Appendix I

Acoustical Analysis

ACOUSTICAL ANALYSIS

CARLETON ACRES SPECIFIC PLAN
VISALIA, CALIFORNIA

WJVA Report No. 21-47

PREPARED FOR

CRAWFORD & BOWEN PLANNING, INC.
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PREPARED BY

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1. INTRODUCTION

Project Description:

The Project Applicant is proposing a Specific Plan to develop approximately 507-acres of land into a mixed-use development. The Project will feature a variety of uses including single-family residential, multi-family housing, commercial, educational, and parks/trails facilities. The proposed Project components are described below.

Residential
The proposal features several different types of housing for a total of up to 3,368 residential units at buildout which is broken down as follows:

- Low Density Residential: Up to 1,592 units
- Medium Density Residential: 758 units
- High Density Residential: 912 units

It should be noted that the number of proposed units for low density residential portion of the development is currently proposed to include a maximum of 1,592 units, which may be lower depending on final configuration of the lots. In addition, the 13.0 acres currently shown for a new elementary school could potentially be converted to low density residential. Therefore, for purposes of providing the maximum number of potential residential units, a total of 65 units was added to the total for both phases (13.0 acres X 5.0 units per acre = 65 units), for a maximum development potential of 1,592 low density residential units.

Commercial
The proposed Project includes up to 35.1 acres of commercial development in two locations within the Project for a total of approximately 205,000 square feet of gross leasable commercial area. The commercial developments will occur in the proposed Mixed Use Commercial Zone and the Neighborhood Commercial Zone. The maximum size for a single or anchor tenant shall be 170,000 square feet within the Mixed-Use Commercial Zone. The first commercial area consists of up to 28.7 acres of Mixed-Use Commercial at the intersection of Riggin Avenue and Shirk Road. Anticipated uses at this location may include development such as a Costco, gas station, car wash, drug store, retail, restaurants (including drive-throughs), and similar uses. The second consists of up to 6.4 acres of Commercial Neighborhood at the north east corner of the development. Anticipated uses at this location may include development such as retail, services and restaurants. The commercial facilities are located to provide efficient accessibility to residents of the Project and the surrounding areas.

Other Project Components
Other proposed uses include approximately 13.0 acres for a potential site for a future elementary school, 17.3 gross acres for a drainage basin, and approximately 13.8 acres of parks/trails/recreational facilities. Various other infrastructure improvements (water, stormwater and wastewater infrastructure, roadway improvements, and related improvements) will be required by the Project.

Environmental Noise Assessment:

This environmental noise assessment has been prepared to determine if significant noise impacts will be produced by the project and to describe mitigation measures for noise if significant impacts are determined. The environmental noise assessment, prepared by WJV Acoustics, Inc. (WJVA), is based upon the project Conceptual Plan provided by the applicant (Figure 1), traffic data provided by Ruettgers and Schuler Civil Engineers, Costco car wash noise analysis (prepared separately) and a project site visit on January 5 & 6, 2022. Revisions to the Land Use Plan, project traffic information or other project-related information available to WJVA at the time the analysis was prepared may require a reevaluation of the findings and/or recommendations of the report.

Appendix A provides definitions of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported in this analysis are A-weighted sound pressure levels in decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighted sound levels, as they correlate well with public reaction to noise. Appendix B provides examples of sound levels for reference.

2. THRESHOLDS OF SIGNIFICANCE

The CEQA Guidelines apply the following questions for the assessment of significant noise impacts for a project:

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?

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

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?

a. Noise Level Standards

CITY OF VISALIA

General Plan

The City of Visalia General[1] Plan Noise Element provides noise level criteria for land use compatibility for both transportation and non-transportation noise sources. The General Plan sets noise compatibility standards for transportation noise sources in terms of the Day-Night Average Level (L_{dn}). The L_{dn} represents the time-weighted energy average noise level for a 24-hour day, with a 10 dB penalty added to noise levels occurring during the nighttime hours (10:00 p.m.-7:00 a.m.). The L_{dn} represents cumulative exposure to noise over an extended period of time and are therefore calculated based upon *annual average* conditions. Table I provides the General Plan noise level standards for transportation noise sources.

The exterior noise level standard of the noise element is 65 dB L_{dn} for outdoor activity areas of residential uses. Outdoor activity areas generally include backyards of single-family residences and individual patios or decks and common outdoor activity areas of multi-family developments. The intent of the exterior noise level requirement is to provide an acceptable noise environment for outdoor activities and recreation.

The noise element also requires that interior noise levels attributable to exterior noise sources not exceed 45 dB L_{dn}. The intent of the interior noise level standard is to provide an acceptable noise environment for indoor communication and sleep.

TABLE I

CITY OF VISALIA GENERAL PLAN NOISE LEVEL STANDARDS
TRANSPORTATION (NON-AIRCRAFT) NOISE SOURCES

Noise-Sensitive Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq} dB[2]
Residential	65	45	---
Transient Lodging	65	45	---
Hospitals, Nursing Homes	65	45	---
Theaters, Auditoriums, Music Halls	---	---	35
Churches, Meeting Halls	65	---	45
Office Buildings	---	---	45
Schools, Libraries, Museums	---	---	45

1 Outdoor activity areas generally include backyards of single-family residences and outdoor patios, decks or common recreation areas of multi-family developments.

2 The CNEL is used for quantification of aircraft noise exposure as required by CAD Title 21.

3 As determined for a typical worst-case hour during periods of use.

Source: City of Visalia General Plan

Additionally, the noise element establishes hourly acoustical performance standards for non-transportation (stationary) noise sources. The standards are set in terms of the L_{eq} (hourly equivalent) and L_{max} (maximum) noise levels. The standards, provided in Table II, are made more restrictive during the nighttime hours of 10:00 p.m. to 7:00 a.m.

TABLE II

NON-TRANSPORTATION NOISE LEVEL STANDARDS, dBA
CITY OF VISALIA

Daytime (7 a.m.-10 p.m.)		Nighttime (10 p.m.-7 a.m.)	
L_{eq}	L_{max}	L_{eq}	L_{max}
50	70	45	65

Source: City of Visalia Noise Element of General Plan

Municipal Code

Section 8.36 of the City's Municipal Code[2] (noise ordinance) applies to noise sources that are not pre-empted from local control by existing state or federal regulations. Commercial activities are not pre-empted noise sources and are therefore subject to the provisions of the noise ordinance.

The noise ordinance addresses the statistical distribution of noise over time and allows for progressively shorter periods of exposure to levels of increasing loudness. Table III summarizes the exterior noise level standards of the ordinance. Note that the ordinance is to be applied during any

one-hour time period of the day, and that the standards are 5 dB more restrictive between the hours of 7:00 p.m. and 6:00 a.m.

TABLE III

EXTERIOR NOISE LEVEL STANDARDS, dBA
CITY OF VISALIA NOISE ORDINANCE

Category	Cumulative # Min/Hr. (L_n)	Daytime (6am-7pm)	Nighttime (7pm-6am)
1	30 (L_{50})	50	45
2	15 (L_{25})	55	50
3	5 ($L_{8.3}$)	60	55
4	1 ($L_{1.7}$)	65	60
5	0 (L_{max})	70	65

Note: L_n is an abbreviation for the percentage of time that a certain noise level is exceeded during a specified time period (in this case, one hour). For example, an L_{50} value of 50 dBA may not be exceeded during the hours of 6 am-7pm.

Source: City of Visalia Municipal Code

The City's noise ordinance also establishes interior residential noise level standards that would apply to the project. The interior noise level standards are established in allowable exceedance limits over differing amounts of time, within residential land uses. Similar to the applicable exterior standards, the interior standards become 5 dB more restrictive during nighttime hours. The applicable interior noise level standards are provided in Table IV.

TABLE IV

INTERIOR NOISE LEVEL STANDARDS, dBA
CITY OF VISALIA NOISE ORDINANCE

Category	Cumulative # Min/Hr.	Daytime (6am-7pm)	Nighttime (7pm-6am)
1	5	45	35
2	1	50	40
3	0	55	45

Source: City of Visalia Municipal Code

The City's noise ordinance also states *"In the event the measured ambient noise level without the alleged offensive source in operation exceeds an applicable noise level standard in any category above, the applicable standard or standards shall be adjusted so as to equal the ambient noise level".*

State of California

There are no state noise standards that are applicable to the project.

Federal Noise Standards

There are no federal noise standards that are applicable to the project.

b. Construction Noise and Vibration

Section 8.36.050 of the City's Municipal Code states *"It is unlawful to operate any of the below-listed devices, appliances, equipment or vehicles on public or private property abutting noise sensitive land uses between the weekday hours of seven p.m. and six a.m., and between the weekend hours of seven p.m. and nine a.m."*

> *(c) Construction equipment including jackhammers, portable generators, pneumatic equipment, trenchers, or other such equipment, except for emergency repair purposes as provided in Section 8.36.070.*

There are no state or federal standards that specifically address construction vibration. Some guidance is provided by the Caltrans Transportation and Construction Vibration Guidance Manual[3]. The Manual provides guidance for determining annoyance potential criteria and damage potential threshold criteria. These criteria are provided below in Table II and Table III, and are presented in terms of peak particle velocity (PPV) in inches per second (in/sec).

TABLE V

GUIDELINE VIBRATION ANNOYANCE POTENTIAL CRITERIA

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.1
Severe	2.0	0.4

Source: Caltrans

TABLE VI

GUIDELINE VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile, historic buildings, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Caltrans

3. SETTING

The proposed Project is located on approximately 507-acres in the northern area of the City of Visalia, California and is generally bound by W. Riggin Avenue to the south, N. Akers Street to the east, N. Shirk Road to the west and Avenue 320 (W. Kibler Avenue) to the north. The site is comprised of two parcels: APN 077-100-088 and APN 077-100-105. APN 077-100-088 consists of approximately 478 acres and is within an unincorporated area of Tulare County while APN 077-100-105 consists of approximately 29.3 acres and is within the City limits of Visalia. The entire site is within the Urban Growth Boundary (UGB) and Sphere of Influence (SOI) of the City of Visalia and the site has historically been used for agricultural purposes. However, the site has been designated by the City's General Plan for residential, commercial, public/institutional and park/recreation uses.

The proposed Project site is located in a developing area of the City of Visalia. Currently, Ridgeview Middle School is located adjacent to and west of Akers Street and would abut the proposed Project site. In addition, the City is currently planning a new high school that will be constructed adjacent to and west of Ridgeview Middle School and would be surrounded by the proposed Project to the north, west and south.

a. Background Noise Level Measurements

Existing noise levels in the project vicinity are dominated by traffic noise along local roadways and noise associated with various agricultural land uses near the project site. Measurements of existing ambient noise levels in the project vicinity were conducted on January 5 & 6, 2022. Long-term (24-hour) ambient noise level measurements were conducted at three (3) locations (sites LT-1, LT-2 and LT-3). Ambient noise levels were measured for a period of 24 continuous hours at each of the three locations. Site LT-1 was located within the northern portion of the project site, along Avenue 320. Site LT-2 was located within the western portion of the project site, along Road 92 (Shirk Road). Site LT-3 was located within the southern portion project site, along W. Riggin Avenue. Due to heavy construction activities in the area, ambient noise measurements were not conducted along the eastern portion of the project site (N. Akers Street). All three sites were exposed to noise associated with vehicle traffic on roadways as well as agricultural activities. The locations of the ambient noise monitoring sites are provided as Figure 2.

Measured hourly energy average noise levels (L_{eq}) at site LT-1 ranged from a low of 53.6 dB between midnight and 1:00 a.m. to a high of 68.4 dBA between 7:00 a.m. and 8:00 a.m. Hourly maximum (L_{max}) noise levels at site LT-1 ranged from 78.2 to 90.3 dBA. Residual noise levels at the monitoring site, as defined by the L_{90}, ranged from 37.7 to 49.8 dBA. The L_{90} is a statistical descriptor that defines the noise level exceeded 90% of the time during each hour of the sample period. The L_{90} is generally considered to represent the residual (or background) noise level in the absence of identifiable single noise events from traffic, aircraft and other local noise sources. The measured L_{dn} value at site LT-1 was 68.2 dB L_{dn}. Figure 3 graphically depicts hourly variations in ambient noise levels at site LT-1. Figure 4 provides a photograph of measurement site LT-1.

Measured hourly energy average noise levels (L_{eq}) at site LT-2 ranged from a low of 43.1 dB between 11:00 p.m. and midnight to a high of 60.0 dBA between 3:00 p.m. and 4:00 p.m. Hourly maximum (L_{max}) noise levels at site LT-2 ranged from 65.3 to 83.4 dBA. Residual noise levels at the monitoring site, as defined by the L_{90}, ranged from 33.5 to 46.2 dBA. The measured L_{dn} value at site LT-2 was 59.7 dB L_{dn}. Figure 5 graphically depicts hourly variations in ambient noise levels at site LT-2. Figure 6 provides a photograph of measurement site LT-2.

Measured hourly energy average noise levels (L_{eq}) at site LT-3 ranged from a low of 57.3 dB between 2:00 a.m. and 3:00 a.m. to a high of 68.2 dBA between 4:00 p.m. and 5:00 p.m. Hourly maximum (L_{max}) noise levels at site LT-3 ranged from 75.5 to 90.3 dBA. Residual noise levels at the monitoring site, as defined by the L_{90}, ranged from 33.3 to 55.8 dBA. The measured L_{dn} value at site LT-was 70.1 dB L_{dn}. Figure 7 graphically depicts hourly variations in ambient noise levels at site LT-3. Figure 8 provides a photograph of measurement site LT-3.

Additionally, short-term (15-minute) ambient noise level measurements were conducted at seven (7) locations (Sites ST-1 through ST-7). Two (2) individual measurements were taken at each of the six short-term sites to quantify ambient noise levels in the morning and afternoon hours. The locations of the long-term and short-term noise monitoring sites are shown in Figure 2.

Table VII summarizes short-term noise measurement results. The noise measurement data included energy average (L_{eq}) maximum (L_{max}) as well as five individual statistical parameters. Observations were made of the dominant noise sources affecting the measurements. The statistical parameters describe the percent of time a noise level was exceeded during the measurement period. For instance, the L_{90} describes the noise level exceeded 90 percent of the time during the measurement period, and is generally considered to represent the residual (or background) noise level in the absence of identifiable single noise events from traffic, aircraft and other local noise sources.

Short-term noise measurements were conducted for 15-minute periods at each of the seven sites. Site ST-1 was located along Akers Street; site ST-2 was located at the corner of Akers Street and Avenue 320; site ST-3 was located at the corner of Avenue 320 and Shirk Road (Road 92); site ST-4 was located at the corner of Shirk Road and Riggin Avenue; site ST-5 was located near existing residential land uses along Shirk Road (south of Riggin Avenue); site ST-6 was located near existing residential land uses south of Riggin Avenue; and site ST-7 was located near the corner of Riggin Avenue and Akers Street, at a church land use. The overall noise measurement data indicate that noise in the project vicinity is highly influenced by vehicular traffic along adjacent roadways.

TABLE VII

SUMMARY OF SHORT-TERM NOISE MEASUREMENT DATA
CARLETON ACRES, VISALIA
JANUARY 5 & 6, 2022

Site	Time	A-Weighted Decibels, dBA							Sources
		L_{eq}	L_{max}	L_2	L_8	L_{25}	L_{50}	L_{90}	
ST-1	8:00 a.m.	66.8	81.4	78.4	71.7	57.4	54.5	52.2	TR, AG, C
ST-1	4:35 p.m.	70.1	83.6	78.5	72.4	56.8	53.9	51.8	TR
ST-2	8:20 a.m.	68.3	87.2	79.3	71.9	61.3	55.1	52.1	TR, AG
ST-2	4:55 p.m.	69.4	88.8	81.4	72.2	63.0	54.8	52.9	TR, AG
ST-3	8:40 p.m.	67.4	81.5	80.2	53.1	62.4	56.0	53.5	TR, AG
ST-3	5:15 p.m.	66.8	77.7	78.9	54.0	59.3	55.5	52.7	TR, AG
ST-4	9:00 a.m.	71.6	88.9	79.7	75.7	70.4	67.8	61.3	TR, B, D
ST-4	5:35 p.m.	72.0	88.4	79.3	74.4	68.3	65.0	61.9	TR, AC
ST-5	9:20 a.m.	67.7	79.2	77.3	73.8	67.1	56.1	52.3	TR, V
ST-5	5:55 p.m.	66.6	76.8	76.6	72.0	65.9	54.9	51.8	TR, V, D
ST-6	9:40 a.m.	67.5	82.3	76.4	73.2	67.2	56.6	47.8	TR, AG
ST-6	6:15 p.m.	67.4	83.8	75.2	73.8	70.4	57.2	50.1	TR
ST-7	10:00 a.m.	64.1	77.3	75.2	69.3	60.7	56.0	53.5	TR, V
ST-7	6:35 p.m.	65.5	82.4	76.4	70.0	62.1	55.9	52.6	TR, V, D

TR: Traffic AC: Aircraft AG: Agricultural Activities C: Construction Activities B: Birds D: Barking Dogs
Source: WJV Acoustics, Inc.

4. NOISE IMPACTS TO OFF-SITE SENSITIVE RECEPTORS, AND MITIGATION MEASURES

a. Project Traffic Noise Impacts on Existing Noise-Sensitive Land Uses Outside Project Site

WJVA utilized the FHWA Traffic Noise Model[4] to quantify expected project-related increases in traffic noise exposure along roadways in the project vicinity. The FHWA Model is a standard analytical method used by state and local agencies for roadway traffic noise prediction. The model is based upon reference energy emission levels for automobiles, medium trucks (2 axles) and heavy trucks (3 or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within ±1.5 dB. To predict L_{dn} values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Average Daily Traffic (ADT) volumes for the analyzed receptor locations were provided by the project traffic engineer, Ruettgers and Schuler Civil Engineers. Truck percentages and the day/night distribution of traffic were estimated by WJVA, based upon previous studies conducted in the project vicinity since project-specific data were not available from government sources. The Noise modeling assumptions used to calculate project traffic noise are provided as Appendix C.

The project phasing is anticipated to occur over a 20-year buildout period. As such, it was determined that an analysis of cumulative traffic conditions would provide the most accurate assessment of project-related traffic noise impacts. Applying all project-related traffic volumes to existing conditions is not considered to be representative of actual project-related traffic noise impacts. Project-related traffic noise would increase incrementally over the anticipated 20-year buildout period. As such, a comparison of existing and existing plus project traffic noise is not considered indicative of overall project traffic noise impacts. Therefore, an analysis of project-related impacts to future (2042) traffic conditions (baseline conditions at the time the project fully occurs) represents the most accurate determination of traffic noise impacts.

Traffic noise exposure levels for 2042 No Project and 2042 Plus Project traffic scenarios were calculated based upon the FHWA Model and the above-described model inputs and assumptions. Project-related significant impacts would occur if an increase in traffic noise associated with the project would result in noise levels exceeding the City's applicable noise level standards at the location(s) of sensitive receptors. For the purpose of this analysis a significant impact was also assumed to occur if traffic noise levels were to increase by 3 dB at sensitive receptor locations where noise levels already exceed the City's applicable noise level standards (without the project), as 3 dB generally represents the threshold of perception in change for the human ear.

The City's exterior noise level standard for residential land uses is 65 dB L_{dn}. Traffic noise was modeled at seventeen (17) receptor locations. The seventeen modeled receptors are located at roadway setback distances representative of the sensitive receptors (residences) along each analyzed roadway segment. The receptor locations are described below and provided graphically on Figure 9.

- R-1: Residential land use located approximately 100 feet from the centerline of Ave. 328.
- R-2: Residential land use located approximately 165 feet from the centerline of Ave. 320.
- R-3: Residential land use located approximately 150 feet from the centerline of Ave. 320.
- R-4: Residential land use located approximately 150 feet from the centerline of Ave. 320.
- R-5: Residential land use located approximately 170 feet from the centerline of Riggin Ave.
- R-6: Residential land use located approximately 65 feet from the centerline of Riggin Ave.
- R-7: Residential land use located approximately 60 feet from the centerline of Riggin Ave.
- R-8: Residential land use located approximately 90 feet from the centerline of Riggin Ave.
- R-9: Residential land use located approximately 100 feet from the centerline of Shirk Rd.
- R-10: Residential land use located approximately 75 feet from the centerline of Ferguson Ave.
- R-11: Residential land use located approximately 65 feet from the centerline of Ferguson Ave.
- R-12: Residential land use located approximately 95 feet from the centerline of Akers St.
- R-13: Residential land use located approximately 95 feet from the centerline of Akers St.
- R-14: Residential land use located approximately 85 feet from the centerline of Akers St.
- R-15: Residential land use located approximately 75 feet from the centerline of Demaree St.
- R-16: Residential land use located approximately 90 feet from the centerline of Riggin Ave.
- R-17: Residential land use located approximately 115 feet from the centerline of Riggin Ave.

2042 Conditions

Table VIII provides future (2042) traffic noise exposure levels at the seventeen analyzed representative receptor locations, and also provides what the project contribution would be to Cumulative conditions.

TABLE VIII

PROJECT CONTRIBUTION TO FUTURE TRAFFIC NOISE, dB, L_{dn}
CARLETON ACERS, VISALIA
2042 TRAFFIC CONDITIONS

Modeled Receptor	2042 Conditions Without Project Contribution	2042 Conditions Plus Project	Project Contribution	Significant Impact?
R-1	61	61	0	No
R-2	55	55	0	No
R-3	51	51	0	No
R-4	58	59	+1	No
R-5	61	61	0	No
R-6	62	64	+2	No
R-7	64	65	+1	No
R-8	62	63	+1	No
R-9	62	62	0	No
R-10	58	58	0	No
R-11	60	60	0	No
R-12	58	61	+3	No
R-13	62	62	0	No
R-14	61	62	+1	No
R-15	63	63	0	No
R-16	63	63	0	No
R-17	60	60	0	No

Source: WJV Acoustics, Inc.
Ruettgers and Schuler Civil Engineers

Reference to Table VIII indicates that the project's contribution to 2042 traffic noise exposure levels at the modeled representative receptor locations would not result in noise levels to exceed the City's noise level standard, nor result in an increase of 3 dB in any sensitive receptor locations where noise levels already exceed the City's noise level standard without the implementation of the project. Consequently, the project contribution to future noise levels (at full project buildout) would be less than considerable and the project would not have a significant impact. It should be noted, with project noise levels at receptor site R-7 were calculated to approach/meet the City's 65 dB L_{dn} exterior noise level standard.

b. Proposed Impacts From Operational On-Site Sources

The proposed Project includes up to 35.1 acres of commercial development in two locations within the Project for a total of approximately 205,000 square feet of gross leasable commercial area. The

commercial developments will occur in the proposed Mixed Use Commercial Zone and the Neighborhood Commercial Zone. The first commercial area consists of up to 28.7 acres of Mixed-Use Commercial at the intersection of Riggin Avenue and Shirk Road. Anticipated uses at this location may include development such as a Costco, gas station, car wash, drug store, retail, restaurants (including drive-throughs), and similar uses. The second consists of up to 6.4 acres of Commercial Neighborhood at the north east corner of the development. Anticipated uses at this location may include development such as retail, services and restaurants.

Mixed Use Commercial Zone

The project would include up to 28.7 acres of Mixed-Use Commercial near the southwest corner of the project site. Anticipated developments within the Mixed-Use Commercial Zone include a Costco retail center, gas station, car wash, drug store, retail and restaurants (including quick serve/drive-through uses).

The noise level standards applicable to these proposed land uses are provided above in Table II (General Plan) and Table III (Municipal Code). The noise standards in both become 5 dB more restrictive during nighttime hours. It should be noted, the City of Visalia General Plan considers nighttime hours to occur between 10:00 pm and 7:00 a.m. while the Municipal Code considers nighttime hours to occur between 7:00 pm and 6:00 am.

The closest existing sensitive receptors (residential land uses) to the proposed Mixed-Use Commercial Zone are single-family residential uses located to the south, along W. Riggin Avenue. The single-family uses along W. Riggin have an existing 6-foot sound wall along the roadway frontage. The sound wall would provide a minimum of 5 dB of noise level reduction from ground-level noise sources occurring within the project site.

While the large retail use within the Mixed-Use Commercial Zone is anticipated to be a Costco retail center, the remaining tenants were not known (or anticipated) at the time this analysis was prepared. A wide variety of noise sources can be associated with such commercial retail land uses. The noise levels produced by such sources can also be highly variable and could potentially impact existing off-site and proposed on-site sensitive receptors. Typical examples of stationary noise sources associated with such land uses include:

- HVAC/Mechanical equipment
- Truck deliveries
- Parking lot activities (closing of car doors and trunks, stereos, alarms etc.)
- Drive-Through operations
- Loading Dock Activities
- Car Wash Operations
- Refuse/Cardboard Compactor

HVAC Mechanical Equipment

It is assumed that the project would include roof-mounted HVAC units on the proposed buildings. The heating, ventilating, and air conditioning (HVAC) requirements for the buildings would likely require the use of multiple packaged roof-top units. For the purpose of noise and aesthetics, roof-mounted HVAC units are typically shielded by means of a roof parapet. WJVA has conducted

reference noise level measurements at numerous commercial and retail buildings with roof-mounted HVAC units, and associated noise levels typically range between approximately 45-50 dB at a distance of 50 feet from the building façade.

For this project, the closest existing residential land uses to any potential roof-mounted HVAC equipment would be located at a minimum setback distance of 250 feet. Taking into account the standard rate of noise attenuation with increased distance from a point source (-6 dB/doubling of distance), noise levels associated with the operation of roof-mounted HVAC units would be approximately 31-36 dB at the closest sensitive receptor property line. Such levels do not exceed any City of Visalia noise level standard or exceed existing (without project) ambient noise levels.

Truck Movements

At the time of this analysis, truck delivery times and frequency as well as truck access route (or routes) had not been designated for all potential uses. However, Costco anticipates an average of approximately 10 trucks delivering goods on a typical weekday. The trucks range in size from 26 feet long for single-axle trailers to 70 feet long for double-axle trailers. Receiving time is from 2:00 a.m. to 1:00 p.m., averaging 2 to 3 trucks per hour, with most of the deliveries completed before the opening time of 9:00 a.m. The receiving and loading docks for the Costco Warehouse are located at the southwest corner of the building and delivery trucks will access the site off N. Shirk Road, which runs along the west of the site.

WJVA has conducted measurements of the noise levels produced by slowly moving trucks for a number of studies. Such truck movements would be expected to produce noise levels in the range of 65 to 71 dBA at a distance of 100 feet. The range in measured truck noise levels is due to differences in the size of trucks, their speed of movement and whether they have refrigeration units in operation during the pass-by.

Truck movements within the project site would be located at distances of 250 feet or greater from existing noise-sensitive land uses (residences to the south). At such distances, noise levels associated with truck movements would produce maximum noise levels in the range of approximately 52 to 58 dB or less. Such noise levels do not exceed the City's daytime or nighttime noise level standards. Additionally, such levels would not be expected to exceed existing (without project) ambient noise levels in the project vicinity.

Parking Lot Activities

Noise due to traffic in parking lots is typically limited by low speeds and is not usually considered to be significant. Human activity in parking lots that can produce noise includes voices, stereo systems and the opening and closing of car doors and trunk lids. Such activities can occur at any time. The noise levels associated with these activities cannot be precisely defined due to variables such as the number of parking movements, time of day and other factors. It is typical for a passing car in a parking lot to produce a maximum noise level of 60-65 dBA at a distance of 50 feet, which is comparable to the level of a raised voice.

For this project, parking would be dispersed throughout the overall project area. The closest proposed parking areas would be located at least 200 feet from the closest existing residential property lines to the northeast. At this distance, maximum (L_{max}) parking lot vehicle movements

would be expected to be approximately 43-48 dB. Such levels would not exceed any of the City's applicable noise levels standards or exceed existing ambient noise levels at the closest residential land uses. Due to existing elevated ambient noise levels at the closest sensitive receptor locations (residential land uses south of the project site), noise levels associated with parking lot activities would generally not be audible over existing (without project) noise levels.

Drive-Through Retail

The proposed project could include multiple retail areas that would likely include drive-through operations (the existing site plan indicates as many as four drive-through operations). While the exact tenants and type of retail stores were not known at this time, it is assumed that amplified speech would be incorporated into drive-through operations.

In order to assess potential project noise levels associated with drive-through operations, WJVA utilized reference noise levels measured at a Wendy's drive-through restaurant located on South Mooney Boulevard in Visalia. Measurements were conducted during the early afternoon of July 11, 2011 between 12:45 p.m. and 1:45 p.m. using the previously-described noise monitoring equipment.

The microphone used by customers to order food and the loudspeaker used by employees to confirm orders are both integrated into a menu board that is located a few feet from the drive-through lane at the approximate height of a typical car window. Vehicles would enter the drive-through lane from the west and then turn to the north along the east side of the restaurant.

Reference noise measurements were obtained at a distance of approximately 40 feet from the menu board containing the microphone/loudspeaker system at an angle of about 45° toward the rear of the vehicle being served. This provided a worst-case exposure to sound from the loudspeaker system since the vehicle was not located directly between the loudspeaker and measurement location. Cars were lined up in the access lane during the noise measurement period indicating that the drive-through lane was operating at or near a peak level of activity.

Each ordering cycle was observed to take approximately 60 seconds including vehicle movements. A typical ordering cycle included 5-10 seconds of loudspeaker use with typical maximum noise levels in the range of 60-62 dBA at the 40 foot-reference location. Vehicles moving through the drive-through lane produced noise levels in the range of 55-60 dBA at the same distance. Vehicles parked at the ordering position (between the menu board and measurement site) were observed to provide significant acoustic shielding during the ordering sequence. The effects of such shielding are reflected by the noise measurement data. Noise levels were measured to approximately 60 dB L_{50} at the measurement site, and included noise from all sources, including the loudspeaker, vehicle movements and HVAC equipment.

The closest noise-sensitive receptors (residential land uses) to the proposed retail drive-through operations are located approximately 200 feet to the south. Potential project-related noise exposure at the locations of the closest residential land uses was calculated based upon the above-described reference noise measurement data and the normal rate of sound attenuation over distance for a "point" noise source (6 dB/doubling of distance). At the setback distance of the closest residential land uses to any proposed drive-through operations, noise levels associated

with drive-through retail operations would be expected to produce noise levels of approximately 43-45 dB L_{max} and approximately 43 dB L_{50}. Such levels would not exceed any daytime or nighttime City of Visalia noise level standards.

Loading Dock Activities

The proposed Costco retail center would include loading docks, to be located at the southwest corner of the building, near N. Shirk Road. Costco anticipates an average of approximately ten (10) trucks delivering goods on a typical weekday. Receiving time is from 2:00 a.m. to 1:00 p.m., averaging two to three trucks per hour, with most of the deliveries completed before the opening time of 9:00 a.m. The bay doors will be equipped with sealed gaskets to limit noise impacts. The closest proposed docks (as indicated on the site plan) to residential land uses are located at a distance of approximately 600 feet.

Noise sources typically associated with loading dock activities include truck engines, the operation of truck-mounted refrigeration units, fork lifts, the banging of hand carts and roll-up doors, noise from P.A. systems, and the voices of truck drivers and store employees. Truck engines and/or refrigeration units are typically turned off while trucks are in loading dock areas to reduce noise and save energy.

Based upon noise level measurements conducted by WJVA for other studies, loading dock noise levels would be expected to be in the range of approximately 43 to 61 dBA at a distance of 600 feet (closest residential land uses to the south). Such levels do not exceed the applicable City of Visalia maximum noise level standards. Additionally, such noise levels would be below existing (without project) ambient noise levels in the project vicinity.

Compactor

The Costco retail center would incorporate a refuse/cardboard compactor, to be located in the vicinity of the loading docks. Based upon noise studies conducted by WJVA for other projects, the maximum noise level produced by a typical un-enclosed trash compactor (Hydra-Fab Model 1200) is approximately 74 dBA at a distance of 10 feet from the equipment. The closest existing noise-sensitive land uses to the compactor location are located approximately 750 to the south. At this distance compactor noise levels would be approximately 37 dB. Such noise levels do not exceed any City of Visalia noise level standards or existing ambient noise levels in the project vicinity.

Car Wash

The proposed Costco retail center would include a car wash facility. Noise levels associated with the proposed car wash were addressed in a separate car wash-specific analysis. Noise levels associated with car wash operations are provided in a memo prepared by MD Acoustics, dated November 14, 2022. As described in the memo, the proposed drive-through car wash facility in the Mixed-Use Commercial Zone will implement an IDC 100 horsepower Predator Blower System running at 55Hz with a 10’ wall with AcoustiBlok lining. This will be a condition of Project approval. Refer to the memo for more information. The proposed system and proposed sound wall would result in noise levels below applicable daytime noise level standards at proposed residential land uses north of the car wash. The Car Wash noise study memo is provided as Appendix D, at the end of this report.

Neighborhood Commercial Zone

The project would include up to 6.4 acres of Commercial Neighborhood at the north east corner of the development. Anticipated uses at this location may include development such as retail, services and restaurants. A wide variety of noise sources can be associated with commercial land use designations. The noise levels produced by such sources can also be highly variable and could potentially impact existing off-site sensitive receptors. From the perspective of the City's noise standards, noise sources not associated with transportation sources are considered stationary noise sources. Typical examples of stationary noise sources that may be associated with such uses include:

- Fans and blowers
- HVAC/Mechanical equipment
- Truck deliveries
- Compactors

In regards to the Neighborhood Commercial Zone, noise levels from new stationary noise sources cannot be predicted with any certainty at this time since specific uses have not yet been proposed and the locations of stationary noise sources relative to the locations of noise sensitive uses are not known. The closest existing residential land use to the Neighborhood Commercial Zone is located approximately 1,500 to the east.

Noise levels from new stationary noise sources may be effectively reduced by incorporating noise mitigation measures into the project design that consider the geographical relationship between the noise sources of concern and potential receptors, the noise-producing characteristics of the sources and the path of transmission between noise sources and sensitive receptors. Options for noise mitigation include the use of building setbacks, the construction of sound walls and the use of noise source equipment enclosures.

When specific uses within the study area are proposed that could result in a noise-related conflict between a commercial or other stationary noise source and existing or proposed noise-sensitive receptor, an acoustical analysis may be required that quantifies project-related noise levels and recommends appropriate mitigation measures to achieve compliance with the City's noise standards.

c. Noise from Construction

Construction noise would occur at various locations within and near the project site through the buildout period. Existing sensitive receptors could be located as close as 100 feet from construction activities. Table IX provides typical construction-related noise levels at distances of 100 feet, 200 feet, and 300 feet.

Construction noise is not considered to be a significant impact if construction is limited to the allowed hours and construction equipment is adequately maintained and muffled. Extraordinary noise-producing activities (e.g., pile driving) are not anticipated. The City of Visalia limits hours of

construction to occur only between the hours of 6:00 a.m. to 7:00 p.m. Monday through Friday, and 9:00 a.m. to 7:00 p.m. on weekends. Any construction activities occurring outside of these hours would be subject to the City's stationary noise standards provided above in Table II. Construction noise impacts could result in annoyance or sleep disruption for nearby residents if nighttime operations were to occur or if equipment is not properly muffled or maintained.

TABLE IX

TYPICAL CONSTRUCTION EQUIPMENT MAXIMUM NOISE LEVELS, dBA

Type of Equipment	100 Ft.	200 Ft.	300 Ft.
Concrete Saw	84	78	74
Crane	75	69	65
Excavator	75	69	65
Front End Loader	73	67	63
Jackhammer	83	77	73
Paver	71	65	61
Pneumatic Tools	79	73	69
Dozer	76	70	66
Rollers	74	68	64
Trucks	80	72	70
Pumps	74	68	64
Scrapers	81	75	71
Portable Generators	74	68	64
Backhoe	80	74	70
Grader	80	74	70

Source: FHWA
Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987

A noise impact could occur if construction activities do not incorporate appropriate best management practices in regards to construction-related noise. The following best management practices should be implemented to minimize the potential for noise impacts on existing sensitive receptors in the project area, during project construction.

Best Management Practices:
Noise levels associated with construction activities may be effectively mitigated by incorporating noise mitigation measures and appropriate best management practices. The following best management practices should be applied during periods of project construction.

- All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.

- Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.

- All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.

- Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.

- Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing the contact phone number of a designated noise disturbance coordinator.

d. Vibration Impacts

The dominant sources of man-made vibration are sonic booms, blasting, pile driving, pavement breaking, demolition, diesel locomotives, and rail-car coupling. None of these activities are anticipated to occur with construction or operation of the proposed project. Vibration from construction activities could be detected at the closest sensitive land uses, especially during movements by heavy equipment or loaded trucks and during some paving activities (if they were to occur). Typical vibration levels at distances of 100 feet and 300 feet are summarized by Table X. These levels would not be expected to exceed any significant threshold levels for annoyance or damage, as provided above in Table V and Table VI.

TABLE X

TYPICAL VIBRATION LEVELS DURING CONSTRUCTION

	PPV (in/sec)	
Equipment	**@ 100´**	**@ 300´**
Bulldozer (Large)	0.011	0.006
Bulldozer (Small)	0.0004	0.00019
Loaded Truck	0.01	0.005
Jackhammer	0.005	0.002
Vibratory Roller	.03	0.013
Caisson Drilling	.01	0.006

Source: *Caltrans*

After full project build out, it is not expected that ongoing operational activities will result in any vibration impacts at nearby sensitive uses. Activities involved in trash bin collection could result in minor on-site vibrations as the bin is placed back onto the ground. Such vibrations would not be expected to be felt at the closest off-site sensitive uses.

5. NOISE IMPACTS TO PROPOSED ON-SITE SENSITIVE RECEPTORS, AND MITIGATION MEASURES

a. Traffic Noise Impacts To Proposed On-Site Receptors

The City of Visalia General Plan Noise Element establishes an exterior noise level standard of 65 dB L_{dn} for outdoor activity areas of residential uses. Outdoor activity areas generally include backyards of single-family residences and individual patios or decks and common outdoor activity areas of multi-family developments. The noise element also requires that interior noise levels attributable to exterior noise sources not exceed 45 dB L_{dn}.

The proposed project includes sensitive receptors (residential land uses) that could be impacted by traffic noise exposure adjacent to arterial roadways. Such arterial roadways include Avenue 320, Shirk Road, Riggin Avenue and Akers Street. WJVA used the above-described FHWA traffic noise model and traffic noise modeling assumptions to determine the distances from the center of the roadways to the 65 dB L_{dn} noise exposure contours. Table XI provides the distances from the center of the arterial roadways adjacent to the project site to the 65 dB L_{dn} noise exposure contours. Table XI provides the contour distances for 2042 Cumulative conditions as they represent a worst-case assessment of noise exposure at proposed sensitive receptor locations.

TABLE XI

DISTANCES TO TRAFFIC NOISE CONTOURS
CARLETON ACERS SPECIFIC PLAN, VISALIA
CUMULATIVE 2042 CONDITIONS

Roadway Segment (Description)	Distance (feet)From Roadway Centerline to 65 dB L_{dn} Contour
Avenue 320	40
Shirk Road	61
Riggin Avenue	143
Akers Street	67

Source: WJV Acoustics, Inc.

A noise impact could occur if the outdoor activity areas of proposed residential sensitive receptors are located within the cumulative conditions 65 dB L_{dn} traffic noise contours. If the outdoor activity areas of these residential land uses are located along these roadways within the 65 dB L_{dn} contour (as described in Table XI), an impact would be expected to occur.

Noise levels from transportation noise sources may be effectively mitigated by incorporating noise mitigation measures into the project design that consider the geographical relationship between the noise sources of concern and potential receptors, the noise-producing characteristics of the sources and the path of transmission between noise sources and sensitive receptors. Options for noise mitigation include the use of building setbacks and the construction of sound walls. Such

mitigation measures would generally be limited to residential land uses for which outdoor activity areas are located within the roadway setback distances described above in Table XI.

Typically, the incorporation of sound walls (or a combination of earthen berms and sound walls) are the most effective method of mitigating transportation noise exposure. The effectiveness of a sound wall is determined by the geometric relationship between the noise source, barrier and receiver. Sound walls are most effective when they are located either close to the noise source or the receiver.

The City of Visalia Design and Improvement Standards provide guidelines and standards for the construction of block walls, within the City of Visalia. Standard wall heights permitted by the City of Visalia range between 6-foot to 7-foot in height. Depending on the height and geometric relationship between the roadway and the receiver location, wall of this height range would be typically expected to provide between approximately 5-6 dB of noise attenuation. While specific wall height requirements would generally be determined once final lot layout designs and elevations are known, wall heights of up to 7 feet will be sufficient to mitigate traffic noise within all proposed residential land uses, to below the City's acceptable maximum allowed noise exposure levels.

b. Noise Impacts from Operational On-Site Sources

The proposed Project includes up to 35.1 acres of commercial development in two locations within the Project for a total of approximately 205,000 square feet of gross leasable commercial area. The commercial developments will occur in the proposed Mixed Use Commercial Zone and the Neighborhood Commercial Zone. The first commercial area consists of up to 28.7 acres of Mixed-Use Commercial at the intersection of Riggin Avenue and Shirk Road. Anticipated uses at this location may include development such as a Costco, gas station, car wash, drug store, retail, restaurants (including drive-throughs), and similar uses. The second consists of up to 6.4 acres of Commercial Neighborhood at the north east corner of the development. Anticipated uses at this location may include development such as retail, services and restaurants.

The noise levels associated with the two commercial developments are discussed in detail above, in relation to existing sensitive receptors (existing residential land uses). This section discusses the noise levels associated with the commercial developments, as they may impact sensitive receptors (residential land uses) proposed with this project. There project proposes medium-density residential land uses to be adjacent to the Mixed-Use Commercial Zone within the southwest portion of the project site and high-density residential land uses to be adjacent to the Neighborhood Commercial Zone within the northeast portion of the project site.

Mixed Use Commercial Zone

The project would include medium-density residential land uses proposed adjacent to the Mixed-Use Commercial Zone. Anticipated developments within the Mixed-Use Commercial Zone include a Costco retail center, gas station, car wash, drug store, retail and restaurants (including quick serve/drive through uses). The noise levels associated with these are discussed in detail above. WJVA calculated the noise levels associated with various noise-producing project components, at

the proposed medium-density residential land uses. The noise levels provided below represent the noise levels discussed above for each component, taking into account the distance between each

noise source and the proposed medium-density residential land uses. The noise levels are as follows:

- HVAC/Mechanical equipment: 42-47 dB
- Truck deliveries: 56-62 dB
- Parking lot activities: 57-62 dB
- Drive-Through operations: 34-36 dB
- Loading Dock Activities: 47-65 dB
- Refuse/Cardboard Compactor: 44 dB

Car Wash

In addition to the above-described noise producing components, the proposed Costco retail center would include a car wash facility. Noise levels associated with the proposed car wash were addressed in a separate car wash-specific analysis. Noise levels associated with car wash operations are provided in a memo prepared by MD Acoustics, dated November 14, 2022. As described in the memo, the proposed drive-through car wash facility in the Mixed-Use Commercial Zone will implement an IDC 100 horsepower Predator Blower System running at 55Hz with a 10' wall with AcoustiBlok lining. This system will reduce car wash noise impacts to less than significant levels. This will be a condition of Project approval. Refer to the memo for more information. The Car Wash noise study memo is provided as Appendix D, at the end of this report.

Neighborhood Commercial Zone

The project would include high-density residential land uses proposed adjacent to the Neighborhood Commercial Zone. A wide variety of noise sources can be associated with commercial land use designations. The noise levels produced by such sources can also be highly variable and could potentially impact proposed on-site sensitive receptors. From the perspective of the City's noise standards, noise sources not associated with transportation sources are considered stationary noise sources. Typical examples of stationary noise sources include:

- Fans and blowers
- HVAC units
- Truck deliveries
- Compactors
- Amplified Drive-through Menu Board Speakers

Noise levels from new stationary noise sources within the Neighborhood Commercial Zone cannot be predicted with any certainty at this time since specific uses have not yet been proposed and the locations of stationary noise sources relative to the locations of new noise sensitive uses are not known. However, under some circumstances there is a potential for such uses exceed the City's noise standards for stationary noise sources at the locations of sensitive receptors.

Noise levels from new stationary noise sources may be effectively mitigated by incorporating noise mitigation measures into the project design that consider the geographical relationship between

the noise sources of concern and potential receptors, the noise-producing characteristics of the sources and the path of transmission between noise sources and sensitive receptors. Options for noise mitigation include the use of building setbacks, the construction of sound walls and the use of noise source equipment enclosures.

When specific uses within the study area are proposed (and their locations are defined) that could result in a noise-related conflict between a commercial or other stationary noise source and project proposed sensitive receptors, an acoustical analysis may be required that quantifies project-related noise levels and recommends appropriate mitigation measures to achieve compliance with the City's noise standards.

c. Noise Impacts from proposed School Land Uses

Sources of operational noise associated with school land uses could include mechanical equipment (trash compactors, HVAC, etc.), vehicle and bus movements and noise associated with general school activities (children at play). There is one existing school site (Ridgeview Middle School) as well as two proposed school sites within the overall project site footprint.

While noise levels associated with school operations are described below and compared to City of Visalia noise level standards, per City of Visalia Municipal Code section 8.36.070 (Noise Exemptions), noise levels associated with school activities are exempt from City of Visalia noise standards. The municipal code states *"Activities conducted in public parks, public playgrounds and public or private school grounds, including but not limited to school athletic and school entertainment events during normal hours of instruction"* are exempt from City of Visalia noise standards. Therefore, the discussion below of school-related noise levels is provided for informational purposes only, and mitigation measures would not be required for project compliance.

Mechanical Equipment
Detailed information about the types and locations of air conditioners and trash compactors potentially associated with the school land uses was not available at the time this report was prepared. Based upon noise studies conducted by WJVA for other projects, the maximum noise level produced by a typical un-enclosed trash compactor (Hydra-Fab Model 1200) is approximately 74 dBA at a distance of 10 feet from the equipment. Since trash compactors operate intermittently, the City's 70 dB L_{max} daytime noise level standard would apply. In order to not exceed this noise level standard at proposed sensitive receptor locations, any trash compactor should be located at least twenty (20) feet from any residential land use or be located within an appropriate enclosure.

It can be assumed that the project would include roof-mounted or ground level HVAC units on school buildings. Noise levels associated with air conditioner units typically range from approximately 55-75 dB at a distance of ten (10) feet from the unit. Noise levels associated with ground level HVAC units could potentially exceed the City's stationary noise standard of 55 dB L_{eq} if new proposed residential land uses are located in close proximity to the HVAC units and/or the HVAC units are not adequately shielded. If an unshielded HVAC unit is located within 100 feet from adjacent residential land uses, associated noise levels could exceed the City's stationary noise level

standards.

Bus and Vehicle Movements

Noise due to traffic in parking lots is typically limited by low speeds and is not usually considered to be significant. Human activity in parking lots that can produce noise includes voices, stereo systems and the opening and closing of car doors and trunk lids. Such activities can occur at any time. The noise levels associated with these activities cannot be precisely defined due to variables such as the number of parking movements, type of vehicles, and other factors. It is typical for a passing car in a parking lot to produce a maximum noise level of 60 to 65 dBA at a distance of 50 feet, which is comparable to the level of a raised voice.

File data for slowly moving heavy trucks and buses indicate that the maximum noise level (L_{max}) is approximately 70-75 dB at 50 feet. Bus movements that do not occur on a public roadway are considered to be a stationary noise source.

The locations of school parking lots and bus access and loading areas in relation to proposed residential land uses were not known at the time of this analysis. If bus movements were to occur within ninety (90) feet of outdoor activity areas of residential land uses (outdoor common use areas and individual patios and balconies for multi-family homes and backyards of single-family homes), associated noise levels could exceed the City's stationary noise level standards at residential land uses.

School Activities

Noise levels from typical school activities are generally limited to noise associated with children at play (yelling, screaming, laughing, etc.) and school bells and alarms. WJVA previously measured noise levels associated with such school activities at an existing elementary school in Fresno County. For that study, noise measurements were conducted within a residential area across the street from the bus loading, student drop-off and a common play area at the school. Noise measurements were conducted at approximately 8:00 a.m. when students were arriving at school by bus or car and were gathering in common play areas before the start of school. Measured noise levels from students gathering or playing at distances of approximately 50-225 feet from the microphone were in the range of 53-63 dB. Noise levels associated with school bells and alarms can vary widely, but are typically in the range of approximately 80-90 dB (or greater) at a distance of twenty feet from the source.

Noise levels from school activities would be intermittent and mostly occur during periods when students are arriving at school in the morning or leaving school in the afternoon, and during periods of recess or physical education classes on the play fields, and could be audible at nearby residential land uses.

Sporting Events / Stadium

Visalia Unified School District (VUSD) may construct a new high school to the west of the existing Ridgeview Middle School location. Potential construction dates (if built) were not known at the time this analysis was prepared. If constructed, the high school could include a sports field/stadium, to be used for sports practices, games and other events. If constructed, a sports field or stadium located within the proposed high school site would likely include a Public Address

(PA) system, for amplified speech and music during events. According to VUSD staff, if the high school is constructed, stadium construction would likely occur after high school construction, and the location of any potential stadium at the high school site is subject to change, and environmental review associated with high school construction (and stadium) would be prepared by VUSD.

Noise levels associated with activities such as high school football games, other sporting events and other events held in the stadium cannot be precisely defined due to variables such as the number of attendees, atmospheric conditions and the topographical relationship between the stadium and off-site sensitive receptors. WJVA reviewed noise level data previously collected for a different project, these noise levels are described below.

WJVA staff conducted reference noise level measurements at Mineral King Bowl in Visalia, California on November 9, 2018 during a high school football game. It should be noted, the game was a sectional playoff game and crowd size and volume was likely louder than a "typical" game. The exact attendance at the football game was not determined, however, the Mineral King Bowl has a capacity of up to 8,500 during football games.

During the football game WJVA collected numerous 15-minute noise level samples. Noise level measurements were taken at a distance of approximately 200 feet from the center of the playing field. At the reference noise measurement site, average noise levels during the football game were approximately 60-66 dB L_{eq} with maximum (L_{max}) noise levels ranging between approximately 70-75 dB.

d. Noise Impacts from Nearby Airports or Airstrips

The Project site is not located within two miles of a public airport or private airstrip.

6. IMPACT SUMMARY

This impact summary addresses only the noise impacts determined to be "potentially significant" and summarizes the appropriate measures that would be required to reduce noise levels to a "less than significant" level, if applicable.

- **Potential Impact:** Noise levels from new stationary noise sources associated with proposed Neighborhood Commercial Zone land uses within the project site could potentially impact existing and new sensitive receptors (residential land uses). Exact uses of Neighborhood Commercial Zone land was not known at the time this analysis was prepared.
  Mitigation: Noise levels from new stationary noise sources may be effectively mitigated by incorporating appropriate noise mitigation measures into the project design that consider the geographical relationship between the noise sources of concern and potential receptors, the noise-producing characteristics of the sources and the path of transmission between noise sources and sensitive receptors. If required, options for noise mitigation include the use of building setbacks, the construction of sound walls and the use of noise source equipment enclosures. When specific uses within the study area are proposed that could result in a noise-related conflict between a commercial or other stationary noise source and existing or proposed noise-sensitive receptor, an acoustical analysis will be required by the City that quantifies project-related noise levels and recommends appropriate mitigation measures to achieve compliance with the City's noise standards.

- **Potential Impact:** A noise impact could occur if new proposed sensitive receptors (residential land uses) are located within the cumulative 65dB L_{dn} traffic noise contours. Table XI provides the setback distances from the centerline of each of the four site-adjacent arterial roadways to the 65 dB L_{dn} exterior nose level contour.
  Mitigation: The City of Visalia Design and Improvement Standards provide guidelines and standards for the construction of block walls, within the City of Visalia. Standard wall heights permitted by the City of Visalia range between 6-foot to 7-foot in height. Depending on the height and geometric relationship between the roadway and the receiver location, wall of this height range would be typically expected to provide between approximately 5-6 dB of noise attenuation. While specific wall height requirements would generally be determined once final lot layout designs and elevations are known, wall heights of up to 7 feet will be sufficient to mitigate traffic noise within all proposed residential land uses, to below the City's acceptable maximum allowed noise exposure levels.

- **Potential Impact:** If bus movements were to occur within ninety (90) feet of outdoor activity areas of residential land uses (outdoor common use areas and individual patios and balconies for multi-family homes and backyards of single-family homes), associated noise levels could exceed the City's stationary noise level standards at residential land uses.
  Mitigation: Bus movements occurring off public roadways (on school campus) shall not occur within 90 feet of any residential outdoor activity areas.

- **Potential Impact:** A noise impact could occur if construction activities occur outside of the City's allowable hours of construction and/or do not incorporate appropriate best management practices in regards to construction-related noise. Implement best management practices to minimize the potential for noise impacts on existing sensitive receptors in the project area, during project construction. The following provides the City's allowable hours of construction as well as generalized best management practices that should be applied during periods of project construction to ensure that noise impacts do not result from project construction:

    - Per the City of Visalia Municipal Code, construction activities should not occur outside the hours of 6:00 a.m. to 7:00 p.m. during weekdays and 9:00 a.m. to 7:00 p.m. on weekends. Construction activities that occur outside these hours would be subject to the stationary noise standards provided above in Table II.

    - All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source.

    - Noise-producing equipment shall not be operating, running, or idling while not in immediate use by a construction contractor.

    - All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from any noise-sensitive land uses.

    - Locate construction staging areas, to the extent possible, at the greatest possible distances from any noise-sensitive land uses.

    - Signs shall be posted at the construction site and near adjacent sensitive receptors displaying hours of construction activities and providing a contact phone number of a designated noise disturbance coordinator.

7. SOURCES CONSULTED

1. Dyett and Bhatia, *Visalia General Plan Update*, October 14, 2014.

2. City of Visalia Municipal Code, updated January 19, 2021

3. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual,* September 2013.

4. Federal Highway Administration, *Traffic Noise Model, Version 2.5,* April 14, 2004

FIGURE 1: PROJECT LAND USE PLAN

Figure 2-5
Site Layout Plan

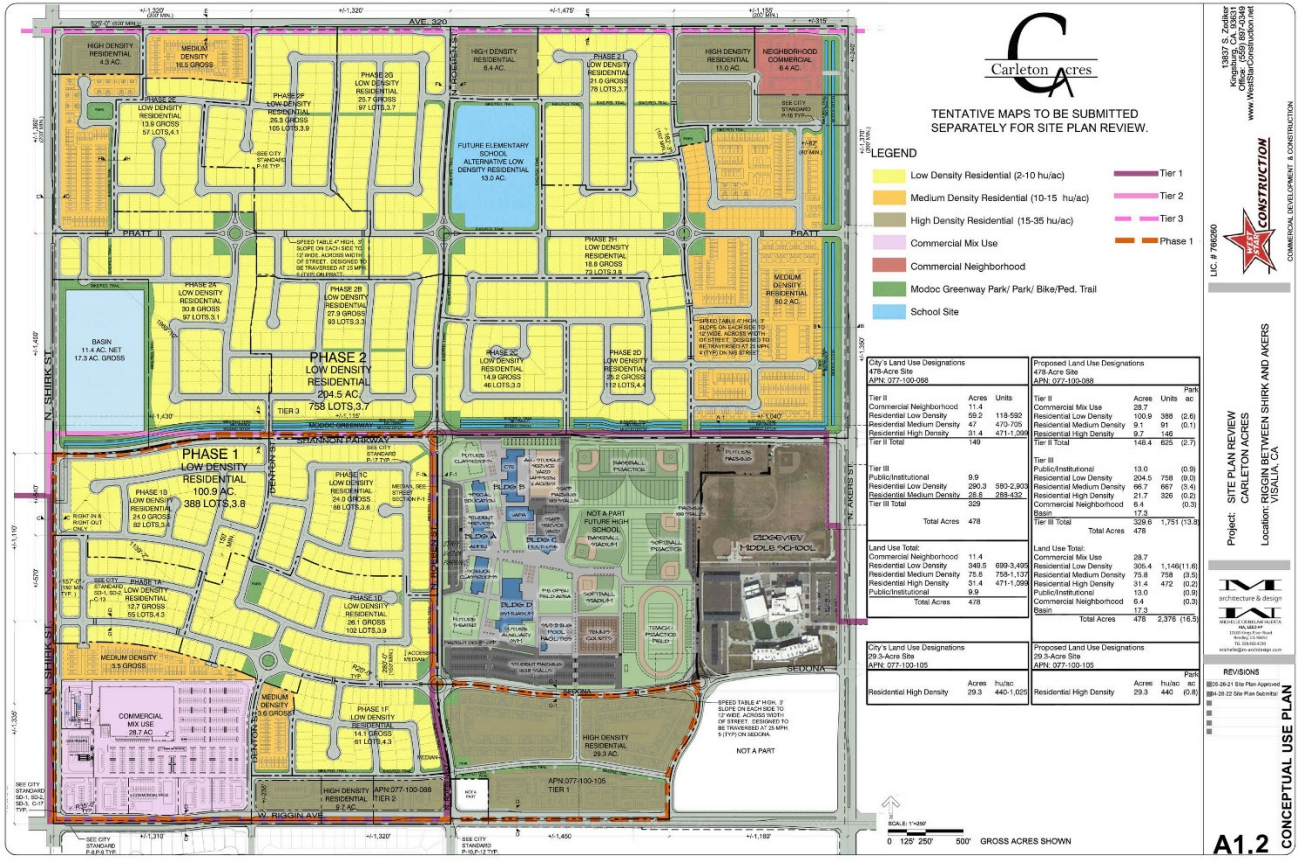


FIGURE 2: PROJECT VICINITY AND AMBIENT NOISE MONITORING SITES

FIGURE 3: HOURLY NOISE LEVELS AT SITE LT-1

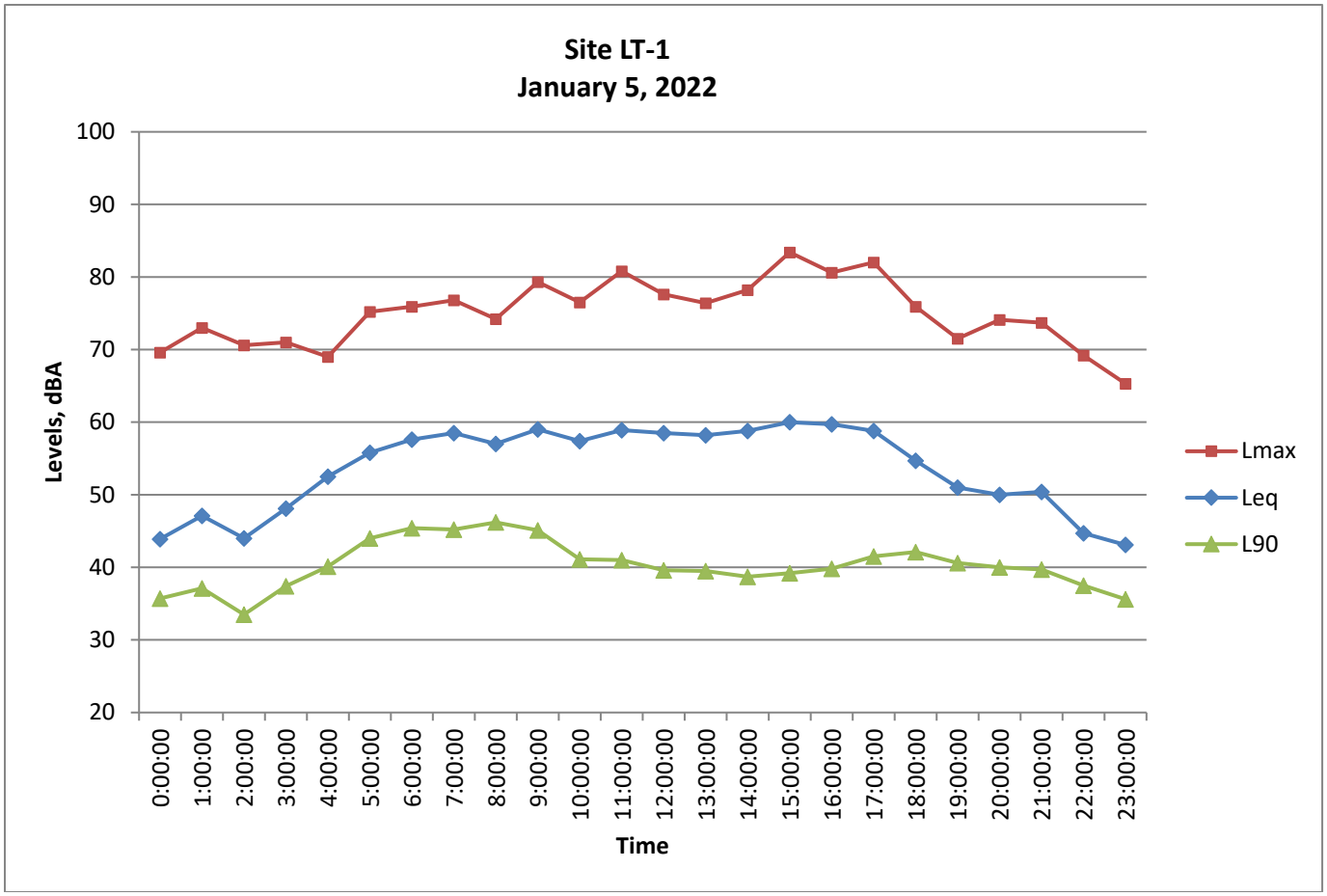


FIGURE 4: NOISE MEASUREMENT SITE LT-1

FIGURE 5: HOURLY NOISE LEVELS AT SITE LT-2

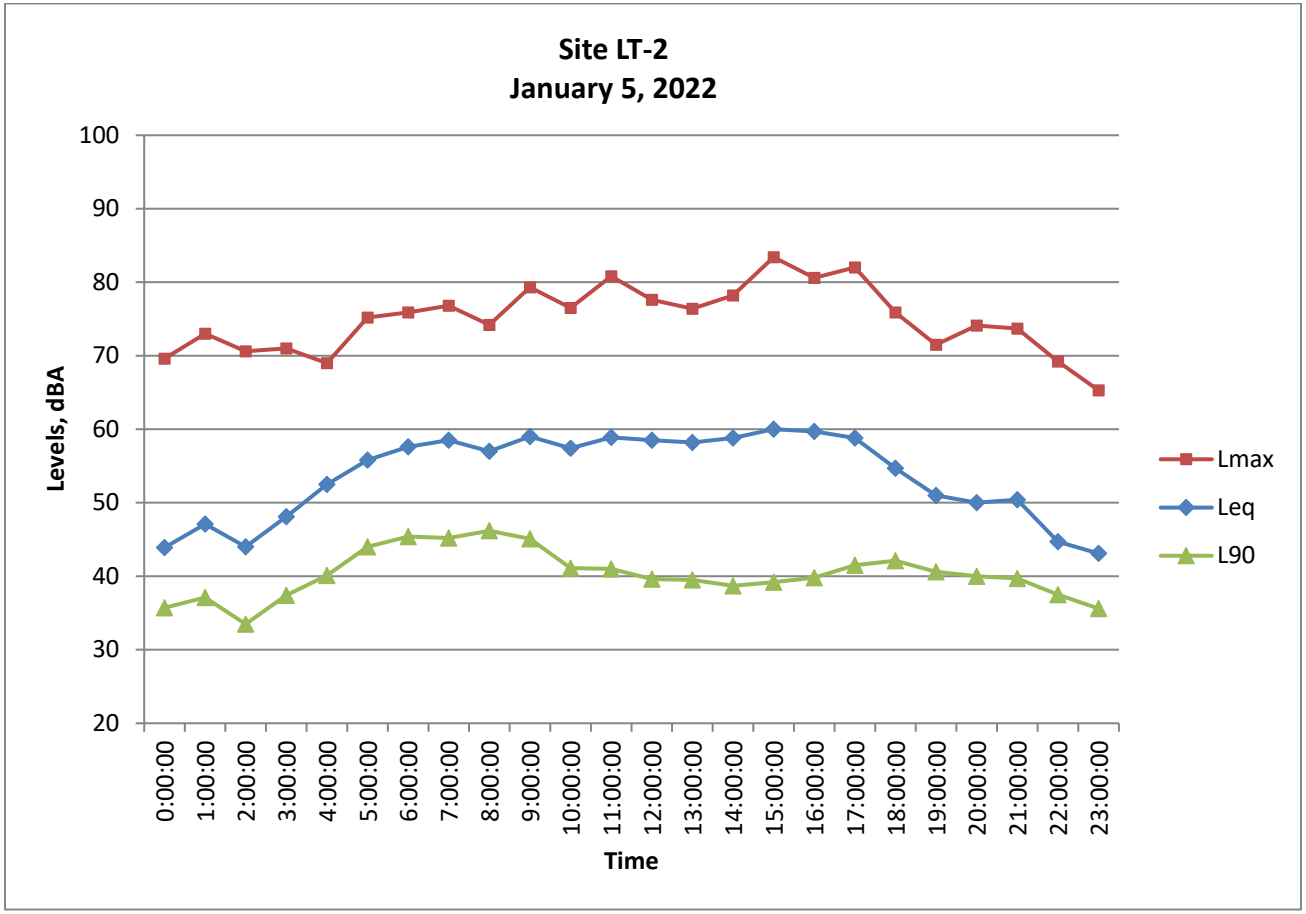


FIGURE 6: NOISE MEASUREMENT SITE LT-2

FIGURE 7: HOURLY NOISE LEVELS AT SITE LT-3

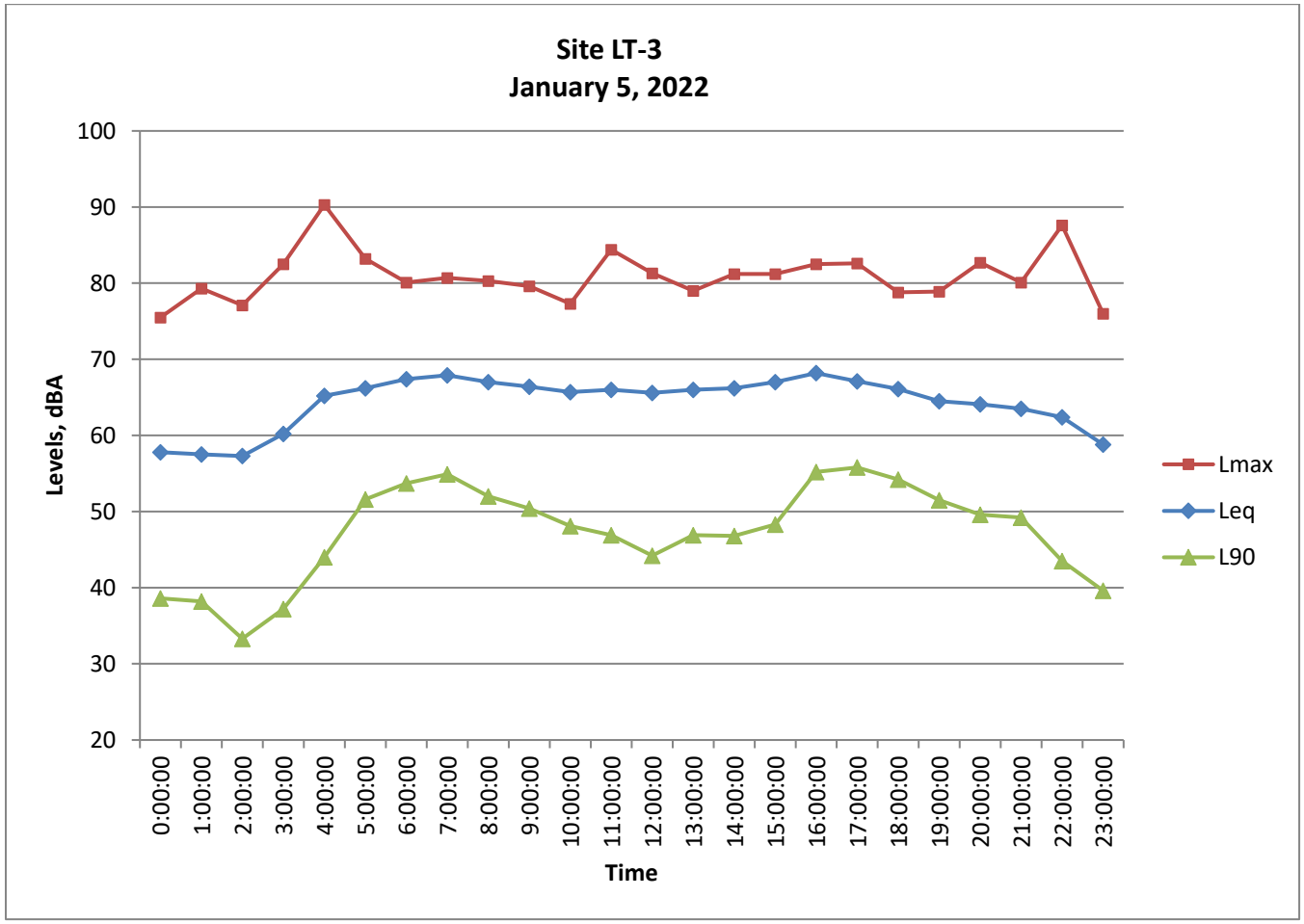
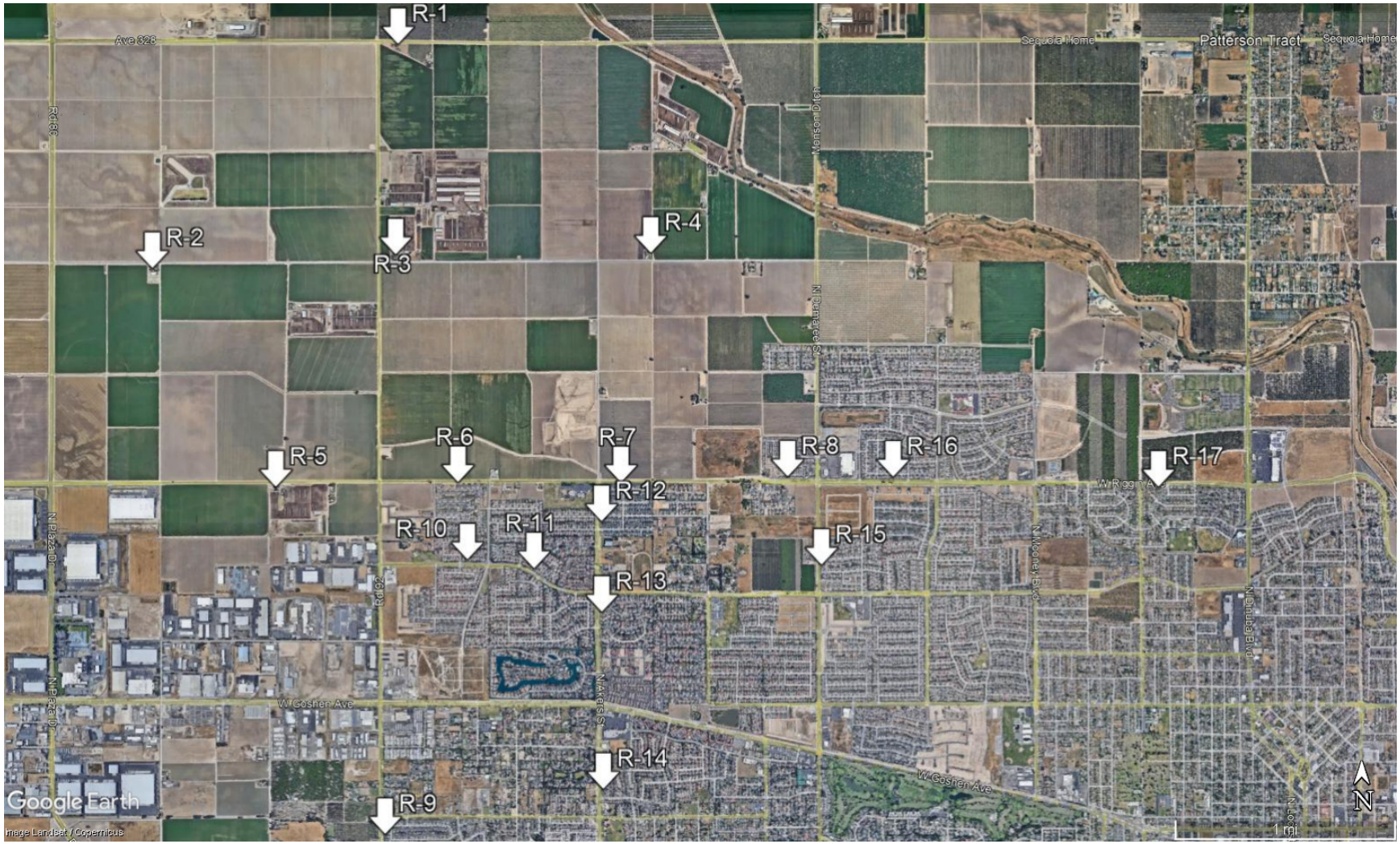


FIGURE 8: NOISE MEASUREMENT SITE LT-3

FIGURE 9: MODELED TRAFFIC NOISE RECEPTOR LOCATIONS



APPENDIX A-1

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

NOTE: The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum noise level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). For example, L_{10} equals the level exceeded 10 percent of the time.

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

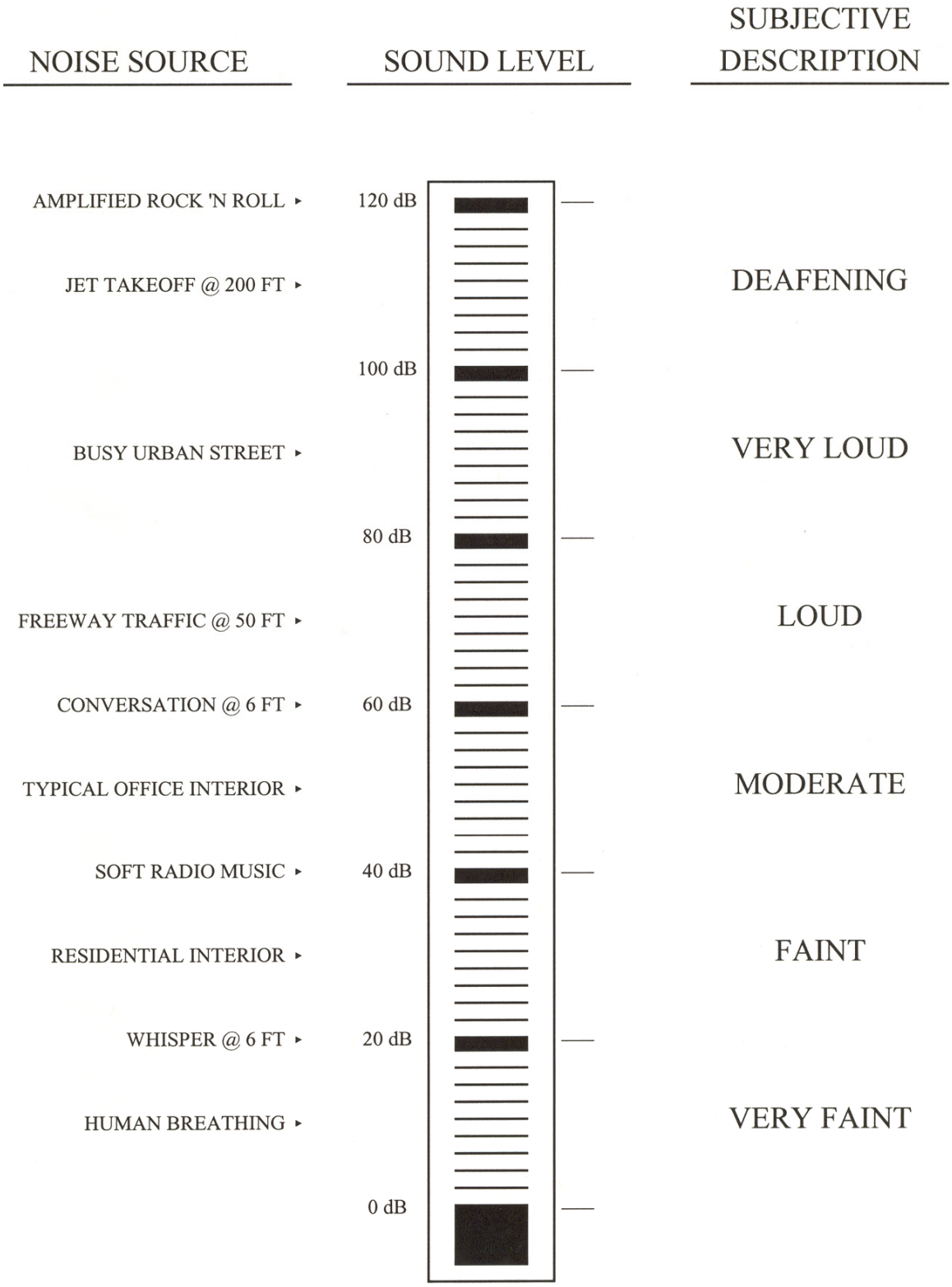
NOISE LEVEL REDUCTION (NLR): The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

SOUND TRANSMISSION CLASS (STC): The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

APPENDIX B
EXAMPLES OF SOUND LEVELS



APPENDIX C

TRAFFIC NOISE MODELING CALCULATIONS

WJV Acoustics, Inc
FHWA-RD-77-108
Calculation Sheets
July 30, 2022

Project #:	21-47
Description:	2042 No Project
Ldn/Cnel:	Ldn
Site Type:	Soft

Contour Levels (dB)	60	65	70	75					

Segment	Roadway Name	Segment Description	ADT	%Day	%Evening	%Night	%Med	%Heavy	Speed	Distance	Offset
1	R-1	Ave 328	8080	90		10	2	1	45	100	
2	R-2	Ave 320	4550	90		10	2	1	45	165	
3	R-3	Ave 320	4360	90		10	2	1	45	150	-5
4	R-4	Ave 320	7990	90		10	2	1	45	150	
5	R-5	Riggin Ave	16590	90		10	2	1	45	170	
6	R-6	Riggin Ave	19030	90		10	2	1	45	65	-5
7	R-7	Riggin Ave	26490	90		10	2	1	45	60	-5
8	R-8	Riggin Ave	29480	90		10	2	1	45	90	-5
9	R-9	Shirk Rd	33520	90		10	2	1	45	100	-5
10	R-10	Ferguson Ave	8750	90		10	2	1	45	75	-5
11	R-11	Ferguson Ave	10840	90		10	2	1	45	65	-5
12	R-12	Akers St	12220	90		10	2	1	45	95	-5
13	R-13	Akers St	28370	90		10	2	1	45	95	-5
14	R-14	Akers St	21940	90		10	2	1	45	85	-5
15	R-15	Demaree St	24980	90		10	2	1	45	75	-5
16	R-16	Riggin Ave	33280	90		10	2	1	45	90	-5
17	R-17	Riggin Ave	23570	90		10	2	1	45	115	-5

WJV Acoustics, Inc
FHWA-RD-77-108
Calculation Sheets
July 30, 2022

Project #:	21-47
Description:	2042 Plus Project
Ldn/Cnel:	Ldn
Site Type:	Soft

Contour Levels (dB)	60	65	70	75					

Segment	Roadway Name	Segment Description	ADT	%Day	%Evening	%Night	%Med	%Heavy	Speed	Distance	Offset
1	R-1	Ave 328	8560	90		10	2	1	45	100	
2	R-2	Ave 320	4690	90		10	2	1	45	165	
3	R-3	Ave 320	5190	90		10	2	1	45	150	-5
4	R-4	Ave 320	8900	90		10	2	1	45	150	
5	R-5	Riggin Ave	19150	90		10	2	1	45	170	
6	R-6	Riggin Ave	26440	90		10	2	1	45	65	-5
7	R-7	Riggin Ave	33490	90		10	2	1	45	60	-5
8	R-8	Riggin Ave	34440	90		10	2	1	45	90	-5
9	R-9	Shirk Rd	36170	90		10	2	1	45	100	-5
10	R-10	Ferguson Ave	8830	90		10	2	1	45	75	-5
11	R-11	Ferguson Ave	10950	90		10	2	1	45	65	-5
12	R-12	Akers St	22510	90		10	2	1	45	95	-5
13	R-13	Akers St	32710	90		10	2	1	45	95	-5
14	R-14	Akers St	24640	90		10	2	1	45	85	-5
15	R-15	Demaree St	27070	90		10	2	1	45	75	-5
16	R-16	Riggin Ave	37160	90		10	2	1	45	90	-5
17	R-17	Riggin Ave	26790	90		10	2	1	45	115	-5
18	Shirk	Riggin to 320	9840	90		10	2	1	45	100	
19	Riggin	Shirk to Akers	35810	90		10	2	1	45	100	
20	Akers	Riggin to 320	11530	90		10	2	1	45	100	

APPENDIX D

COSTCO CAR WASH NOISE MEMO

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Suite 1-461
Chandler, AZ 85249
p. (602) 774-1950

CA Office
1197 Los Angeles Ave, Suite C-256
Simi Valley, CA 93065
p. (805) 426-4477

November 14, 2022

Costco Wholesale
Kim Katz, Director of Real Estate
999 Lake Drive Issaquah WA

Subject: Costco Wholesale Car Wash – W Riggin Ave & N Shirk St – Noise Review Letter – Visalia, CA

MD Acoustics, LLC (MD) has completed a noise review letter for Costco Wholesale – W Riggin Ave & N Shirk St project located at NE Corner of W Riggin Ave & N Shirk St, Visalia, CA. The site plan utilized for the project is located in Exhibit A (page 3 of this report). The project assessed the noise from the car wash blower and drying system.

1.0 Study Method and Procedure

The car wash equipment noise level was modeled using SoundPlan 3D (SP) acoustic modeling software. SP is capable of evaluating stationary noise sources (e.g. point sources such as blowers and drying systems) at various receptor locations. SP's software utilizes algorithms (based on inverse square law and reference equipment noise level data) to calculate the noise projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography and noise sensitive receptors. The model assumes all noise sources are continuously operating and are provided in A-weighted decibels (dBA).

MD modeled four (4) situations with varying mitigation methods. All four situations represent a 125' long car wash tunnel with 12' wide by 10' height openings (entrance and exit), a IDC 100 HP Predator Blower System, and a CMU wall positioned at the exit of the tunnel that wraps around the vehicle exit path (as shown within the exhibit). Wall placement shows approximate location for illustrative purposes. Manufacturer reference noise data is provided in Appendix A.

Situation 1 features a IDC 100 HP Predator Blower System running at 60 Hz with an 8-foot tall CMU wall positioned at the exit of the tunnel (see Exhibit B-1).

Situation 2 is similar to **Situation 1**, except the height of the CMU wall is 10' and the tunnel implements 10' of AcoustiBlok lining (See Appendix A) (see Exhibit B-2).

Situation 3 features a IDC 100 HP Predator Blower System running at 55Hz with an 8-foot tall CMU wall positioned at the exit of the tunnel (see Exhibit B-3).

Situation 4 is similar to **Situation 3**, except the tunnel implements 10' of AcoustiBlok lining (See Appendix A) (see Exhibit B-4).

Modeling inputs and outputs for all situations are provided in Appendix B.

2.0 Findings

A total of three (3) receptors were modeled to accurately evaluate the car wash equipment operational noise levels at and/or adjacent to the project site. A receptor is denoted by a yellow dot. The dot represents either a property line, a sensitive receptor such as an outdoor sensitive area/building facade or a calibration point (point where sound pressure levels are confirmed to match manufacturer's noise data).

For Situations 1 - 4, the noise level at the northern adjacent property line will be 51 dBA, 47 dBA, 46 dBA, and 41 dBA respectively.

3.0 Conclusion

MD is pleased to provide this noise review for this project. Noise modeling assumptions and results are provided. If you have any questions regarding this letter, please call our office at (805) 426-4477.

Sincerely,
MD Acoustics, LLC

Jordan Trubakoff
Design and Acoustical Consultant

Mike Dickerson, INCE
Princpal

Exhibit A
Site Plan

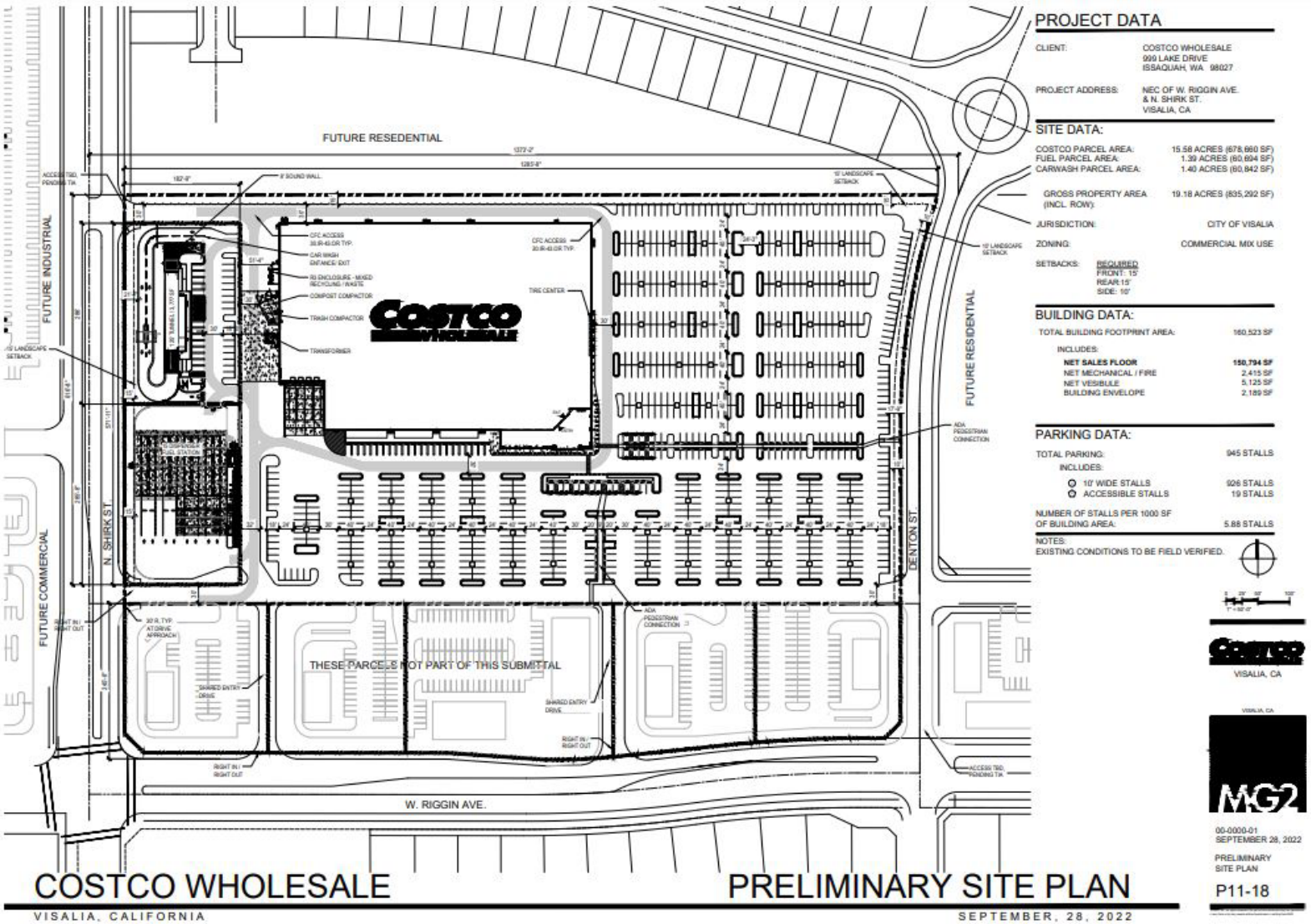


Exhibit B-1

Situation 1 – IDC 100 HP Predator System Operating @ 60Hz

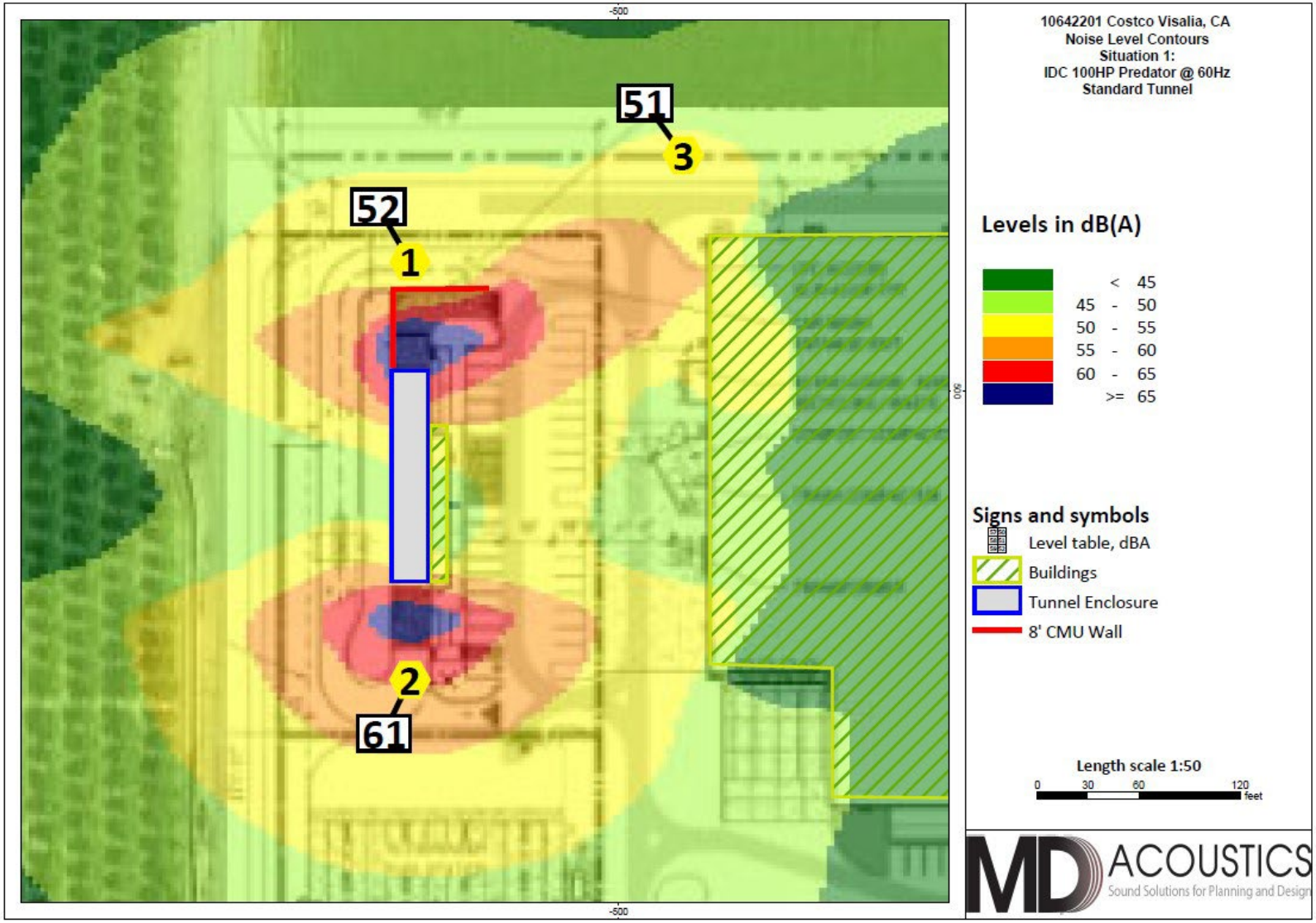


Exhibit B-2

Situation 2 – IDC 100 HP Predator System Operating @ 60Hz + Lined Tunnel + 10’ CMU Wall

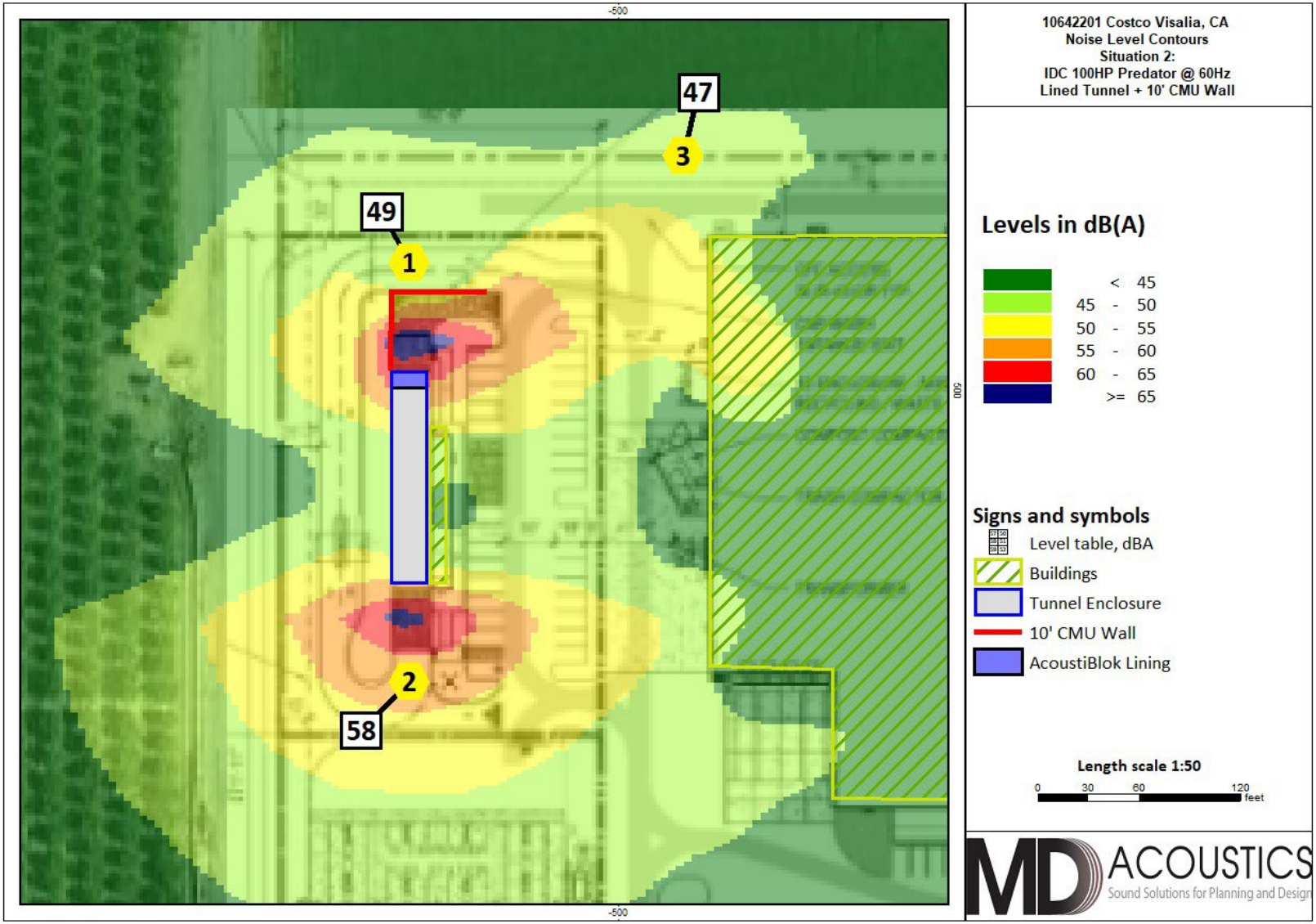


Exhibit B-3

Situation 3 – IDC 100 HP Predator System Operating @ 55Hz

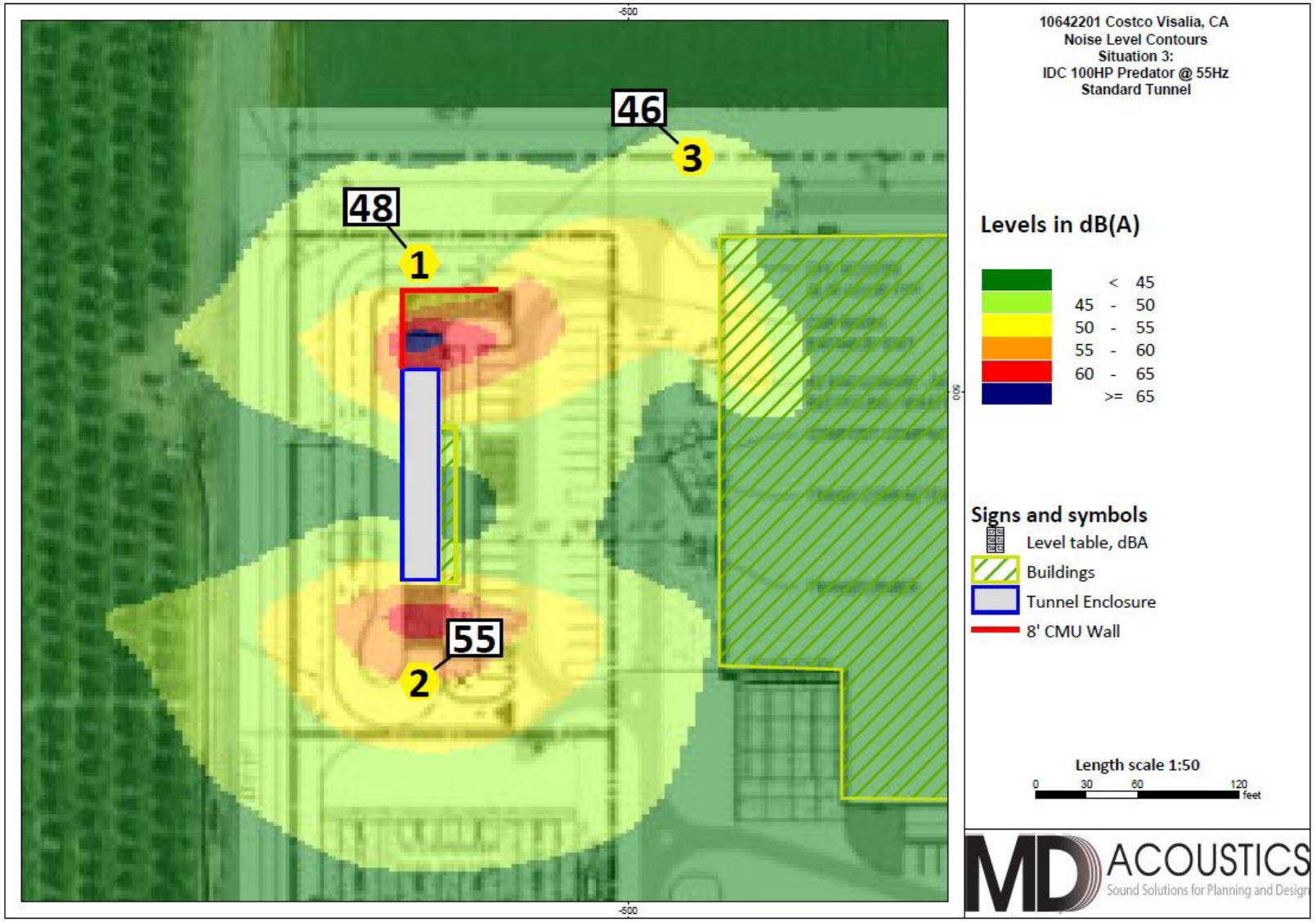
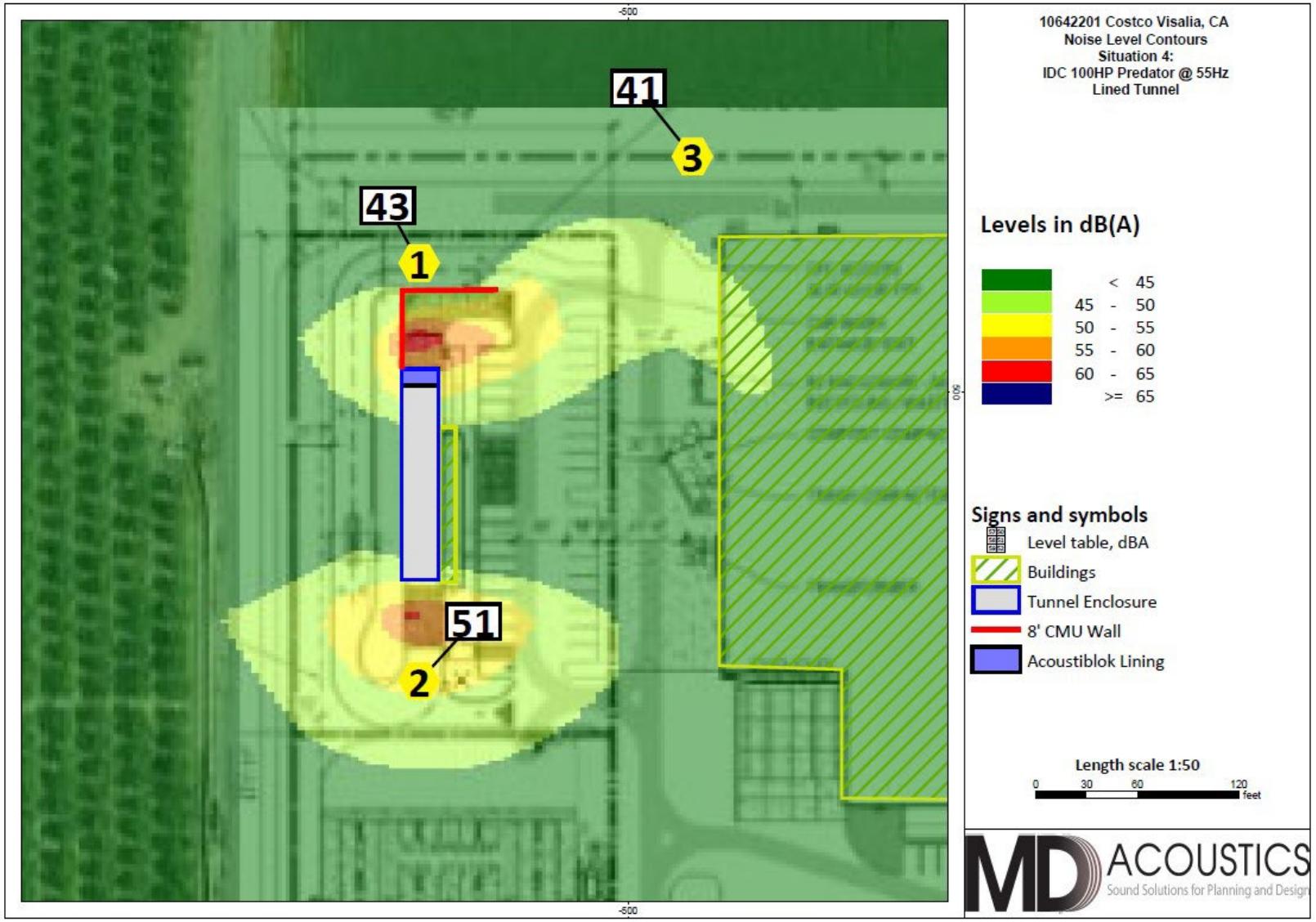


Exhibit B-4

Situation 4 – IDC 100 HP Predator System Operating @ 55Hz + Lined Tunnel



Appendix A

Manufacturer Sound Data Reference

and

AcoustiBlok Information and Diagram

INTERNATIONAL DRYING
CORPORATION

STEALTH PREDATOR DRYING SYSTEM

THE FIRST "ULTRA QUIET" DRYING SYSTEM

- ✔Patent pending Reverse flow technology
- ✔Producers construced from 304 surgical stainless steel
- ✔Over 11,000 cubic feet per minute (CFM) per 10HP motor
- ✔Meets or exceeds most U.S. and International sound regulations
- ✔Sound & Performance studies done in reverberant sound room ISO 3741:2010, 3747:2010

SCAN ME

CALL US ANYTIME
(+1) 815 477 4911

EMAIL US
info@internationaldrying.com

FIND US
Internationaldrying.com

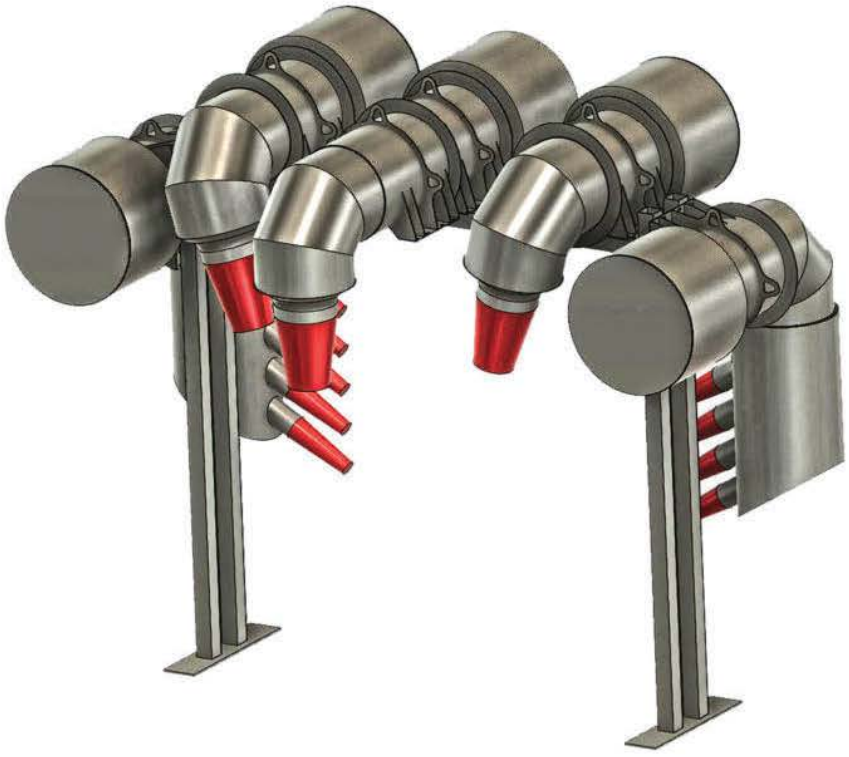
VISIT US
International Drying Corporation
160 Chicago St
Cary, IL 60013

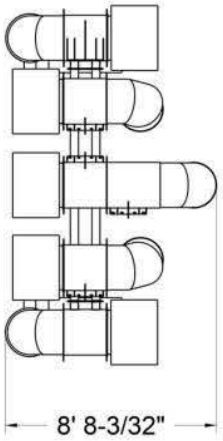
Stealth Predator Ultra-Quiet Drying System Specifications

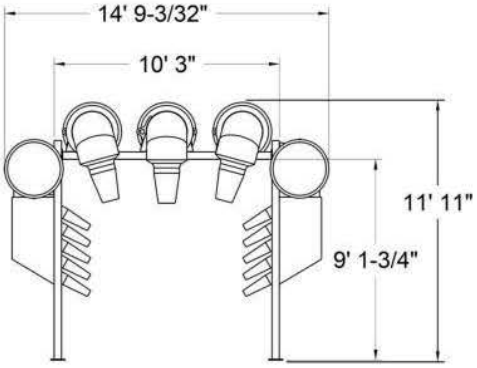
30HP System - Total Sound 60Hz		80HP System - Total Sound 60Hz	
Q = sound source			
65	dBA at Q=1, 30 feet	69.4	dBA at Q=1, 30 feet
61.8	dBA at Q=1, 45 feet	66.5	dBA at Q=1, 45 feet
60.2	dBA at Q=1, 55 feet	64.9	dBA at Q=1, 55 feet

Meets OSHA Sound Exposure Requirements

✓ **The Stealth Predator features patent pending "Reverse flow air technology" which creates the first "Ultra-Quiet Dryer" and is the most powerful Ultra Quiet Dryer ever designed.**







INTERNATIONAL DRYING CORPORATION

SPECIFICATIONS

15' 2" Bay Width
12' 0" Ceiling Height
96" Standard Clearance

Closed cell foam nozzles available in red, blue, black

Ducts-Stainless Steel
Molded Aluminum Impellors
Stainless Steel Motor Housings

Slotted flanges for adjustability of air outlet and air intake direction

Made in U.S.A
All U.S. Materials

a NASA Spinoff listed company

100% Recyclable

North America Office
Acoustiblok, Inc.
6900 Interbay Boulevard
Tampa, FL 33616 USA
Phone: 813-980-1400
Fax: 813-549-2653
www.acoustiblok.com
sales@acoustiblok.com

QuietFiber®

(Non-fiberglass)

Hydrophobic Industrial Noise Absorption Material Benefits and Specifications

Engineered specifically for maximum noise absorption and is used extensively in the industrial, residential and commercial applications. QuietFiber® is an easily installed solution to many noise applications.

Unlike other fibrous materials or fiberglass which does not have the high NRC ratings that QuietFiber has, QuietFiber is "hydrophobic," meaning it will not absorb nor combine with water. Marine noise reduction applications are endless.

QuietFiber Benefits:

- Highest noise absorption rating of NRC 1.00 (far exceeding fiberglass ratings)
- Non Silica
- QuietFiber® material is virtually fireproof. Class A fire rating, 0 smoke spread and 0 flame development.
- Hydrophobic, will not combine with water.
- Will not support mold or mildew growth.
- Black or white faced available.
- Easy installation.
- Full outdoor weather and U.V. tolerant.
- Significant sound benefit when used in wall or floor assemblies vs. fiberglass batt.
- Install on top of existing acoustical ceiling tiles as to reduce room to room crossover sound.
- High temperature capable for high temperature sound abatement.
- Comprised of up to 90% recycled material. 100% recyclable. Non-fiberglass.

White Face (left) Black Face (right)

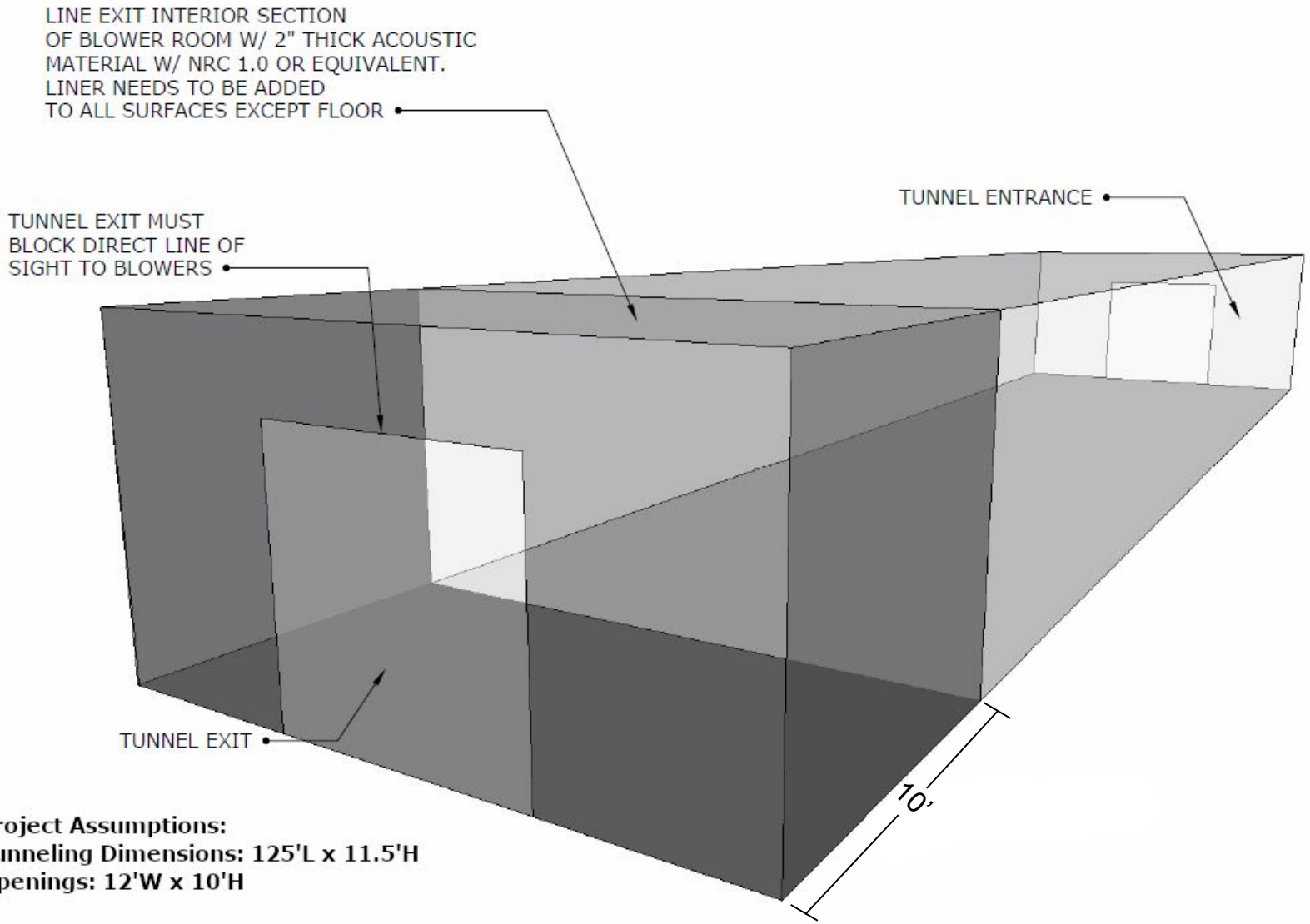
NRC 1.0 Rated	125hz	250hz	500hz	1000hz	2000hz	4000hz
	0.36	0.79	1.15	1.04	1.01	1.04

Technical Data:

- ASTM C 423 - NRC1.0
- ASTM E 84 - Class 1, 0 Flame 0 Smoke
- ASTM C 518 – R 4.2 per inch
- ASTM C 518 – 0.24k @ 75 (24° C)

Standards Compliance:

- ASTM C 665 Non-Corrosive Type I
- ASTM C 612 1A, 1B, II, III
- ASTM E 136 Rated Non-combustible per NFPA Std 220
- ASTM C 1104 Absorption less than 1% by volume
- ASTM C 356 Linear shrinkage <2% @ 1200° F (650°C)



Project Assumptions:
Tunneling Dimensions: 125'L x 11.5'H
Openings: 12'W x 10'H

Required AcoustiBlok sqft: ~350 sqft

MD ACOUSTICS
Sound Solutions for Planning and Design

ACOUSTIC TREATMENTS TO TUNNEL INTERIOR

FOR ILLUSTRATIVE PURPOSES ONLY

Appendix B

SoundPlan Input/Outputs:

Situation 1

Situation 2

Situation 3

Situation 4

Costco Visalia CA
Contribution spectra - Situation 1 - IDC 100HP Pred@60Hz - SP

Source	Time slice	Sum dB(A)	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 52.4 dB(A) Sigma(Leq,d) 0.0 dB(A)											
Facade 01	Leq,d	-9.6	-11.3	-22.7	-16.0	-23.4	-37.1	-44.5	-57.2	-75.2	
Facade 02	Leq,d	6.1	4.0	-7.0	0.2	-6.5	-15.8	-22.9	-35.1	-52.9	
Facade 03	Leq,d	6.8	3.4	-5.7	2.6	-3.5	-15.3	-22.8	-35.2	-50.3	
Facade 04	Leq,d	9.1	7.5	-3.2	2.2	-5.4	-19.4	-27.8	-40.2	-55.1	
Roof 01	Leq,d	10.0	6.9	-2.6	5.7	-1.7	-15.4	-24.0	-37.2	-54.4	
Transmissive area 01	Leq,d	52.3	32.8	37.6	47.8	47.1	45.2	42.1	32.8	15.7	
Transmissive area 01	Leq,d	30.9	16.6	18.9	27.0	25.5	22.0	18.9	10.0	-9.7	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 60.6 dB(A) Sigma(Leq,d) 0.0 dB(A)											
Facade 01	Leq,d	12.5	7.6	-0.1	8.9	4.8	-6.4	-12.6	-23.2	-37.2	
Facade 02	Leq,d	15.3	10.8	3.1	11.5	7.1	-4.5	-11.3	-22.3	-36.0	
Facade 03	Leq,d	-6.0	-7.6	-18.9	-12.8	-19.4	-29.7	-33.7	-46.6	-65.2	
Facade 04	Leq,d	13.3	10.0	1.2	8.7	3.4	-8.9	-16.6	-28.8	-43.8	
Roof 01	Leq,d	13.8	8.8	0.2	10.5	5.6	-6.6	-14.1	-26.0	-40.9	
Transmissive area 01	Leq,d	36.9	20.1	22.2	29.6	28.7	29.1	32.9	23.5	1.8	
Transmissive area 01	Leq,d	60.6	37.1	43.5	54.2	56.1	54.2	52.1	44.6	28.6	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 51.0 dB(A) Sigma(Leq,d) 0.0 dB(A)											
Facade 01	Leq,d	-12.4	-13.6	-25.1	-20.0	-28.2	-41.8	-49.8	-63.2	-84.0	
Facade 02	Leq,d	6.3	3.5	-5.0	0.5	-2.9	-11.7	-17.5	-28.8	-45.4	
Facade 03	Leq,d	1.3	-2.1	-10.2	-3.9	-7.5	-15.8	-21.1	-32.0	-47.0	
Facade 04	Leq,d	0.5	-1.1	-12.0	-5.9	-13.9	-27.8	-35.7	-48.8	-67.1	
Roof 01	Leq,d	4.1	-0.2	-9.6	0.6	-4.6	-16.7	-22.7	-34.2	-51.1	
Transmissive area 01	Leq,d	51.0	27.7	33.6	41.0	44.9	46.2	45.1	37.2	20.1	
Transmissive area 01	Leq,d	27.5	15.4	17.7	24.0	21.5	16.9	13.7	3.8	-18.6	

Costco Visalia CA
Contribution level - Situation 1 - IDC 100HP Pred@60Hz - SP

Source	Source ty	Leq,d dB(A)	A dB	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 52.4 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	10.0	0.0	
Facade 01	Area	-9.6	0.0	
Transmissive area 01	Area	30.9	0.0	
Facade 02	Area	6.1	0.0	
Facade 03	Area	6.8	0.0	
Transmissive area 01	Area	52.3	0.0	
Facade 04	Area	9.1	0.0	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 60.6 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	13.8	0.0	
Facade 01	Area	12.5	0.0	
Transmissive area 01	Area	60.6	0.0	
Facade 02	Area	15.3	0.0	
Facade 03	Area	-6.0	0.0	
Transmissive area 01	Area	36.9	0.0	
Facade 04	Area	13.3	0.0	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 51.0 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	4.1	0.0	
Facade 01	Area	-12.4	0.0	
Transmissive area 01	Area	27.5	0.0	
Facade 02	Area	6.3	0.0	
Facade 03	Area	1.3	0.0	
Transmissive area 01	Area	51.0	0.0	
Facade 04	Area	0.5	0.0	

Costco Visalia CA
3rd octave spectra of the sources in dB(A) - Situation 1 - IDC 100HP Pred@60Hz - SP

Name	l or A	Li	R'w	L'w	Lw	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz	
	m,m²	dB(A)	dB	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Roof 01	247.00	83.7	57.0	34.7	58.7	46	46.2	46.2	40.5	40.5	40.5	51.5	51.5	51.5	46.8	46.8	46.8	34.2	34.2	34.2	27.9	27.9	27.9	18.1	18.1	18.1	7.1	7.1	7.1	
Facade 01	11.80	83.7	57.0	34.8	45.5	33	33.0	33.0	27.4	27.4	27.4	38.3	38.3	38.3	33.6	33.6	33.6	21.0	21.0	21.0	14.6	14.6	14.6	4.5	4.5	4.5	-8.0	-8.0	-8.0	
Transmissive area 01	10.95	83.5	0.0	83.5	93.9	62	62.4	62.4	70.8	70.8	70.8	83.7	83.7	83.7	85.0	85.0	85.0	81.6	81.6	81.6	79.2	79.2	79.2	72.1	72.1	72.1	57.7	57.7	57.7	
Facade 02	133.00	84.2	57.0	35.3	56.5	44	44.1	44.1	38.4	38.4	38.4	49.4	49.4	49.4	44.6	44.6	44.6	32.1	32.1	32.1	25.7	25.7	25.7	15.9	15.9	15.9	4.7	4.7	4.7	
Facade 03	11.80	85.1	57.0	35.9	46.6	34	34.1	34.1	28.5	28.5	28.5	39.5	39.5	39.5	34.8	34.8	34.8	22.8	22.8	22.8	16.9	16.9	16.9	7.5	7.5	7.5	-2.2	-2.2	-2.2	
Transmissive area 01	10.95	85.1	0.0	85.1	95.5	64	63.8	63.8	72.2	72.2	72.2	85.2	85.2	85.2	86.4	86.4	86.4	83.5	83.5	83.5	81.7	81.7	81.7	75.4	75.4	75.4	63.7	63.7	63.7	
Facade 04	133.00	84.2	57.0	35.3	56.5	44	44.1	44.1	38.4	38.4	38.4	49.4	49.4	49.4	44.6	44.6	44.6	32.1	32.1	32.1	25.7	25.7	25.7	15.9	15.9	15.9	4.7	4.7	4.7	

Costco Visalia CA
Contribution spectra - Situation 2 - IDC 100HP Pred@60Hz +

Source	Time slice	Sum dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 48.6 dB(A) Sigma(Leq,d) 0.0 dB(A)									
Facade 01	Leq,d	-17.3	-24.3	-18.9	-26.8	-40.1	-47.1	-59.6	
Facade 02	Leq,d	-2.3	-9.3	-4.1	-11.5	-20.5	-27.2	-39.2	
Facade 03	Leq,d	-0.3	-8.0	-2.0	-8.9	-20.3	-27.5	-39.7	
Facade 04	Leq,d	-0.4	-5.9	-2.5	-10.9	-24.4	-32.5	-44.5	
Roof 01	Leq,d	3.3	-4.6	1.9	-6.2	-19.4	-27.6	-40.5	
Transmissive area 01	Leq,d	48.6	35.8	44.2	42.8	41.5	38.6	29.5	
Transmissive area 01	Leq,d	27.9	17.5	24.2	22.2	19.0	16.3	7.6	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 57.6 dB(A) Sigma(Leq,d) 0.0 dB(A)									
Facade 01	Leq,d	7.8	-1.6	5.9	1.3	-9.5	-15.3	-25.6	
Facade 02	Leq,d	9.0	0.7	7.0	1.9	-9.3	-15.7	-26.5	
Facade 03	Leq,d	-15.5	-21.3	-17.5	-25.3	-35.1	-38.6	-51.4	
Facade 04	Leq,d	6.2	-1.2	4.3	-1.8	-13.7	-21.0	-32.9	
Roof 01	Leq,d	8.0	-2.0	6.4	0.9	-10.9	-18.0	-29.6	
Transmissive area 01	Leq,d	33.3	20.4	26.0	24.1	25.0	29.7	20.2	
Transmissive area 01	Leq,d	57.6	42.1	51.4	52.8	51.2	49.4	42.1	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 46.6 dB(A) Sigma(Leq,d) 0.0 dB(A)									
Facade 01	Leq,d	-21.1	-26.6	-23.0	-31.7	-44.9	-52.5	-65.6	
Facade 02	Leq,d	-1.2	-7.4	-4.0	-8.1	-16.5	-21.8	-33.0	
Facade 03	Leq,d	-5.3	-11.4	-8.0	-12.7	-20.6	-25.7	-36.4	
Facade 04	Leq,d	-8.5	-14.4	-10.4	-19.1	-32.6	-40.1	-52.9	
Roof 01	Leq,d	-1.9	-11.8	-3.5	-9.4	-21.0	-26.6	-37.8	
Transmissive area 01	Leq,d	46.6	31.8	37.4	40.0	41.6	40.7	33.0	
Transmissive area 01	Leq,d	24.5	16.3	21.2	18.2	13.9	11.0	1.4	

Costco Visalia CA
Contribution level - Situation 2 - IDC 100HP Pred@60Hz + Lined

Source	Source ty	Leq,d dB(A)	A dB	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 48.6 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	3.3	0.0	
Facade 01	Area	-17.3	0.0	
Transmissive area 01	Area	27.9	0.0	
Facade 02	Area	-2.3	0.0	
Facade 03	Area	-0.3	0.0	
Transmissive area 01	Area	48.6	0.0	
Facade 04	Area	-0.4	0.0	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 57.6 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	8.0	0.0	
Facade 01	Area	7.8	0.0	
Transmissive area 01	Area	57.6	0.0	
Facade 02	Area	9.0	0.0	
Facade 03	Area	-15.5	0.0	
Transmissive area 01	Area	33.3	0.0	
Facade 04	Area	6.2	0.0	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 46.6 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	-1.9	0.0	
Facade 01	Area	-21.1	0.0	
Transmissive area 01	Area	24.5	0.0	
Facade 02	Area	-1.2	0.0	
Facade 03	Area	-5.3	0.0	
Transmissive area 01	Area	46.6	0.0	
Facade 04	Area	-8.5	0.0	

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3rd octave spectra of the sources in dB(A) - Situation 2 - IDC 100HP Pred@60Hz + Lined + 10' CMU -

Name	l or A	Li	R'w	L'w	Lw	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	
	m,m²	dB(A)	dB	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Roof 01	247.00	79.3	57.0	29.8	53.8	38.3	38.3	38.3	47.4	47.4	47.4	42.0	42.0	42.0	29.9	29.9	29.9	24.0	24.0	24.0	14.5	14.5	14.5	
Facade 01	11.80	80.5	57.0	30.9	41.7	25.8	25.8	25.8	35.3	35.3	35.3	30.0	30.0	30.0	17.9	17.9	17.9	11.9	11.9	11.9	2.1	2.1	2.1	
Transmissive area 01	10.95	80.5	0.0	80.5	90.9	69.4	69.4	69.4	81.0	81.0	81.0	81.7	81.7	81.7	78.6	78.6	78.6	76.5	76.5	76.5	69.7	69.7	69.7	
Facade 02	133.00	79.4	57.0	30.0	51.2	36.0	36.0	36.0	44.9	44.9	44.9	39.4	39.4	39.4	27.3	27.3	27.3	21.3	21.3	21.3	11.7	11.7	11.7	
Facade 03	11.80	79.9	57.0	30.4	41.1	26.3	26.3	26.3	34.8	34.8	34.8	29.0	29.0	29.0	17.4	17.4	17.4	11.8	11.8	11.8	2.5	2.5	2.5	
Transmissive area 01	10.95	81.1	0.0	81.1	91.5	70.4	70.4	70.4	81.5	81.5	81.5	82.0	82.0	82.0	79.4	79.4	79.4	77.8	77.8	77.8	71.6	71.6	71.6	
Facade 04	133.00	79.4	57.0	30.0	51.2	36.0	36.0	36.0	44.9	44.9	44.9	39.4	39.4	39.4	27.3	27.3	27.3	21.3	21.3	21.3	11.7	11.7	11.7	

Costco Visalia CA
Contribution spectra - Situation 3 - IDC 100HP Pred@55Hz - SP

Source	Time slice	Sum dB(A)	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 47.6 dB(A) Sigma(Leq,d) 0.0 dB(A)											
Facade 01	Leq,d	-14.6	-16.2	-27.7	-21.0	-28.3	-42.0	-49.4	-62.1	-80.1	
Facade 02	Leq,d	1.4	-0.9	-11.5	-4.0	-10.6	-20.7	-27.6	-39.9	-57.6	
Facade 03	Leq,d	1.9	-1.6	-10.7	-2.3	-8.2	-19.9	-27.3	-39.7	-54.8	
Facade 04	Leq,d	4.1	2.6	-8.1	-2.7	-10.3	-24.3	-32.8	-45.1	-60.0	
Roof 01	Leq,d	5.2	2.1	-7.4	0.9	-6.5	-20.1	-28.8	-42.0	-59.2	
Transmissive area 01	Leq,d	47.6	27.8	32.7	43.0	42.3	40.6	37.5	28.3	11.0	
Transmissive area 01	Leq,d	25.8	11.7	13.9	22.0	20.5	16.3	14.1	5.2	-14.5	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 55.4 dB(A) Sigma(Leq,d) 0.0 dB(A)											
Facade 01	Leq,d	7.2	2.4	-5.3	3.6	-0.5	-11.6	-17.9	-28.4	-42.5	
Facade 02	Leq,d	10.3	6.1	-2.2	6.5	1.4	-10.4	-17.3	-28.3	-41.9	
Facade 03	Leq,d	-11.1	-12.7	-24.2	-17.9	-24.7	-35.1	-38.4	-51.3	-70.3	
Facade 04	Leq,d	8.2	4.9	-3.8	3.7	-1.5	-13.6	-21.3	-33.4	-48.4	
Roof 01	Leq,d	8.6	3.6	-4.9	5.4	0.6	-11.6	-19.2	-31.1	-46.0	
Transmissive area 01	Leq,d	32.1	15.1	17.2	24.6	23.1	24.1	28.5	19.0	-2.9	
Transmissive area 01	Leq,d	55.3	31.9	38.2	48.9	50.8	48.9	46.8	39.3	23.3	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 45.7 dB(A) Sigma(Leq,d) 0.0 dB(A)											
Facade 01	Leq,d	-17.6	-18.8	-30.3	-25.3	-33.6	-47.7	-55.7	-68.8	-89.3	
Facade 02	Leq,d	1.3	-1.5	-10.1	-4.6	-8.0	-16.7	-22.5	-33.8	-50.4	
Facade 03	Leq,d	-3.4	-7.1	-14.2	-8.3	-11.9	-20.2	-25.5	-36.4	-51.3	
Facade 04	Leq,d	-4.4	-6.1	-17.0	-10.9	-18.8	-32.8	-40.7	-53.7	-72.0	
Roof 01	Leq,d	-0.8	-5.1	-14.5	-4.3	-9.6	-21.7	-27.6	-39.1	-56.0	
Transmissive area 01	Leq,d	45.7	22.8	28.7	36.1	39.5	40.8	39.8	31.9	14.8	
Transmissive area 01	Leq,d	22.5	10.3	12.6	19.0	16.5	11.9	8.6	-1.2	-23.6	

Costco Visalia CA
Contribution level - Situation 3 - IDC 100HP Pred@55Hz - SP

Source	Source ty	Leq,d dB(A)	A dB	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 47.6 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	5.2	0.0	
Facade 01	Area	-14.6	0.0	
Transmissive area 01	Area	25.8	0.0	
Facade 02	Area	1.4	0.0	
Facade 03	Area	1.9	0.0	
Transmissive area 01	Area	47.6	0.0	
Facade 04	Area	4.1	0.0	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 55.4 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	8.6	0.0	
Facade 01	Area	7.2	0.0	
Transmissive area 01	Area	55.3	0.0	
Facade 02	Area	10.3	0.0	
Facade 03	Area	-11.1	0.0	
Transmissive area 01	Area	32.1	0.0	
Facade 04	Area	8.2	0.0	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 45.7 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	-0.8	0.0	
Facade 01	Area	-17.6	0.0	
Transmissive area 01	Area	22.5	0.0	
Facade 02	Area	1.3	0.0	
Facade 03	Area	-3.4	0.0	
Transmissive area 01	Area	45.7	0.0	
Facade 04	Area	-4.4	0.0	

Costco Visalia CA
3rd octave spectra of the sources in dB(A) - Situation 3 - IDC 100HP Pred@55Hz - SP

Name	l or A	Li	R'w	L'w	Lw	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz	
	m,m²	dB(A)	dB	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Roof 01	247.00	78.7	57.0	29.8	53.7	41	41.2	41.2	35.6	35.6	35.6	46.5	46.5	46.5	41.8	41.8	41.8	29.2	29.2	29.2	22.9	22.9	22.9	13.1	13.1	13.1	2.2	2.2	2.2	
Facade 01	11.80	78.6	57.0	29.7	40.4	28	27.9	27.9	22.3	22.3	22.3	33.3	33.3	33.3	28.5	28.5	28.5	16.0	16.0	16.0	9.6	9.6	9.6	-0.5	-0.5	-0.5	-13.1	-13.1	-13.1	
Transmissive area 01	10.95	78.4	0.0	78.4	88.8	57	57.4	57.4	65.7	65.7	65.7	78.7	78.7	78.7	80.0	80.0	80.0	76.5	76.5	76.5	74.2	74.2	74.2	67.1	67.1	67.1	52.7	52.7	52.7	
Facade 02	133.00	79.2	57.0	30.3	51.5	39	39.0	39.0	33.4	33.4	33.4	44.4	44.4	44.4	39.6	39.6	39.6	27.0	27.0	27.0	20.7	20.7	20.7	10.9	10.9	10.9	-0.3	-0.3	-0.3	
Facade 03	11.80	80.1	57.0	30.9	41.6	29	29.0	29.0	23.4	23.4	23.4	34.4	34.4	34.4	29.8	29.8	29.8	17.7	17.7	17.7	11.9	11.9	11.9	2.5	2.5	2.5	-7.2	-7.2	-7.2	
Transmissive area 01	10.95	80.2	0.0	80.2	90.6	59	58.8	58.8	67.2	67.2	67.2	80.2	80.2	80.2	81.4	81.4	81.4	78.5	78.5	78.5	76.8	76.8	76.8	70.4	70.4	70.4	58.7	58.7	58.7	
Facade 04	133.00	79.2	57.0	30.3	51.5	39	39.0	39.0	33.4	33.4	33.4	44.4	44.4	44.4	39.6	39.6	39.6	27.0	27.0	27.0	20.7	20.7	20.7	10.9	10.9	10.9	-0.3	-0.3	-0.3	

Costco Visalia CA
Contribution spectra - Situation 4 - IDC 100HP Pred@55Hz

Source	Time slice	Sum dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 42.7 dB(A) Sigma(Leq,d) 0.0 dB(A)									
Facade 01	Leq,d	-23.3	-30.2	-24.9	-32.8	-46.1	-53.1	-65.5	
Facade 02	Leq,d	-7.8	-15.3	-9.5	-17.0	-26.4	-33.0	-45.0	
Facade 03	Leq,d	-6.2	-13.8	-7.9	-14.9	-26.2	-33.3	-45.5	
Facade 04	Leq,d	-5.7	-11.3	-7.8	-15.9	-29.3	-37.4	-49.6	
Roof 01	Leq,d	-2.8	-10.6	-4.2	-12.3	-25.4	-33.7	-46.6	
Transmissive area 01	Leq,d	42.6	29.9	38.4	36.9	35.5	32.6	23.5	
Transmissive area 01	Leq,d	21.8	11.5	18.3	16.2	12.4	10.5	1.8	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 51.4 dB(A) Sigma(Leq,d) 0.0 dB(A)									
Facade 01	Leq,d	1.5	-7.9	-0.4	-5.0	-15.7	-21.6	-31.9	
Facade 02	Leq,d	2.9	-5.6	1.1	-4.7	-15.9	-22.4	-33.3	
Facade 03	Leq,d	-21.4	-27.2	-23.5	-31.3	-41.2	-44.3	-57.0	
Facade 04	Leq,d	0.2	-7.2	-1.8	-7.7	-19.4	-26.6	-38.6	
Roof 01	Leq,d	1.9	-8.1	0.2	-5.2	-17.0	-24.0	-35.7	
Transmissive area 01	Leq,d	27.1	14.4	20.0	17.7	18.9	23.6	14.2	
Transmissive area 01	Leq,d	51.4	35.8	45.1	46.5	44.9	43.2	35.9	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 40.7 dB(A) Sigma(Leq,d) 0.0 dB(A)									
Facade 01	Leq,d	-27.3	-32.9	-29.2	-38.1	-51.8	-59.5	-72.2	
Facade 02	Leq,d	-7.2	-13.4	-10.0	-14.1	-22.4	-27.8	-38.9	
Facade 03	Leq,d	-11.2	-17.3	-13.9	-18.5	-26.5	-31.5	-42.3	
Facade 04	Leq,d	-14.5	-20.4	-16.4	-25.0	-38.5	-46.1	-58.9	
Roof 01	Leq,d	-7.9	-17.7	-9.5	-15.4	-27.0	-32.5	-43.7	
Transmissive area 01	Leq,d	40.6	25.9	31.5	34.1	35.6	34.8	27.1	
Transmissive area 01	Leq,d	18.5	10.2	15.2	12.2	7.9	5.1	-4.5	

Costco Visalia CA
Contribution level - Situation 4 - IDC 100HP Pred@55Hz Lined -

Source	Source ty	Leq,d dB(A)	A dB	
Receiver 1 Fl G Lr,lim dB(A) Leq,d 42.7 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	-2.8	0.0	
Facade 01	Area	-23.3	0.0	
Transmissive area 01	Area	21.8	0.0	
Facade 02	Area	-7.8	0.0	
Facade 03	Area	-6.2	0.0	
Transmissive area 01	Area	42.6	0.0	
Facade 04	Area	-5.7	0.0	
Receiver 2 Fl G Lr,lim dB(A) Leq,d 51.4 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	1.9	0.0	
Facade 01	Area	1.5	0.0	
Transmissive area 01	Area	51.4	0.0	
Facade 02	Area	2.9	0.0	
Facade 03	Area	-21.4	0.0	
Transmissive area 01	Area	27.1	0.0	
Facade 04	Area	0.2	0.0	
Receiver 3 Fl G Lr,lim dB(A) Leq,d 40.7 dB(A) Sigma(Leq,d) 0.0 dB(A)				
Roof 01	Area	-7.9	0.0	
Facade 01	Area	-27.3	0.0	
Transmissive area 01	Area	18.5	0.0	
Facade 02	Area	-7.2	0.0	
Facade 03	Area	-11.2	0.0	
Transmissive area 01	Area	40.6	0.0	
Facade 04	Area	-14.5	0.0	

Costco Visalia CA
3rd octave spectra of the sources in dB(A) - Situation 4 - IDC 100HP Pred@55Hz Lined - SP

Name	l or A	Li	R'w	L'w	Lw	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	
	m,m²	dB(A)	dB	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Roof 01	247.00	73.3	57.0	23.8	47.7	32.3	32.3	32.3	41.4	41.4	41.4	36.0	36.0	36.0	23.9	23.9	23.9	18.0	18.0	18.0	8.5	8.5	8.5	
Facade 01	11.80	74.5	57.0	24.9	35.6	19.8	19.8	19.8	29.3	29.3	29.3	24.0	24.0	24.0	11.9	11.9	11.9	5.9	5.9	5.9	-3.9	-3.9	-3.9	
Transmissive area 01	10.95	74.5	0.0	74.5	84.9	63.4	63.4	63.4	75.0	75.0	75.0	75.7	75.7	75.7	72.6	72.6	72.6	70.6	70.6	70.6	63.8	63.8	63.8	
Facade 02	133.00	73.4	57.0	24.0	45.2	30.0	30.0	30.0	38.9	38.9	38.9	33.4	33.4	33.4	21.3	21.3	21.3	15.3	15.3	15.3	5.7	5.7	5.7	
Facade 03	11.80	73.9	57.0	24.4	35.1	20.3	20.3	20.3	28.8	28.8	28.8	23.0	23.0	23.0	11.4	11.4	11.4	5.8	5.8	5.8	-3.4	-3.4	-3.4	
Transmissive area 01	10.95	75.1	0.0	75.1	85.5	64.4	64.4	64.4	75.6	75.6	75.6	76.0	76.0	76.0	73.3	73.3	73.3	71.8	71.8	71.8	65.6	65.6	65.6	
Facade 04	133.00	73.4	57.0	24.0	45.2	30.0	30.0	30.0	38.9	38.9	38.9	33.4	33.4	33.4	21.3	21.3	21.3	15.3	15.3	15.3	5.7	5.7	5.7	