

CHRISTOPHER JEAN & ASSOCIATES, INC.
ACOUSTICAL CONSULTING SERVICES

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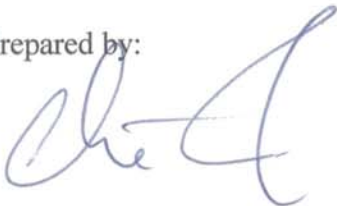
FINAL ACOUSTICAL ANALYSIS

ARTIVAN DANCE AND BANQUET CENTER

3740 PARK SIERRA DRIVE

CITY OF RIVERSIDE

Prepared by:



Christopher Jean, INCE

Prepared for:

Mr. David Vanderzell
THVS Investments, LLC
19689 Allenhurst Sreet
Riverside, California 92508

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SUMMARY

This analysis has been completed to determine the exterior and interior noise exposure and the necessary noise reduction measures for the proposed Artivan Dance and Banquet Center project located at 3740 Park Sierra Drive in the City of Riverside. The renovated project building will host various dance class functions including, private lessons (2 to 10 students), group lessons (20 to 30 students), and practice/social sessions (40 to 100 people). Pre-recorded music will be used for most of the dance class functions. The project will also host private parties and banquets for groups of up to 250 people. Pre-recorded and/or live music could be used for party and banquet functions.

The analysis has found that project noise levels from the interior of the project building will remain in compliance with both the daytime and ambient corrected nighttime noise ordinance limits of the City of Riverside at all of the surrounding land uses.

A. PROJECT DESIGN FEATURES

The following project design features will ensure that the project building envelope continues to produce at least 23.5 dBA of interior-to-exterior noise reduction and remain in compliance with the City noise limits at all of the surrounding land uses.

1. All exterior windows on the project building are planned to be in fixed frames.
2. All exterior doors shall be equipped with automatic door closers to ensure that doors remain closed when not in actual use.
3. Integral door stops or other means of propping doors open shall be prohibited.
4. The use of sub-woofers inside the project building shall be strictly prohibited.

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1.0 INTRODUCTION

This report presents the results of a noise impact and design study of the proposed Artivan Dance and Banquet Center project located at 3740 Park Sierra Drive in the City of Riverside. This report includes a discussion of the expected exterior community noise environment and the recommendations for control of project noise at the surrounding land uses.

A vicinity map showing the general location of the project site is presented in Exhibit 1 – Site Location Map. An aerial photograph of the existing project site and its surroundings is shown on Exhibit 2. The project floor plan is shown on Exhibit 3. The project consists of the remodel of an existing restaurant building.

The project will host various dance functions including, private lessons (2 to 10 students), group lessons (20 to 30 students), and practice/social sessions (40 to 100 people). Pre-recorded music will be used for most of these functions. The project will also host private parties and banquets for groups up to 250 people. Pre-recorded and live music could be used for party and banquet functions.

2.0 APPLICABLE NOISE CRITERIA

The City of Riverside requires all projects to conform to the following.

7.25.010 - Exterior sound level limits.

- A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceed the following:
1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
 2. The exterior noise standard of the applicable land use category, plus five

- decibels, for a cumulative period of more than 15 minutes in any hour; or
3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
 4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
 5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.
- C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.
- D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

TABLE 7.25.010AEXTERIOR NOISE STANDARDS

<u>LAND USE CATEGORY</u>	<u>TIME PERIOD</u>	<u>NOISE LEVEL</u>
Residential	Night (10 p.m. to 7 a.m.)	45 dBA
	Day (7 a.m. to 10 p.m.)	55 dBA
Office/Commercial	Anytime	65 dBA
Industrial	Anytime	70 dBA
Community Support	Anytime	60 dBA
Public Recreation Facility	Anytime	65 dBA
Nonurban	Anytime	70 dBA

7.30.015 - Interior sound level limits.

- A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:
1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
 2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;
 3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum

allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

- C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

TABLE 7.30.015

INTERIOR NOISE STANDARDS

<u>LAND USE CATEGORY</u>	<u>TIME PERIOD</u>	<u>NOISE LEVEL</u>
Residential	Night (10 p.m. to 7 a.m.)	35 dBA
	Day (7 a.m. to 10 p.m.)	45 dBA
School	7 a.m to 10 p.m. (while school is in session)	45 dBA
Hospital	Anytime	45 dBA

3. EXISTING AMBIENT NOISE LEVELS

The existing ambient noise environment is a mixture of noise from the SR91 Freeway, nearby railroad operations, Magnolia Avenue, Park Sierra Drive, parking lot activities, and sounds associated with the various buildings in proximity to the project site. Multiple daytime and nighttime ambient noise measurements were taken around the project area over the weekend of August 30 through September 1, and again over the weekend of September 20 through 22. It was observed that the freeway tends to set the area minimum ambient noise levels both day and night.

City staff requested that the ambient noise measurements be reported using some type of time-stamped graphic printout. Since most professional sound level meters provide only tabular printouts that require the reader to pick out the correct information from an entire page of data, a smart phone integrating sound level meter application was used to perform the ambient noise measurements and provide the desired screen shots captured for each set of measurement data. The accuracy of the phone app was verified by comparing side-by-side measurements between the app and a Larson-Davis Model 700 Type 2 integrating sound level meter field-calibrated using a Bruel & Kjaer Type 4230 Acoustic Calibrator. The app was found to report values within 0.5 dBA of the Larson-Davis meter. The August 30 through September 1 screen shots are

contained in Appendix 1. The September 20 through 22 screen shots are contained in Appendix 2. The measurement screen shots include the time of day the measurement was taken, the average noise level (AVG) over the measurement duration, plus the minimum and maximum levels occurring during the measurement. The measurement locations are shown on Exhibit 4. The ambient measurement location descriptions and the single lowest measured average ambient noise levels are listed in Table 1.

TABLE 1

LOWEST MEASURED AVERAGE DBA AMBIENT NOISE LEVELS

<u>LOCATION</u>	<u>DAYTIME</u>	<u>NIGHTTIME</u>
1. North PL of Red Lobster Bldg.	56.2	51.8
2. West PL of Kaiser Facility	60.3	51.6
3. North PL of Mixed-Use Parcel	53.8	50.7

The Appendix 1 and Appendix 2 screen shots used for the ambient noise level values shown in Table 1 have been labeled for clarity and ease of identification. The lowest single-measurement average noise levels represent the most conservative reporting of the existing ambient noise conditions. The lowest measured average ambient noise levels at the Red Lobster and Kaiser Facility are below the corresponding Commercial and Community Support use Table 7.25.010A exterior noise limits. Thus, no ambient noise level corrections can be applied to the Table 7.25.010A noise limits for these properties. The most recently measured average ambient noise levels at the Mixed Use zoned parcel exceeds the baseline residential nighttime exterior noise limit of 45 dBA. According to Section 7.25.010 - Exterior sound level limits, if the measured ambient noise level exceeds the base noise limit, then the measured ambient noise level becomes the base noise limit. Thus, the ambient corrected base exterior noise limit at the Mixed-Use parcel becomes 50.7 dBA.

Uniform Building Code compliant structures will provide around 10 dBA of exterior-to-interior noise reduction with windows opened for ventilation. If future residents on the Mixed Use parcel choose to leave their windows open for ventilation, the measured 50.7 dBA ambient noise levels on the exterior of the building will also exceed the residential nighttime interior noise limit of 35. According to Section 7.30.015 - Interior sound level limits, Paragraph B, if the measured ambient noise level exceeds the base noise limit, then the measured ambient noise level becomes the base noise limit. Thus, the ambient corrected base interior noise limit at the Mixed-Use parcel becomes 40.7 dBA.

4.0 SURROUNDING LAND USES

4.1 RESIDENTIAL

The nearest existing residential uses to the project site are across Magnolia Street (860 feet), La Sierra Avenue (1,250 feet), across Polk Street (1,500 feet) and across Indiana Avenue (2,200 feet). All of the existing residential uses are in near proximity to major noise sources (roadways) and benefit from building development (shielding) between the project site and the residential uses. However, City staff has specified the existing parking lot use immediately south of the Red Lobster restaurant, but zoned for future mixed-use, as the nearest residential "use" to the project site. This parking lot is about 165 feet from the project building as shown on Exhibit 5.

4.2 COMMUNITY SUPPORT

Exhibit 6 shows a Kaiser Hospital facility east of the project site immediately across Park Sierra Drive. The project building is about 145 feet from the nearest Kaiser facility property line and about 500 feet from the nearest hospital building.

4.3 OFFICE/COMMERCIAL

The project site is located within an existing commercial retail center. Exhibit 7 shows the nearest commercial use to the project building is a Red Lobster restaurant. The north parcel line of the Red Lobster tenant space is approximately 30 feet south of the project building. The east parcel line of a fitness center tenant space lies approximately 30 feet to the west of the project building. Additional restaurant buildings lie about 140 feet to the north.

5.0 PROJECT SOURCE NOISE LEVELS

The project will generate exterior noise typical of any commercial building including, rooftop mechanical equipment, parking lot activities, patron voices and various deliveries. Most of these noise sources will be similar to, and indistinguishable from, the various existing roadway, commercial use and hospital noise sources surrounding the project. The only distinct project noise source will be pre-recorded and/or live music coming from the interior of the project building.

Depending on the function, pre-recorded music levels as high as 85 dBA on the interior of the project building will occur for private dance lessons with music levels up to 95 dBA for

private parties. Live music sound levels could produce similar levels depending on the performance type and/or ensemble. Interior music levels higher than noted tend to chase patrons/guests out of the building, so the situation is somewhat self-policing.

6.0 BUILDING ENVELOPE NOISE REDUCTION

To more accurately determine how much project sound will escape the building, measurements were performed to verify how much interior-to-exterior noise reduction the existing project building provides. The measurement procedure consisted of setting up a high quality sound system in each of the two main patron areas of the building, playing both pre-recorded music and "pink noise" (an industry standard broadband reference sound source with the characteristic of equal amplitude per frequency) through the system at high output, using a Larson-Davis Model 700 type 2 sound level meter to measure the interior sound levels, then the exterior sound levels, and finally compare the two sets of values. The larger front patron area with the solarium patio was found to produce 23.5 dBA of interior-to-exterior noise reduction. The smaller rear patron area was found to produce 29.5 dBA of interior-to-exterior noise reduction.

7.0 PROJECT NOISE LEVELS AT NEAREST LAND USES

The existing structure has been found to produce at least 23.5 dBA of interior-to-exterior noise with doors closed and fixed windows. This means that interior sound levels as high as 95 dBA would be reduced to no more than 71.5 dBA at a reference distance of 10 feet outside the project building. Using a propagation rate of -6 dBA per doubling of distance ($20 \log \frac{\text{Distance}_{\text{ref}}}{\text{Distance}_{\text{actual}}} = \text{dBA correction}$), the project music levels were projected out to the nearest property lines.

The project music levels at the north property line of the Red Lobster restaurant 30 feet south of the project, as well as at the east parcel line of the fitness center 30 feet to the west, will be 64.3 dBA. Such levels will comply with the Office/Commercial baseline exterior noise limit of 65 dBA. Assuming that the Uniform Building Code constructed Red Lobster building also keeps its doors closed and retains its existing fixed windows, project music levels will be reduced at least another 20 dBA on the interior of the Red Lobster building to 42.5 dBA (distance of 40 feet from project building). This level will be well below normal conversation levels inside the Red Lobster building and should not interfere with normal business operations.

Projecting the project music levels out to the nearest hospital property line results in a level of 48.3 dBA. This level will comply with the Community Support baseline exterior noise limit of 60 dBA. Projecting the project music levels out the nearest hospital building results in an exterior level of 37.5 dBA with project doors closed and fixed windows. Assuming that the UBC compliant hospital building also keeps its doors closed and retains its existing fixed windows, the existing hospital building will provide at least an additional 20 dBA of exterior-to-

interior noise reduction the project music levels to no more than 17.5 dBA on the interior of the hospital. Such levels will comply with the Community Support baseline interior noise limit of 45 dBA, will be well below the typical hospital interior ambient and will not interfere with normal hospital operations.

Projecting the project music levels out to the Mixed Use property line results in a project music level of 47.2 dBA with project doors closed and fixed windows. Such levels will comply with the Residential baseline daytime exterior noise limit of 55 dBA as well as the ambient adjusted nighttime exterior noise limit of 50.7 dBA. Assuming that the future Mixed Use buildings will provide an additional 10 dBA of exterior-to-interior noise reduction with doors and windows open, the project music levels will be reduced to 37.2 dBA on the interior of the structures. Such levels will comply with the Residential baseline daytime interior noise limit of 45 dBA as well as the ambient adjusted nighttime interior noise limit of 40.7 dBA. The project music levels would be similar to typical residential interior ambient conditions but would not interfere with normal residential living activity.

8.0 PROJECT COMPLIANCE AT SURROUNDING LAND USES

The projected project noise levels are compared to the allowed noise ordinance limits in Table 2 on the following page.

TABLE 2

PROJECT NOISE VS. ALLOWED NOISE LEVELS (1)

<u>LOCATION</u>	<u>ALLOWED LIMITS</u>		<u>PROJECT LEVELS</u>		<u>COMPLIANCE</u>	
	<u>OUTSIDE</u>	<u>INSIDE</u>	<u>OUTSIDE</u>	<u>INSIDE</u>	<u>OUTSIDE</u>	<u>INSIDE</u>
Red Lobster Restaurant	65 dBA	N/A	61.5 dBA	39.5 dBA	YES	N/A
Kaiser Hospital Building	60 dBA	45 dBA	48.3 dBA	17.5 dBA	YES	YES
Mixed Use Parcel - Day	55 dBA	45 dBA	47.2 dBA	37.2 dBA	YES	YES
- Night	50.7 dBA	40.7 dBA	47.2 dBA	37.2 dBA	YES	YES

The results of Table 2 show that all project music levels from the interior of the project building will be below, and in substantial compliance with, all of the allowed daytime and nighttime exterior and interior noise limits at all of the surrounding commercial, hospital and residential land uses.

8.0 PROJECT DESIGN FEATURES

The following project design features will ensure that the project building envelope will produce at least 23.5 dBA of interior-to-exterior noise reduction as well as compliance with the City noise limits at all of the surrounding land uses.

1. All exterior windows on the project building are planned to be in fixed frames.
2. All exterior doors shall be equipped with automatic door closers to ensure that doors remain closed when not in actual use.
3. Integral door stops or other means of propping doors open shall be prohibited.
4. The use of sub-woofers inside the project building shall be strictly prohibited.

9.0 CONCLUSION

The analysis has found that the proposed Artivan Dance and Banquet Facility will comply with all City noise limits.

EXHIBIT 1 SITE LOCATION

Google Maps 3740 Park Sierra Dr



Map data ©2019 Google 200 ft

EXHIBIT 2 AERIAL PHOTO

Google Maps

3740 Park Sierra Dr

Artisan Dance and Banquet Center



Imagery ©2019 County of San Bernardino, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2019 Google

100 ft

**EXHIBIT 3
FLOOR PLAN**

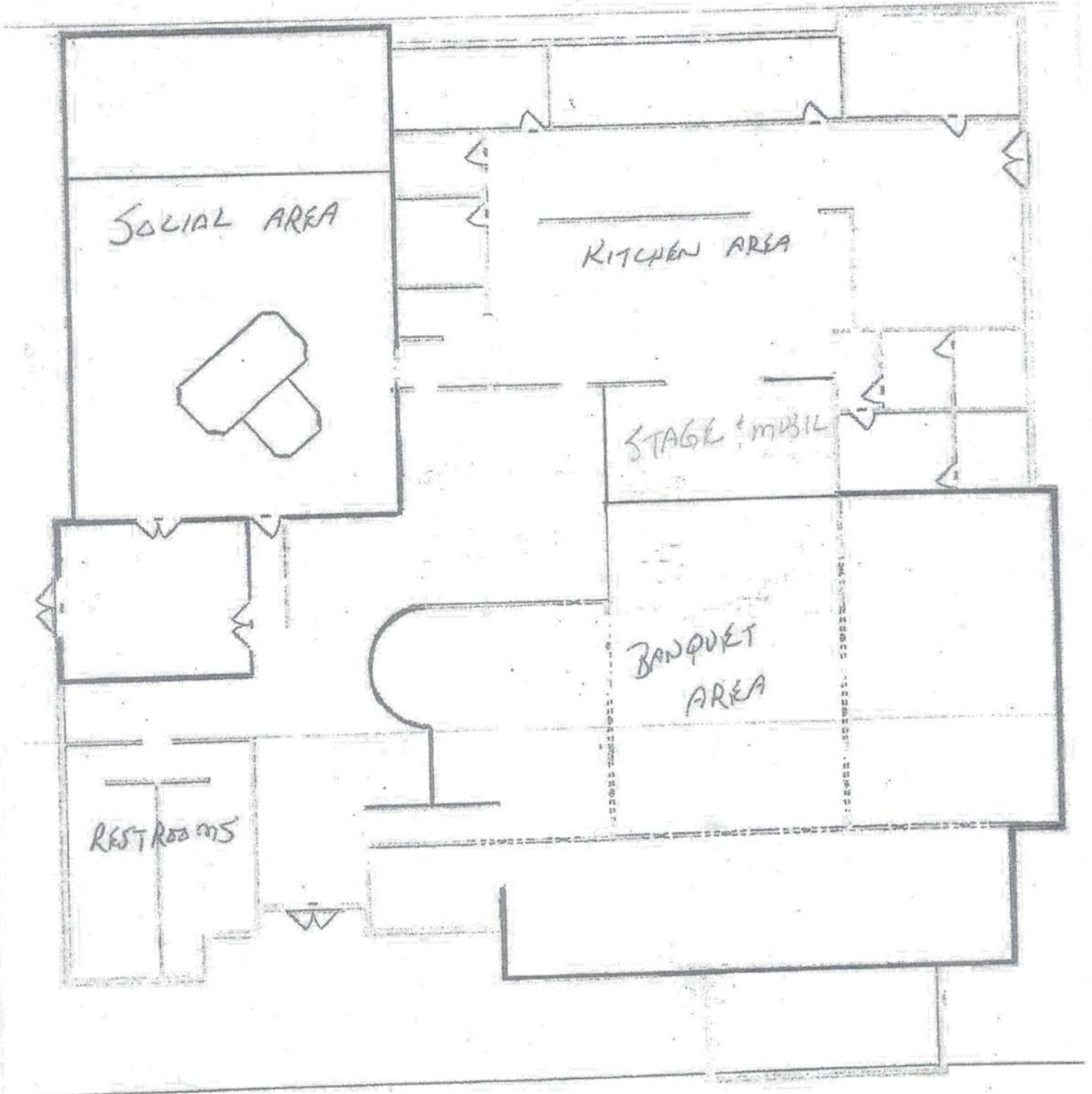
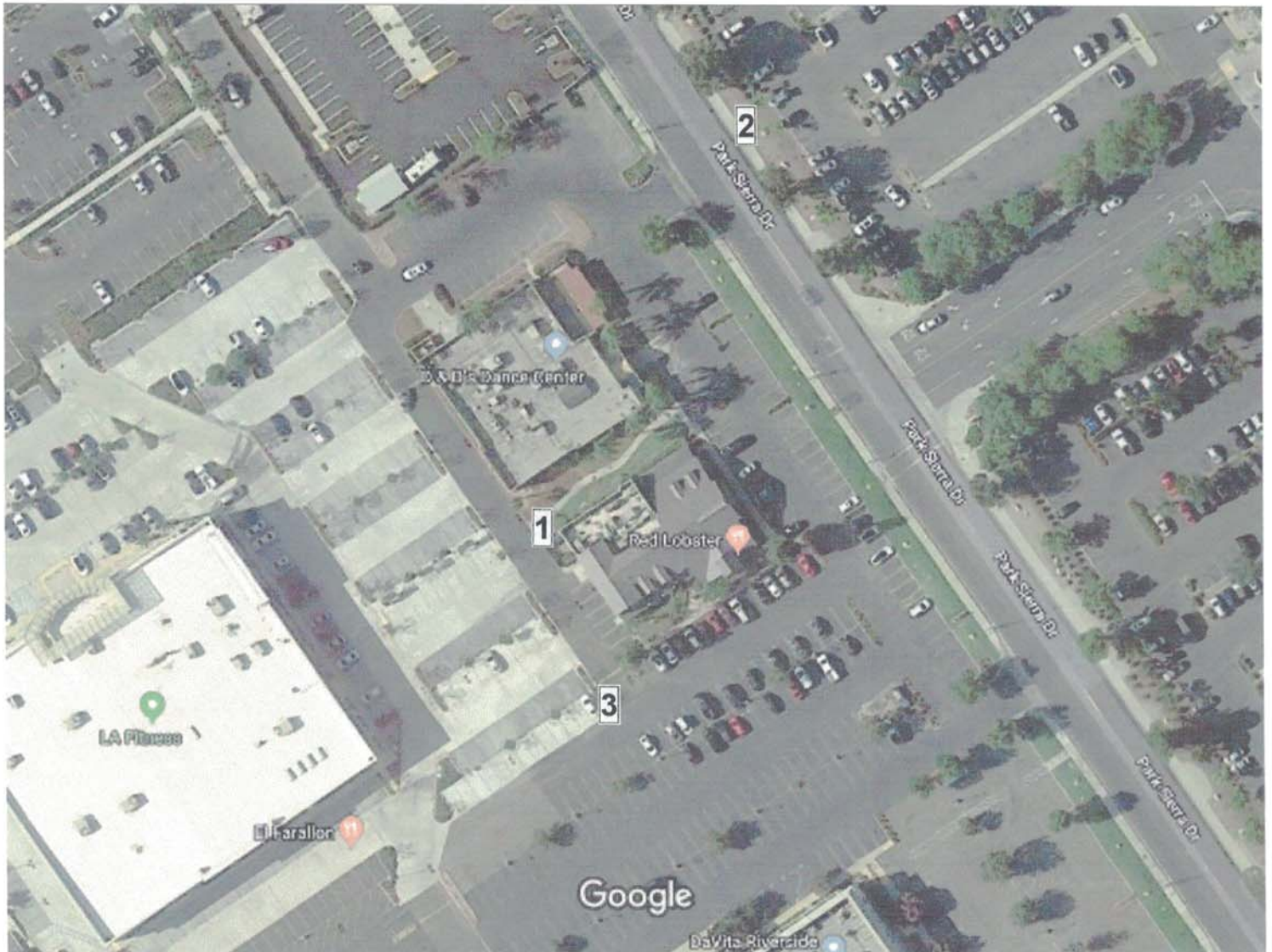


EXHIBIT 4 AMBIENT MEASUREMENT LOCATIONS

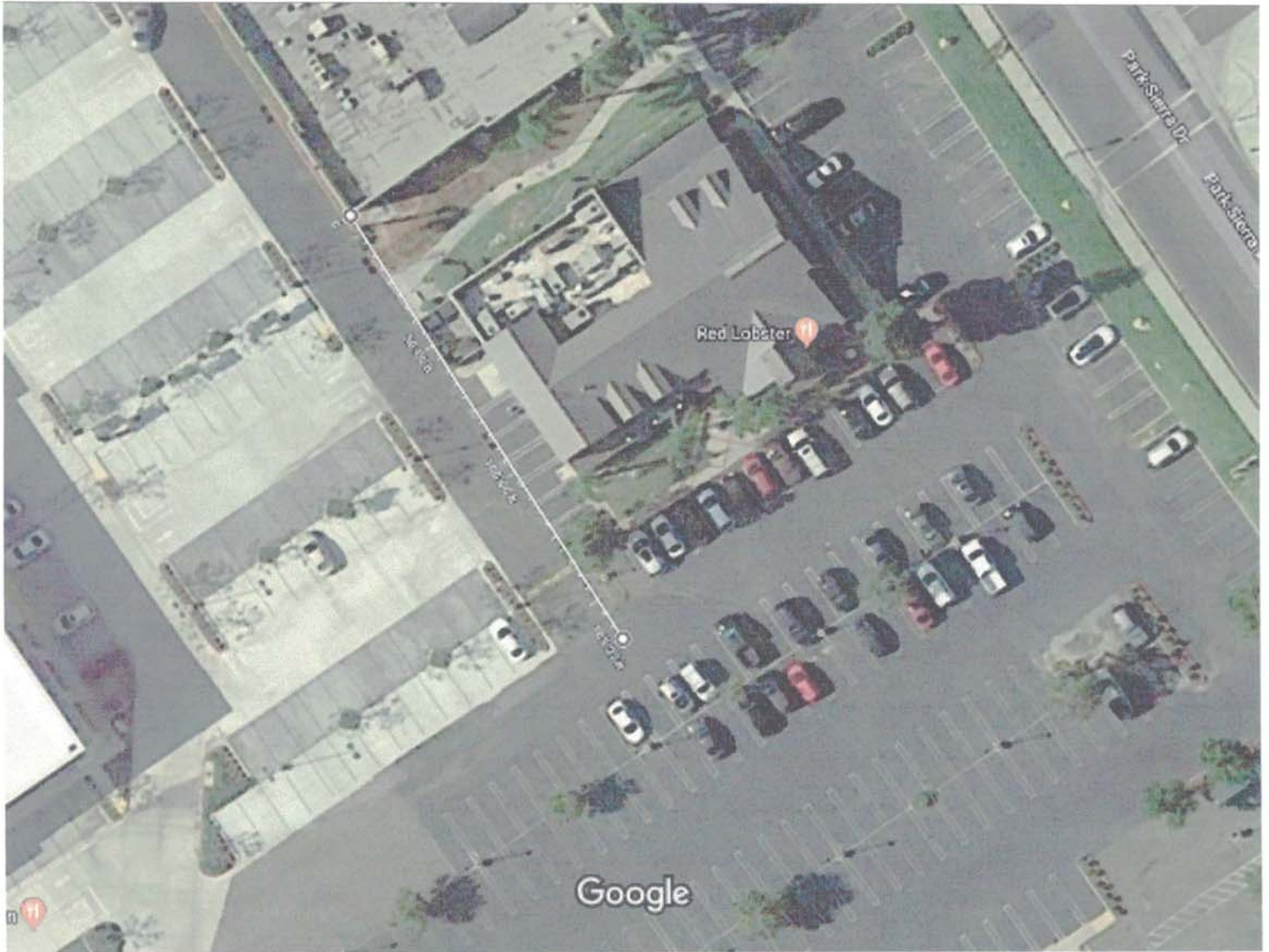
Google Maps Ambient Measurement Locations



Imagery ©2019 County of San Bernardino, Maxar Technologies, U.S. Geological Survey, Map data ©2019 Google 50 ft

EXHIBIT 5

Google Maps Distance to Mixed Use Parcel

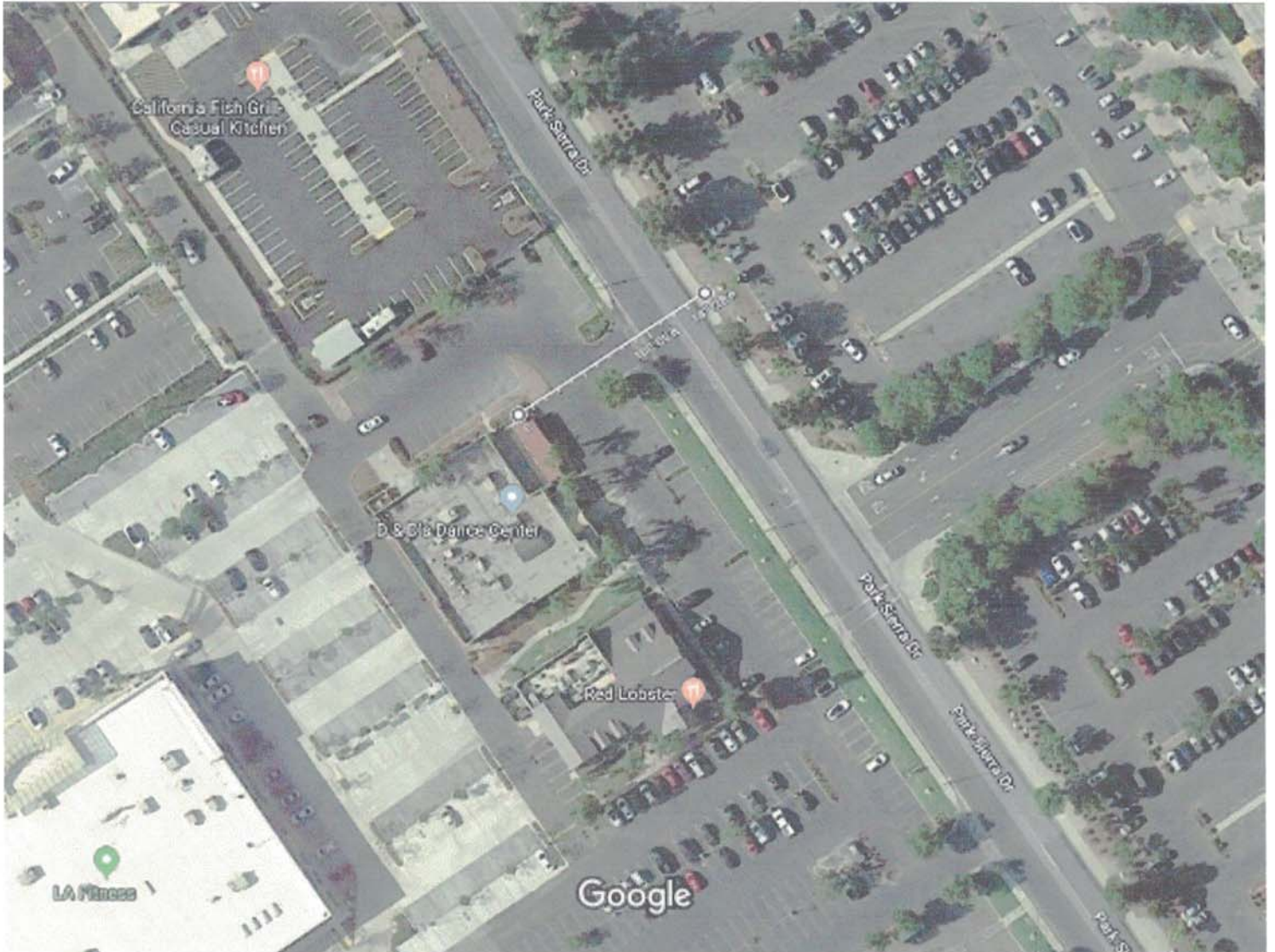


Map data ©2019 Google 20 ft

Measure distance
Total distance: 165.37 ft (50.41 m)

EXHIBIT 6

Google Maps Distance to Kaiser Facility Property Line

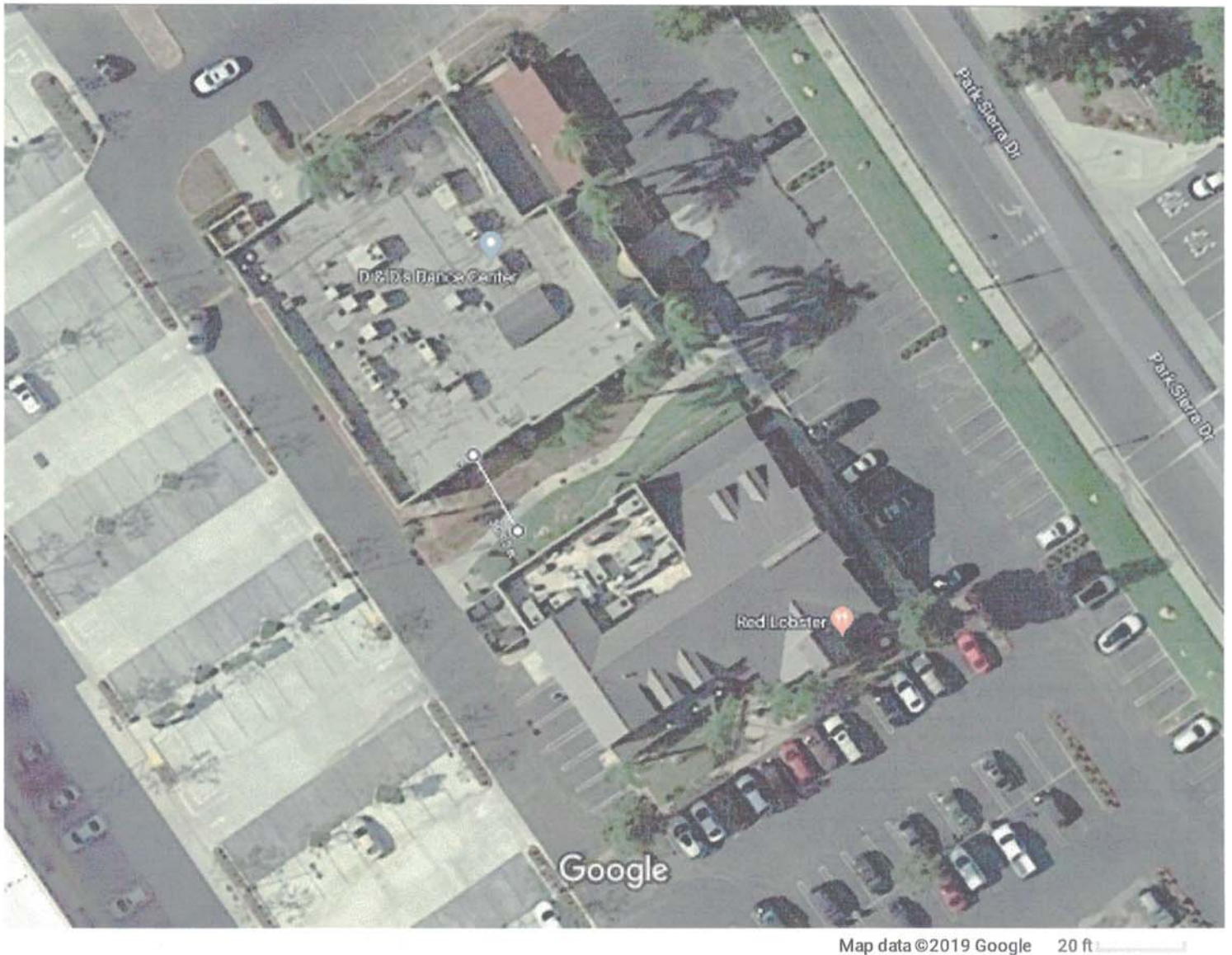


Imagery ©2019 County of San Bernardino, Maxar Technologies, U.S. Geological Survey, Map data ©2019 Google 50 ft

Measure distance
Total distance: 145.28 ft (44.28 m)

EXHIBIT 7

Google Maps Distance to Red Lobster PL



Measure distance
Total distance: 30.02 ft (9.15 m)