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SPIRIT OF JOY CHURCH MUP
PRELIMINARY NOISE ANALYSIS
COUNTY OF SAN DIEGO, CALIFORNIA

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SPIRIT OF JOY CHURCH MUP
PRELIMINARY NOISE ANALYSIS
COUNTY OF SAN DIEGO, CALIFORNIA

1.0 EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed Spirit of Joy Church Mixed Use Development. The project site is proposed to include a sanctuary, fellowship hall, two administration/classroom buildings, a utility building, two courtyards and a play area on a total of 8.54 acres. The Project site is located in the unincorporated community of Ramona, on the southwest corner of Highland Valley Road and Julian Road (SR-67) in the County of San Diego.

The purpose of this noise assessment is to evaluate the noise impacts for the project study area and to recommend noise mitigation measures, if necessary, to minimize the potential project impacts. Preliminary exterior and interior noise requirements for tentative tract map approval are presented in this report.

1.1 On-Site Noise Analysis

The results of this analysis indicate that the combination of future vehicle noise from Highland Valley Road and Julian Road is the principal source of community noise that will impact the site. Based on the future buildout traffic projections, the play area on the proposed site will experience unmitigated exterior noise levels in excess of the County of San Diego 60 dBA CNEL noise standards for transportation related noise impacts. To minimize traffic noise impacts, the project should provide the following noise mitigation measures summarized below:

Exterior Noise Mitigation

The exterior noise levels will exceed the County of San Diego 60 dBA CNEL standard at the play area. As a design measure, the project is proposing a 7-foot

high wall along the perimeter of the play area. With the incorporation of the wall, all outdoor noise sensitive land uses on the project site will meet the County of San Diego 60 dBA CNEL standard. Exhibit 1-A shows the mitigation and barrier heights required for the proposed outdoor noise sensitive land uses.

Interior Noise Mitigation

Building façade noise levels were found to be below 65 dBA for the first and second floors of all buildings adjacent to the roadways. Therefore, with the incorporation of dual glazed windows and standard construction methods, interior mitigation is not required to obtain an interior level of 50 dBA CNEL.

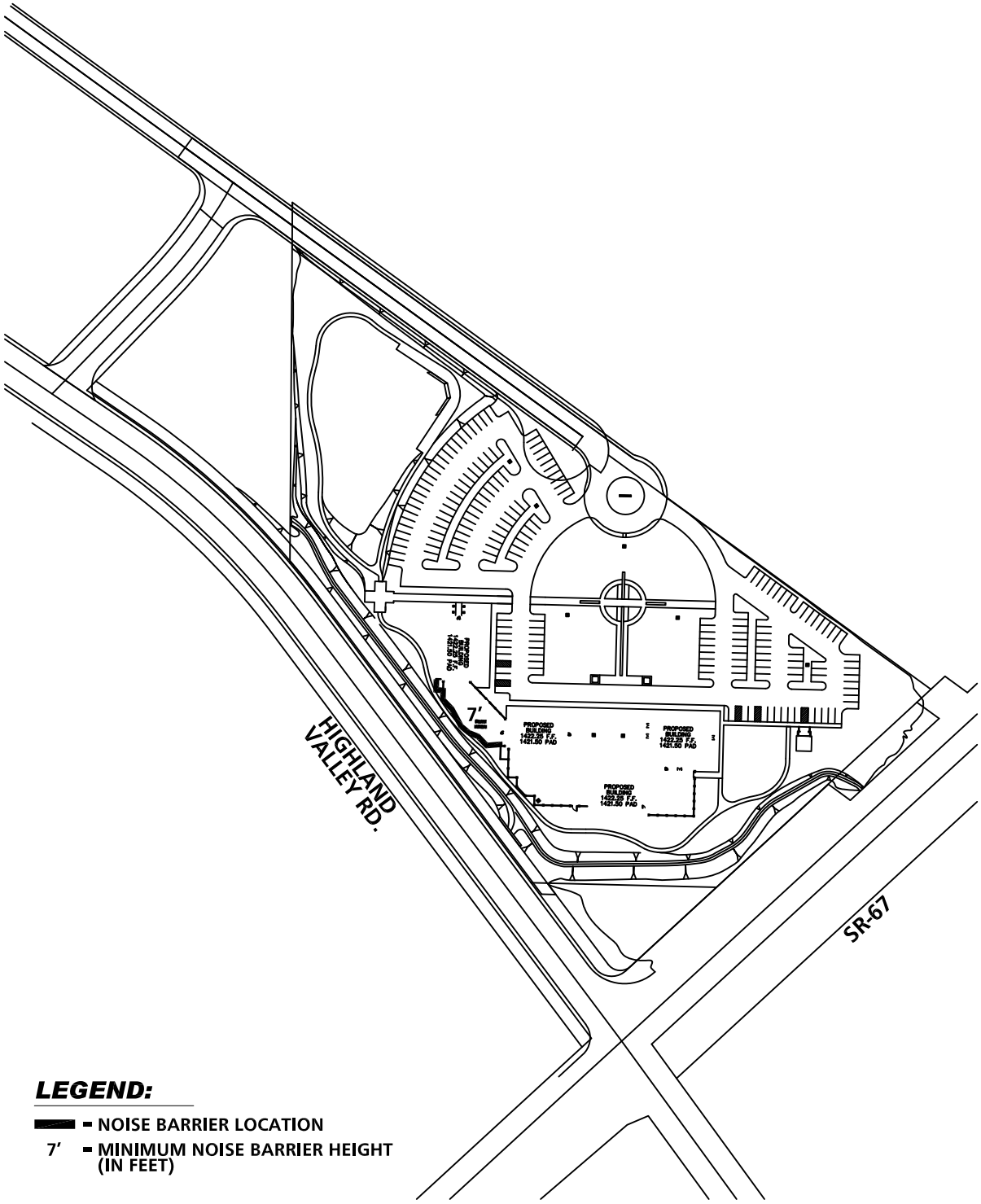
1.2 Construction Noise Analysis

Results of the analysis indicate that the project will meet the County of San Diego 75 dBA CNEL standard for grading activities at all project property lines and no mitigation is required.

If construction activities occur within 400 feet of any sensitive habitat location the noise level may be above the sensitive habitat standard of 60 dBA Leq or ambient, whichever is greater, and impacts could occur. It is recommended that a specific mitigation plan based upon the location of the identified habitat and corresponding construction schedule be identified by a County certified acoustical engineer. This mitigation plan would determine the height and location of a temporary barrier, if one is necessary. The biological mitigation plan should include noise monitoring prior to and during the beginning of the nesting/breeding season by the acoustical engineer in coordination with the Project Biologist to ensure compliance with applicable standards.

EXHIBIT 1-A

SUMMARY OF RECOMMENDATIONS



LEGEND:

- NOISE BARRIER LOCATION
- 7' = MINIMUM NOISE BARRIER HEIGHT (IN FEET)

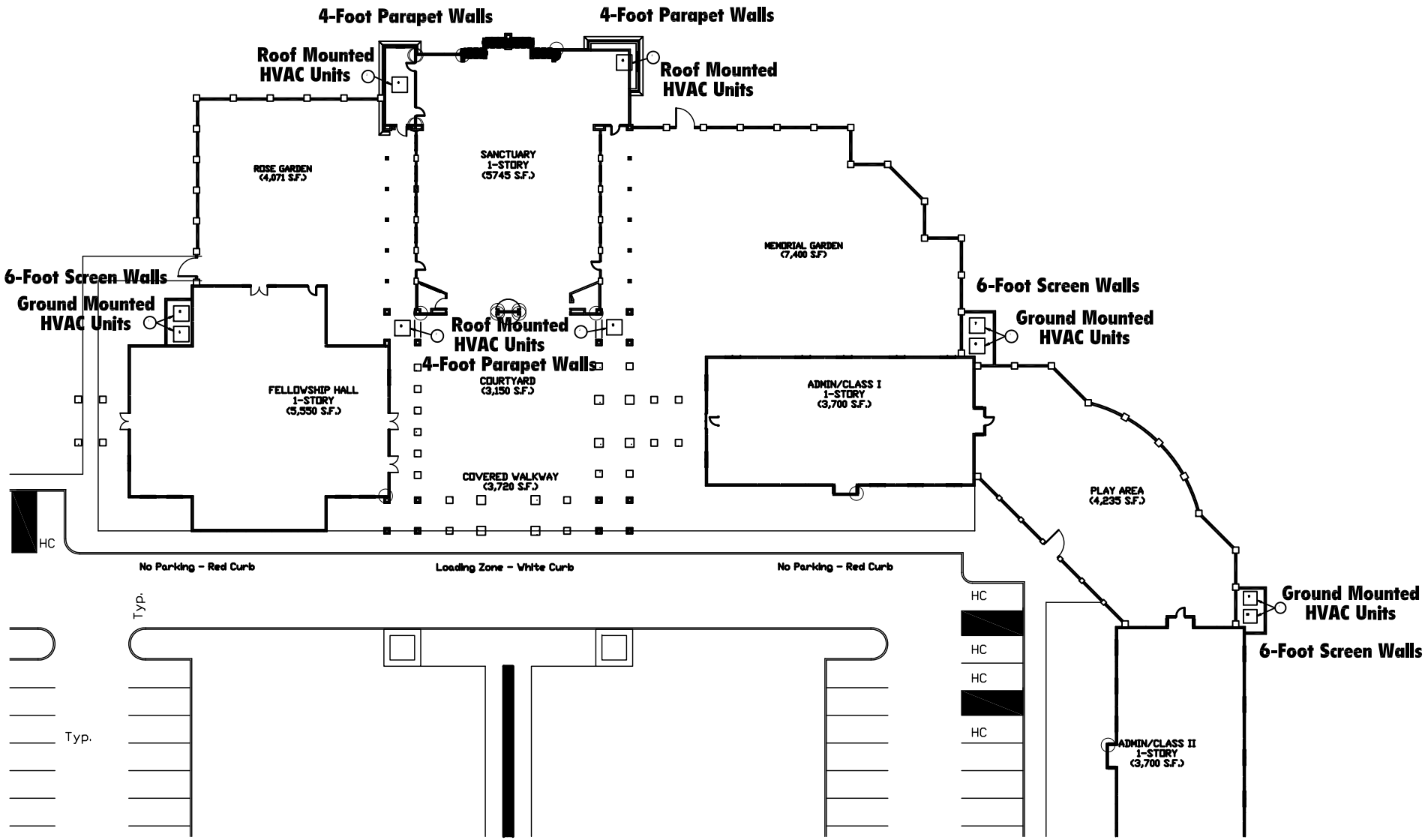
N

1.3 Project Noise Impact Analysis

The results of this analysis show that the proposed Spirit of Joy Church Mixed Use Development will produce noise levels below the stationary source exterior noise level standard of 50 dBA Leq daytime and 45 dBA Leq nighttime set by the County of San Diego. In order to achieve these levels the roof-top mechanical ventilation system will be required to have minimum 4-foot high parapet walls that will block the line-of-sight from the adjacent property lines. The mechanical ventilation units at ground level will be required to have minimum 6-foot high walls surrounding the units, which may consist of overlapping wooden fencing or any non-gapping material. The proposed mitigation for the mechanical ventilation is provided in Exhibit 1-B.

EXHIBIT 1-B

Mechanical Ventilation Mitigation



URBAN CROSSROADS

2.0 INTRODUCTION

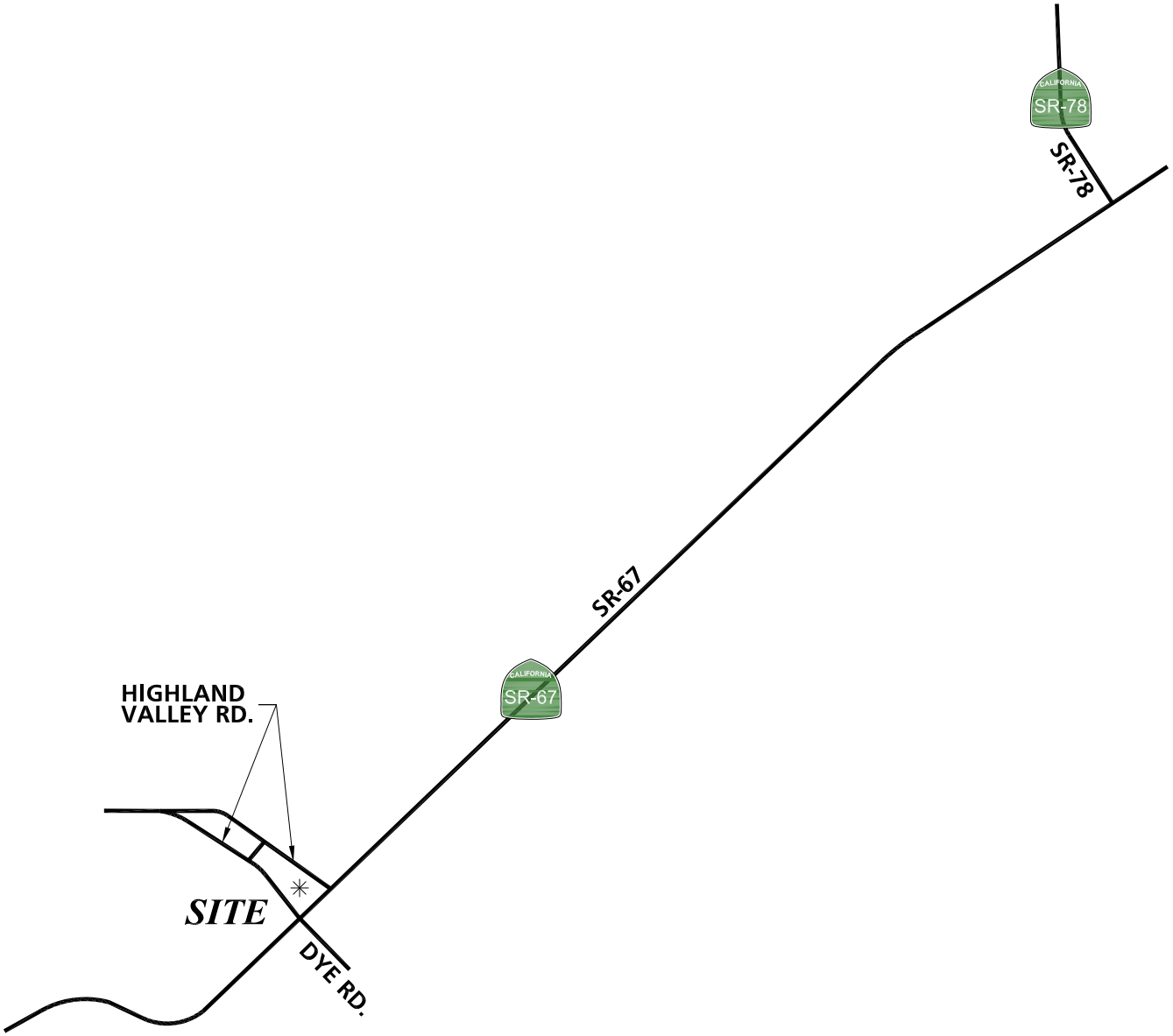
This preliminary noise study outlines the project, provides basic information regarding the fundamentals of traffic noise, describes local noise guidelines, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior and interior noise environments.

This report presents the results of a preliminary noise study for the Spirit of Joy Church Mixed Use Development. The proposed site is located on approximately 8.54 acres and includes a sanctuary, fellowship hall, two administration/classroom buildings, a utility building, two courtyards and a play area. The project is anticipated to be built in a single phase but due to economical factors the buildings may need to be constructed in up to three separate phases. The general location of the project is shown on the Location Map, Exhibit 2-A. The proposed project is located in the unincorporated community of Ramona, on the southwest corner of Highland Valley Road and Julian Road (SR-67) in the County of San Diego. The site plan used for this analysis is shown on Exhibit 2-B.

Included in the report is a discussion of the expected exterior community noise environment and recommendations for control of the noise impacts for exterior noise sensitive land uses for the entire project site. In the following sections, noise exposures expected within the planned site are reviewed and compared to the applicable noise standards.

EXHIBIT 2-A

LOCATION MAP



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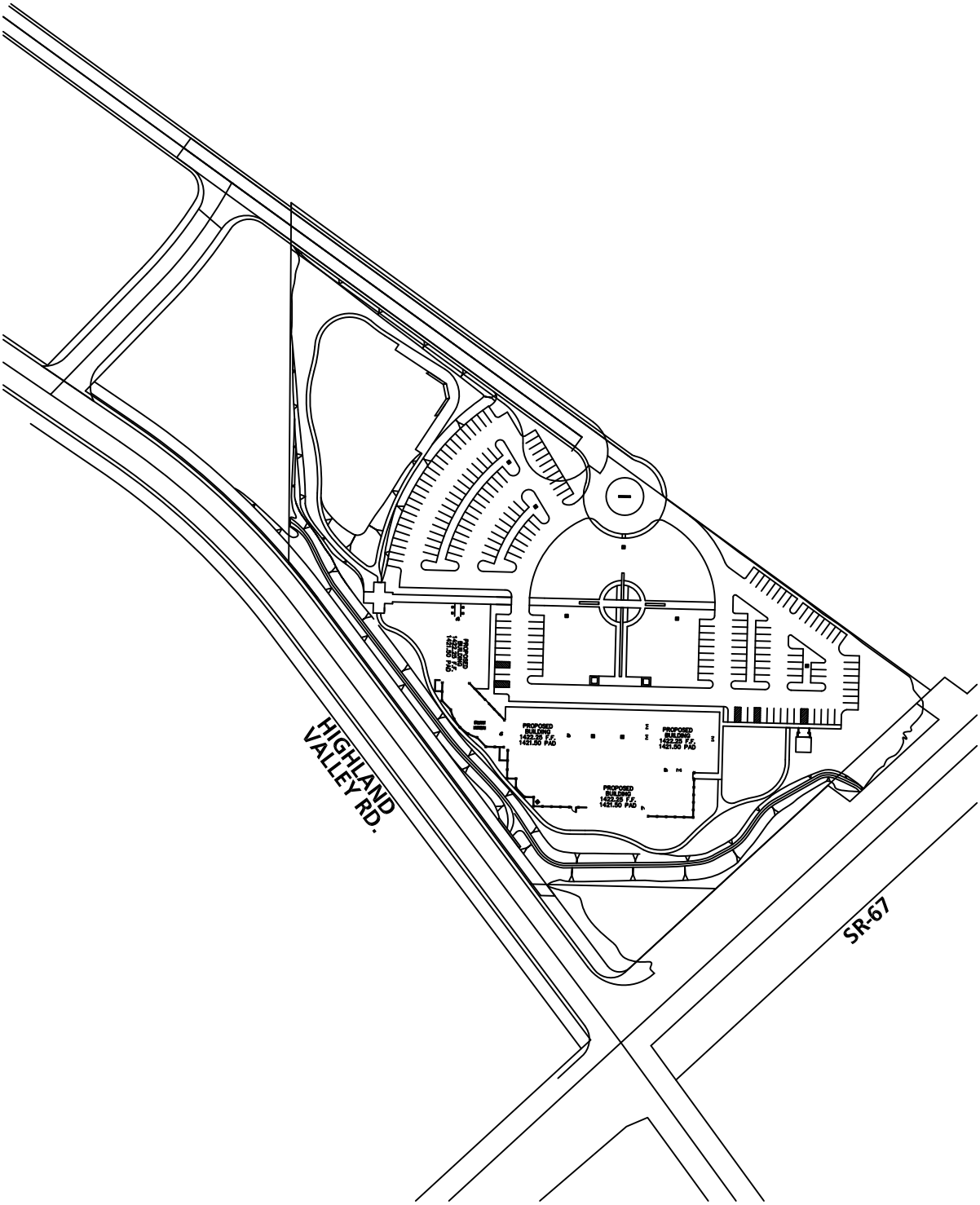
URBAN CROSSROADS

EXHIBIT 2-B

SITE PLAN



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URBAN CROSSROADS

3.0 NOISE FUNDAMENTALS

Noise has been simply defined as "unwanted sound". Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

3.1 Noise Descriptors

Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak hour Leq is the noise metric used by Caltrans for all traffic noise impact analysis.

The Community Noise Equivalent Level (CNEL) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m., and the addition of ten decibels to sound levels at night between 10 p.m. to 7 a.m. These additions are made to the sound levels at these time periods because during the evening and night hours, with the decrease in overall amount and loudness of noise generated, when compared to daytime hours, there is an increased sensitivity to sounds. For this reason the sound appears louder and it is weighted accordingly. The County of San Diego relies on the CNEL noise standard to assess transportation related impacts on noise sensitive land uses.

3.2 Traffic Noise Prediction

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds and greater number of trucks. Vehicle noise is a combination of the noise produced by the engine, exhaust and tires.

Because of the logarithmic nature of traffic noise levels, a doubling of the traffic noise (acoustic energy) results in a noise level increase 3 dBA. Based on the FHWA community noise assessment criteria this change is “barely perceptible”. In other words, doubling the traffic volume (assuming that the speed and truck mix do not change) results in a noise increase of 3 dBA. The truck mix on a given roadway also has a significant effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

3.3 Noise Control

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receiver by controlling the noise source, transmission path, receiver or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to any and all of these three elements and a noise barrier is most effective when placed close to the noise source or receiver.

3.4 Ground Absorption

To account for the ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft site and hard site conditions. Soft site conditions account for the sound propagation loss over

natural surfaces such as normal earth and ground vegetation. A drop-off rate of 4.5 dBA per doubling of distance is typically observed over soft ground with landscaping, as compared with a 3.0 dBA drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. To predict the future noise environment, soft site conditions were used in this analysis.

3.5 Noise Barrier Attenuation

Effective noise barriers can reduce noise levels by 10 to 15 decibels, cutting the loudness of traffic noise in half. Noise barriers however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the view of a road. Noise barriers do very little good for homes on a hillside overlooking a road or for building which rise above the barrier. A noise barrier can typically achieve a 5 decibel noise level reduction when it is tall enough to break the line-of-sight.

4.0 SAN DIEGO COUNTY NOISE STANDARDS

The County of San Diego addresses two separate types of noise sources through the CEQA process: (1) mobile, and (2) stationary. To control transportation related noise sources such as arterial roads, freeways, airports and railroads, the County of San Diego has established guidelines for acceptable community noise levels in the Noise Element of the General Plan. To control stationary source, non-transportation related noise impacts, the County of San Diego has identified the worst-case noise levels for daytime and nighttime activities in residential areas of the County. Those guidelines are summarized below and provided as Appendix "A".

4.1 Noise Element Criteria

The County of San Diego has adopted interior and exterior noise standards as part of the County's Noise Element of the General Plan for assessing the compatibility of land uses with transportation related noise impacts. For assessing noise impacts to noise sensitive land uses, the County requires an exterior noise level of less than 60 dBA CNEL for outdoor sensitive use areas and an interior noise standard of 50 dBA CNEL for rooms that are only occupied part of the day, i.e. schools and churches.

4.2 Noise Ordinance Criteria

Section 36.404 of the San Diego County noise ordinance provides performance standards and noise control guidelines for determining and mitigating non-transportation, or stationary, noise source impacts to residential properties. The purpose of the noise ordinance is to protect, create and maintain an environment free from noise and vibration that may jeopardize the health or welfare, or degrade the quality of life.

According to the stationary source exterior noise standards, no person shall operate any source of sound at any location within the County or allow the creation of any noise on a property which causes the noise levels to exceed the exterior

noise limits at the property boundary within all zones. The noise ordinance sets an exterior noise limit for noise sensitive land uses adjacent to the property zoned residential of 50 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m.

Section 36.410 of the County of San Diego ordinance controls construction equipment noise. Except for emergency work, it shall be unlawful for any person, including the County of San Diego, to operate construction equipment at any construction site, except as outlined in subsections (a) and (b) below:

(a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.

(b) It shall be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

(c) It shall be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

For temporary activities, the County considers the 75 decibel (A) average to be based on a period of one hour.

In 1991, the U.S. Fish and Wildlife Service (USFWS) recommended that noise levels not exceed 60 dBA to protect the Gnatcatcher and other sensitive bird species. The County of San Diego has adopted this standard for all sensitive species as part of the Noise Element of the General Plan. Therefore, the 60 dBA Leq will be used as the noise criteria to assess noise impacts on sensitive wildlife both on and off site.

5.0 NOISE LEVEL MEASUREMENTS

To determine the existing noise level environment and to assess potential noise impacts, measurements were taken at one worse-case location adjacent to Julian Road. The noise measurement was recorded by Urban Crossroads, Inc. between the hours of 11:30 a.m. and 11:45 a.m. on November 7, 2007.

5.1 Measurement Procedure and Criteria

Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

5.2 Noise Measurement Locations

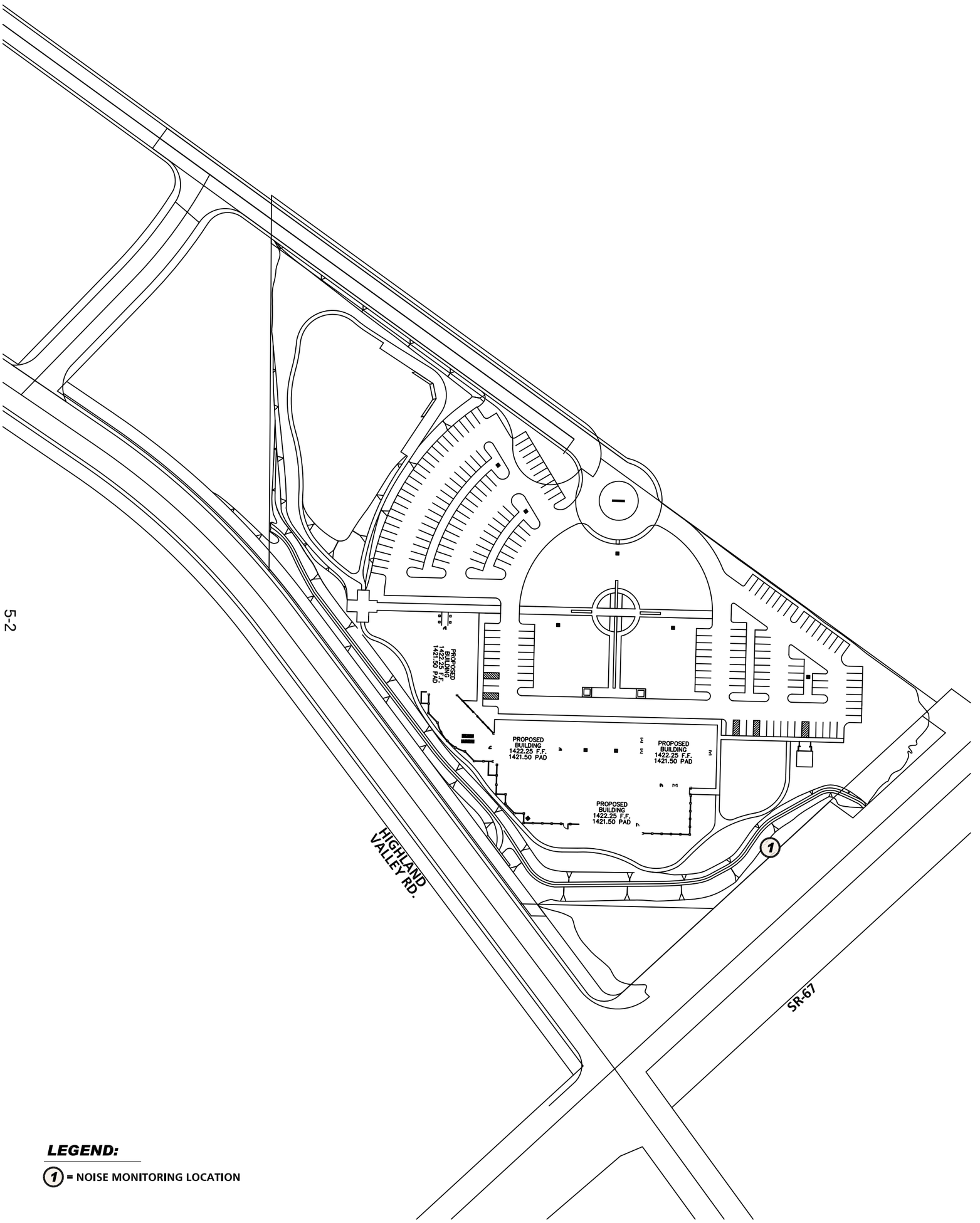
Noise monitoring locations were selected based on their respective impact potential. The site is currently vacant with the exception of a minimal number of residential structures located in the northern portion of the project site. Monitoring location 1 was located approximately 60 feet from the centerline of Julian Road. The noise monitoring location is provided in Exhibit 5-A.

5.3 Noise Measurement Results

The result of the noise level measurement is presented in Table 5-1. The noise measurements were monitored for a minimum time period of 10 minutes. The existing ambient Leq noise levels measured in the area of the project during the morning hour was found to be 63.9 dBA Leq at monitoring location 1. Existing noise levels in the project area consisted primarily of background vehicle traffic from Julian Road.

EXHIBIT 5-A

NOISE MONITORING LOCATION



LEGEND:

1 = NOISE MONITORING LOCATION

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URBAN CROSSROADS

TABLE 5-1

EXISTING (AMBIENT) NOISE LEVEL MEASUREMENTS[1]

OBSERVER LOCATION[2]	DESCRIPTION[3]	TIME OF MEASUREMENT	PRIMARY NOISE SOURCE	MEASURED NOISE LEVELS (dBA Leq)
1	Located on project site approximately 60 feet from the center line of Julian Road.	11:30 AM	Vehicle noise from Julian Road	63.9

[1] Noise measurement taken for a minimum period of 15 minutes by Urban Crossroads Inc on November 7, 2007.

[2] See Exhibit 5-A for the location of the monitoring site

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6.0 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future noise environment.

6.1 FHWA Traffic Noise Prediction Model

The expected roadway noise impacts from Highland Valley Road and Julian Road were projected using Sound32, Caltrans' version of the FHWA's STAMINA 2.0/OPTIMA Traffic Noise Prediction Model. Sound32 is a peak hour Leq based traffic noise prediction model. The results of this analysis are based on the Caltrans *Highway Design Manual* California Vehicle Noise Emission Levels (Calveno Curves). These curves more accurately reflect motor vehicle noise characteristics in the project area, and use of the Calveno curves is required by Section 1103.1 of the *Highway Design Manual*. The key input parameters, which determine the projected impact of vehicular traffic noise, include the lane travel speed, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions ("hard" or "soft") and the peak hour traffic volumes.

To predict the future noise environment, soft site conditions were used in this analysis based on a previous noise study completed for the adjacent Cummings Ranch project by EDAW. This project was originally proposed on the location of the Spirit of Joy Church.

Since the Sound32 traffic noise model calculates the peak hour Leq dBA noise level, it is necessary to convert the results into CNEL values. The Leq to CNEL calculations are based on a typical vehicle distribution of over a twenty-four hour period with the appropriate noise penalties for the evening and nighttime periods. For the purpose of this analysis 80% of all vehicles were assigned during the daytime hours of 7 a.m. to 7 p.m., 7% during the evening hours of 7 p.m. to 10 p.m. and 13% during the nighttime hours of 10 p.m. to 7 a.m. Section N-2231 of the Caltrans Technical Noise Supplement outlines the procedures to calculate the CNEL values using the peak hour Leq.

6.2 Sound 32 Model Setup

To obtain the necessary coordinate information required by the Sound32 traffic noise prediction model, input data was taken using the grading plans. The preliminary grading plans provided by Snipes & Dye received in December of 2007 were used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, the observers and at the building façade to predict the future noise environment. For modeling purposes, traffic was consolidated into a single lane located along the centerline of the road. Lane consolidation is considered an acceptable practice since the amount of error introduced by this simplification is negligible. The lanes were then subdivided into a series of contiguous segments for analysis. The nodes points on each road segment were then manually assigned an elevation using either the roadway centerline elevation or the elevation provided on the vertical roadway profile. For the purpose of this analysis, the roadway segments extend a minimum of 500 feet beyond any observer location. No grade correction (according to Caltrans Policy TAN-02-01 dated January 17, 2002) or calibration factors were included as part of the Sound32 traffic noise prediction model analysis.

To assess the study noise impacts with the development of the proposed project the outdoor observers located in noise sensitive land use areas were placed five (5) feet above the pad elevation and approximately ten (10) feet from the top of slope.

6.3 Traffic Noise Prediction Model Inputs

The roadway parameters including the average daily traffic volumes and vehicle speeds used for this study are presented in Table 6-1. To assess the peak hour traffic noise conditions, 10% of the ADT was used for all the study area roadways. Table 6-2 presents the hourly traffic flow distribution (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model. The

TABLE 6-1

ROADWAY PARAMETERS

CONDITION	(ADT)[1]	PEAK HOUR TRAFFIC VOLUMES[2]			MODELED VEHICLE SPEED	POSTED VEHICLE SPEED
		AUTOS	MEDIUM TRUCKS	HEAVY TRUCKS		
HIGHLAND VALLEY ROAD						
BUILDOUT	6,500	606	29	14	40	40
JULIAN ROAD						
BUILDOUT	32,000	3,040	99	61	55	55

[1] Average Daily Traffic (ADT) for buildout condition was based on the previously accepted noise analysis for the Cumming Ranch Project

[2] Worst case scenario assuming 10% of the ADT.

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TABLE 6-2

HOURLY TRAFFIC FLOW DISTRIBUTION

MOTOR-VEHICLE TYPE	DAYTIME (7 AM TO 7 PM)	EVENING (7 PM TO 10 PM)	NIGHT (10 PM TO 7 AM)	TOTAL % TRAFFIC FLOW
HIGHLAND VALLEY ROAD				
Automobiles	77.5%	12.9%	9.6%	93.00%
Medium Trucks	84.8%	4.9%	10.3%	5.00%
Heavy Trucks	86.5%	2.7%	10.8%	2.00%
JULIAN ROAD				
Automobiles	77.5%	12.9%	9.6%	95.00%
Medium Trucks	84.8%	4.9%	10.3%	3.00%
Heavy Trucks	86.5%	2.7%	10.8%	2.00%

[1] Vehicle mix for both roadways were based on the previously accepted noise analysis for the Cumming Ranch Project

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future traffic noise model utilizes a previously established vehicle mix provided in the noise analysis for the Cumming Ranch project completed by EDAW of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks for Julian Road and a vehicle mix of 93% Autos, 5% Medium Trucks and 3% Heavy Trucks for Highland Valley Road.

6.4 Sound32 Modeled Scenarios

The existing conditions were modeled to compare against the noise measurements described in Section 5 of this report. It is expected that the primary source of noise impacts to the site will be traffic noise from Highland Valley Road and Julian Road. The Buildout scenario includes the future Year 2030 traffic volume forecasts from the previously established noise analysis for the Cumming Ranch Project prepared by EDAW with estimated traffic speeds of 40 mph for Highland Valley Road based upon the roadway classification of rural light collector and 55 mph on Julian Road.

7.0 ON-SITE NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the input parameters described in Section 6 of this report, calculations of the expected future noise impacts were completed. An analysis has been performed to determine the acoustical shielding which may be used to reduce the expected roadway noise impact for the affected noise sensitive land uses. Key input data for these barrier performance equations include the relative source-barrier-receiver horizontal separations, the relative source-barrier-receiver vertical separations, the typical noise source spectra and the barrier transmission loss. The exterior noise levels were analyzed for the existing conditions and buildout conditions.

7.1 Traffic Noise Contours

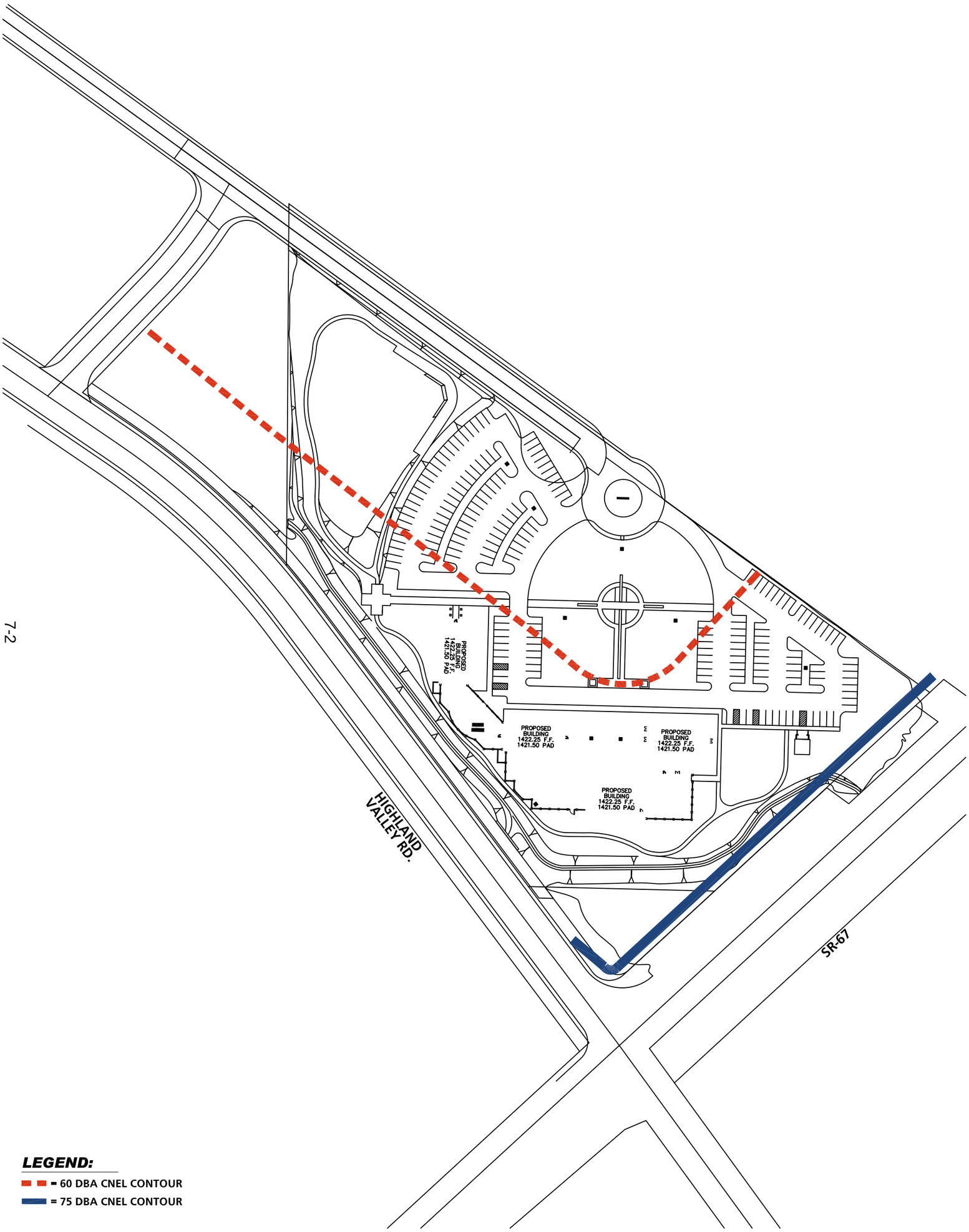
Noise contours are lines that drawn around a noise source indicating a constant or equal level of noise exposure. Noise contour boundaries are generally used as a planning tool to assess the need for additional analysis.

The noise contour boundaries were developed for unmitigated future Buildout conditions. No barriers were included as part of the noise contour analysis. The Sound32 traffic noise prediction model was used to calculate a reference noise level for observers perpendicular to Highland Valley Road and Julian Road. Exhibit 7-A provides the location of the first and second floor 75 and 60 dBA CNEL noise contour boundaries.

The noise contours shown on Exhibit 7-A show that the 75 dBA CNEL contours are located at the project's southeastern boundary along Julian Road. Portions of the proposed site will exceed the County of San Diego 60 dBA CNEL exterior noise standard for unmitigated conditions. Based on this finding, additional detailed exterior noise analysis was performed for each noise sensitive land use. The distances to the 60 dBA CNEL contour for the first and second floors of each planning area are provided in Table 7-1.

EXHIBIT 7-A

NOISE CONTOURS



LEGEND:

- = 60 DBA CNEL CONTOUR
- = 75 DBA CNEL CONTOUR

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URBAN CROSSROADS

TABLE 7-1

DISTANCE TO 60 dBA CNEL CONTOUR[1]

LOCATION	DISTANCE TO FIRST FLOOR 60 dBA CONTOUR (FEET)	DISTANCE TO SECOND FLOOR 60 dBA CONTOUR (FEET)
HIGHLAND VALLEY ROAD	125	125
JULIAN ROAD	400	400

[1] Graphic provided as Exhibit 7-A

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7.2 Buildout Scenario Exterior Noise Analysis

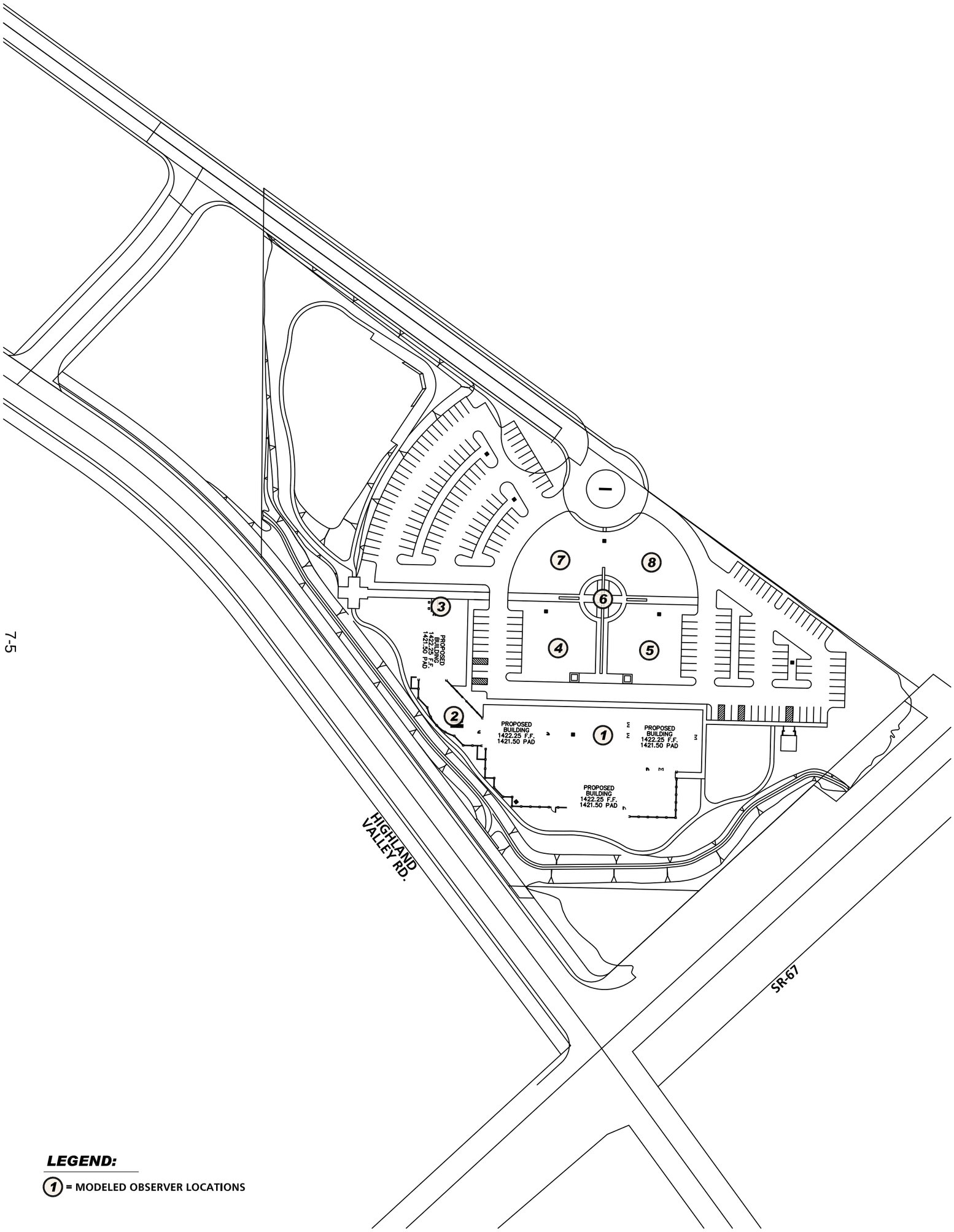
The buildout analysis was modeled assuming future Year 2030 traffic volumes along Highland Valley Road and Julian Road. The exterior noise levels will exceed the County of San Diego 60 dBA CNEL standard for noise sensitive land uses at the proposed play area. The maximum unmitigated noise level on the project site is 63.5 dBA CNEL at the play area. As a design measure, the project is proposing a 7-foot high wall along the perimeter of the play area. With the incorporation of the wall, all noise sensitive land uses on the project site will meet the County of San Diego 60 dBA CNEL standard. The barrier must be constructed of a non-gapping material. This 7-foot high barrier will reduce the maximum noise level to 59.5 dBA CNEL. Exhibit 1-A shows the mitigation and barrier heights required to bring future noise levels to the County of San Diego 60 dBA CNEL exterior noise level standard for the proposed outdoor noise sensitive land uses. Modeled observer locations for the project are presented in Exhibit 7-B. The results of the unmitigated and mitigated exterior areas are shown in Table 7-2. The Sound32 input decks for first floor future year 2030 conditions are provided in Appendix “B”.

7.3 Buildout Scenario Interior Noise Analysis

In order to determine the noise levels at the front of the buildings facing the roadways, building façades were modeled. These levels will need to be utilized to determine interior mitigation once architectural plans are finalized. The first and second building façade levels are provided in Table 7-3. Noise levels at the building facades of the first and second floors of all buildings adjacent to the roadways were found to be below 65 dBA Ldn. Therefore, with the incorporation of dual glazed windows and standard construction methods, interior mitigation is not required to obtain an interior level of 50 dBA CNEL.

EXHIBIT 7-B

MODELED OBSERVER LOCATIONS



LEGEND:

(1) = MODELED OBSERVER LOCATIONS

N

URBAN CROSSROADS

TABLE 7-2

BUILDOUT CONDITIONS
EXTERIOR NOISE LEVELS (dBA CNEL)

RECEPTOR	RECEPTOR LOCATION	UNMITIGATED FIRST FLOOR EXTERIOR NOISE LEVEL	MITIGATED FIRST FLOOR EXTERIOR NOISE LEVEL	BARRIER HEIGHT (IN FEET)
1	SMALL COURTYARD	59.4	59.3	0'
2	PLAY AREA	63.5	59.5	7'
3	PATIO	58.2	58.2	0'
4	MAIN COURTYARD	58.9	58.6	0'
5	MAIN COURTYARD	59.8	59.8	0'
6	MAIN COURTYARD	58.7	58.6	0'
7	MAIN COURTYARD	58.0	57.9	0'
8	MAIN COURTYARD	58.7	58.6	0'

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TABLE 7-3

BUILDOUT CONDITIONS BUILDING FACADE NOISE LEVELS (dBA Ldn)

RECEPTOR NUMBER	RECEPTOR LOCATION	FIRST FLOOR BUILDING FACADE NOISE LEVEL	SECOND FLOOR BUILDING FACADE NOISE LEVEL
1	ADMINISTRATION BUILDING FAÇADE	62.5	63.2
2	CLASSROOMS BUILDING FAÇADE	61.7	62.8
3	SANCTUARY BUILDING FAÇADE	63.7	64.7
4	FELLOWSHIP HALL BUILDING FAÇADE	63.3	64.0

7.4 Noise Control Barrier Construction Materials

The designed noise screening may only be accomplished if the barriers weight is at least 3.5 pounds per square foot of face area and have no decorative cutouts or line-of-site openings between shielded areas and the roadways. The recommended noise control barrier may be constructed using one of the following alternative materials:

1. Masonry block;
2. Stucco veneer over wood framing (or foam core), or 1 inch thick tongue and groove wood of sufficient weight per square foot;
3. Glass (1/4 inch thick), or other transparent material with sufficient weight per square foot;
4. Earthen berm;
5. Any combination of these construction materials.

Barriers must utilize ¼ thick glass or an equivalent transparent material to meet the required noise mitigations measures. The recommended barrier must present a solid face from top to bottom. Unnecessary openings or decorative cutouts should not be made. All gaps (except for weep holes) should be filled grout or caulking.

8.0 SHORT-TERM CONSTRUCTION NOISE IMPACTS

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment, including graders, bulldozers, loaders and scrapers can reach high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours. The project site will be mass graded prior to the construction of any buildings. According to the project applicant, a total of two dozers, two loaders, two excavators and two scrapers during grading activities will be required to complete the proposed grading operations. The noise levels utilized in this analysis are shown in Table 8-1.

8.1 Construction Related Noise Levels

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from approximately 60 dBA to noise levels in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 68 dBA measured at 50 feet from the noise source to the receptor would be reduced to 62 dBA at 100 feet from the source to the receptor, and would be further reduced to 56 dBA at 200 feet from the source to the receptor.

8.2 Grading Activities Noise Level Impact Analysis

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. Key input data for these barrier performance equations include the relative source to receiver horizontal separations, the relative source to receiver vertical separations, the typical noise source spectra and any barrier transmission loss.

TABLE 8-1

CONSTRUCTION EQUIPMENT NOISE LEVELS

EQUIPMENT TYPE	SOURCE LEVEL AT 50 FEET (dBA) [1]
Dozer	75
Loader	70
Excavator	75
Scraper	75

1 Reference Levels Provided by Environmental Protection Agency (EPA), 1971.

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The nearest property lines are located approximately 200-feet or more from the acoustic center of proposed grading operations. The project site will be mass graded in one phase. The project plans to utilize two dozers, two loaders, two excavators and two scrapers. As can be seen in the Table 8-2, at a distance of 200-feet the point source noise attenuation from construction activities and the nearest property line is 12.0 dBA. Given this, the noise levels will comply with the County of San Diego's 75 dBA standard at all project property lines.

8.3 Biological Impacts

In 1991, the U.S. Fish and Wildlife Service (USFWS) recommended that noise levels not exceed 60 dBA to protect the Gnatcatcher and other bird species. The County of San Diego has adopted this standard for all sensitive species. Therefore, the 60 dBA Leq will be used as the noise criteria to assess noise impacts on sensitive wildlife both on and off site. Construction activities may occur during the sensitive habitat nesting/breeding season. If construction activities occur within 400 feet of any sensitive habitat location the noise level may be above 60 dBA Leq and impacts could occur. As a design measure the proposed project applicant may be required to install a temporary noise barrier along any property line where the construction equipment is located within 400 feet. The proposed noise barrier will need to be of solid non-gapping wood construction to comply with the County of San Diego's 60 dBA standard for sensitive habitats.

If the construction equipment is located within 400 feet of any sensitive habitat, it is recommended that a specific mitigation plan based upon the location of the identified habitat and corresponding construction schedule be identified by a County certified acoustical engineer. This mitigation plan would determine the height and location of a temporary barrier, if one is necessary. The height of this barrier would be based on the topography in the area, the location of the habitat and also the location of the equipment. The biological mitigation plan should include noise monitoring prior to and during the beginning of the nesting/breeding season by the acoustical engineer in coordination with the Project Biologist to ensure compliance with applicable standards.

TABLE 8-2

CONSTRUCTION NOISE LEVELS

EQUIPMENT TYPE	QUANTITY	SOURCE LEVEL AT 50 FEET (dBA) [1]	CUMULATIVE LEVEL AT 50 FEET (dBA)
Dozer	2	75	78.0
Loader	2	70	73.0
Excavator	2	75	78.0
Scraper	2	75	78.0
	CUMULATIVE LEVELS AT 50 FEET (dBA)		78.0
	DISTANCE TO PROPERTY LINE		200
	NOISE REDUCTION DUE TO DISTANCE		-12.0
	PROPERTY LINE NOISE LEVEL		**66.0**

[1] Reference Levels Provided by Environmental Protection Agency (EPA), 1971.

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9.0 PROJECT NOISE IMPACT ANALYSIS

This section examines the potential stationary noise source impacts associated with the development and operation of the proposed Spirit of Joy Church.

9.1 Project Related Stationary Source Noise

A review of the proposed project indicates that noise sources such as church-related outdoor activities and the mechanical ventilation system (air conditioning) are the primary sources of stationary noise.

9.2 Reference Noise Level Impacts

This section provides a detailed description of the reference noise level measurement settings and results shown on Table 9-1. It is important to note that the following projected noise levels assume the worst-case noise environment with the noise sources all occurring at the same time. In reality, these noise levels will vary throughout the day.

9.2.1 Outdoor Activities

According to the schedule of regular hours and events proposed for the Spirit of Joy Church, outdoor activities will take place twice a week for 2 hours each. These events consist of the Youth Ministry and the Kids Klub and will occur in the main courtyard shown on Exhibit 7-A. There are also two special events each year which will take place outdoors in this same area. The reference noise levels utilized for the outdoor activities consist of measurements taken by Urban Crossroads, Inc. of playground activities at a similar school. A noise level of 62.8 dBA CNEL at a distance of 25 feet will be utilized for the outdoor activities. The proposed schedule of hours and events is provided as Appendix “D”.

9.2.2 Air Conditioning Units

Mechanical ventilation units will be installed on the proposed buildings of the project site and also at ground level. The project plans to utilize 3 to 7.5 ton A.C. units. To assess the mechanical ventilation system (packaged heat pump) noise impacts, typical outdoor sound power levels were provided by Carrier. The noise ratings provided by Carrier indicated that packaged heat pumps of this size will produce unmitigated noise levels of approximately 73.4 dBA when measured at a distance of 5 feet.

To predict the worst-case future noise environment, a continuous reference noise level of 73.4 dBA at 5 feet was used to represent all the mechanical ventilation units. Even though the mechanical ventilation system will cycle on and off throughout the day, this approach presents the worst-case noise condition. In addition, these units have been designed to provide cooling during the peak summer daytime periods, and it is unlikely that all the units will be operating continuously throughout the noise sensitive nighttime periods.

The noise impacts associated with the roof-top mechanical ventilation system will be limited with the recommended minimum 4-foot parapet walls that will block the line-of-sight from the adjacent residential units. The noise impacts associated with the mechanical ventilation units at ground level will be limited with the recommended minimum 6-foot high walls, which may consist of overlapping fencing or any non-gapping material.

9.3 Project Only Stationary Source Noise Impacts

Based upon the reference noise levels provided on Table 9-1, it is possible to project stationary source noise levels from the proposed home improvement center. Table 9-2 presents the noise level impacts from the proposed project to

TABLE 9-1

REFERENCE NOISE LEVEL MEASUREMENTS

NOISE SOURCE	MEASUREMENT DATE	DURATION (MINUTES)	DISTANCE FROM NOISE SOURCE (FEET)	NOISE SOURCE HEIGHT (FEET)	DROP-OFF RATE (Leq dBA)	NOISE LEVELS (Leq dBA)
A/C - RTU-1[1]	--	--	3	19.1	6.0	82.9
Outdoor Activities[2]	27-Sep-07	10	25	4.0	6.0	62.8

[1] Based on the Trane Model WSC072 heat pump.

[2] As measured by Urban Crossroads on September 27, 2007

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TABLE 9-2

NOISE LEVEL PROJECTIONS

OBSERVER LOCATION	DISTANCE TO OBSERVER LOCATION (IN_FEET)	NOISE SOURCE	EXTERIOR NOISE LEVELS (Leq dBA)		
			UNMITIGATED	BARRIER NOISE ATTENUATION	MITIGATED
WESTERN PROPERTY LINE	300'	A/C - RTU-1	37.8	-16.3	21.5
	300'	A/C - RTU-1	37.8	-16.3	21.5
	225'	A/C - RTU-1	40.3	-4.9	35.4
	185'	A/C - RTU-1	42.0	-5.1	36.9
	182'	A/C - RTU-1	42.2	-5.1	37.1
	145'	A/C - RTU-1	44.2	-5.1	39.1
	125'	A/C - RTU-1	45.4	-10.7	34.7
	125'	A/C - RTU-1	45.4	-10.7	34.7
	120'	A/C - RTU-1	45.8	-10.7	35.1
	120'	A/C - RTU-1	45.8	-10.7	35.1
	260'	Outdoor Activities	42.5	-11.1	31.4
Project Only Noise Total			53.2		45.1
SOUTHERN PROPERTY LINE	155'	A/C - RTU-1	43.6	-10.7	32.9
	155'	A/C - RTU-1	43.6	-10.7	32.9
	196'	A/C - RTU-1	41.5	-4.9	36.6
	167'	A/C - RTU-1	42.9	-5.1	37.8
	245'	A/C - RTU-1	39.6	-4.9	34.7
	220'	A/C - RTU-1	40.5	-4.9	35.6
	335'	A/C - RTU-1	36.9	-15.3	21.6
	335'	A/C - RTU-1	36.9	-15.3	21.6
	460'	A/C - RTU-1	34.1	-15.3	18.8
	460'	A/C - RTU-1	34.1	-15.3	18.8
	260'	Outdoor Activities	42.5	-11.1	31.4
Project Only Noise Total			51.1		43.6

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the western and to the southern property line. These projections include outdoor activity noise and noise from the mechanical ventilation system. The mitigated project only noise level projections ranged from 43.6 dBA Leq to 45.1 dBA Leq. Table 9-2 shows that the project related noise levels will meet the County of San Diego worse case 45 dBA Leq exterior noise standard at all project property lines. Exhibit 1-B shows the barrier heights required to bring the operational noise levels from the mechanical ventilation units below the County of San Diego 45 dBA Leq nighttime standard. The stationary source noise prediction calculations are included in Appendix “E.”

APPENDIX A

COUNTY OF SAN DIEGO NOISE STANDARDS

Policy 4b

Because exterior community noise equivalent levels (CNEL) above 60 decibels and/or interior CNEL above 45 decibels may have an adverse effect on public health and welfare, it is the policy of the County of San Diego that:

1. Whenever it appears that new development may result in any (existing or future)noise sensitive land use being subject to noise levels of CNEL equal to 60 decibels *(A)* or greater, an acoustical analysis shall be required.

2. If the acoustical analysis shows that noise levels at any noise sensitive land use will exceed CNEL equal to 60 decibels, modifications shall be made to the development which reduce the exterior noise level to less than CNEL of 60 decibels *(A)* and the interior noise level to less than CNEL of 45 decibels *(A).*

3. If modifications are not made to the development in accordance with paragraph 2 above, the development shall not be approved unless a finding is made that there are specifically identified overriding social or economic considerations which warrant approval of the development without such modification; provided, however, if the acoustical study shows that sound levels for any noise sensitive land use will exceed a CNEL equal to 75 decibels (A) even with such modifications, the development shall not be approved irrespective of such social or economic considerations.

Definitions, Notes & Exceptions

"Decibels (A)" refers to A-weighted sound levels as noted on page VIII-2 of this Element.

"Development" means any physical development including but not limited to residences, commercial, or industrial facilities, roads, civic buildings, hospitals, schools, airports, or similar facilities.

"Exterior noise":

(a) For single family detached dwelling projects, "exterior noise" means noise measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(i) Net lot area up to 4,000 sq. ft.:	400 square feet
(ii) Net lot area 4,000 sq. ft. to 10 ac.:	10% of net lot area
(iii) Net lot area over 10 ac.:	1 ac.

(b) For all other projects, "exterior noise" means noise measured at all exterior areas which are provided for group or private usable open space purposes.

(c) For County road construction projects, the exterior noise level due to vehicular traffic impacting a noise sensitive area should not exceed the following values:

(i)	Federally funded projects:	The Noise standard contained in applicable Federal Highway Administration Standards.
(ii)	Other projects:	60 decibels *(A),* except if the existing or projected noise level without the project is 58 decibels *(A)* or greater, a 3 decibel *(A)* increase is allowed, up to the maximum permitted by Federal Highway Administration Standards.

"Group or Private Usable Open Space" shall mean: Usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways (Group Usable Open Space); and usable open space intended for use of occupants of one dwelling unit, normally including yards, decks and balconies (Private Usable Open Space).

"Interior noise": The following exception shall apply: For rooms which are usually occupied only a part of the day (schools, libraries, or similar), the interior one-hour average sound level, due to noise outside, should not exceed 50 decibels (A).

"Noise sensitive land use" means any residence, hospital, school, hotel, resort, library or any other facility where quiet is an important attribute of the environment.

Action Program 4b1 Recommend programs to soundproof buildings or redevelop areas where it is impossible to reduce existing source noise to acceptable levels.

Action Program 4b2 Study the feasibility of extending the application of Section 1092, California Administrative Code dealing with noise insulation standards to single-family dwellings, and incorporating higher standards for reduction of exterior noise intrusion into structures.

Action Program 4b3 Require present and projected noise level data to be included in Environmental Impact Reports. Designs to mitigate adverse noise impacts shall also be used.

(2) any sound or noise exceeding criteria standards, or levels as set forth in this chapter.

(t) Water Craft shall mean any boat, ship, barge, craft or floating thing designed for navigation in the water which is propelled by machinery, whether or not such machinery is the principal source or propulsion, but shall not include a vessel possessing a valid marine document issued by the United States Bureau of Customs or any federal agency successor thereto.

(u) Supplementary Definitions of Technical Terms - definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1. 1-1961 (R-1971) or the latest revision thereof.

(Amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 8477 (N.S.), adopted 11-8-94, operative 1-1-95; amended by Ord. No. 8975 (N.S.), adopted 12-8-98, operative 1-2-99)

Cross reference(s)--Definitions, § 12.101 et seq.

SEC. 36.403. SOUND LEVEL MEASUREMENT.

(a) Any sound or noise level measurement made pursuant to the provisions of this ordinance shall be measured with a sound level meter using the A-weighting and "slow" response pursuant to applicable manufacturer's instructions.

(b) The sound level meter shall be appropriately calibrated and adjusted as necessary by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances set forth in American National Standards ANSI-SI. 4-1971.

(c) For outside measurements, the microphone shall be not less than four (4) feet above the ground, at least four (4) feet distant from walls or other large reflecting surfaces and shall be protected from the effects of wind noises by the use of appropriate wind screens and the location selected shall be at any point on the affected property. In cases when the microphone must be located within ten (10) feet of walls or similar large reflecting surfaces, the actual measured distances and orientation of sources, microphone and reflecting surfaces shall be noted and recorded. In no case shall a noise measurement be taken within five (5) feet of the noise source.

(d) For inside measurements, the microphone shall be at least three (3) feet distant from any wall, ceiling or partition, and the average measurement of at least three (3) microphone positions throughout the room shall be determined.

SEC. 36.404. SOUND LEVEL LIMITS.

Unless a variance has been applied for and granted, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below, except that:

(1) Construction noise level limits shall be governed by Section 36.410 of this chapter; and

(2) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit which authorizes the noise-generating use or activity, and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, then implementation and compliance with such noise mitigation measures shall be deemed to constitute compliance with this section.

Zone		APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
R-RO, R-C, R-M, C-30, S-86, R-V AND R-U Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S-94 and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones.	Anytime	75

If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two (2) zoning districts is the arithmetic mean of the respective limits for the two districts; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be

75 decibels at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located.

(Amended by Ord. No. 7094 (N.S.), effective 3-25-86; amended by Ord. No. 9478 (N.S.), effective 7-19-02)

SEC. 36.405. MOTOR VEHICLES.

(a) Repairs of Motor Vehicles. It shall be unlawful for any person within the County to repair, rebuild, or test any motor vehicle in such a manner as to cause disturbing, excessive or offensive noises as defined in Section 36.402(s) of this chapter.

(b) On-Highway. Violations for exceeding applicable noise level limits as to persons operating motor vehicles on a public street or highway in the County shall be prosecuted under applicable California Vehicle Code provisions and under Federal Regulation adopted pursuant to 42 U.S.C. 4905(a)(1)(A), (B), and (C)(ii), (iii) for which enforcement responsibility is delegated to local governmental agencies.

(c) Off-Highway. Except as otherwise provided for in this ordinance, it shall be unlawful to operate any motor vehicle of any type on any site other than on a public street or highway as defined in the California Vehicle Code in a manner so as to cause noise in excess of those noise levels permitted for On-Highway motor vehicles as specified in the table "35 miles per hour or less speed limits" contained in Section 23130 of the California Vehicle Code.

(d) Emergency Vehicles. Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations.

(e) Urban Transit Buses. Buses as defined in the California Vehicle Code shall at all times comply with the requirements of this section.

SEC. 36.406. POWERED MODEL VEHICLES.

It shall be unlawful for any person to operate any powered model vehicle except between the hours of 7 a.m. and 9 p.m. and then only in such a manner so as not to emit noise in excess of those levels set forth in Section 36.404; however, if powered model vehicles are operated in public parks at a point more than 100 feet from the property line, the noise level shall be determined at a distance of 100 feet from the noise source instead of at the property line, and

noises from powered model vehicles measured at that distance in excess of the noise limits specified in Section 36.404 are prohibited.

SEC. 36.407. REFUSE VEHICLES & PARKING LOT SWEEPERS.

No person shall operate, or permit to be operated, a refuse compacting, processing, or collection vehicle or parking lot sweeper between the hours of 10 p.m. to 6 a.m. in or adjacent to any residential zone unless a variance has been applied for and granted pursuant to this chapter.

(Amended by Ord. No. 7428 (N.S.), effective 2-4-88)

SEC. 36.408. WATERCRAFT.

Violations for excessive noise of watercraft operating in waters under the jurisdiction of the County of San Diego shall be prosecuted under applicable provisions of the California Harbors and Navigation Code.

SEC. 36.409. AIRPORTS.

All noise emanating from airport activities other than that produced by aircraft shall be subject to all of the regulations contained in this ordinance.

SEC. 36.410. CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person, including the County of San Diego, to operate construction equipment at any construction site, except as outlined in subsections (a) and (b) below:

(a) It shall be unlawful for any person, including the County of San Diego, to operate construction equipment at any construction site on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday. Notwithstanding the above, a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. in compliance with the requirements of subdivision (b) of this Section at his residence or for the purpose of constructing a residence for himself, provided such operation of construction equipment is not carried on for profit or livelihood. In addition, it shall be unlawful for any person to operate construction equipment at any construction site on Mondays through Saturdays except between the hours of 7 a.m. and 7 p.m.

(b) No such equipment, or combination of equipment regardless of age or date of acquisition, shall be operated so as to cause noise at a level in excess of seventy-five (75) decibels for more than 8 hours during any twenty-four (24) hour period when measured at or within the property lines of any property which is developed and used either in part or in whole for residential purposes.

In the event that lower noise limit standards are established for construction equipment pursuant to State or Federal law, said lower limits shall be used as a basis for revising and amending the noise level limits specified in subsection (b) above.

SEC. 36.411. CONTAINERS AND CONSTRUCTION MATERIAL.

It shall be unlawful for any person to handle or transport or cause to be handled or transported in any public place, any container or any construction material in such a way as to create a disturbing, excessive, or offensive noise as defined under Section 36.402(s) of this ordinance.

SEC. 36.412. SIGNAL DEVICE FOR FOOD TRUCKS.

No person shall operate or cause to have operated or used any sound signal device other than sound-amplification equipment attached to a motor vehicle wagon or manually propelled cart from which food or any other items are sold which emits a sound signal more frequently than once every ten minutes in any one street block and with a duration of more than ten seconds for any single emission. The sound level of this sound signal shall not exceed ninety (90) decibels at fifty (50) feet.

SEC. 36.413. MULTIPLE FAMILY DWELLING UNITS.

Notwithstanding any other provisions of this ordinance it shall be unlawful for any person to create, maintain or cause to be maintained any sound within the interior of any multiple family dwelling unit which causes the noises level to exceed those limits set forth below in any other dwelling unit:

Type of Land Use		Allowable Interior Noise Level (dBA)		
		No Time	1 min in 1 hour	5 min in 1 hour
Multifamily	10 pm- 7 am	> 45	40	35
Residential	7 am-10 pm	> 55	50	35

(> greater than)

(less than or equal to)

The monitoring procedures outlined under Section 36.403 shall be followed in enforcing this section.

SEC. 36.414. GENERAL NOISE REGULATIONS.

FEDERAL HIGHWAY ADMINISTRATION

NOISE ABATEMENT CRITERIA (NAC)

Activity Category	Leq for Noisiest Traffic Hour	Description of Activity
A	57 (Exterior)	Land on which serenity and quiet are of extraordinary significance and serve an important public need; and where the preservation of those qualities is essential if the area is to continue to serve its intended purposes.
B	**67 (Exterior)**	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Notes: Leq(h) is the one-hour energy equivalent sound level.
The interior noise levels (activity) apply to:
(1) Indoor activities for those parcels where no exterior noise-sensitive land use or activity is identified, and
(2) Those situations where the exterior activities are either remote from the highway or shielded in some manner so that the exterior activities will not be affected by the noise, but the interior activities will.
Source: FHWA, Procedures for Abatement of Highway Traffic and Construction Noise.

APPENDIX B

EXTERIOR ANALYSIS PREDICTION MODEL INPUTS
AND CALCULATIONS FOR BUILDOUT SCENARIO

```
Spirit of Joy Unmitigated First Floor
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 3040 , 55 , 99 , 55 , 61 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 606 , 40 , 29 , 40 , 14 , 40
L-Julian Road, 1
N,1290.,1062,1428,
N,1631.,1428,1424,
N,1861.,1668,1421,
N,2074.,1892,1422,
N,2430.,2268,1426,
L-Highland Valley Road, 2
N,714.,2401,1413,
N,925.,2256,1413,
N,1079.,2137,1414,
N,1272.,1910,1418,
N,1495.,1617,1421,
N,1650.,1406,1424,
N,1843.,1139,1425,
B-Building 1 (Classrooms), 1 , 2 , 0 ,0
1448.,1804,1422,1432,
1445.,1846,1422,1432,
1534.,1848,1422,1432,
1536.,1808,1422,1432,
1448.,1804,1422,1432,
B-Building 2 (Sanctuary), 2 , 2 , 0 ,0
1561.,1708,1422,1437,
1560.,1796,1422,1437,
1640.,1798,1422,1437,
1644.,1712,1422,1437,
1561.,1708,1422,1437,
B-Building 3 (Fellowship Hall), 3 , 2 , 0 ,0
1648.,1789,1419,1429,
1647.,1869,1419,1429,
1721.,1872,1419,1429,
1723.,1791,1419,1429,
1648.,1789,1419,1429,
B-Building 4 (Administrative), 4 , 2 , 0 ,0
1363.,1885,1422,1432,
1360.,1971,1422,1432,
1402.,1972,1422,1432,
1405.,1885,1422,1432,
1363.,1882,1422,1432,
B-Julian Road Edge, 5 , 1 , 0 ,0
1270.,1088,1428,1428,
1616.,1451,1424,1424,
B-Julian Road Edge, 6 , 1 , 0 ,0
1617.,1452,1424,1424,
1839.,1685,1421,1421,
2051.,1913,1422,1422,
2406.,2288,1426,1426,
R, 1 , 67 ,500
1606,1836,1427.,Courtyrd
R, 2 , 67 ,500
1416,1849,1427.,Play Are
R, 3 , 67 ,500
1393,1990,1427.,Patio
R, 4 , 67 ,500
1537,1940,1427.,Main Out
R, 5 , 67 ,500
1637,1946,1427.,Main Out
R, 6 , 67 ,500
1591,2005,1427.,Main Out
```

```
R, 7 , 67 ,500
1527,2054,1427.,Main Out
R, 8 , 67 ,500
1647,2063,1427.,Main Out
D, 4.5
ALL,ALL
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
Spirit of Joy Unmitigated First Floor

BARRIER DATA
****

BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	10.*							B1 P1	42.1	MASONRY
2	-	10.*							B1 P2	89.0	MASONRY
3	-	10.*							B1 P3	40.0	MASONRY
4	-	10.*							B1 P4	88.1	MASONRY
5	-	15.*							B2 P1	88.0	MASONRY
6	-	15.*							B2 P2	80.0	MASONRY
7	-	15.*							B2 P3	86.1	MASONRY
8	-	15.*							B2 P4	83.1	MASONRY
9	-	10.*							B3 P1	80.0	MASONRY
10	-	10.*							B3 P2	74.1	MASONRY
11	-	10.*							B3 P3	81.0	MASONRY
12	-	10.*							B3 P4	75.0	MASONRY
13	-	10.*							B4 P1	86.1	MASONRY
14	-	10.*							B4 P2	42.0	MASONRY
15	-	10.*							B4 P3	87.1	MASONRY
16	-	10.*							B4 P4	42.1	MASONRY
17	-	0.*							B5 P1	501.5	BERM
18	-	0.*							B6 P1	321.8	BERM
19	-	0.*							B6 P2	311.3	BERM
20	-	0.*							B6 P3	516.4	BERM
	0	1	2	3	4	5	6	7			

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	Courtyrd	67.	500.	59.4
2	Play Are	67.	500.	63.5
3	Patio	67.	500.	58.2
4	Main Out	67.	500.	58.9
5	Main Out	67.	500.	59.8
6	Main Out	67.	500.	58.7
7	Main Out	67.	500.	58.0
8	Main Out	67.	500.	58.7

```
Spirit of Joy Mitigated First Floor
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 3040 , 55 , 99 , 55 , 61 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 606 , 40 , 29 , 40 , 14 , 40
L-Julian Road, 1
N,1290.,1062,1428,
N,1631.,1428,1424,
N,1861.,1668,1421,
N,2074.,1892,1422,
N,2430.,2268,1426,
L-Highland Valley Road, 2
N,714.,2401,1413,
N,925.,2256,1413,
N,1079.,2137,1414,
N,1272.,1910,1418,
N,1495.,1617,1421,
N,1650.,1406,1424,
N,1843.,1139,1425,
B-Building 1 (Classrooms), 1 , 2 , 0 ,0
1448.,1804,1422,1432,
1445.,1846,1422,1432,
1534.,1848,1422,1432,
1536.,1808,1422,1432,
1448.,1804,1422,1432,
B-Building 2 (Sanctuary), 2 , 2 , 0 ,0
1561.,1708,1422,1437,
1560.,1796,1422,1437,
1640.,1798,1422,1437,
1644.,1712,1422,1437,
1561.,1708,1422,1437,
B-Building 3 (Fellowship Hall), 3 , 2 , 0 ,0
1648.,1789,1419,1429,
1647.,1869,1419,1429,
1721.,1872,1419,1429,
1723.,1791,1419,1429,
1648.,1789,1419,1429,
B-Building 4 (Administrative), 4 , 2 , 0 ,0
1363.,1885,1422,1432,
1360.,1971,1422,1432,
1402.,1972,1422,1432,
1405.,1885,1422,1432,
1363.,1882,1422,1432,
B-Barrier 3, 5 , 2 , 0 ,0
1458.,1806,1422,1429,
1401.,1804,1422,1429,
1401.,1840,1422,1429,
1377.,1839,1422,1429,
1375.,1887,1422,1429,
B-Julian Road Edge, 6 , 1 , 0 ,0
1270.,1088,1428,1428,
1616.,1451,1424,1424,
B-Julian Road Edge, 7 , 1 , 0 ,0
1617.,1452,1424,1424,
1839.,1685,1421,1421,
2051.,1913,1422,1422,
2406.,2288,1426,1426,
R, 1 , 67 ,500
1606,1836,1427.,Courtyrd
R, 2 , 67 ,500
1416,1849,1427.,Play Are
R, 3 , 67 ,500
1393,1990,1427.,Patio
```

```
R, 4 , 67 ,500
1537,1940,1427.,Main Out
R, 5 , 67 ,500
1637,1946,1427.,Main Out
R, 6 , 67 ,500
1591,2005,1427.,Main Out
R, 7 , 67 ,500
1527,2054,1427.,Main Out
R, 8 , 67 ,500
1647,2063,1427.,Main Out
D, 4.5
ALL,ALL
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
Spirit of Joy Mitigated First Floor

BARRIER DATA
****

BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	10.*							B1 P1	42.1	MASONRY
2	-	10.*							B1 P2	89.0	MASONRY
3	-	10.*							B1 P3	40.0	MASONRY
4	-	10.*							B1 P4	88.1	MASONRY
5	-	15.*							B2 P1	88.0	MASONRY
6	-	15.*							B2 P2	80.0	MASONRY
7	-	15.*							B2 P3	86.1	MASONRY
8	-	15.*							B2 P4	83.1	MASONRY
9	-	10.*							B3 P1	80.0	MASONRY
10	-	10.*							B3 P2	74.1	MASONRY
11	-	10.*							B3 P3	81.0	MASONRY
12	-	10.*							B3 P4	75.0	MASONRY
13	-	10.*							B4 P1	86.1	MASONRY
14	-	10.*							B4 P2	42.0	MASONRY
15	-	10.*							B4 P3	87.1	MASONRY
16	-	10.*							B4 P4	42.1	MASONRY
17	-	7.*							B5 P1	57.0	MASONRY
18	-	7.*							B5 P2	36.0	MASONRY
19	-	7.*							B5 P3	24.0	MASONRY
20	-	7.*							B5 P4	48.0	MASONRY
21	-	0.*							B6 P1	501.5	BERM
22	-	0.*							B7 P1	321.8	BERM
23	-	0.*							B7 P2	311.3	BERM
24	-	0.*							B7 P3	516.4	BERM
	0	1	2	3	4	5	6	7			

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	Courtyrd	67.	500.	59.3
2	Play Are	67.	500.	59.5
3	Patio	67.	500.	58.2
4	Main Out	67.	500.	58.6
5	Main Out	67.	500.	59.8
6	Main Out	67.	500.	58.6
7	Main Out	67.	500.	57.9
8	Main Out	67.	500.	58.6

APPENDIX C

EXTERIOR ANALYSIS PREDICTION MODEL INPUTS
AND CALCULATIONS FOR BUILDNG FACADES

```
Spirit of Joy Mitigated First Floor
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 3040 , 55 , 99 , 55 , 61 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 606 , 40 , 29 , 40 , 14 , 40
L-Julian Road, 1
N,1290.,1062,1428,
N,1631.,1428,1424,
N,1861.,1668,1421,
N,2074.,1892,1422,
N,2430.,2268,1426,
L-Highland Valley Road, 2
N,714.,2401,1413,
N,925.,2256,1413,
N,1079.,2137,1414,
N,1272.,1910,1418,
N,1495.,1617,1421,
N,1650.,1406,1424,
N,1843.,1139,1425,
B-Building 1 (Classrooms), 1 , 2 , 0 ,0
1448.,1804,1422,1432,
1445.,1846,1422,1432,
1534.,1848,1422,1432,
1536.,1808,1422,1432,
1448.,1804,1422,1432,
B-Building 2 (Sanctuary), 2 , 2 , 0 ,0
1561.,1708,1422,1437,
1560.,1796,1422,1437,
1640.,1798,1422,1437,
1644.,1712,1422,1437,
1561.,1708,1422,1437,
B-Building 3 (Fellowship Hall), 3 , 2 , 0 ,0
1648.,1789,1419,1429,
1647.,1869,1419,1429,
1721.,1872,1419,1429,
1723.,1791,1419,1429,
1648.,1789,1419,1429,
B-Building 4 (Administrative), 4 , 2 , 0 ,0
1363.,1885,1422,1432,
1360.,1971,1422,1432,
1402.,1972,1422,1432,
1405.,1885,1422,1432,
1363.,1882,1422,1432,
B-Barrier 3, 5 , 2 , 0 ,0
1458.,1806,1422,1429,
1401.,1804,1422,1429,
1401.,1840,1422,1429,
1377.,1839,1422,1429,
1375.,1887,1422,1429,
B-Julian Road Edge, 6 , 1 , 0 ,0
1270.,1088,1428,1428,
1616.,1451,1424,1424,
B-Julian Road Edge, 7 , 1 , 0 ,0
1617.,1452,1424,1424,
1839.,1685,1421,1421,
2051.,1913,1422,1422,
2406.,2288,1426,1426,
R, 1 , 67 ,500
1355,1932,1427.,Admin
R, 2 , 67 ,500
1491,1799,1427.,Classrms
R, 3 , 67 ,500
1606,1702,1427.,Sanct.
```

R, 4 , 67 ,500
1691,1787,1427.,Fellowsh
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Spirit of Joy Mitigated First Floor

BARRIER DATA
****

BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	10.*							B1 P1	42.1	MASONRY
2	-	10.*							B1 P2	89.0	MASONRY
3	-	10.*							B1 P3	40.0	MASONRY
4	-	10.*							B1 P4	88.1	MASONRY
5	-	15.*							B2 P1	88.0	MASONRY
6	-	15.*							B2 P2	80.0	MASONRY
7	-	15.*							B2 P3	86.1	MASONRY
8	-	15.*							B2 P4	83.1	MASONRY
9	-	10.*							B3 P1	80.0	MASONRY
10	-	10.*							B3 P2	74.1	MASONRY
11	-	10.*							B3 P3	81.0	MASONRY
12	-	10.*							B3 P4	75.0	MASONRY
13	-	10.*							B4 P1	86.1	MASONRY
14	-	10.*							B4 P2	42.0	MASONRY
15	-	10.*							B4 P3	87.1	MASONRY
16	-	10.*							B4 P4	42.1	MASONRY
17	-	7.*							B5 P1	57.0	MASONRY
18	-	7.*							B5 P2	36.0	MASONRY
19	-	7.*							B5 P3	24.0	MASONRY
20	-	7.*							B5 P4	48.0	MASONRY
21	-	0.*							B6 P1	501.5	BERM
22	-	0.*							B7 P1	321.8	BERM
23	-	0.*							B7 P2	311.3	BERM
24	-	0.*							B7 P3	516.4	BERM
	0	1	2	3	4	5	6	7			

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	Admin	67.	500.	62.5
2	Classrms	67.	500.	61.7
3	Sanct.	67.	500.	63.7
4	Fellowsh	67.	500.	63.3

```
Spirit of Joy Mitigated Second Floor
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 3040 , 55 , 99 , 55 , 61 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 606 , 40 , 29 , 40 , 14 , 40
L-Julian Road, 1
N,1290.,1062,1428,
N,1631.,1428,1424,
N,1861.,1668,1421,
N,2074.,1892,1422,
N,2430.,2268,1426,
L-Highland Valley Road, 2
N,714.,2401,1413,
N,925.,2256,1413,
N,1079.,2137,1414,
N,1272.,1910,1418,
N,1495.,1617,1421,
N,1650.,1406,1424,
N,1843.,1139,1425,
B-Building 1 (Classrooms), 1 , 2 , 0 ,0
1448.,1804,1422,1432,
1445.,1846,1422,1432,
1534.,1848,1422,1432,
1536.,1808,1422,1432,
1448.,1804,1422,1432,
B-Building 2 (Sanctuary), 2 , 2 , 0 ,0
1561.,1708,1422,1437,
1560.,1796,1422,1437,
1640.,1798,1422,1437,
1644.,1712,1422,1437,
1561.,1708,1422,1437,
B-Building 3 (Fellowship Hall), 3 , 2 , 0 ,0
1648.,1789,1419,1429,
1647.,1869,1419,1429,
1721.,1872,1419,1429,
1723.,1791,1419,1429,
1648.,1789,1419,1429,
B-Building 4 (Administrative), 4 , 2 , 0 ,0
1363.,1885,1422,1432,
1360.,1971,1422,1432,
1402.,1972,1422,1432,
1405.,1885,1422,1432,
1363.,1882,1422,1432,
B-Barrier 3, 5 , 2 , 0 ,0
1458.,1806,1422,1429,
1401.,1804,1422,1429,
1401.,1840,1422,1429,
1377.,1839,1422,1429,
1375.,1887,1422,1429,
B-Julian Road Edge, 6 , 1 , 0 ,0
1270.,1088,1428,1428,
1616.,1451,1424,1424,
B-Julian Road Edge, 7 , 1 , 0 ,0
1617.,1452,1424,1424,
1839.,1685,1421,1421,
2051.,1913,1422,1422,
2406.,2288,1426,1426,
R, 1 , 67 ,500
1355,1932,1437.,Admin
R, 2 , 67 ,500
1491,1799,1437.,Classrms
R, 3 , 67 ,500
1606,1702,1437.,Sanct.
```

R, 4 , 67 ,500
1691,1787,1437.,Fellowsh
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Spirit of Joy Mitigated Second Floor

BARRIER DATA
****

BAR ELE	0	1	2	3	4	5	6	7	BAR ID	LENGTH	TYPE
1	-	10.*							B1 P1	42.1	MASONRY
2	-	10.*							B1 P2	89.0	MASONRY
3	-	10.*							B1 P3	40.0	MASONRY
4	-	10.*							B1 P4	88.1	MASONRY
5	-	15.*							B2 P1	88.0	MASONRY
6	-	15.*							B2 P2	80.0	MASONRY
7	-	15.*							B2 P3	86.1	MASONRY
8	-	15.*							B2 P4	83.1	MASONRY
9	-	10.*							B3 P1	80.0	MASONRY
10	-	10.*							B3 P2	74.1	MASONRY
11	-	10.*							B3 P3	81.0	MASONRY
12	-	10.*							B3 P4	75.0	MASONRY
13	-	10.*							B4 P1	86.1	MASONRY
14	-	10.*							B4 P2	42.0	MASONRY
15	-	10.*							B4 P3	87.1	MASONRY
16	-	10.*							B4 P4	42.1	MASONRY
17	-	7.*							B5 P1	57.0	MASONRY
18	-	7.*							B5 P2	36.0	MASONRY
19	-	7.*							B5 P3	24.0	MASONRY
20	-	7.*							B5 P4	48.0	MASONRY
21	-	0.*							B6 P1	501.5	BERM
22	-	0.*							B7 P1	321.8	BERM
23	-	0.*							B7 P2	311.3	BERM
24	-	0.*							B7 P3	516.4	BERM
	0	1	2	3	4	5	6	7			

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	Admin	67.	500.	63.2
2	Classrms	67.	500.	62.8
3	Sanct.	67.	500.	64.7
4	Fellowsh	67.	500.	64.0

APPENDIX D

SPIRIT OF JOY SCHEDULE OF EVENTS

Spirit of Joy Lutheran Church
Scheduling of regular hours, events, and special events
Revised 8/20/07

Regular Scheduling:

Sunday: **Worship** (Sanctuary) hours: 8:15am and 9:45am (200 in attendance)
Youth Ministry (Fellowship Hall & outdoors) gathering: 5:00-7:00pm (20)

Monday**: Office Hours, Monday through Friday** 9:00am –1:00pm (4 in office)
Adult Bible Studies: (FH & Education) 6:00am-7:00am (25)
7:00pm-8:00pm (40)
AA Meetings: (FH & ED) 12:00-1:30pm (15)

Tuesday:
Prayers and Squares Quilters: (FH) 9:00am-1:00pm (15)
Kids Klub: (FH & Outdoors) 4:00pm-6:00pm (35)
Evening Meetings: **Council Meeting** (ED) (once per month 7:00pm-9:00pm (10**), & Stephen Ministry** meeting(twice per month, 6:30pm-9:00pm, (12)

Wednesday:
Men's Ministry: (FH) 7:00am-8:00am (15)
Adult Bible Studies: (FH) 9:30am-11:30am (25), 7:00pm-9:00pm (20)

Thursday:
Confirmation class, junior high youth: (FH) 4:00pm-6:00pm (15)
Choirs, Praise team (ED) 6:00pm-7:00pm (5)
Spirit of Joy Choir (ED) 7:00pm-9:00pm (15)
AA Meetings: (FH & ED) 12:00-1:30pm (15)
7:00pm-9:00pm (15)

Friday:
NA Meeting: (FH & ED) 7:00pm-9:00pm (10)

Saturday:
Men's Bible Study (ED) (twice per month); 7:30am-9:00am (15)
NA Meeting: (FH & ED) 10:00am-11:30am (20)

Special Events:
Stewardship Banquet: (FH & Outdoor) (once per year) November: Sunday, 5:00pm-7:00pm (120)
Christmas Gathering: (All) (once per year) December: Sunday, 5:00pm-7:00pm (120)
Easter Worship Service: (Center Lawn) 6am Sunrise Service outside, 8:15am and 9:45am (150) at each service.
Christmas Worship: (Sanctuary) 5:00pm, 7:00pm (150 at each), 11:00pm (100).
Lenten services: (Sanctuary & FH) 5 Wednesday evenings during Lent(February and March), 6:30pm-7:30pm, (70).

Vacation Bible School: (FH & ED) week long in summer, 9:00am-noon,(75) children preschool through sixth grade.
Special Choir Rehearsal for Easter and Christmas: (Sanctuary & ED) 5 Saturdays prior to worship, 9:00am-11:00am, (15).

Additional special events may include speakers, additional fellowship events, youth functions, children functions(most of which will be held in fellowship area).

APPENDIX E

STATIONARY SOURCE NOISE PREDICTION CALCULATIONS

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-01

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	300.0	feet	***Barrier Height:***	**15.0 feet**
Noise Distance to Barrier:	5.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	295.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	300.0	-35.6
Shielding (Barrier Attenuation)		-16.3
Adjusted (Distance + Barrier)	**300.0**	**21.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-02

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	300.0	feet	***Barrier Height:***	**15.0**	**feet**
Noise Distance to Barrier:	5.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0	
Barrier Distance to Observer:	295.0	feet			
Noise Height:	4.0	feet			
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes	
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes	
Noise Source Elevation:	0.0	feet			

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	300.0	-35.6
Shielding (Barrier Attenuation)		-16.3
Adjusted (Distance + Barrier)	**300.0**	**21.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-03

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	225.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	224.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	225.0	-33.1
Shielding (Barrier Attenuation)		-4.9
Adjusted (Distance + Barrier)	**225.0**	**35.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-04

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	185.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	184.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	185.0	-31.4
Shielding (Barrier Attenuation)		-5.1
Adjusted (Distance + Barrier)	**185.0**	**36.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-05

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	182.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	181.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	182.0	-31.2
Shielding (Barrier Attenuation)		-5.1
Adjusted (Distance + Barrier)	**182.0**	**37.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-06

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	145.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	144.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	145.0	-29.2
Shielding (Barrier Attenuation)		-5.1
Adjusted (Distance + Barrier)	**145.0**	**39.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-07

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	125.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	124.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	125.0	-28.0
Shielding (Barrier Attenuation)		-10.7
Adjusted (Distance + Barrier)	**125.0**	**34.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-08

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	125.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	124.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	125.0	-28.0
Shielding (Barrier Attenuation)		-10.7
Adjusted (Distance + Barrier)	**125.0**	**34.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-09

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	120.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	119.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	120.0	-27.6
Shielding (Barrier Attenuation)		-10.7
Adjusted (Distance + Barrier)	**120.0**	**35.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-10

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	120.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	119.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	120.0	-27.6
Shielding (Barrier Attenuation)		-10.7
Adjusted (Distance + Barrier)	**120.0**	**35.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Outdoor Activities
Observer Location: 1-11

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	260.0	feet	***Barrier Height:***	**15.0**	**feet**
Noise Distance to Barrier:	50.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0	
Barrier Distance to Observer:	210.0	feet			
Noise Height:	4.0	feet			
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes	
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes	
Noise Source Elevation:	0.0	feet			

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	25.0	62.8
Distance Attenuation	260.0	-20.3
Shielding (Barrier Attenuation)		-11.1
Adjusted (Distance + Barrier)	**260.0**	**31.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-01

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	155.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	154.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	155.0	-29.8
Shielding (Barrier Attenuation)		-10.7
Adjusted (Distance + Barrier)	**155.0**	**32.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-02

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	155.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	154.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	155.0	-29.8
Shielding (Barrier Attenuation)		-10.7
Adjusted (Distance + Barrier)	**155.0**	**32.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-03

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	196.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	195.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	196.0	-31.9
Shielding (Barrier Attenuation)		-4.9
Adjusted (Distance + Barrier)	**196.0**	**36.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-04

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	167.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	166.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	167.0	-30.5
Shielding (Barrier Attenuation)		-5.1
Adjusted (Distance + Barrier)	**167.0**	**37.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-05

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	245.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	244.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	245.0	-33.8
Shielding (Barrier Attenuation)		-4.9
Adjusted (Distance + Barrier)	**245.0**	**34.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-06

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	220.0	feet	***Barrier Height:***	**4.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	219.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	20.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	220.0	-32.9
Shielding (Barrier Attenuation)		-4.9
Adjusted (Distance + Barrier)	**220.0**	**35.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-07

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	335.0	feet	***Barrier Height:***	**10.0**	**feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0	
Barrier Distance to Observer:	334.0	feet			
Noise Height:	4.0	feet			
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes	
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes	
Noise Source Elevation:	0.0	feet			

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	335.0	-36.5
Shielding (Barrier Attenuation)		-15.3
Adjusted (Distance + Barrier)	**335.0**	**21.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-08

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	335.0	feet	***Barrier Height:***	**10.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	334.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	335.0	-36.5
Shielding (Barrier Attenuation)		-15.3
Adjusted (Distance + Barrier)	**335.0**	**21.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-09

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	460.0	feet	***Barrier Height:***	**10.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	459.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	460.0	-39.3
Shielding (Barrier Attenuation)		-15.3
Adjusted (Distance + Barrier)	**460.0**	**18.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: A/C RTU-1
Observer Location: 1-10

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	460.0	feet	***Barrier Height:***	**10.0 feet**
Noise Distance to Barrier:	1.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	459.0	feet		
Noise Height:	4.0	feet		
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	5.0	73.4
Distance Attenuation	460.0	-39.3
Shielding (Barrier Attenuation)		-15.3
Adjusted (Distance + Barrier)	**460.0**	**18.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Outdoor Activities
Observer Location: 1-11

Project Name: Spirit of Joy
Job Number: 5126
Analyst: A. Stalker

NOISE MODEL INPUTS

Noise Distance to Observer	260.0	feet	***Barrier Height:***	**15.0**	**feet**
Noise Distance to Barrier:	50.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0	
Barrier Distance to Observer:	210.0	feet			
Noise Height:	4.0	feet			
Observer Height (Above Pad):	5.0	feet	*Barrier Breaks Line of Sight:*	Yes	
Observer Elevation:	0.0	feet	*Wall Located at Noise Source Elevation:*	Yes	
Noise Source Elevation:	0.0	feet			

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	25.0	62.8
Distance Attenuation	260.0	-20.3
Shielding (Barrier Attenuation)		-11.1
Adjusted (Distance + Barrier)	**260.0**	**31.4**