventilation units would be 41 dBA L_{eq} and 37 dBA L_{eq}, respectively. The logarithmic combination of these three values is 51 dBA L_{eq} and thus compliant with the nighttime standard of 55 dBA L_{eq}.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2013b). Information from Caltrans indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet (DOT 2006).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the western project boundary (i.e., 15 feet from the nearest receiving sensitive land use) the estimated vibration velocity level would be 0.19 ips per the equation as follows (FTA 2006):

$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.19 = 0.089 * (25/15)^{1.5}$

In the above equation, PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver. Therefore, at this predicted PPV, the impact of vibration-induced annoyance to occupants of nearby existing homes would be less than significant.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, anticipated construction vibration associated with the proposed project would yield levels of 0.19 ips, which do not surpass the guidance limit of 0.2 to 0.3 ips PPV for preventing damage to residential structures (Caltrans 2013b). Because the predicted vibration level at 15 feet is less than this guidance limit, the risk of vibration damage to nearby structures is considered less than significant.

Once operational, the proposed project would not be expected to feature major producers of groundborne vibration. Anticipated mechanical systems like heating, ventilation, and air-conditioning units are designed and manufactured to feature rotating (fans, motors) and reciprocating (compressors) components that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to proposed project operation would be **less than significant**.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

There are no private airstrips within the vicinity of the project site. The closest airport to the project site is the Oceanside Municipal Airport, approximately 1.85 miles northeast of the site. According to the Airport Land Use Compatibility Plan Exhibit IV-10, Compatibility Data Map: Noise, the project site is not located within a noise exposure of 60 dB CNEL and would therefore not expose people residing or working in the project area to excessive noise levels (San Diego County Regional Airport Authority 2010). Impacts from aviation overflight noise exposure would be **less than significant**.

6 Mitigation Measures

The following mitigation measure, introduced in Section 5, Impact Discussion, would apply during construction activities.

MM-N-1 Prior to the issuance of a Construction Permit, the Applicant/Owner or Construction Contractor shall prepare and submit a Construction Noise Management Plan (CNMP) to the City of Oceanside Planning Division (City Planner) for review and approval. Prior to the issuance of a Construction Permit, Construction Plans shall also include a note indicating compliance with the CNMP is required. The CNMP shall be prepared or reviewed by a Qualified Acoustician (retained at the Applicant/Owner or Construction Contractor's expense) and feature the following:

a. A detailed construction schedule at daily (or weekly, if activities during each day of the week are typical) resolution and correlating to areas or zones of on-site project construction activity(ies) and the anticipated equipment types and quantities involved. Information will include expected hours of actual operation per day for each type of equipment per phase, and indication of anticipated concurrent construction activities on site.

b. Suggested locations of a set of noise level monitors, attended by a Qualified Acoustician or another party under its supervision or direction, at which sample outdoor ambient noise levels will be measured and collected over a sufficient sample period and subsequently analyzed (i.e., compared with applicable time-dependent A-weighted decibel [dBA] thresholds) to ascertain compliance with the 8-hour Federal Transit Administration guidance-based limit of 80 dBA equivalent sound level over a consecutive 8-hour period. Sampling shall be performed, at a minimum, on the first (or otherwise considered typical construction operations) day of each distinct construction phase (e.g., each of the seven listed phases in Table 4).

c. If sample collected noise level data indicates that the 8-hour noise threshold has or will be exceeded, construction work shall be suspended (for the activity or phase of concern) and the Applicant/Owner or Construction Contractor shall implement one or more of the following measures as detailed or specified in the CNMP:

    i. Administrative controls (e.g., reduce operating time of equipment and/or prohibit usage of equipment type[s] within certain distances).

    ii. Engineering controls (upgrade noise controls, such as install better engine exhaust mufflers).

    iii. Install noise abatement on the site boundary fencing (or within, as practical and appropriate) in the form of sound blankets or comparable temporary barriers to occlude construction noise emission between the site (or specific equipment operation as the situation may define) and the noise-sensitive receptor(s) of concern.

    The implemented measure(s) will be reviewed or otherwise inspected and approved by the Qualified Acoustician (or another party under its supervision or direction) prior to resumption of the construction activity or process that caused the measured noise concern or need for noise mitigation. Noise levels shall be re-measured after installation of said measures to ascertain post-mitigation compliance with the noise threshold. As needed, this process shall be repeated and refined until noise level compliance is demonstrated and documented. A report of this implemented mitigation and its documented success will be provided to the City Planner.

d. The Applicant/Owner or Construction Contractor shall make available a telephone hotline so that concerned neighbors in the community may call to report noise complaints. The CNMP shall include a process to investigate these complaints and, if determined to be valid, detail efforts to provide a timely resolution and response to the complainant, with a copy of resolution provided to the City Planner.

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7 Summary of Findings

This noise report was conducted for the proposed project. The results indicate that potential impacts during construction would be less than significant with mitigation (**MM-N-1**). Noise impacts due to operation of the proposed project (including traffic noise) would be less than significant. No further mitigation is required.

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Appendix A

Baseline Noise Measurement Field Data

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Field Noise Measurement Data

Record: 1154	
Project Name	*Alta*
Observer(s)	*Connor Burke*
Date	*2019-05-28*

Meteorological Conditions	
Temp (F)	*64*
Humidity % (R.H.)	*63*
Wind	*Light*
Wind Speed (MPH)	*10*
Wind Direction	*South West*
Sky	*Sunny*

Instrument and Calibrator Information	
Instrument Name List	*(ENC) Rion NL-52*
Instrument Name	*(ENC) Rion NL-52*
Instrument Name Lookup Key	*(ENC) Rion NL-52*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name Lookup Key	*(ENC) LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Monitoring	
Record #	*1*
Site ID	*ST2*
Site Location Lat/Long	*33.203630, -117.385986*
Begin (Time)	*10:30:00*
End (Time)	*10:45:00*
Leq	*48.8*
Lmax	*53.8*
Lmin	*45.9*
Other Lx?	*L90, L50, L10*
L90	*46.7*
L50	*47.9*
L10	*51*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Distant traffic*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*2*
Site ID	*ST3*
Site Location Lat/Long	*33.203567, -117.384747*
Begin (Time)	*10:50:00*
End (Time)	*11:00:00*
Leq	*57.9*
Lmax	*71.2*
Lmin	*51.5*
Other Lx?	*L90, L50, L10*
L90	*53.1*
L50	*56*
L10	*60.3*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Distant Conversations / Yelling, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Source Info and Traffic Counts

Number of Lanes	*2*
Lane Width (feet)	*10*
Roadway Width (feet)	*20*
Roadway Width (m)	*6.1*
Distance to Roadway (feet)	*50*
Distance to Roadway (m)	*15.3*
Distance Measured to Centerline or Edge of Pavement?	*Edge of Pavement*
Estimated Vehicle Speed (MPH)	*35*

Traffic Counts

Vehicle Count Summary	*A 130, MT 3, HT 0, B 0, MC 1*
Select Method for Recording Count Duration	*Enter Manually*
Counting Both Directions?	*Yes*
Count Duration (minutes)	*10*
Vehicle Count Tally	
Select Method for Vehicle Counts	*Use Counter (+/-)*
Number of Vehicles - Autos	*130*
Number of Vehicles - Medium Trucks	*3*
Number of Vehicles - Heavy Trucks	*0*
Number of Vehicles - Buses	*0*
Number of Vehicles - Motorcyles	*1*

Description / Photos

Site Photos

Photo

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Monitoring

Record #	*3*
Site ID	*ST1*
Site Location Lat/Long	*33.202544, -117.384977*
Begin (Time)	*11:20:00*
End (Time)	*11:30:00*
Leq	*51.4*
Lmax	*61.8*
Lmin	*48*
Other Lx?	*L90, L50, L10*
L90	*48.6*
L50	*50.2*
L10	*53.2*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Distant traffic*
Other Noise Sources (Background)	*Birds, Distant Conversations / Yelling, Distant Traffic*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo

Appendix B

Construction Noise Modeling Input and Output

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per FTA guidance = 80

allowable hours over which Leq is to be averaged (example: 8 per FTA guidance) = 8

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Dozer	1	40	82		15	92.5	1.5	90	81
	Excavator	1	40	81		15	91.5	1.5	90	80
	Concrete Saw	1	20	90		15	100.5	1.5	90	86
							Total for Demolition Phase:			88.2
Site Preparation	Dozer	1	40	82		15	92.5	3	180	84
	Backhoe	1	40	78		15	88.5	3	180	80
	Front End Loader	1	40	79		15	89.5	3	180	81
							Total for Site Preparation Phase:			87.0
Grading	Excavator	1	40	81		15	91.5	1	60	78
	Grader	1	40	85		15	95.5	1	60	82
	Dozer	1	40	82		15	92.5	1	60	79
	Front End Loader	1	40	79		15	89.5	1	60	76
	Backhoe	1	40	78		15	88.5	1	60	75
	Scraper	1	40	84		15	94.5	1	60	81
							Total for Grading Phase:			87.4
Building Construction	Crane	1	16	81		25	87.0	2	120	73
	Man Lift	1	20	75		25	81.0	2	120	68
	Generator	1	50	72		25	78.0	2	120	69
	Backhoe	1	40	78		25	84.0	2	120	74
	Front End Loader	1	40	79		25	85.0	2	120	75
	Welder / Torch	1	40	73		25	79.0	2	120	69
							Total for Building Construction Phase:			80.0
Trenching	Excavator	1	40	81		15	91.5	2	120	81
	Tractor	1	40	84		15	94,5	2	120	84
							Total for Trenching Phase:			86.2
Architectural Coating	Compressor (air)	1	40	78		25	84.0	4	240	77
							Total for Architectural Coating Phase:			77.0
Paving	Paver	1	50	77		15	87.5	2	120	78
	Roller	1	20	80		15	90,5	2	120	77
	Roller	1	20	80		15	90.5	2	120	77
	All Other Equipment > 5 HP	1	50	85		15	95.5	2	120	86
							Total for Paving Phase:			87.9

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per FTA guidance = 80

allowable hours over which Leq is to be averaged (example: 8 per FTA guidance) = 8

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Dozer	1	40	82		300	66.4	8	480	62
	Excavator	3	40	81		300	65.4	8	480	66
	Concrete Saw	2	20	90		300	74.4	8	480	70
							Total for Demolition Phase:			**72.3**
Site Preparation	Dozer	3	40	82		300	66.4	8	480	67
	Backhoe	1	40	78		300	62.4	8	480	58
	Front End Loader	1	40	79		300	63.4	8	480	59
							Total for Site Preparation Phase:			**68.4**
Grading	Excavator	2	40	81		300	65.4	8	480	64
	Grader	1	40	85		300	69.4	8	480	65
	Dozer	1	40	82		300	66.4	8	480	62
	Front End Loader	1	40	79		300	63.4	8	480	59
	Backhoe	1	40	78		300	62.4	8	480	58
	Scraper	2	40	84		300	68.4	8	480	67
							Total for Grading Phase:			**71.8**
Building Construction	Crane	1	16	81		300	65.4	8	480	57
	Man Lift	3	20	75		300	59.4	8	480	57
	Generator	1	50	72		300	56.4	8	480	53
	Backhoe	1	40	78		300	62.4	8	480	58
	Front End Loader	2	40	79		300	63.4	8	480	62
	Welder / Torch	1	40	73		300	57.4	8	480	53
							Total for Building Construction Phase:			**66.0**
Trenching	Excavator	1	40	81		300	65.4	8	480	61
	Tractor	1	40	84		300	68.4	8	480	64
							Total for Trenching Phase:			**66.2**
Architectural Coating	Compressor (air)	1	40	78		300	62.4	8	480	58
							Total for Architectural Coating Phase:			**58.5**
Paving	Paver	2	50	77		300	61.4	8	480	61
	Roller	1	20	80		300	64.4	8	480	57
	Roller	1	20	80		300	64.4	8	480	57
	All Other Equipment > 5 HP	2	50	85		300	69.4	8	480	69
							Total for Paving Phase:			**70.5**

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit, based on 5 dB + measured existing outdoor ambient = 54

allowable hours over which Leq is to be averaged = 1

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 1-hour Leq
Nighttime concrete pour/pump activity	Concrete Pump Truck	1	20	81		300	65.4	1	60	58
	Generator (<25KVA, VMS signs)	1	50	70		300	54.4	1	60	51
							Total for Nighttime concrete pour/pump activity Phase:			59.2

Appendix C

Traffic Noise Modeling Input and Output

Dudek
CB

14 June 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Alta
RUN: Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	51.4	53.4	66	2.0	10	----	53.4	0.0	8	-8.0
ST3	2	1	57.9	59.9	66	2.0	10	----	59.9	0.0	8	-8.0
ST2	3	1	48.8	48.4	66	-0.4	10	----	48.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 14 June 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Alta
RUN: Existing

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
North N Coast Hwy	30.0	point1	1	1,310.7	2,330.1	0.00				Average	
		point2	2	1,405.2	2,135.5	0.00				Average	
		point3	3	1,470.4	1,989.5	0.00				Average	
		point4	4	1,535.5	1,839.0	0.00				Average	
		point5	5	1,575.0	1,744.5	0.00				Average	
		point6	6	1,592.4	1,666.5	0.00				Average	
		point7	7	1,610.8	1,548.1	0.00				Average	
		point8	8	1,621.0	1,344.0	0.00					
South N Coast Hwy	30.0	point13	13	1,610.8	558.7	0.00				Average	
		point14	14	1,599.8	788.1	0.00				Average	
		point15	15	1,598.9	1,077.2	0.00				Average	
		point16	16	1,601.6	1,191.0	0.00				Average	
		point17	17	1,600.2	1,341.3	0.00					
Costa Pacific Way	30.0	point22	22	1,553.0	1,345.2	0.00				Average	
		point23	23	1,277.6	1,342.5	0.00				Average	
		point24	24	1,088.5	1,335.1	0.00					
North Hwy 76	40.0	point25	25	1,708.4	450.4	0.00				Average	
		point26	26	1,777.3	645.9	0.00				Average	
		point27	27	1,831.4	853.3	0.00				Average	
		point28	28	1,877.3	1,077.2	0.00				Average	
		point29	29	1,949.8	1,449.0	0.00					
S Hwy 76	40.0	point30	30	1,906.7	1,519.6	0.00				Average	
		point31	31	1,814.0	1,075.4	0.00				Average	
		point32	32	1,754.3	771.6	0.00				Average	
		point33	33	1,727.7	755.1	0.00				Average	

		point34	34	1,680.9	746.8	0.00				Average	
		point35	35	1,643.3	793.6	0.00				Average	
		point36	36	1,638.7	797.3	0.00					
N North Coast Hwy	30.0	point37	37	1,977.4	11.9	0.00				Average	
		point38	38	1,888.3	127.6	0.00				Average	
		point39	39	1,766.3	307.5	0.00				Average	
		point40	40	1,664.4	481.9	0.00					
S North Coast Hwy	30.0	point41	41	1,941.6	10.1	0.00				Average	
		point42	42	1,743.3	286.4	0.00				Average	
		point43	43	1,634.1	461.6	0.00				Average	
		point44	44	1,625.9	482.8	0.00					
Roadway8	12.0	point45	45	1,750.7	756.3	0.00				Average	
		point46	46	1,739.7	678.3	0.00				Average	
		point47	47	1,719.5	637.0	0.00				Average	
		point48	48	1,698.4	583.7	0.00				Average	
		point49	49	1,654.3	551.6	0.00					
South N Coast Hwy-2	30.0	point50	50	1,600.2	1,341.3	0.00				Average	
		point18	18	1,583.3	1,599.5	0.00				Average	
		point19	19	1,564.9	1,725.2	0.00				Average	
		point20	20	1,412.5	2,081.3	0.00				Average	
		point21	21	1,289.6	2,321.8	0.00					
North N Coast Hwy-2	30.0	point51	51	1,621.0	1,344.0	0.00				Average	
		point9	9	1,626.4	1,136.9	0.00				Average	
		point10	10	1,627.3	832.2	0.00				Average	
		point11	11	1,634.6	615.6	0.00				Average	
		point12	12	1,639.2	557.7	0.00					

Dudek 14 June 2019
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Alta
RUN: Existing

Roadway	Points											
Name	Name	No.	Segment									
			User 1		User 2		User 3		User 4		<unknown>	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
North N Coast Hwy	point1	1										
	point2	2										
	point3	3										
	point4	4										
	point5	5										
	point6	6										
	point7	7										
	point8	8										
South N Coast Hwy	point13	13										
	point14	14										
	point15	15										
	point16	16										
	point17	17										
Costa Pacific Way	point22	22										
	point23	23										
	point24	24										
North Hwy 76	point25	25										
	point26	26										
	point27	27										
	point28	28										
	point29	29										
S Hwy 76	point30	30										
	point31	31										

	point32	32										
	point33	33										
	point34	34										
	point35	35										
	point36	36										
N North Coast Hwy	point37	37										
	point38	38										
	point39	39										
	point40	40										
S North Coast Hwy	point41	41										
	point42	42										
	point43	43										
	point44	44										
Roadway8	point45	45										
	point46	46										
	point47	47										
	point48	48										
	point49	49										
South N Coast Hwy-2	point50	50										
	point18	18										
	point19	19										
	point20	20										
	point21	21										
North N Coast Hwy-2	point51	51										
	point9	9										
	point10	10										
	point11	11										
	point12	12										

Dudek
CB

14 June 2019
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Alta
RUN: Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,369.8	857.2	0.00	4.92	51.40	66	10.0	8.0	Y
ST3	2	1	1,481.8	1,378.6	0.00	4.92	57.90	66	10.0	8.0	Y
ST2	3	1	1,084.3	1,268.4	0.00	4.92	48.80	66	10.0	8.0	Y

Dudek
CB

14 June 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Alta
RUN: E + P
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	51.4	54.0	66	2.6	10	----	54.0	0.0	8	-8.0
ST3	2	1	57.9	61.1	66	3.2	10	----	61.1	0.0	8	-8.0
ST2	3	1	48.8	51.2	66	2.4	10	----	51.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 14 June 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Alta
RUN: E + P

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
North N Coast Hwy	30.0	point1	1	1,310.7	2,330.1	0.00				Average	
		point2	2	1,405.2	2,135.5	0.00				Average	
		point3	3	1,470.4	1,989.5	0.00				Average	
		point4	4	1,535.5	1,839.0	0.00				Average	
		point5	5	1,575.0	1,744.5	0.00				Average	
		point6	6	1,592.4	1,666.5	0.00				Average	
		point7	7	1,610.8	1,548.1	0.00				Average	
		point8	8	1,621.0	1,344.0	0.00					
South N Coast Hwy	30.0	point13	13	1,610.8	558.7	0.00				Average	
		point14	14	1,599.8	788.1	0.00				Average	
		point15	15	1,598.9	1,077.2	0.00				Average	
		point16	16	1,601.6	1,191.0	0.00				Average	
		point17	17	1,600.2	1,341.3	0.00					
Costa Pacific Way	30.0	point22	22	1,553.0	1,345.2	0.00				Average	
		point23	23	1,277.6	1,342.5	0.00				Average	
		point24	24	1,088.5	1,335.1	0.00					
North Hwy 76	40.0	point25	25	1,708.4	450.4	0.00				Average	
		point26	26	1,777.3	645.9	0.00				Average	
		point27	27	1,831.4	853.3	0.00				Average	
		point28	28	1,877.3	1,077.2	0.00				Average	
		point29	29	1,949.8	1,449.0	0.00					
S Hwy 76	40.0	point30	30	1,906.7	1,519.6	0.00				Average	
		point31	31	1,814.0	1,075.4	0.00				Average	
		point32	32	1,754.3	771.6	0.00				Average	
		point33	33	1,727.7	755.1	0.00				Average	

		point34	34	1,680.9	746.8	0.00				Average	
		point35	35	1,643.3	793.6	0.00				Average	
		point36	36	1,638.7	797.3	0.00					
N North Coast Hwy	30.0	point37	37	1,977.4	11.9	0.00				Average	
		point38	38	1,888.3	127.6	0.00				Average	
		point39	39	1,766.3	307.5	0.00				Average	
		point40	40	1,664.4	481.9	0.00					
S North Coast Hwy	30.0	point41	41	1,941.6	10.1	0.00				Average	
		point42	42	1,743.3	286.4	0.00				Average	
		point43	43	1,634.1	461.6	0.00				Average	
		point44	44	1,625.9	482.8	0.00					
Roadway8	12.0	point45	45	1,750.7	756.3	0.00				Average	
		point46	46	1,739.7	678.3	0.00				Average	
		point47	47	1,719.5	637.0	0.00				Average	
		point48	48	1,698.4	583.7	0.00				Average	
		point49	49	1,654.3	551.6	0.00					
South N Coast Hwy-2	30.0	point50	50	1,600.2	1,341.3	0.00				Average	
		point18	18	1,583.3	1,599.5	0.00				Average	
		point19	19	1,564.9	1,725.2	0.00				Average	
		point20	20	1,412.5	2,081.3	0.00				Average	
		point21	21	1,289.6	2,321.8	0.00					
North N Coast Hwy-2	30.0	point51	51	1,621.0	1,344.0	0.00				Average	
		point9	9	1,626.4	1,136.9	0.00				Average	
		point10	10	1,627.3	832.2	0.00				Average	
		point11	11	1,634.6	615.6	0.00				Average	
		point12	12	1,639.2	557.7	0.00					

Dudek 14 June 2019
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Alta
RUN: E + P

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
North N Coast Hwy	point1	1	497	35	10	35	5	35	0	0	0	0
	point2	2	497	35	10	35	5	35	0	0	0	0
	point3	3	497	35	10	35	5	35	0	0	0	0
	point4	4	497	35	10	35	5	35	0	0	0	0
	point5	5	497	35	10	35	5	35	0	0	0	0
	point6	6	497	35	10	35	5	35	0	0	0	0
	point7	7	497	35	10	35	5	35	0	0	0	0
	point8	8										
South N Coast Hwy	point13	13	655	35	14	35	7	35	0	0	0	0
	point14	14	655	35	14	35	7	35	0	0	0	0
	point15	15	655	35	14	35	7	35	0	0	0	0
	point16	16	655	35	14	35	7	35	0	0	0	0
	point17	17										
Costa Pacific Way	point22	22	310	15	6	15	3	15	0	0	0	0
	point23	23	310	15	6	15	3	15	0	0	0	0
	point24	24										
North Hwy 76	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29										
S Hwy 76	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0

	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33	0	0	0	0	0	0	0	0	0	0
	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35	0	0	0	0	0	0	0	0	0	0
	point36	36										
N North Coast Hwy	point37	37	943	35	19	35	10	35	0	0	0	0
	point38	38	943	35	19	35	10	35	0	0	0	0
	point39	39	943	35	19	35	10	35	0	0	0	0
	point40	40										
S North Coast Hwy	point41	41	943	35	19	35	10	35	0	0	0	0
	point42	42	943	35	19	35	10	35	0	0	0	0
	point43	43	943	35	19	35	10	35	0	0	0	0
	point44	44										
Roadway8	point45	45	0	0	0	0	0	0	0	0	0	0
	point46	46	0	0	0	0	0	0	0	0	0	0
	point47	47	0	0	0	0	0	0	0	0	0	0
	point48	48	0	0	0	0	0	0	0	0	0	0
	point49	49										
South N Coast Hwy-2	point50	50	497	35	10	35	5	35	0	0	0	0
	point18	18	497	35	10	35	5	35	0	0	0	0
	point19	19	497	35	10	35	5	35	0	0	0	0
	point20	20	497	35	10	35	5	35	0	0	0	0
	point21	21										
North N Coast Hwy-2	point51	51	655	35	14	35	7	35	0	0	0	0
	point9	9	655	35	14	35	7	35	0	0	0	0
	point10	10	655	35	14	35	7	35	0	0	0	0
	point11	11	655	35	14	35	7	35	0	0	0	0
	point12	12										

Dudek
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14 June 2019
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Alta
RUN: E + P

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,369.8	857.2	0.00	4.92	51.40	66	10.0	8.0	Y
ST3	2	1	1,481.8	1,378.6	0.00	4.92	57.90	66	10.0	8.0	Y
ST2	3	1	1,084.3	1,268.4	0.00	4.92	48.80	66	10.0	8.0	Y

Dudek
CB

14 June 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Alta
RUN: E + C
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	51.4	53.6	66	2.2	10	----	53.6	0.0	8	-8.0
ST3	2	1	57.9	60.0	66	2.1	10	----	60.0	0.0	8	-8.0
ST2	3	1	48.8	48.5	66	-0.3	10	----	48.5	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek
CB

14 June 2019
TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Alta
RUN: E + C

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
North N Coast Hwy	30.0	point1	1	1,310.7	2,330.1	0.00				Average	
		point2	2	1,405.2	2,135.5	0.00				Average	
		point3	3	1,470.4	1,989.5	0.00				Average	
		point4	4	1,535.5	1,839.0	0.00				Average	
		point5	5	1,575.0	1,744.5	0.00				Average	
		point6	6	1,592.4	1,666.5	0.00				Average	
		point7	7	1,610.8	1,548.1	0.00				Average	
		point8	8	1,621.0	1,344.0	0.00					
South N Coast Hwy	30.0	point13	13	1,610.8	558.7	0.00				Average	
		point14	14	1,599.8	788.1	0.00				Average	
		point15	15	1,598.9	1,077.2	0.00				Average	
		point16	16	1,601.6	1,191.0	0.00				Average	
		point17	17	1,600.2	1,341.3	0.00					
Costa Pacific Way	30.0	point22	22	1,553.0	1,345.2	0.00				Average	
		point23	23	1,277.6	1,342.5	0.00				Average	
		point24	24	1,088.5	1,335.1	0.00					
North Hwy 76	40.0	point25	25	1,708.4	450.4	0.00				Average	
		point26	26	1,777.3	645.9	0.00				Average	
		point27	27	1,831.4	853.3	0.00				Average	
		point28	28	1,877.3	1,077.2	0.00				Average	
		point29	29	1,949.8	1,449.0	0.00					
S Hwy 76	40.0	point30	30	1,906.7	1,519.6	0.00				Average	
		point31	31	1,814.0	1,075.4	0.00				Average	
		point32	32	1,754.3	771.6	0.00				Average	
		point33	33	1,727.7	755.1	0.00				Average	

		point34	34	1,680.9	746.8	0.00				Average	
		point35	35	1,643.3	793.6	0.00				Average	
		point36	36	1,638.7	797.3	0.00					
N North Coast Hwy	30.0	point37	37	1,977.4	11.9	0.00				Average	
		point38	38	1,888.3	127.6	0.00				Average	
		point39	39	1,766.3	307.5	0.00				Average	
		point40	40	1,664.4	481.9	0.00					
S North Coast Hwy	30.0	point41	41	1,941.6	10.1	0.00				Average	
		point42	42	1,743.3	286.4	0.00				Average	
		point43	43	1,634.1	461.6	0.00				Average	
		point44	44	1,625.9	482.8	0.00					
Roadway8	12.0	point45	45	1,750.7	756.3	0.00				Average	
		point46	46	1,739.7	678.3	0.00				Average	
		point47	47	1,719.5	637.0	0.00				Average	
		point48	48	1,698.4	583.7	0.00				Average	
		point49	49	1,654.3	551.6	0.00					
South N Coast Hwy-2	30.0	point50	50	1,600.2	1,341.3	0.00				Average	
		point18	18	1,583.3	1,599.5	0.00				Average	
		point19	19	1,564.9	1,725.2	0.00				Average	
		point20	20	1,412.5	2,081.3	0.00				Average	
		point21	21	1,289.6	2,321.8	0.00					
North N Coast Hwy-2	30.0	point51	51	1,621.0	1,344.0	0.00				Average	
		point9	9	1,626.4	1,136.9	0.00				Average	
		point10	10	1,627.3	832.2	0.00				Average	
		point11	11	1,634.6	615.6	0.00				Average	
		point12	12	1,639.2	557.7	0.00					

Dudek 14 June 2019
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Alta
RUN: E + C

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
North N Coast Hwy	point1	1	500	35	10	35	5	35	0	0	0	0
	point2	2	500	35	10	35	5	35	0	0	0	0
	point3	3	500	35	10	35	5	35	0	0	0	0
	point4	4	500	35	10	35	5	35	0	0	0	0
	point5	5	500	35	10	35	5	35	0	0	0	0
	point6	6	500	35	10	35	5	35	0	0	0	0
	point7	7	500	35	10	35	5	35	0	0	0	0
	point8	8										
South N Coast Hwy	point13	13	572	35	12	35	6	35	0	0	0	0
	point14	14	572	35	12	35	6	35	0	0	0	0
	point15	15	572	35	12	35	6	35	0	0	0	0
	point16	16	572	35	12	35	6	35	0	0	0	0
	point17	17										
Costa Pacific Way	point22	22	75	15	2	15	1	15	0	0	0	0
	point23	23	75	15	2	15	1	15	0	0	0	0
	point24	24										
North Hwy 76	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29										
S Hwy 76	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0

	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33	0	0	0	0	0	0	0	0	0	0
	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35	0	0	0	0	0	0	0	0	0	0
	point36	36										
N North Coast Hwy	point37	37	999	35	21	35	10	35	0	0	0	0
	point38	38	999	35	21	35	10	35	0	0	0	0
	point39	39	999	35	21	35	10	35	0	0	0	0
	point40	40										
S North Coast Hwy	point41	41	999	35	21	35	10	35	0	0	0	0
	point42	42	999	35	21	35	10	35	0	0	0	0
	point43	43	999	35	21	35	10	35	0	0	0	0
	point44	44										
Roadway8	point45	45	0	0	0	0	0	0	0	0	0	0
	point46	46	0	0	0	0	0	0	0	0	0	0
	point47	47	0	0	0	0	0	0	0	0	0	0
	point48	48	0	0	0	0	0	0	0	0	0	0
	point49	49										
South N Coast Hwy-2	point50	50	500	35	10	35	5	35	0	0	0	0
	point18	18	500	35	10	35	5	35	0	0	0	0
	point19	19	500	35	10	35	5	35	0	0	0	0
	point20	20	500	35	10	35	5	35	0	0	0	0
	point21	21										
North N Coast Hwy-2	point51	51	572	35	12	35	6	35	0	0	0	0
	point9	9	572	35	12	35	6	35	0	0	0	0
	point10	10	572	35	12	35	6	35	0	0	0	0
	point11	11	572	35	12	35	6	35	0	0	0	0
	point12	12										

Dudek
CB

14 June 2019
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Alta
RUN: E + C

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,369.8	857.2	0.00	4.92	51.40	66	10.0	8.0	Y
ST3	2	1	1,481.8	1,378.6	0.00	4.92	57.90	66	10.0	8.0	Y
ST2	3	1	1,084.3	1,268.4	0.00	4.92	48.80	66	10.0	8.0	Y

Dudek
CB

14 June 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Alta
RUN: E + P + C
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	51.4	54.2	66	2.8	10	----	54.2	0.0	8	-8.0
ST3	2	1	57.9	61.2	66	3.3	10	----	61.2	0.0	8	-8.0
ST2	3	1	48.8	51.3	66	2.5	10	----	51.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek
CB

14 June 2019
TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Alta
RUN: E + P + C

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
North N Coast Hwy	30.0	point1	1	1,310.7	2,330.1	0.00				Average	
		point2	2	1,405.2	2,135.5	0.00				Average	
		point3	3	1,470.4	1,989.5	0.00				Average	
		point4	4	1,535.5	1,839.0	0.00				Average	
		point5	5	1,575.0	1,744.5	0.00				Average	
		point6	6	1,592.4	1,666.5	0.00				Average	
		point7	7	1,610.8	1,548.1	0.00				Average	
		point8	8	1,621.0	1,344.0	0.00					
South N Coast Hwy	30.0	point13	13	1,610.8	558.7	0.00				Average	
		point14	14	1,599.8	788.1	0.00				Average	
		point15	15	1,598.9	1,077.2	0.00				Average	
		point16	16	1,601.6	1,191.0	0.00				Average	
		point17	17	1,600.2	1,341.3	0.00					
Costa Pacific Way	30.0	point22	22	1,553.0	1,345.2	0.00				Average	
		point23	23	1,277.6	1,342.5	0.00				Average	
		point24	24	1,088.5	1,335.1	0.00					
North Hwy 76	40.0	point25	25	1,708.4	450.4	0.00				Average	
		point26	26	1,777.3	645.9	0.00				Average	
		point27	27	1,831.4	853.3	0.00				Average	
		point28	28	1,877.3	1,077.2	0.00				Average	
		point29	29	1,949.8	1,449.0	0.00					
S Hwy 76	40.0	point30	30	1,906.7	1,519.6	0.00				Average	
		point31	31	1,814.0	1,075.4	0.00				Average	
		point32	32	1,754.3	771.6	0.00				Average	
		point33	33	1,727.7	755.1	0.00				Average	

		point34	34	1,680.9	746.8	0.00				Average	
		point35	35	1,643.3	793.6	0.00				Average	
		point36	36	1,638.7	797.3	0.00					
N North Coast Hwy	30.0	point37	37	1,977.4	11.9	0.00				Average	
		point38	38	1,888.3	127.6	0.00				Average	
		point39	39	1,766.3	307.5	0.00				Average	
		point40	40	1,664.4	481.9	0.00					
S North Coast Hwy	30.0	point41	41	1,941.6	10.1	0.00				Average	
		point42	42	1,743.3	286.4	0.00				Average	
		point43	43	1,634.1	461.6	0.00				Average	
		point44	44	1,625.9	482.8	0.00					
Roadway8	12.0	point45	45	1,750.7	756.3	0.00				Average	
		point46	46	1,739.7	678.3	0.00				Average	
		point47	47	1,719.5	637.0	0.00				Average	
		point48	48	1,698.4	583.7	0.00				Average	
		point49	49	1,654.3	551.6	0.00					
South N Coast Hwy-2	30.0	point50	50	1,600.2	1,341.3	0.00				Average	
		point18	18	1,583.3	1,599.5	0.00				Average	
		point19	19	1,564.9	1,725.2	0.00				Average	
		point20	20	1,412.5	2,081.3	0.00				Average	
		point21	21	1,289.6	2,321.8	0.00					
North N Coast Hwy-2	30.0	point51	51	1,621.0	1,344.0	0.00				Average	
		point9	9	1,626.4	1,136.9	0.00				Average	
		point10	10	1,627.3	832.2	0.00				Average	
		point11	11	1,634.6	615.6	0.00				Average	
		point12	12	1,639.2	557.7	0.00					

Dudek 14 June 2019
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Alta
RUN: E + P + C

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
North N Coast Hwy	point1	1	512	35	11	35	5	35	0	0	0	0
	point2	2	512	35	11	35	5	35	0	0	0	0
	point3	3	512	35	11	35	5	35	0	0	0	0
	point4	4	512	35	11	35	5	35	0	0	0	0
	point5	5	512	35	11	35	5	35	0	0	0	0
	point6	6	512	35	11	35	5	35	0	0	0	0
	point7	7	512	35	11	35	5	35	0	0	0	0
	point8	8										
South N Coast Hwy	point13	13	679	35	14	35	7	35	0	0	0	0
	point14	14	679	35	14	35	7	35	0	0	0	0
	point15	15	679	35	14	35	7	35	0	0	0	0
	point16	16	679	35	14	35	7	35	0	0	0	0
	point17	17										
Costa Pacific Way	point22	22	310	15	6	15	3	15	0	0	0	0
	point23	23	310	15	6	15	3	15	0	0	0	0
	point24	24										
North Hwy 76	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29										
S Hwy 76	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0

	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33	0	0	0	0	0	0	0	0	0	0
	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35	0	0	0	0	0	0	0	0	0	0
	point36	36										
N North Coast Hwy	point37	37	1036	35	21	35	11	35	0	0	0	0
	point38	38	1036	35	21	35	11	35	0	0	0	0
	point39	39	1036	35	21	35	11	35	0	0	0	0
	point40	40										
S North Coast Hwy	point41	41	1036	35	21	35	11	35	0	0	0	0
	point42	42	1036	35	21	35	11	35	0	0	0	0
	point43	43	1036	35	21	35	11	35	0	0	0	0
	point44	44										
Roadway8	point45	45	0	0	0	0	0	0	0	0	0	0
	point46	46	0	0	0	0	0	0	0	0	0	0
	point47	47	0	0	0	0	0	0	0	0	0	0
	point48	48	0	0	0	0	0	0	0	0	0	0
	point49	49										
South N Coast Hwy-2	point50	50	512	35	11	35	5	35	0	0	0	0
	point18	18	512	35	11	35	5	35	0	0	0	0
	point19	19	512	35	11	35	5	35	0	0	0	0
	point20	20	512	35	11	35	5	35	0	0	0	0
	point21	21										
North N Coast Hwy-2	point51	51	679	35	14	35	7	35	0	0	0	0
	point9	9	679	35	14	35	7	35	0	0	0	0
	point10	10	679	35	14	35	7	35	0	0	0	0
	point11	11	679	35	14	35	7	35	0	0	0	0
	point12	12										

Dudek
CB

14 June 2019
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Alta
RUN: E + P + C

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,369.8	857.2	0.00	4.92	51.40	66	10.0	8.0	Y
ST3	2	1	1,481.8	1,378.6	0.00	4.92	57.90	66	10.0	8.0	Y
ST2	3	1	1,084.3	1,268.4	0.00	4.92	48.80	66	10.0	8.0	Y

Dudek
CB

30 July 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Alta
RUN: Buildout
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	51.4	54.5	66	3.1	10	----	54.5	0.0	8	-8.0
ST3	2	1	57.9	61.6	66	3.7	10	----	61.6	0.0	8	-8.0
ST2	3	1	48.8	49.2	66	0.4	10	----	49.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 30 July 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Alta
RUN: Buildout

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
North N Coast Hwy	30.0	point1	1	1,310.7	2,330.1	0.00				Average	
		point2	2	1,405.2	2,135.5	0.00				Average	
		point3	3	1,470.4	1,989.5	0.00				Average	
		point4	4	1,535.5	1,839.0	0.00				Average	
		point5	5	1,575.0	1,744.5	0.00				Average	
		point6	6	1,592.4	1,666.5	0.00				Average	
		point7	7	1,610.8	1,548.1	0.00				Average	
		point8	8	1,621.0	1,344.0	0.00					
South N Coast Hwy	30.0	point13	13	1,610.8	558.7	0.00				Average	
		point14	14	1,599.8	788.1	0.00				Average	
		point15	15	1,598.9	1,077.2	0.00				Average	
		point16	16	1,601.6	1,191.0	0.00				Average	
		point17	17	1,600.2	1,341.3	0.00					
Costa Pacific Way	30.0	point22	22	1,553.0	1,345.2	0.00				Average	
		point23	23	1,277.6	1,342.5	0.00				Average	
		point24	24	1,088.5	1,335.1	0.00					
North Hwy 76	40.0	point25	25	1,708.4	450.4	0.00				Average	
		point26	26	1,777.3	645.9	0.00				Average	
		point27	27	1,831.4	853.3	0.00				Average	
		point28	28	1,877.3	1,077.2	0.00				Average	
		point29	29	1,949.8	1,449.0	0.00					
S Hwy 76	40.0	point30	30	1,906.7	1,519.6	0.00				Average	
		point31	31	1,814.0	1,075.4	0.00				Average	
		point32	32	1,754.3	771.6	0.00				Average	
		point33	33	1,727.7	755.1	0.00				Average	

		point34	34	1,680.9	746.8	0.00				Average	
		point35	35	1,643.3	793.6	0.00				Average	
		point36	36	1,638.7	797.3	0.00					
N North Coast Hwy	30.0	point37	37	1,977.4	11.9	0.00				Average	
		point38	38	1,888.3	127.6	0.00				Average	
		point39	39	1,766.3	307.5	0.00				Average	
		point40	40	1,664.4	481.9	0.00					
S North Coast Hwy	30.0	point41	41	1,941.6	10.1	0.00				Average	
		point42	42	1,743.3	286.4	0.00				Average	
		point43	43	1,634.1	461.6	0.00				Average	
		point44	44	1,625.9	482.8	0.00					
Roadway8	12.0	point45	45	1,750.7	756.3	0.00				Average	
		point46	46	1,739.7	678.3	0.00				Average	
		point47	47	1,719.5	637.0	0.00				Average	
		point48	48	1,698.4	583.7	0.00				Average	
		point49	49	1,654.3	551.6	0.00					
South N Coast Hwy-2	30.0	point50	50	1,600.2	1,341.3	0.00				Average	
		point18	18	1,583.3	1,599.5	0.00				Average	
		point19	19	1,564.9	1,725.2	0.00				Average	
		point20	20	1,412.5	2,081.3	0.00				Average	
		point21	21	1,289.6	2,321.8	0.00					
North N Coast Hwy-2	30.0	point51	51	1,621.0	1,344.0	0.00				Average	
		point9	9	1,626.4	1,136.9	0.00				Average	
		point10	10	1,627.3	832.2	0.00				Average	
		point11	11	1,634.6	615.6	0.00				Average	
		point12	12	1,639.2	557.7	0.00					

Dudek 30 July 2019
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Alta
RUN: Buildout

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
North N Coast Hwy	point1	1	839	35	17	35	9	35	0	0	0	0
	point2	2	839	35	17	35	9	35	0	0	0	0
	point3	3	839	35	17	35	9	35	0	0	0	0
	point4	4	839	35	17	35	9	35	0	0	0	0
	point5	5	839	35	17	35	9	35	0	0	0	0
	point6	6	839	35	17	35	9	35	0	0	0	0
	point7	7	839	35	17	35	9	35	0	0	0	0
	point8	8										
South N Coast Hwy	point13	13	747	35	15	35	8	35	0	0	0	0
	point14	14	747	35	15	35	8	35	0	0	0	0
	point15	15	747	35	15	35	8	35	0	0	0	0
	point16	16	747	35	15	35	8	35	0	0	0	0
	point17	17										
Costa Pacific Way	point22	22	75	15	2	15	1	15	0	0	0	0
	point23	23	75	15	2	15	1	15	0	0	0	0
	point24	24										
North Hwy 76	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29										
S Hwy 76	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0

	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33	0	0	0	0	0	0	0	0	0	0
	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35	0	0	0	0	0	0	0	0	0	0
	point36	36										
N North Coast Hwy	point37	37	951	35	20	35	10	35	0	0	0	0
	point38	38	951	35	20	35	10	35	0	0	0	0
	point39	39	951	35	20	35	10	35	0	0	0	0
	point40	40										
S North Coast Hwy	point41	41	951	35	20	35	10	35	0	0	0	0
	point42	42	951	35	20	35	10	35	0	0	0	0
	point43	43	951	35	20	35	10	35	0	0	0	0
	point44	44										
Roadway8	point45	45	0	0	0	0	0	0	0	0	0	0
	point46	46	0	0	0	0	0	0	0	0	0	0
	point47	47	0	0	0	0	0	0	0	0	0	0
	point48	48	0	0	0	0	0	0	0	0	0	0
	point49	49										
South N Coast Hwy-2	point50	50	839	35	17	35	9	35	0	0	0	0
	point18	18	839	35	17	35	9	35	0	0	0	0
	point19	19	839	35	17	35	9	35	0	0	0	0
	point20	20	839	35	17	35	9	35	0	0	0	0
	point21	21										
North N Coast Hwy-2	point51	51	747	35	15	35	8	35	0	0	0	0
	point9	9	747	35	15	35	8	35	0	0	0	0
	point10	10	747	35	15	35	8	35	0	0	0	0
	point11	11	747	35	15	35	8	35	0	0	0	0
	point12	12										

Dudek
CB

30 July 2019
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Alta
RUN: Buildout

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,369.8	857.2	0.00	4.92	51.40	66	10.0	8.0	Y
ST3	2	1	1,481.8	1,378.6	0.00	4.92	57.90	66	10.0	8.0	Y
ST2	3	1	1,084.3	1,268.4	0.00	4.92	48.80	66	10.0	8.0	Y

Dudek
CB

30 July 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Alta
RUN: Buildout + project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	51.4	54.9	66	3.5	10	----	54.9	0.0	8	-8.0
ST3	2	1	57.9	62.5	66	4.6	10	----	62.5	0.0	8	-8.0
ST2	3	1	48.8	51.7	66	2.9	10	----	51.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 30 July 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Alta
RUN: Buildout + project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
North N Coast Hwy	30.0	point1	1	1,310.7	2,330.1	0.00				Average	
		point2	2	1,405.2	2,135.5	0.00				Average	
		point3	3	1,470.4	1,989.5	0.00				Average	
		point4	4	1,535.5	1,839.0	0.00				Average	
		point5	5	1,575.0	1,744.5	0.00				Average	
		point6	6	1,592.4	1,666.5	0.00				Average	
		point7	7	1,610.8	1,548.1	0.00				Average	
		point8	8	1,621.0	1,344.0	0.00					
South N Coast Hwy	30.0	point13	13	1,610.8	558.7	0.00				Average	
		point14	14	1,599.8	788.1	0.00				Average	
		point15	15	1,598.9	1,077.2	0.00				Average	
		point16	16	1,601.6	1,191.0	0.00				Average	
		point17	17	1,600.2	1,341.3	0.00					
Costa Pacific Way	30.0	point22	22	1,553.0	1,345.2	0.00				Average	
		point23	23	1,277.6	1,342.5	0.00				Average	
		point24	24	1,088.5	1,335.1	0.00					
North Hwy 76	40.0	point25	25	1,708.4	450.4	0.00				Average	
		point26	26	1,777.3	645.9	0.00				Average	
		point27	27	1,831.4	853.3	0.00				Average	
		point28	28	1,877.3	1,077.2	0.00				Average	
		point29	29	1,949.8	1,449.0	0.00					
S Hwy 76	40.0	point30	30	1,906.7	1,519.6	0.00				Average	
		point31	31	1,814.0	1,075.4	0.00				Average	
		point32	32	1,754.3	771.6	0.00				Average	
		point33	33	1,727.7	755.1	0.00				Average	

		point34	34	1,680.9	746.8	0.00				Average	
		point35	35	1,643.3	793.6	0.00				Average	
		point36	36	1,638.7	797.3	0.00					
N North Coast Hwy	30.0	point37	37	1,977.4	11.9	0.00				Average	
		point38	38	1,888.3	127.6	0.00				Average	
		point39	39	1,766.3	307.5	0.00				Average	
		point40	40	1,664.4	481.9	0.00					
S North Coast Hwy	30.0	point41	41	1,941.6	10.1	0.00				Average	
		point42	42	1,743.3	286.4	0.00				Average	
		point43	43	1,634.1	461.6	0.00				Average	
		point44	44	1,625.9	482.8	0.00					
Roadway8	12.0	point45	45	1,750.7	756.3	0.00				Average	
		point46	46	1,739.7	678.3	0.00				Average	
		point47	47	1,719.5	637.0	0.00				Average	
		point48	48	1,698.4	583.7	0.00				Average	
		point49	49	1,654.3	551.6	0.00					
South N Coast Hwy-2	30.0	point50	50	1,600.2	1,341.3	0.00				Average	
		point18	18	1,583.3	1,599.5	0.00				Average	
		point19	19	1,564.9	1,725.2	0.00				Average	
		point20	20	1,412.5	2,081.3	0.00				Average	
		point21	21	1,289.6	2,321.8	0.00					
North N Coast Hwy-2	30.0	point51	51	1,621.0	1,344.0	0.00				Average	
		point9	9	1,626.4	1,136.9	0.00				Average	
		point10	10	1,627.3	832.2	0.00				Average	
		point11	11	1,634.6	615.6	0.00				Average	
		point12	12	1,639.2	557.7	0.00					

Dudek 30 July 2019
CB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: Alta
RUN: Buildout + project

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
North N Coast Hwy	point1	1	854	35	18	35	9	35	0	0	0	0
	point2	2	854	35	18	35	9	35	0	0	0	0
	point3	3	854	35	18	35	9	35	0	0	0	0
	point4	4	854	35	18	35	9	35	0	0	0	0
	point5	5	854	35	18	35	9	35	0	0	0	0
	point6	6	854	35	18	35	9	35	0	0	0	0
	point7	7	854	35	18	35	9	35	0	0	0	0
	point8	8										
South N Coast Hwy	point13	13	854	35	18	35	9	35	0	0	0	0
	point14	14	854	35	18	35	9	35	0	0	0	0
	point15	15	854	35	18	35	9	35	0	0	0	0
	point16	16	854	35	18	35	9	35	0	0	0	0
	point17	17										
Costa Pacific Way	point22	22	311	15	6	15	3	15	0	0	0	0
	point23	23	311	15	6	15	3	15	0	0	0	0
	point24	24										
North Hwy 76	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27	0	0	0	0	0	0	0	0	0	0
	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29										
S Hwy 76	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31	0	0	0	0	0	0	0	0	0	0

	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33	0	0	0	0	0	0	0	0	0	0
	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35	0	0	0	0	0	0	0	0	0	0
	point36	36										
N North Coast Hwy	point37	37	989	35	20	35	10	35	0	0	0	0
	point38	38	989	35	20	35	10	35	0	0	0	0
	point39	39	989	35	20	35	10	35	0	0	0	0
	point40	40										
S North Coast Hwy	point41	41	989	35	20	35	10	35	0	0	0	0
	point42	42	989	35	20	35	10	35	0	0	0	0
	point43	43	989	35	20	35	10	35	0	0	0	0
	point44	44										
Roadway8	point45	45	0	0	0	0	0	0	0	0	0	0
	point46	46	0	0	0	0	0	0	0	0	0	0
	point47	47	0	0	0	0	0	0	0	0	0	0
	point48	48	0	0	0	0	0	0	0	0	0	0
	point49	49										
South N Coast Hwy-2	point50	50	854	35	18	35	9	35	0	0	0	0
	point18	18	854	35	18	35	9	35	0	0	0	0
	point19	19	854	35	18	35	9	35	0	0	0	0
	point20	20	854	35	18	35	9	35	0	0	0	0
	point21	21										
North N Coast Hwy-2	point51	51	854	35	18	35	9	35	0	0	0	0
	point9	9	854	35	18	35	9	35	0	0	0	0
	point10	10	854	35	18	35	9	35	0	0	0	0
	point11	11	854	35	18	35	9	35	0	0	0	0
	point12	12										

Dudek 30 July 2019
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Alta
RUN: Buildout + project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,369.8	857.2	0.00	4.92	51.40	66	10.0	8.0	Y
ST3	2	1	1,481.8	1,378.6	0.00	4.92	57.90	66	10.0	8.0	Y
ST2	3	1	1,084.3	1,268.4	0.00	4.92	48.80	66	10.0	8.0	Y

Appendix D

CREATE Rail Operations Noise Model Worksheet

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project

Case: Alta Oceanside

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	56	49	50
Source 1	47	49	24
Source 2	37	39	2
Source 3	54	22	48
Source 4	50	5	45
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	600	distance (ft)	600	distance (ft)	600	distance (ft)	600
Daytime Hours	speed (mph)	40	speed (mph)	40	speed (mph)		speed (mph)	
(7 AM - 10 PM)	trains/hour	2.93	trains/hour	2.93	trains/hour		trains/hour	
	locos/train	2	cars/train	4	locos/train		length of cars (ft) / train	
Nighttime Hours	speed (mph)		speed (mph)		speed (mph)	55	speed (mph)	55
(10 PM - 7 AM)	trains/hour		trains/hour		trains/hour	0.44	trains/hour	0.44
	locos/train		cars/train		locos/train	3	length of cars (ft) / train	1080
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Embedded Track?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Aerial Structure?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Barrier Present?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Appendix E

Federal Railroad Administration Grade Crossing Noise Model Worksheet

FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	110
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	4
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	40
Future Train Speed (mph)	40
Number of Existing Trains in one Direction	24
Number of Future Trains in one Direction	24
Existing Number of Day Trains (7 am to 10 p.m.)	22
Future Number of Day Trains (7 am to 10 p.m.)	22
Existing Number of Night Trains (10 p.m. to 7 am)	2
Future Number of Night Trains (10 p.m. to 7 am)	2
Existing Average Number of Cars	8
Future Average Number of Cars	8
Existing Average Number of Locomotives	2
Future Average Number of Locomotives	2

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

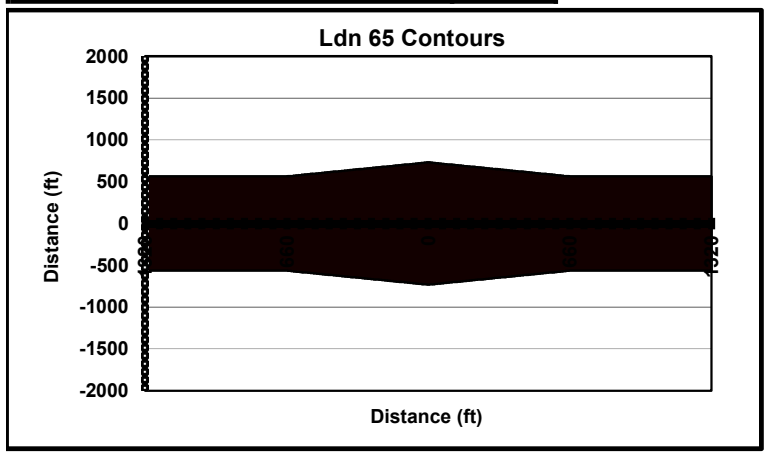
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	55	dBA	4

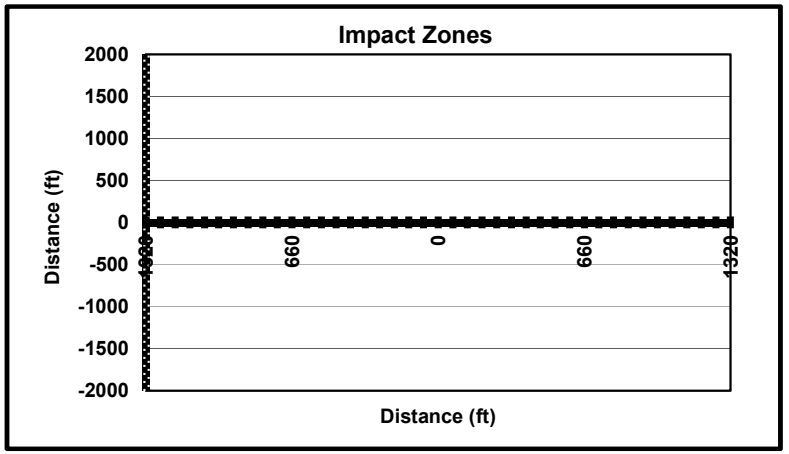
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	730
Future 65 Ldn Contour at X-ing	730
Existing 65 Ldn Contour at 1/2 zone length	563
Future 65 Ldn Contour at 1/2 zone length	563
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





Appendix F

Outdoor Entertainment Scenario Noise Model Output

Parking Garage Ventilation Fan Noise Prediction

		63	125	250	500	1000	2000	4000	8000
1/1-octave band center frequency									
A-weighting adjustments		26	13	9	3	0	-1	-1	1
		specific sound power levels (dB)							
largest of values for the two fan diameter ranges, per ENC (Bies & Hansen 1996) -->	plug	36	38	36	34	33	28	20	12
largest of values for the two fan diameter ranges, per ENC (Bies & Hansen 1996) -->	tube	41	41	47	46	44	43	37	35
largest of values for the two fan diameter ranges, per ENC (Bies & Hansen 1996) -->	prop	56	57	56	55	55	52	48	46

fans (tubeaxial-type exhaust fan only, for parking garage ventilation)

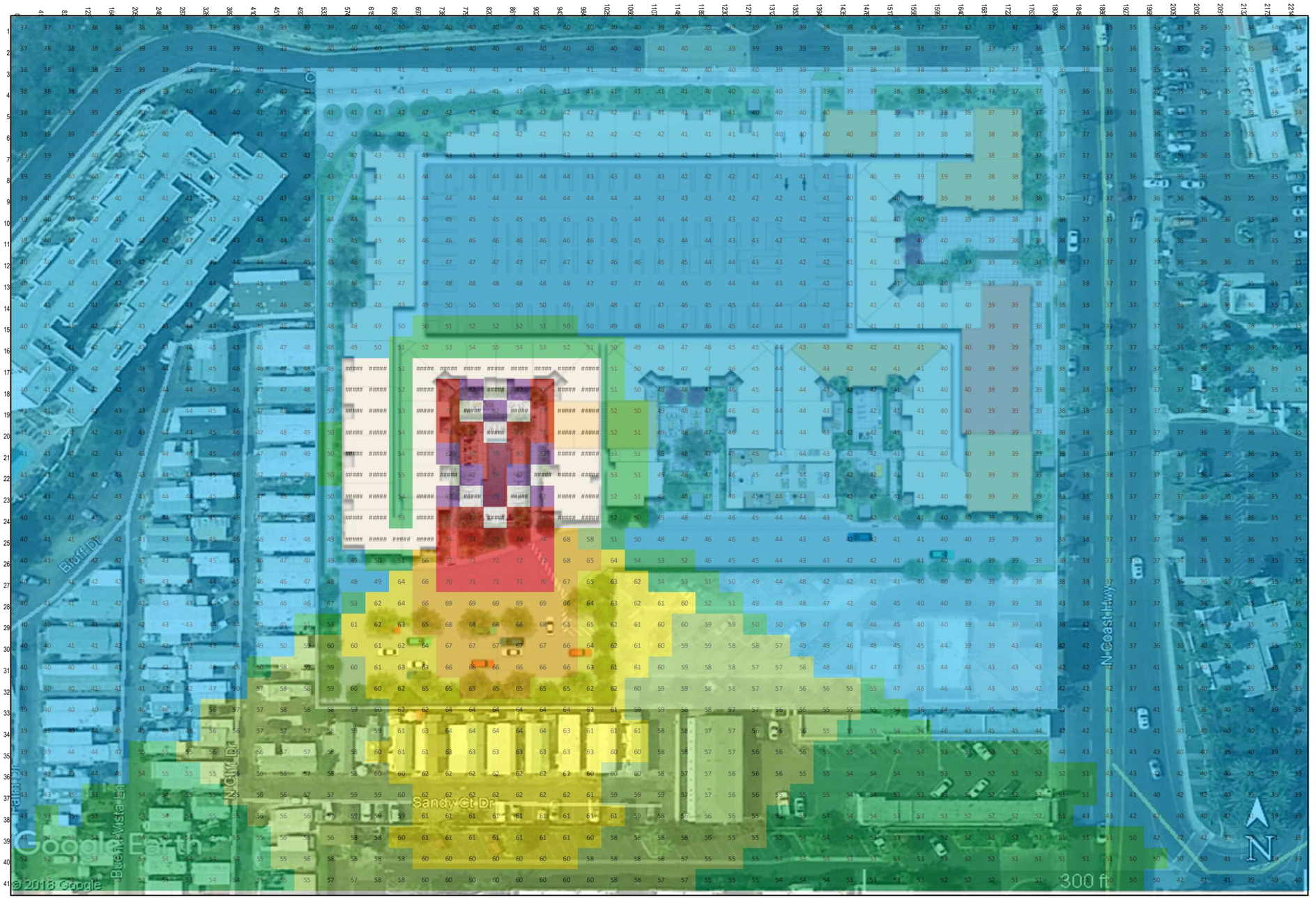
Phase	Building Tag	GSF	m^2	facility function	CFM pksf	m^3/s per 1,000 m^2	Pressure (Pa)	Q (m^3/s)	fantype = plug, tube, or prop	unweighted PWL 63	125	250	500	1000	2000	4000	8000	OA dB	Q (cfm)	Distance to Nearest Receptor (feet)	Hourly dBA Leq	with combined barrier effect*
return air fans in building rooftop AHUs:																						
	parking garage (all five levels)	87000	8087	enclosed parking	750	3.81	250	31	tube	89	89	95	94	92	91	85	83	100	66000			
													A-weighted dB					OA				
										63	76	86	91	92	92	86	82	97		99.24716621	60	**45**

*due to parapet and building roof sound path occlusion

Residential HVAC Rooftop Condenser Noise Prediction

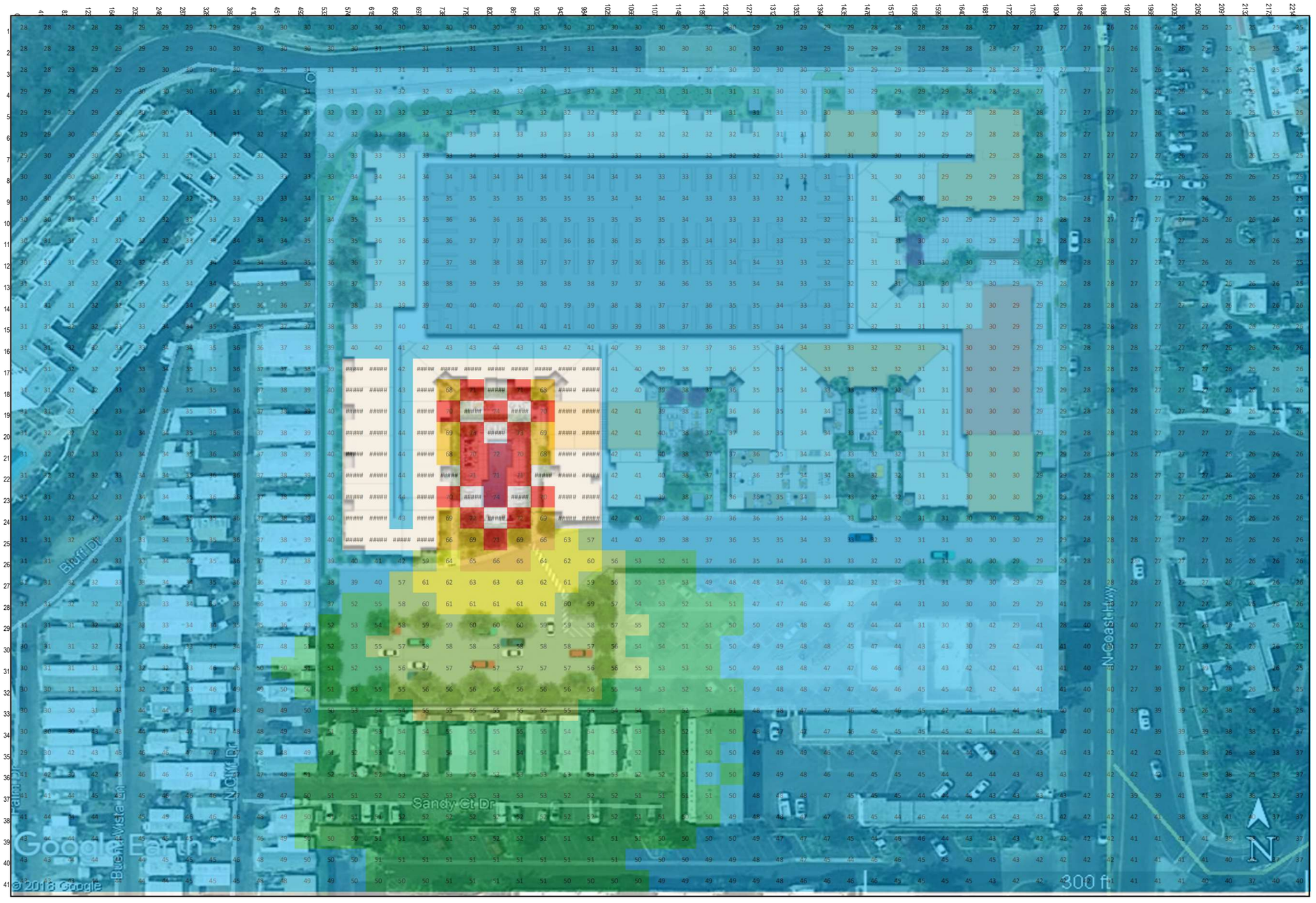
Overall dBA	Qty	Distance to Nearest Receptor (feet)	Hourly dBA Leq	with combined barrier effect*
74	4	69.6	53	**43**

*due to parapet and building roof sound path occlusion



> 80 dBA	75-80 dBA	70-75 dBA	65-70 dBA	60-65 dBA	55-60 dBA	50-55 dBA	< 50 dBA

Scale: this box = **300 feet**



> 80 dBA	75-80 dBA	70-75 dBA	65-70 dBA	60-65 dBA	55-60 dBA	50-55 dBA	< 50 dBA

Scale: this box = **300 feet**