

# 7<sup>TH</sup> AVE AND GLENDALE RETAIL AND RESTAURANT PLAZA NOISE STUDY - GLENDALE, AZ

OCTOBER 4, 2023

PREPARED FOR:  
SIMONCRE JC TUCKER IV LLC

PREPARED BY:  
**ACOUSTICS GROUP, INC.**  
CONSULTANTS IN ACOUSTICS, NOISE & VIBRATION





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# **75<sup>th</sup> Ave and Glendale Retail and Restaurant Plaza Noise Study - Glendale, AZ**

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## 1. EXECUTIVE SUMMARY

Acoustics Group, Inc., (AGI) was retained to conduct a noise study of the proposed Retail and Restaurant Plaza at the corner of 75<sup>th</sup> Avenue and Glendale Avenue in Glendale, AZ. AGI has reviewed the City of Glendale Noise Standards, conducted noise measurements, analyzed the noise levels from future operations at the site, assessed the impact of the future noise to determine compliance with the Noise Standards, and recommended noise control measures.

The future operations were modeled for worst case typical conditions during peak hour activity and worst-case conditions during a delivery at the Goodwill. The typical hourly Leq from operations is estimated to be as high 41.6 and 42.7 dBA at residential rear yard of noise receptors NM1 and NM2, respectively. The operations peak hour noise levels would comply with the City of Glendale's retail noise standard of 55 dBA. Delivery operations at the Goodwill will operate during the nighttime period with plaza operations estimated to be as high as 42.6 and 55.3 dBA at the residential rear yard of noise receptors NM1 and NM2, respectively. The delivery operations noise levels would exceed retail noise standards of 55 dBA at NM2. Noise control has been recommended to reduce operation noise levels for compliance with the City's Standards.

## 2. INTRODUCTION

SimonCRE JC Tucker IV LLC proposes a new retail center located at the corner of 75<sup>th</sup> Avenue and Glendale Avenue in Glendale, AZ. Refer to Figure 1 for the general location of the Site and a Vicinity Map. Land uses immediately surrounding the site are commercial and residential. An existing 6-ft high noise barrier wall protects the residential land use to the south and east of the project site. The main noise concern is restaurant and retail operations affecting the residential properties. Refer to Figure 2 for the Site Plan and Location of the Retail Center.



Figure 1. Project Location

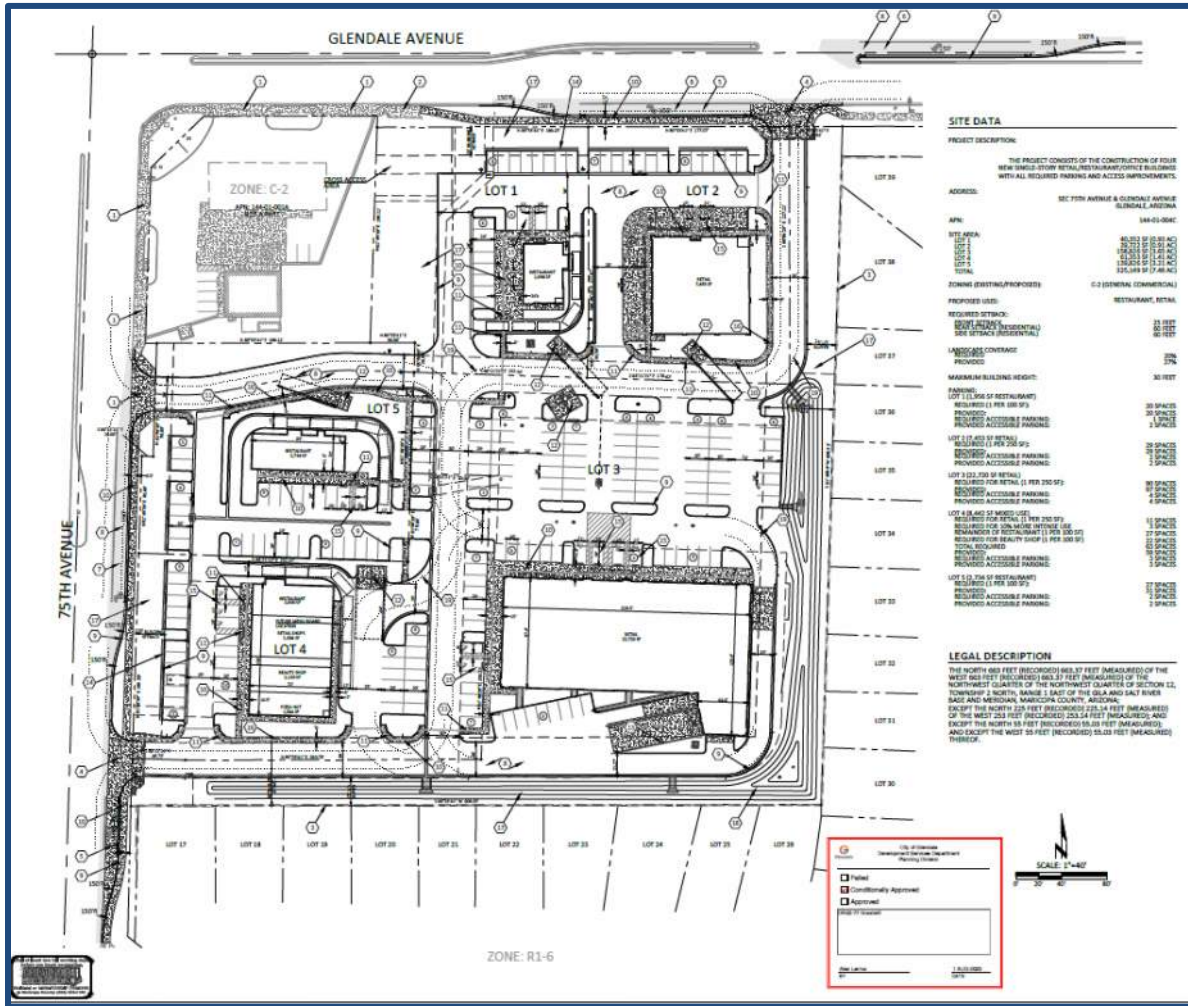
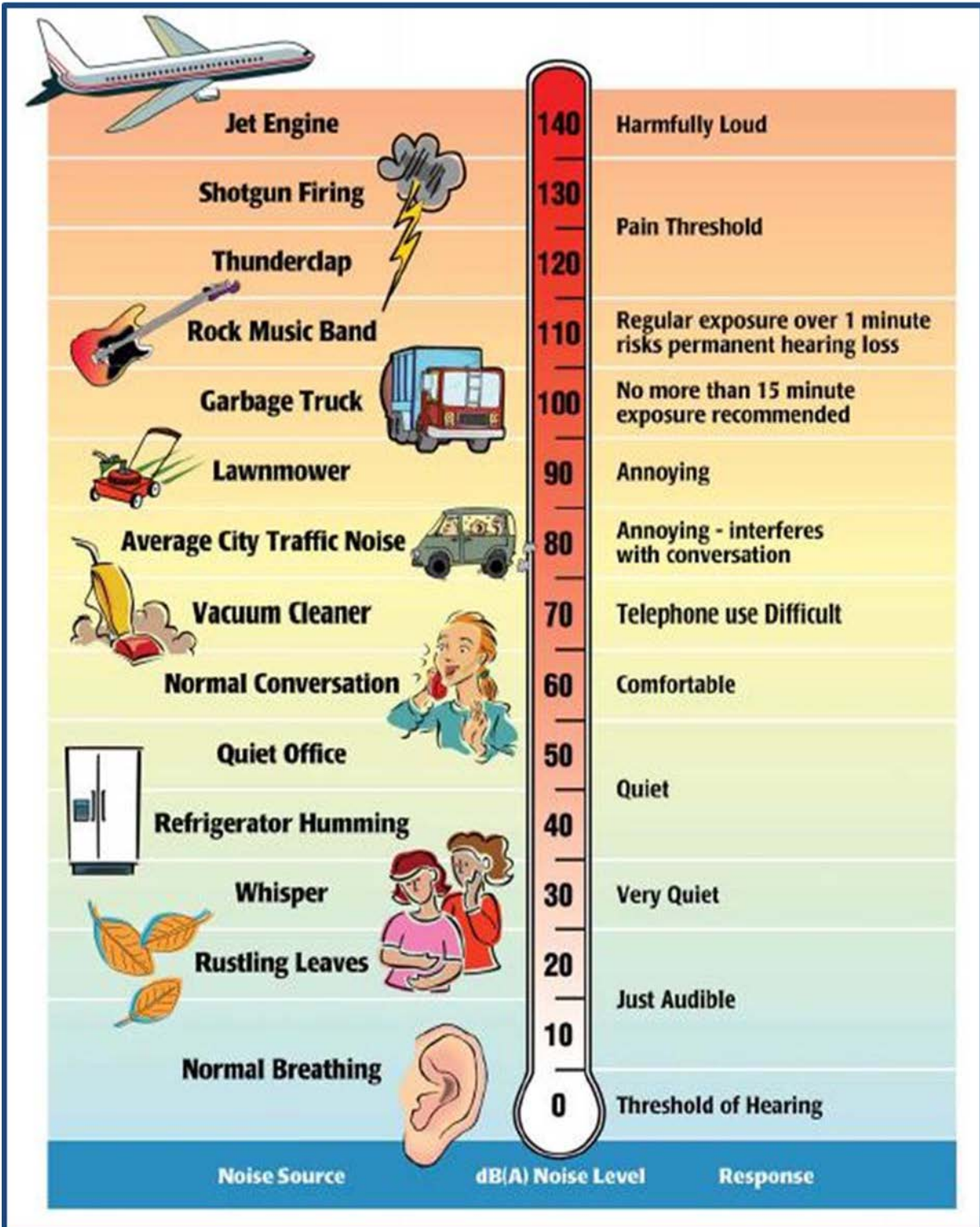


Figure 2. Site Plan

### 3. NOISE

The magnitude by which noise affects its surrounding environment is measured on a logarithmic scale in decibels (dB). Because the human ear is limited to hearing a specific range of frequencies, the A-weighted filter system is used to form relevant results. A-weighted sound levels are represented as dBA. Figure 3 shows typical A-weighted exterior and interior noise levels that occur in human environments.

Several noise metrics have been developed to evaluate noise.  $L_{eq}$  is the energy average noise level and corresponds to a steady-state sound level that has the same acoustical energy as the sum of all the time varying noise events.  $L_{max}$  is the maximum noise level measured during a sampling period, and  $L_{xx}$  are the statistical noise levels that are exceeded xx-% of the time of the measurement.  $L_{50}$  is the average noise level that is exceeded 50% of the time, 30 minutes in a 60 minute period.



Source: Melville Branch and R. Beland, 1970. EPA/ONAC 550/9-74-004, March 1974.

Figure 3. Typical A-weighted Noise Levels



#### 4. NOISE STANDARDS

The City of Glendale Municipal Code has adopted regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. In general, any excessive, unnecessary, or offensive noise that disturbs the peace and quiet or that causes discomfort or annoyance is prohibited. Specifically, for Community Shopping Centers, the City's Code limits mechanical noise to 55 dBA at the property line. Exemptions are made for safety signals and warning devices.

#### 5. EXISTING NOISE LEVELS

AGI performed a site visit from August 31 to September 1, 2023 to conduct two long-term ambient noise measurements and three short-term ambient noise measurements to document existing baseline hourly noise levels. Figure 4 shows the location of the noise measurements. At location NM1, the measured hourly Leq ranged from 45.6 to 59.3 dBA. At NM2, the measured hourly Leq ranged from 44.7 to 56.7 dBA. The predominant noise sources contributing to the ambient background noise consisted of vehicular traffic and a dust storm. At ST1, the measured short-term Leq ranged from 54.2 to 54.6 dBA. At ST2, the measured short-term Leq ranged from 53.4 to 53.5 dBA. The noise sources contributing to the short-term ambient measurement data were vehicular traffic. Table 1 summarizes the noise measurement data from the survey. Refer to the Appendix for the measurement data sheets.

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Figure 4. Noise Measurement Locations

Table 1. Summary of Ambient Noise Measurements

Receiver Location		Time	Lmin, dBA	Lmax, dBA	Leq, dBA	Contributing Noise Sources
NM1	East Property Line	8/31/2023 11:00 AM – 9/1/2023 11:00 AM	38.7	78.4	45.6 to 59.3	Vehicular Traffic, Dust Storm
NM2	South Property Line	8/31/2023 11:00 AM – 9/1/2023 11:00 AM	36.3	77.7	44.7 to 56.7	Vehicular Traffic, Dust Storm
ST1	East Property Line	8/31/2023 10:46 AM – 11:06 AM	47.2	70.8	54.6	Vehicular Traffic
		9/1/2023 9:12 AM – 9:39 AM	44.2	68.4	54.2	Vehicular Traffic
ST2	South Property Line	8/31/2023 11:11 AM – 11:33 AM	43.7	68.9	53.4	Vehicular Traffic
		9/1/2023 8:56 AM – 9:08 AM	43.4	63.2	53.5	Vehicular Traffic



## 6. NOISE ANALYSIS

The following section analyzes the potential noise impacts associated with the construction and operations of the proposed project.

The future noise generated from the future retail operations has the potential to impact nearby properties. The methodology used to analyze and predict operations noise from the project involved the use of the CadnaA computer noise model. CadnaA can simulate the physical environment by factoring in x, y, and z geometrics of a particular site to simulate the buildings, obstacles, and typography. The model uses industry recognized algorithms (ISO 9613) to perform acoustical analyses. The noise generated by future operations was calculated by inputting acoustical sources at the project site.

Operations sound levels and assumptions were provided by SimonCRE. Deliveries will only occur during the nighttime hours. Refer to Table 2 for the noise sources used in the predictive analysis.

**Table 2. Operations Noise Sources**

Noise Source	Operations or Equipment Sound Power Level Leq, dBA
Trailer Hookup	113
Trailer Drop Off	117
Loading Unloading Trailer	95
Backup Beeper	105
Rooftop Unit (5 Ton)	78
Rooftop Unit (7.5 Ton)	83
Rooftop Unit (10 Ton)	82
Drive Through PA System	86
Car Door Slam	92
Car Start	86

Source: AGI Industry Database

The future operations were modeled for worst case typical conditions during peak hour activity and worst-case conditions during a delivery at the Goodwill. Within the project boundaries, the typical hourly Leq from operations is estimated to be as high as 50.1 and 51.1 dBA at location NM1 and NM2, respectively. The existing 6-ft high residential property line barrier will reduce operations noise levels to as high as 41.6 and 42.7 dBA at the residential rear yard of noise receptors NM1 and NM2, respectively. During deliveries at Goodwill, the hourly Leq from operations is estimated to be as high as 50.4 and 61.7 dBA within the project boundaries at location NM1 and NM2, respectively. Behind the 6-ft high residential barrier, the delivery and operations noise level will be as high as 42.6 and 55.3 dBA at the residential rear yards of noise receptor NM1 and NM2,

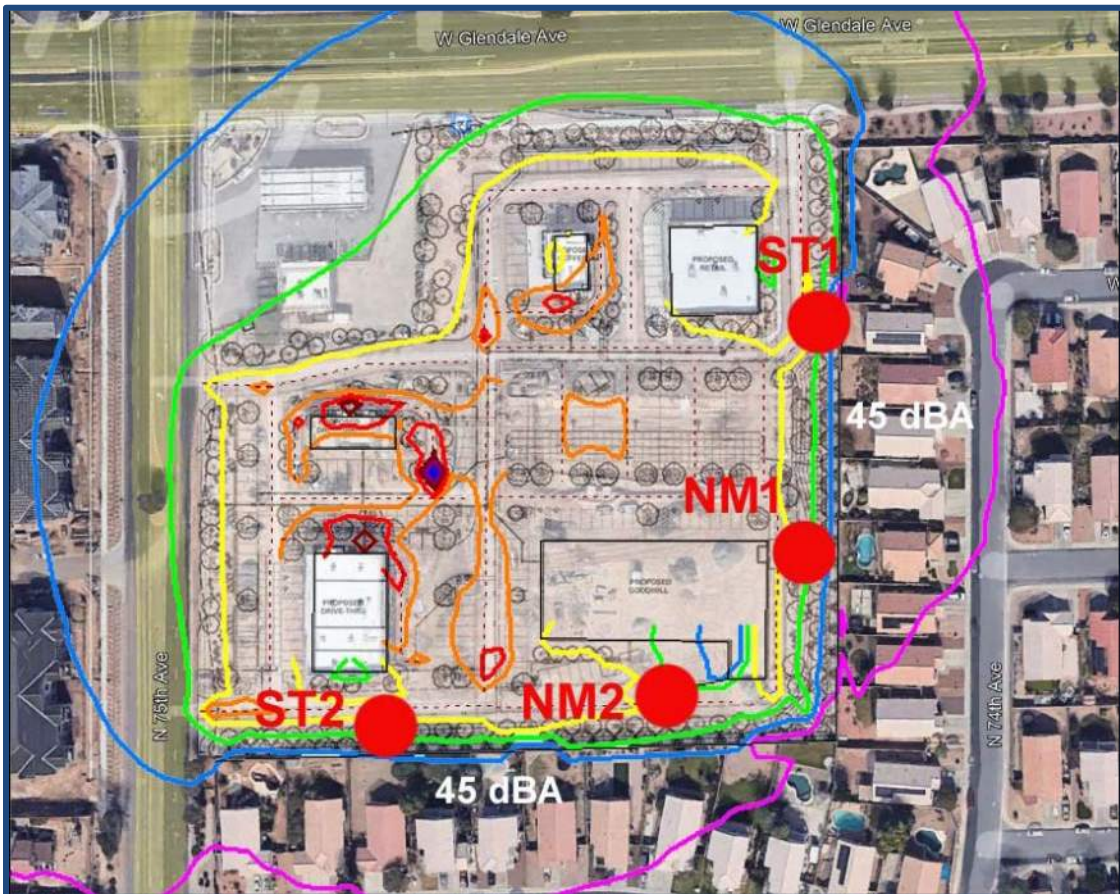


respectively. Refer to Figures 5 and 6 for a noise contour map of the Proposed Operations without noise control for typical operations and delivery with operations, respectively. These predicted noise contours include the shielding provided by the existing 6-ft high concrete masonry block wall along the residential property boundary. Refer to Table 3 for a summary of the predicted noise levels.

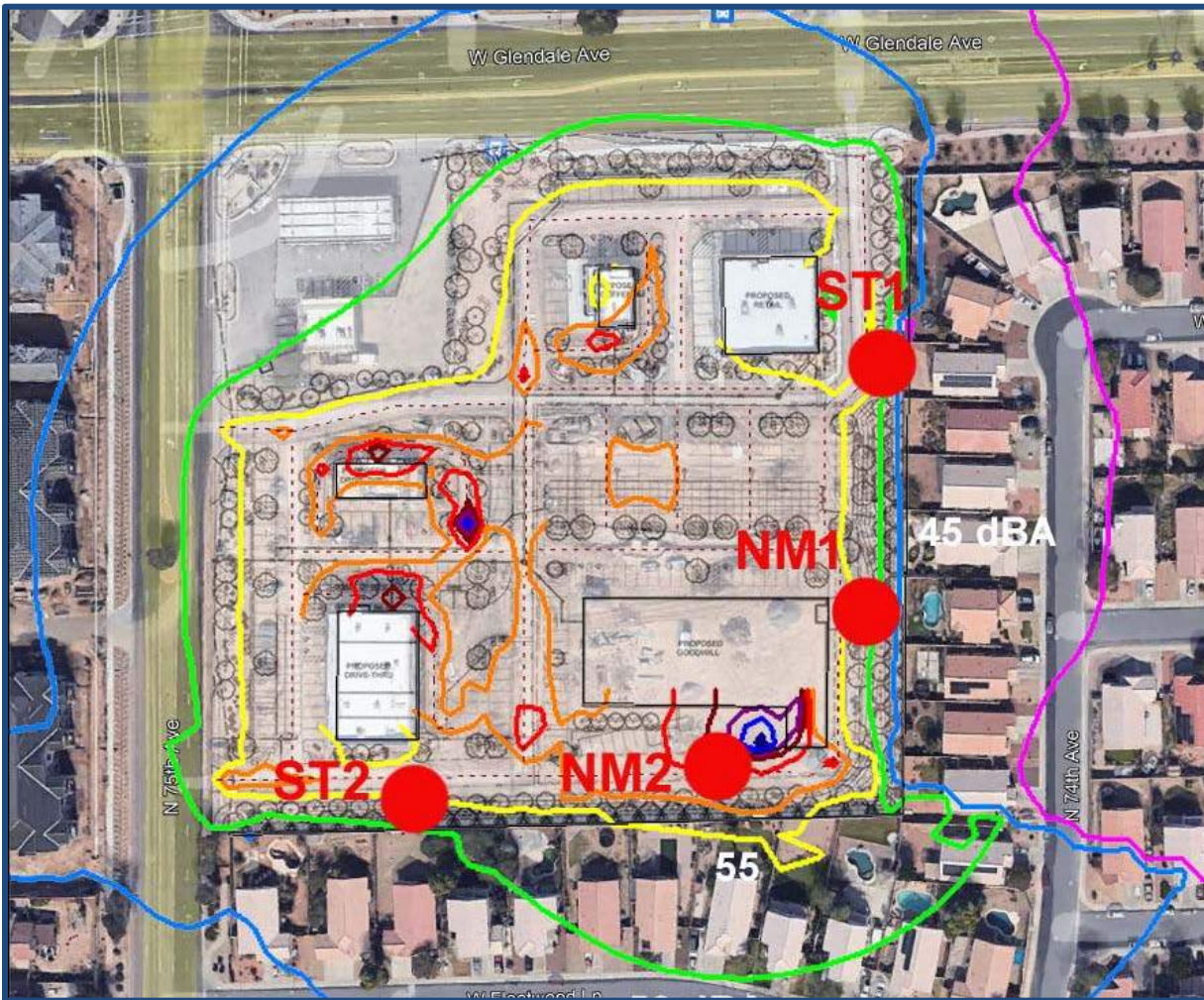
**Table 3. Predicted Noise Levels**

Noise Sensitive Location		Operation Peak Hour Leq, dBA			
		Future Typical		Future with Delivery <sup>1</sup>	
		Project Boundary Side	Behind 6-ft Barrier	Project Boundary Side	Behind 6-ft Barrier
NM1	East Property Line	50.1	41.6	50.4	42.6
NM2	South Property Line	51.1	42.7	61.7	55.3
ST1	East Property Line	51.1	43.8	51.2	43.9
ST2	South Property Line	50.9	44.0	53.8	48.9

Note: <sup>0</sup>Delivery operations only occur during the nighttime.



**Figure 5. Predicted Noise Contour Map of the Retail and Restaurant Plaza Typical Operations – Without Noise Control**



**Figure 6. Predicted Noise Contour Map of the Retail and Restaurant Plaza Operations (with Goodwill Delivery) – Without Noise Control**

## 7. IMPACT ASSESSMENT

The typical hourly  $L_{eq}$  from operations is estimated to be as high 41.6 and 42.7 dBA at residential rear yard of noise receptors NM1 and NM2, respectively. The operations peak hour noise levels would comply with the City of Glendale's retail noise standard of 55 dBA. Delivery operations at Goodwill will operate during the nighttime period with plaza operations estimated to be as high as 42.6 and 55.3 dBA at the residential rear yard of noise receptors NM1 and NM2, respectively. The delivery operations noise levels would exceed the retail noise standards of 55 dBA at NM2. Noise control is necessary to reduce operations' noise levels for compliance with the City's Standards. Refer to Table 4 for a summary of the future operations noise levels and impact assessments.



Table 4. Impact Assessment of Operations Noise

Condition	Noise Sensitive Location (behind existing 6-ft Noise Barrier)		Future Operation Peak Hour Leq behind existing 6-ft Residential Noise Barrier, dBA	Noise Standard, Leq, dBA	Assessment
Typical Operations	NM1	East Property Line	41.6	55	Compliance
	NM2	South Property Line	42.7	55	Compliance
	ST1	East Property Line	43.8	55	Compliance
	ST2	South Property Line	44.0	55	Compliance
Operations with Delivery	NM1	East Property Line	42.6	55	Compliance
	NM2	South Property Line	55.3	55	<b>Exceedance</b>
	ST1	East Property Line	43.9	55	Compliance
	ST2	South Property Line	48.9	55	Compliance

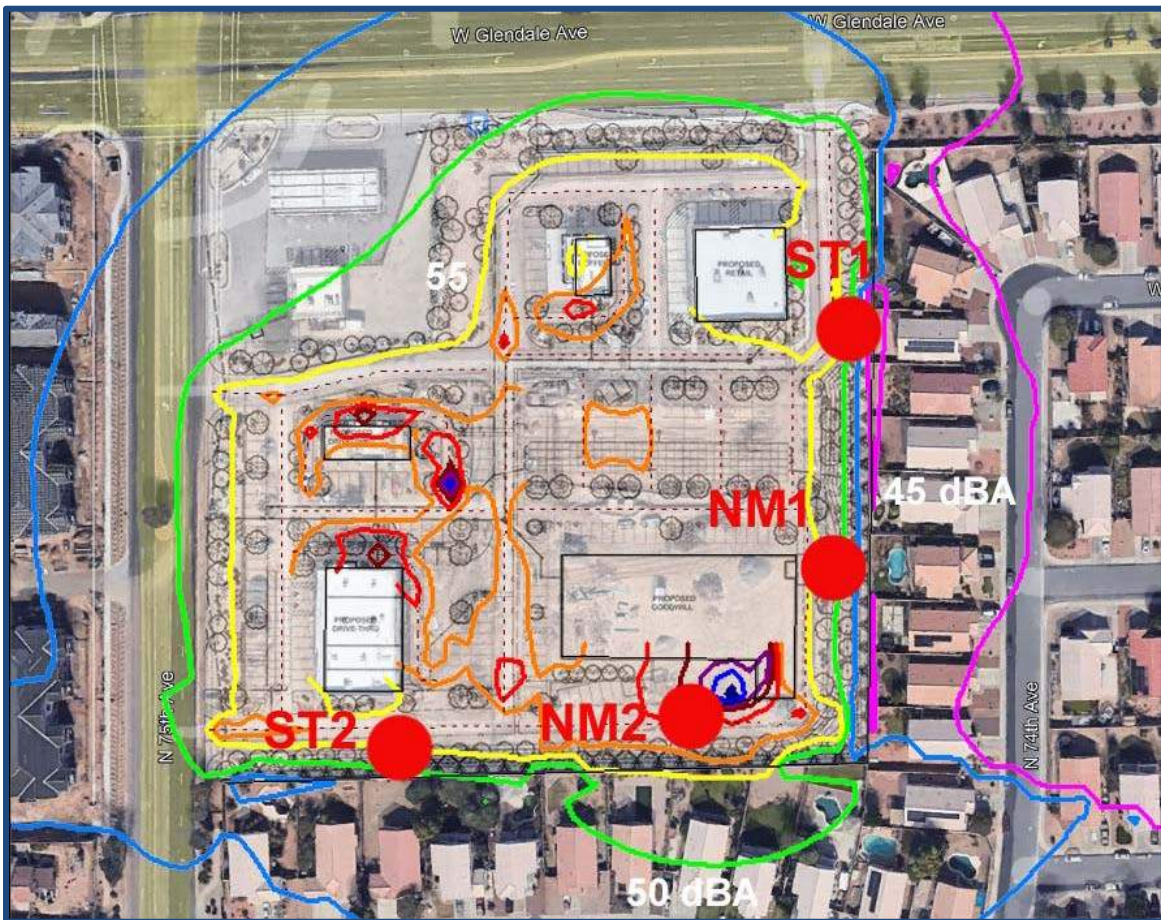
## 8. NOISE CONTROL ANALYSIS

Noise control was evaluated to reduce the noise from operations and deliveries to comply with the City's Noise Standards. AGI evaluated the noise reduction from increasing the proposed 8-ft high loading dock noise barrier to 10-ft high. With a 10-ft high loading dock noise barrier, the operation noise level is expected to be reduced to 42.6 and 51.7 dBA at NM1 and NM2, respectively. This will result in a noise level reduction of 3.6 dBA at NM2. The operations peak hour noise levels would comply with the City of Glendale's noise standard of 55 dBA. Table 5 summarizes the Operations and Delivery Noise Levels with 10-ft high Loading Dock Noise Barrier. Figure 7 illustrates the Noise Contour Map for Operations and Delivery Noise Control with the 10-ft high loading dock noise barrier.



**Table 5. Impact Assessment of Operations with Delivery Noise with 10-ft High Loading Dock Noise Barrier**

Condition	Noise Sensitive Location (behind existing 6-ft Noise Barrier)	Future Operation with Delivery Peak Hour Leq with 8-ft High Loading Dock Noise Barrier, dBA	Future Operation with Delivery Peak Hour Leq with 10-ft High Loading Dock Noise Barrier, dBA	Noise Standard, Leq, dBA	Assessment	
Delivery	NM1	East Property Line	42.6	42.6	55	Compliance
	NM2	South Property Line	55.3	51.7	55	Compliance
	ST1	East Property Line	43.9	43.9	55	Compliance
	ST2	South Property Line	48.9	48.9	55	Compliance



**Figure 7. Predicted Noise Contour Map with Noise Control – 10-ft High Loading Dock Noise Barrier**





3. The operations and equipment shall not exceed the following noise source levels:

Noise Source	Operations or Equipment Sound Power Level Leq, dBA
Trailer Hookup	113
Trailer Drop Off	117
Loading Unloading Trailer	95
Backup Beeper	105
Rooftop Unit (5 Ton)	78
Rooftop Unit (7.5 Ton)	83
Rooftop Unit (10 Ton)	82
Drive Through PA System	86

4. A spotter should be used to minimize the use of back up beepers for loading/unloading operations.
5. Delivery vehicles should not be left idling, to minimize noise onto neighboring properties.
6. The final design should be reviewed by a licensed Mechanical Engineer to ensure compliance with all applicable mechanical, fire and safety codes.
7. Upon completion of the project, a noise verification study should be performed to verify compliance with the City’s noise standards.

**10. CONCLUSION**

Acoustics Group, Inc., (AGI) was retained to conduct a noise study of the proposed Retail and Restaurant Plaza at the corner of 75<sup>th</sup> Avenue and Glendale Avenue in Glendale, AZ. AGI has reviewed the City of Glendale Noise Standards, conducted noise measurements, analyzed the noise levels from future operations at the site, assessed the impact of the future noise to determine compliance with the Noise Standards, and recommended noise control measures.

The future operations were modeled for worst case typical conditions during peak hour activity and worst-case conditions during peak hour activity and delivery at Goodwill. The typical hourly Leq from operations is estimated to be as high 41.6 and 42.7 dBA at residential rear yard of noise receptors NM1 and NM2, respectively. The operations peak hour noise levels would comply with the City of Glendale’s retail noise standard of 55 dBA. Delivery operations at the Goodwill will operate during the nighttime period with plaza operations estimated to be as high as 42.6 and 55.3 dBA at residential rear yard of noise receptors NM1 and NM2, respectively. The delivery operations noise levels would exceed retail noise standards of 55 dBA at NM2. Noise control has been recommended to reduce operation noise levels for compliance with the City’s Standards.



The final design of the project should be reviewed by a qualified acoustical consultant to ensure compliance with the noise standards.



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## 11. REFERENCES

1. Melville Branch and R. Beland, 1970. EPA/ONAC 550/9-74-004, March 1974.
2. Project Drawings dated July 17, 2023.
3. City of Glendale Municipal Code



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**12. APPENDIX**

**FIELD DATA SHEETS & MEASUREMENT DATA**

**CITY OF GLENDALE NOISE ORDINANCE**

**MODELING INPUT & OUTPUT**

**PROJECT DRAWINGS**



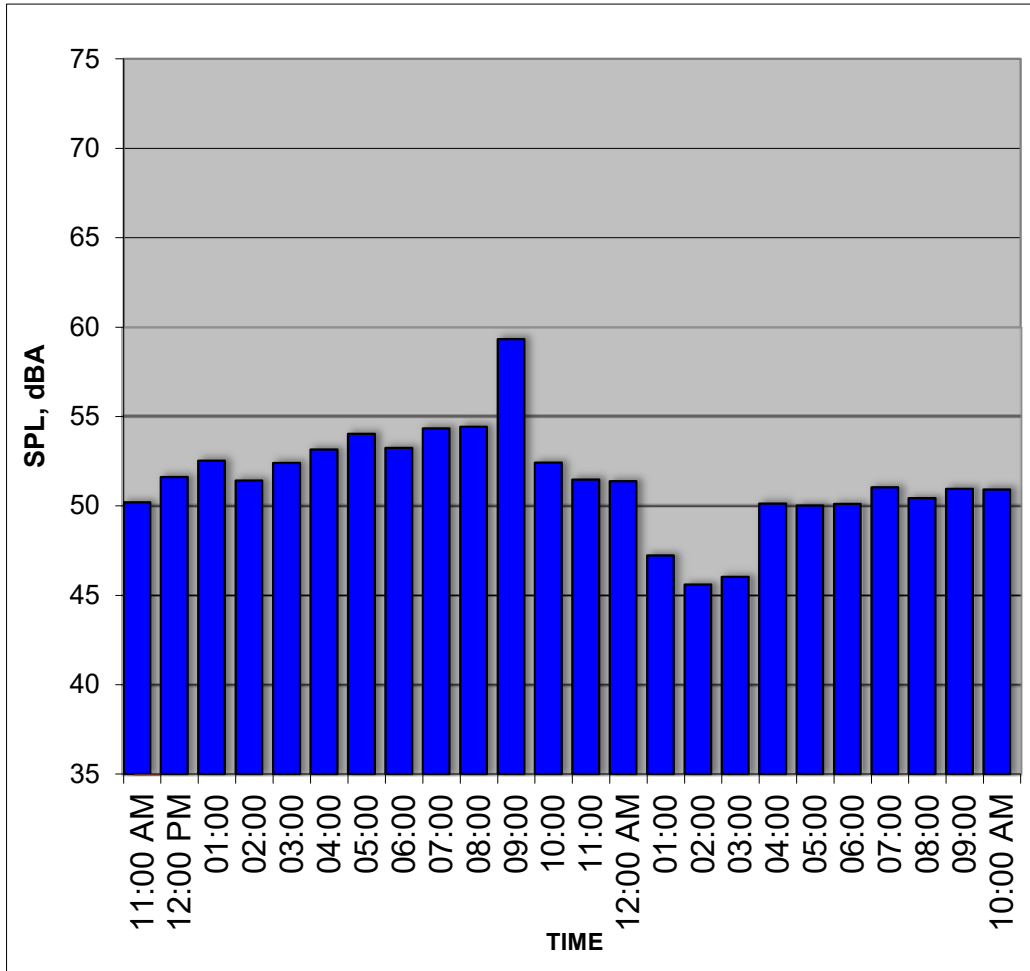
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**FIELD DATA SHEETS & MEASUREMENT DATA**

# MEASUREMENT DATA - HOURLY NOISE LEVELS

**Project:** SimonCRE JC Tucker IV LLC  
**Address:** SEC 75th & Glendale Ave., Glendale, AZ 85303  
**Location:** East Property Line  
**Noise Sources:** Vehicular Traffic & Dust Storm

**Date:** 8/31/2023  
 - 9/1/2023  
**Position:** NM1



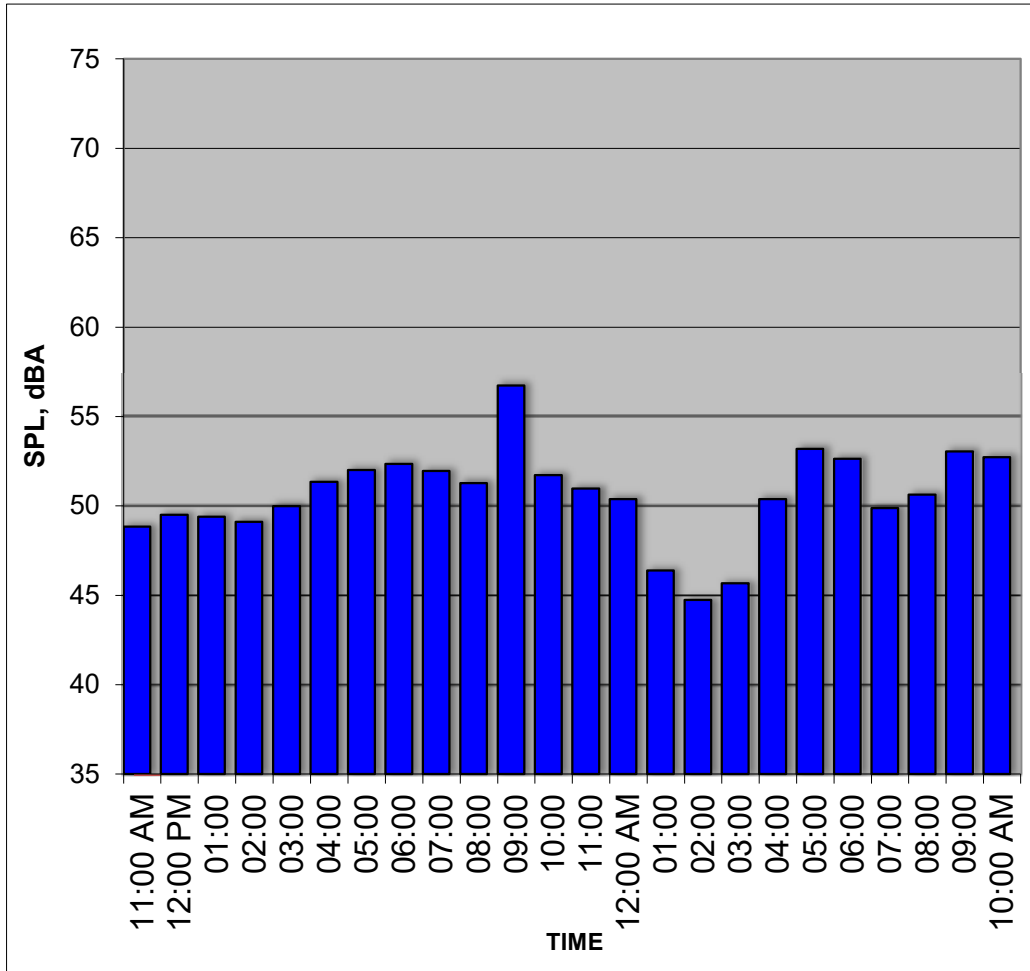
TIME	HNL, dB(A)
11:00 - 12:00 PM	50.2
12:00 - 01:00 PM	51.6
01:00 - 02:00 PM	52.5
02:00 - 03:00 PM	51.4
03:00 - 04:00 PM	52.4
04:00 - 05:00 PM	53.2
05:00 - 06:00 PM	54.0
06:00 - 07:00 PM	53.2
07:00 - 08:00 PM	54.3
08:00 - 09:00 PM	54.4
09:00 - 10:00 PM	59.3
10:00 - 11:00 PM	52.4
11:00 - 12:00 AM	51.5
12:00 - 01:00 AM	51.4
01:00 - 02:00 AM	47.2
02:00 - 03:00 AM	45.6
03:00 - 04:00 AM	46.0
04:00 - 05:00 AM	50.1
05:00 - 06:00 AM	50.0
06:00 - 07:00 AM	50.1
07:00 - 08:00 AM	51.0
08:00 - 09:00 AM	50.4
09:00 - 10:00 AM	51.0
10:00 - 11:00 AM	50.9
<b>CNEL:</b>	<b>58.0</b>



# MEASUREMENT DATA - HOURLY NOISE LEVELS

**Project:** SimonCRE JC Tucker IV LLC  
**Address:** SEC 75th & Glendale Ave., Glendale, AZ 85303  
**Location:** South Property Line  
**Noise Sources:** Vehicular Traffic & Dust Storm

**Date:** 8/31/2023  
 - 9/1/2023  
**Position:** NM2



TIME	HNL, dB(A)
11:00 - 12:00 PM	48.8
12:00 - 01:00 PM	49.5
01:00 - 02:00 PM	49.4
02:00 - 03:00 PM	49.1
03:00 - 04:00 PM	50.0
04:00 - 05:00 PM	51.3
05:00 - 06:00 PM	52.0
06:00 - 07:00 PM	52.3
07:00 - 08:00 PM	52.0
08:00 - 09:00 PM	51.3
09:00 - 10:00 PM	56.7
10:00 - 11:00 PM	51.7
11:00 - 12:00 AM	51.0
12:00 - 01:00 AM	50.4
01:00 - 02:00 AM	46.4
02:00 - 03:00 AM	44.7
03:00 - 04:00 AM	45.7
04:00 - 05:00 AM	50.4
05:00 - 06:00 AM	53.2
06:00 - 07:00 AM	52.6
07:00 - 08:00 AM	49.9
08:00 - 09:00 AM	50.6
09:00 - 10:00 AM	53.1
10:00 - 11:00 AM	52.7
<b>CNEL:</b>	<b>57.6</b>



## NOISE MONITORING FIELD DATA SHEET

<b>Project:</b>	Retail Project - SEC 75th & Glendale Ave - SimonCRE JC Tucker IV LLC	<b>Date:</b>	8/31/2023
<b>Loc:</b>	ST1 - East Property Line		
	ST2 - South Property Line		
<b>SLM:</b>	Brüel & Kjær 2270	<b>SN:</b>	3011341
<b>Mic:</b>	PCB 377B20	<b>SN:</b>	11074
<b>P/A:</b>	Brüel & Kjær ZC0032	<b>SN:</b>	25575

Start	Duration	L2	L8	L25	L50	L90	L99	Lmax	Lmin	Leq	Notes
8/31/2023 10:46 AM	00:20:17	61.7	57.1	54.1	52.1	49.3	48.0	70.8	47.2	54.6	ST1 - Vehicular Traffic
8/31/2023 11:11 AM	00:22:07	61.0	57.1	53.9	50.4	46.1	44.6	68.9	43.7	53.4	ST2 - Vehicular Traffic
9/1/2023 8:53 AM	00:15:01	59.7	57.6	54.7	51.3	46.7	44.3	63.2	43.4	53.5	ST1 - Vehicular Traffic
9/1/2023 9:12 AM	00:27:41	61.0	58.1	54.9	51.3	46.8	45.2	68.4	44.2	54.2	ST2 - Vehicular Traffic





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**CITY OF GLENDALE NOISE ORDINANCE**

5.790 - Performance Standards.

- A. Design review for the entire site must be approved prior to issuance of building permits for any portion of the site.
- B. A project may be built in phases, but the first phase must include at least one of the major anchors for the center and a percentage of the total gross floor area for the center as determined at the time of Master Development Plan approval. Pad sites shall not be developed prior to development of the first major anchor.
- C. The shopping center must include plazas containing a total of at least one thousand (1,000) square feet per net acre of the site. The plazas shall include shade trees, seating areas, tables, and trash receptacles. At least fifty percent (50%) of the area of plazas required shall be constructed in the first phase of development.
- D. Outdoor sales and displays are prohibited, except when the following conditions are present:
  - 1. Products and services displayed outdoors are customary, accessory, and incidental to those sold and displayed in a primary business being conducted in the permanent building on the property.
  - 2. Outdoor sales and displays do not interfere with pedestrian access ways, fire lanes, required parking spaces, driveways, landscape area, or traffic visibility at driveway entries and street intersections.
- E. All retail and service activities shall be within an enclosed building. No outside storage of equipment or materials is permitted.
- F. Loading areas, building service areas and drive-thru service windows must be oriented away from streets and screened from public view with a combination of landscaping and screen walls.
- G. Prior to certificate of occupancy of any building on the site, the developer shall provide certification that the noise level from mechanical equipment does not exceed 55 dBA (normal speaking voice) at the property line.

(Ord. No. 2177, § 4, 12-19-00; Ord. No. O17-51, § 5, 10-24-17)

**Editor's note—** Ord. No. O17-51, § 5, adopted Oct. 24, 2017, added Section 5.787 and in so doing renumbered former Sections 5.787—5.794 as Sections 5.788—5.795, as set out herein.



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## MODELING INPUT & OUTPUT



Receiver Name	ID	Land Use	Limiting Value	Station	Distance	Height	Lr w/o Noise Control	dl req.	Lr w/ Noise Control	Exceeding	passive NC
Day	Night	Day	Night	m	m	Day	Night	Day	Night	Day	Night
NM1A			0	52	13.98	1.5	50.1	39	50.1	0	-
NM1B			0	52	18.67	1.5	41.6	33.4	41.6	0	-
NM2A			0	53	5.64	1.5	51.1	38.7	51.1	0	-
NM2B			0	54	16.59	1.5	42.7	37.2	42.7	0	-
ST1A			0	16	7.92	1.5	51.1	38.4	51.1	0	-
ST1B			0	15	13.62	1.5	43.8	36.4	43.8	0	-

Receiver Name	ID	Land Use	Limiting Value	Station	Distance	Height	Lr w/o Noise Control	dl req.	Lr w/ Noise Control	Exceeding	passive NC
Day	Night	Day	Night	m	m	Day	Night	Day	Night	Day	Night
NM1A			0	52	13.98	1.5	50.1	39	50.1	0	-
NM1B			0	52	18.67	1.5	41.6	33.4	41.6	0	-
NM2A			0	53	5.64	1.5	51.1	38.7	51.1	0	-
NM2B			0	54	16.59	1.5	42.7	37.2	42.7	0	-
ST1A			0	16	7.92	1.5	51.1	38.4	51.1	0	-
ST1B			0	15	13.62	1.5	43.8	36.4	43.8	0	-

Receiver Name	ID	Land Use	Limiting Value	Station	Distance	Height	Lr w/o Noise Control	dl req.	Lr w/ Noise Control	Exceeding	passive NC
Day	Night	Day	Night	m	m	Day	Night	Day	Night	Day	Night
NM1A			0	52	13.98	1.5	50.1	39	50.1	0	-
NM1B			0	52	18.67	1.5	41.6	33.4	41.6	0	-
NM2A			0	53	5.64	1.5	51.1	38.7	51.1	0	-
NM2B			0	54	16.59	1.5	42.7	37.2	42.7	0	-
ST1A			0	16	7.92	1.5	51.1	38.4	51.1	0	-
ST1B			0	15	13.62	1.5	43.8	36.4	43.8	0	-

Receiver Name	ID	Land Use	Limiting Value	Station	Distance	Height	Lr w/o Noise Control	dl req.	Lr w/ Noise Control	Exceeding	passive NC
Day	Night	Day	Night	m	m	Day	Night	Day	Night	Day	Night
NM1A			0	52	13.98	1.5	50.1	39	50.1	0	-
NM1B			0	52	18.67	1.5	41.6	33.4	41.6	0	-
NM2A			0	53	5.64	1.5	51.1	38.7	51.1	0	-
NM2B			0	54	16.59	1.5	42.7	37.2	42.7	0	-
ST1A			0	16	7.92	1.5	51.1	38.4	51.1	0	-
ST1B			0	15	13.62	1.5	43.8	36.4	43.8	0	-

Receiver Name	ID	Land Use	Limiting Value	Station	Distance	Height	Lr w/o Noise Control	dl req.	Lr w/ Noise Control	Exceeding	passive NC
Day	Night	Day	Night	m	m	Day	Night	Day	Night	Day	Night
NM1A			0	52	13.98	1.5	50.1	39	50.1	0	-
NM1B			0	52	18.67	1.5	41.6	33.4	41.6	0	-
NM2A			0	53	5.64	1.5	51.1	38.7	51.1	0	-
NM2B			0	54	16.59	1.5	42.7	37.2	42.7	0	-
ST1A			0	16	7.92	1.5	51.1	38.4	51.1	0	-
ST1B			0	15	13.62	1.5	43.8	36.4	43.8	0	-

572A	0	0	51	10.13	1.5	50.9	38.7	50.9	38.7	0	0 -	-	-
572B	0	0	51	17.42	1.5	44	36.6	44	36.6	0	0 -	-	-