

NOISE STUDY REPORT

Playa del Sur (Private Development) Albuquerque, NM (Amended)

May 2024

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I certify that this report was prepared under my supervision, and I am a registered professional engineer in the State of New Mexico in good standing.
Amended May, 2024



A handwritten signature in black ink, appearing to read "Ronald R. Bohannon".

05/13/2024

Ronald R. Bohannon
PE # 7868

Executive Summary

At the request of the City of Albuquerque on May 6th, 2024, readings for additional locations for this noise study were completed on May 8, 2024. The amendment identified three additional locations as shown in the addendum (corner, north, and east). Readings were measured at each site every fifteen minutes from 5:30AM to 8:30AM. The average sound levels for each site across the three-hour period were 65.11 dB, 63.75 dB, and 63.19 dB (corner, north, and east). With these levels, the previously discussed measures shall reduce the noise below 60 dB. The body of the report has not been changed.

This report was commissioned by the developer looking to develop approximately 45 single-family residential homes at a site northwest of the interchange of Interstate 40 and Coors Blvd NW. The site adjoins Interstate 40 on the south and Coors Blvd on the east. The two facilities were found to generate minimal noise that reaches the proposed property lines proposed for this development, and it was found that what noise does reach the proposed homes could be easily abated.

The site is accessible via Miami Rd NW and is highlighted in exhibits below for reference. The purpose of this study is to evaluate the noise impacts on the proposed development. In discussions with the City, Article 9 is the only ordinance that the city has for noise abatement. The intent of Article 9 is to mitigate the effects of new noise generators on surrounding properties and is not applicable to the new development. The noise is already being generated so the purpose of this Study is to measure the existing levels on the site and provide guidance on development of the new houses to further reduce any noise impacts on them.

This study includes measurements of the existing noise environment and recommended performance specifications for indoor and outdoor construction materials used at the site to promote healthy and safe noise levels once the site is developed. To reiterate, there is an existing noise ordinance that protects existing properties from new noise generators, but it does not protect new residential properties from already existing noises produced by adjacent land uses. Additionally, the unique positioning of this site adjacent to the intersection of Coors Blvd and I-40, a Mass Transit System, exempts the development from any existing noise ordinance requirements (see Article 9, Section 9-9-8 “Exemptions and Exclusions” which states that “the limits set forth in this article do not apply to sounds or vibrations generated in the operation of any mass transit system.”). Nonetheless, as a courtesy to future residents of the proposed development, and to protect the proposed lots from excess traffic noise and use the City of Albuquerque Article 9 general requirements for noise levels by land use as standards to meet, this study was completed. Using these guidelines, this report makes construction performance specification recommendations that

satisfy these standards. It also refers to a noise level categorization described by the Hearing Health Foundation to promote an understanding of what levels of noise are present in the existing condition and what noise levels are “safe,” to set a benchmark value for excessive noise and a standard to meet.

This Report highlights the key design considerations that informed the design of the noise abatement strategy, including the presence of an existing sound wall and the locations of proposed homes in the existing noisescapes. The Report also presents the results of an analysis of existing noise levels at the site compared to ideal noise levels for residential premises in the developed condition per Article 9, as well as an analysis of the adequacy of the proposed construction specifications for abating excess noise. The noise level measurements taken demonstrated that the existing noise level is less than 60 dB where the majority of all proposed lots are and only three of the forty-five proposed lots lie in noise zones that exceed this level. Research into noise abatement construction specifications showed that this could be satisfactorily reduced. The use of double pane glass and 5/8” drywall could reduce noise by 26 dB at a minimum and ordinary 6” thick, hollow CMU walls could reduce noise by as much as 46 dB.

Overall, the proposed noise abatement strategy is a comprehensive approach that aims to minimize day-to-day noise heard by residents coming from the freeway and Coors Blvd and to minimize noise impacts at the site in general. The recommended measures will ensure that noise levels meet ideal levels per Article 9 as closely as possible after construction is complete. The results of the Study show that the noise generated by Coors Blvd and the ramp onto I-40 that travels onto the site is minimal (there are almost no lots where noise levels exceed 60 dB) and requires minimal abatement. Standard construction materials and techniques should be more than sufficient to reduce noise levels future residents would be likely to experience in this development.

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Appendix A: City of Albuquerque Article 9 – Noise Ordinance

1. Purpose & Project Background

This report and the noise measurements were completed to identify if there is excessive existing noise present at the site (greater than 70 dB, the value below which the Hearing Health Foundation deems safe) and propose mitigation. For comparison, the City of Albuquerque’s standards (which do not have to be met in this development due to the aforementioned exemptions) state that residential receptors should not be subjected to noise produced by new generators more than 55 dBA as heard indoors or 60 dBA as heard outdoors. These specifications come from Article 9 (which is attached and shown in Appendix A), Section 9-9-4 (A), Table 1. Article 9 is primarily meant to protect new noise point sources and mitigate those impacts, not to protect new receptors from existing generators, and therefore does not apply to this Study, but does provide some extra specifications for reference.

Per Article 9, 9-9-8, the Noise Ordinance limits do not apply to sounds or vibrations generated by mass transit systems, of which the interchange of Coors Blvd and Interstate-40 is one. Nonetheless, this Study was completed and the standards in Article 9 and the below graphic from the Hearing Health Foundation were used as a point of reference to:

- Provide a baseline of noise levels to assess the existing noise environment.
- Identify noise impact locations and evaluate possible noise abatement measures for proposed homes.

This report summarizes the findings of noise level measurements taken at the site and proposes abatement measures to promote healthy and safe noise levels for future residents.



Figure 1: Hearing Health Foundation Relative Noise Levels Graphic

Source: <https://hearinghealthfoundation.org>

2. Location

The project site is located at 5720 Miami Rd NW, at the NW corner of Coors Blvd and Interstate 40. The site is undeveloped and sits within the northerly portions of Tracts 308, 309 & 310, Unit 8, Town of Atrisco Grant. The site consists of approximately 4.47 acres and is bounded by Coors Blvd to the East, I40 to the south, Dos Caminos Subdivision to the West, and the Chamisa Cove Subdivision to the North. The site can be seen in Figure 2 below.



Figure 2: Vicinity Map

3. Existing Conditions and Noise Measurement Methodology

The site is currently undeveloped, and the loudest noise comes from Coors Blvd and the interchange ramp from Coors going southbound to I40 westbound. Most of the noise audible at the site comes to the property at the Northeast corner, where there is no existing screen wall on Coors, only a short existing traffic barrier wall dividing the lot from Coors (see Figure 3 below for a map of the existing conditions and walls along Coors/I40).

Approximately 380 feet southwest of the northeast corner of the lot along Coors, a CMU screen wall begins that divides Coors and the lot. The wall increases in height going South with the slope of the ramp, reaching a maximum height of approximately 40 feet relative to existing grade adjacent to the ramp near the southeast edge of the property (see Figure 2 below for illustration). Figure 5, the Noise Levels Heat Map, which can be found on page 9 of this Report, shows the effect of the existing sound wall on the existing noise towards the site. None of the proposed lot locations are exposed to outdoor noise greater than 70 dBA, and only 3 proposed homes are exposed to average noise levels above 60 dBA, the Article 9 standard for residential receptors for outdoor noise. The proposed lots are not located where there are unsafe or excessive noise levels.

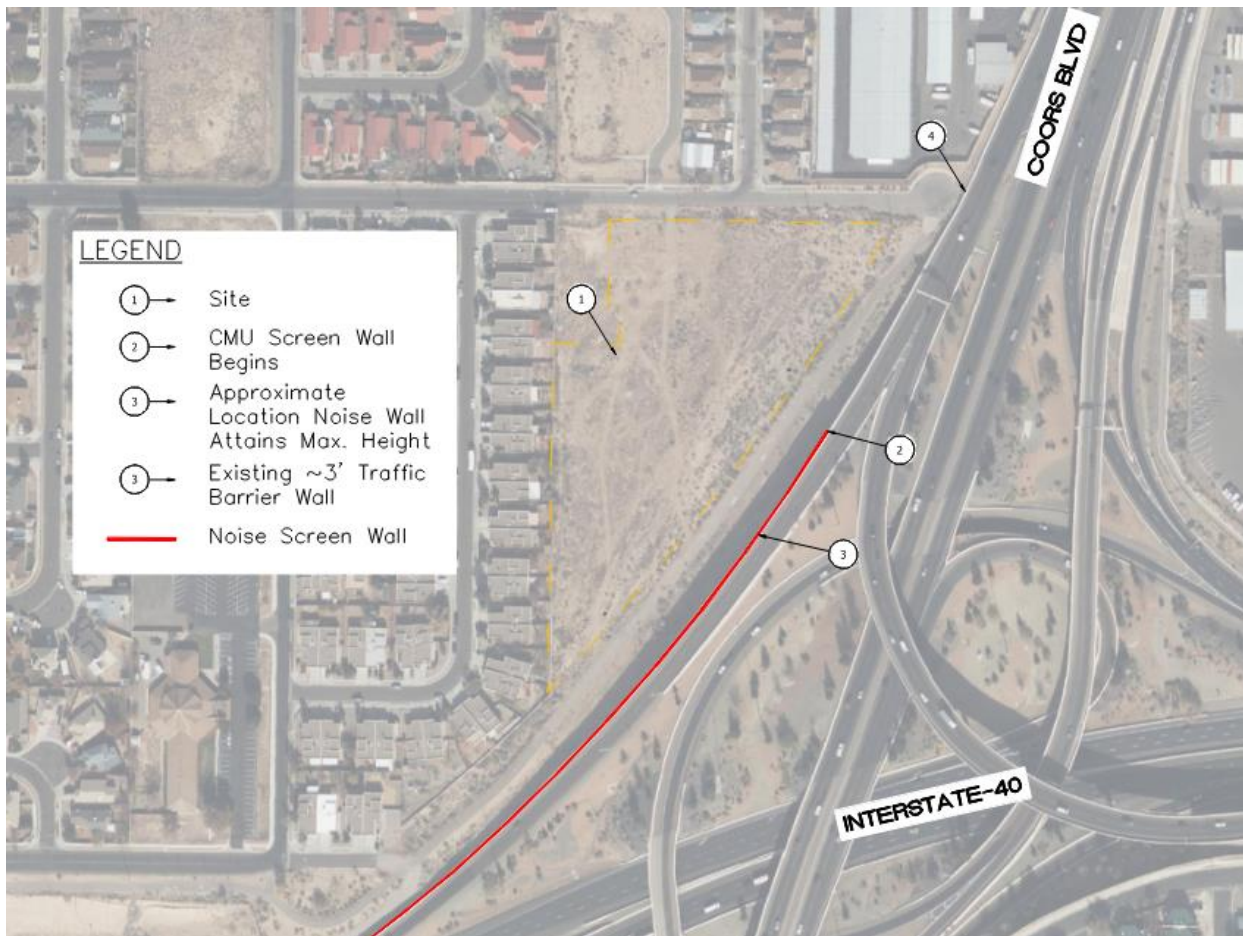


Figure 3: Existing Conditions Map

The existing noise levels were measured using the Reed R8060 Sound Level Meter, an “Approved Sound Level Meter” per Article 9 (the Noise Ordinance) that meets the American National Standards Institute ANSI 1.4-1983. Measurements were taken at 6 locations (labelled A through F in Figure 3 below) on July 26th, 2023, from 5:30-8:25 AM with the meter set to a weighted response of “A” and “Slow” speed setting. Figure 3, Table 1, and Figure 4 below respectively illustrate the locations where measurements were taken, the average noise levels and times measurements were taken, and a noise level contour/heat map based on the data collected. See additional readings in Addendum.



Figure 4: Noise Level Measurement Locations

Test Location	Measurement Time	Noise Level (dBA)	Average (dBA)
A	5:30 AM	86.7	79.8
	5:35 AM	80.4	
	5:40 AM	73.9	
	5:45 AM	78.6	
	5:50 AM	75.6	
	5:55 AM	83.7	
B	6:00 AM	54.5	56.8
	6:05 AM	56.7	
	6:10 AM	56.1	
	6:15 AM	57.9	
	6:20 AM	56.8	
	6:25 AM	59	
C	6:30 AM	57	59.5
	6:35 AM	62.4	
	6:40 AM	58.1	
	6:45 AM	59.3	
	6:50 AM	59.6	
	6:55 AM	60.8	
D	7:00 AM	56.6	55.5
	7:05 AM	56.3	
	7:10 AM	54.1	
	7:15 AM	59	
	7:20 AM	52.2	
	7:25 AM	54.7	
E	7:30 AM	51.5	51.5
	7:35 AM	50.6	
	7:40 AM	54	
	7:45 AM	51	
	7:50 AM	52.3	
	7:55 AM	49.5	
F	8:00 AM	62.1	63.3
	8:05 AM	65.2	
	8:10 AM	59.3	
	8:15 AM	67.3	
	8:20 AM	64.9	
	8:25 AM	60.9	

Table 1: Noise Level Measurements by Location and Time

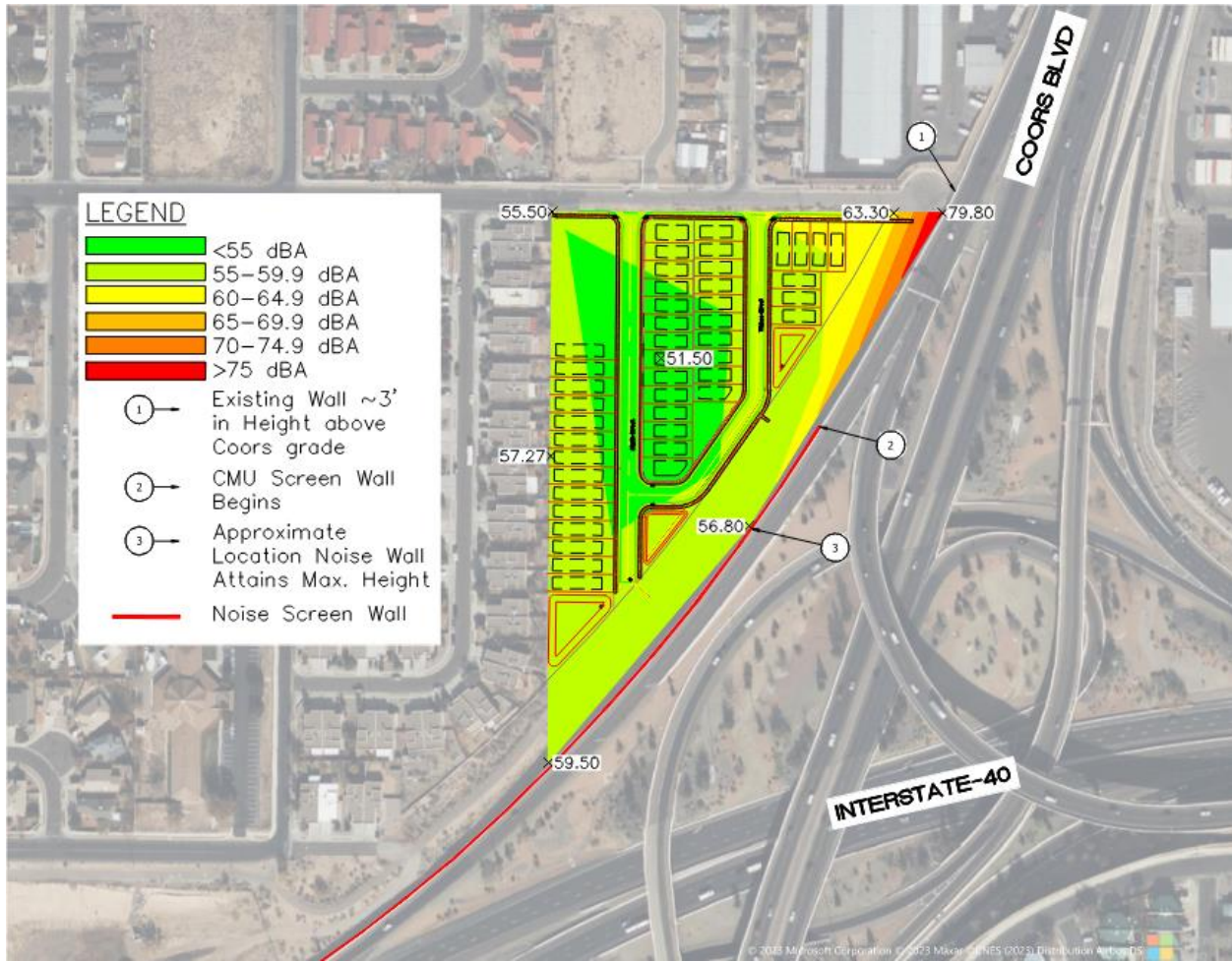


Figure 5: Noise Levels Heat Map

4. Proposed Conditions

The proposed noise abatement scheme is configured to protect the proposed residences from traffic noise on Coors Blvd and the ramp from Coors to I-40. This is accomplished by incorporating the recommended construction performance specifications as listed in the below table/footnotes, and discussion. As previously discussed, there are three locations where homes are exposed to existing outdoor noise levels above 60 dBA. This is only 5 dBA above what Article 9 states homes should not be exposed to from new developments, and though this standard does not have to be met due to inapplicability to this site and the Mass Transit System exemption, it is easy to accommodate. The below table details the recommended sound abatement measures and correlates them with the noise level categorization in Figure 4 above. Note that in this study, Sound Transmission Class (STC) refers to the rating of a construction material for sound abatement, wherein a value of 1 STC correlates to a 1 decibel reduction in noise.

Noise Level	Recommended Abatement (Indoor Noise)	Recommended Abatement (Outdoor Noise)	Recommended Construction Specifications (Indoor Noise)	Recommended Construction Specifications (Outdoor Noise)
<55 dBA	None	None	None	None
55-59.9 dBA	5 dBA	None	Standard Wall/Windows *	None
60-64.9 dBA	10 dBA	5 dBA	Standard Wall/Windows *	8' CMU Walls *
65-69.9 dBA	None **	None **	N/A **	N/A **
70-75 dBA	None **	None **	N/A **	N/A **
>75 dBA	None **	None **	N/A **	N/A **

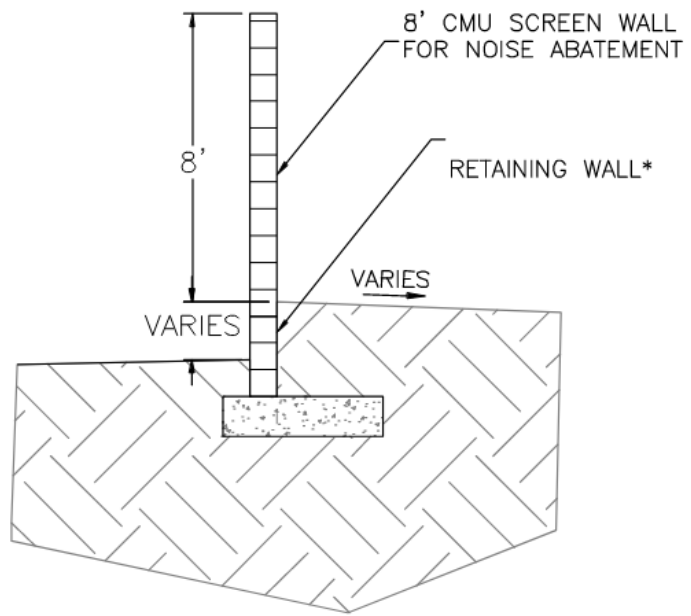
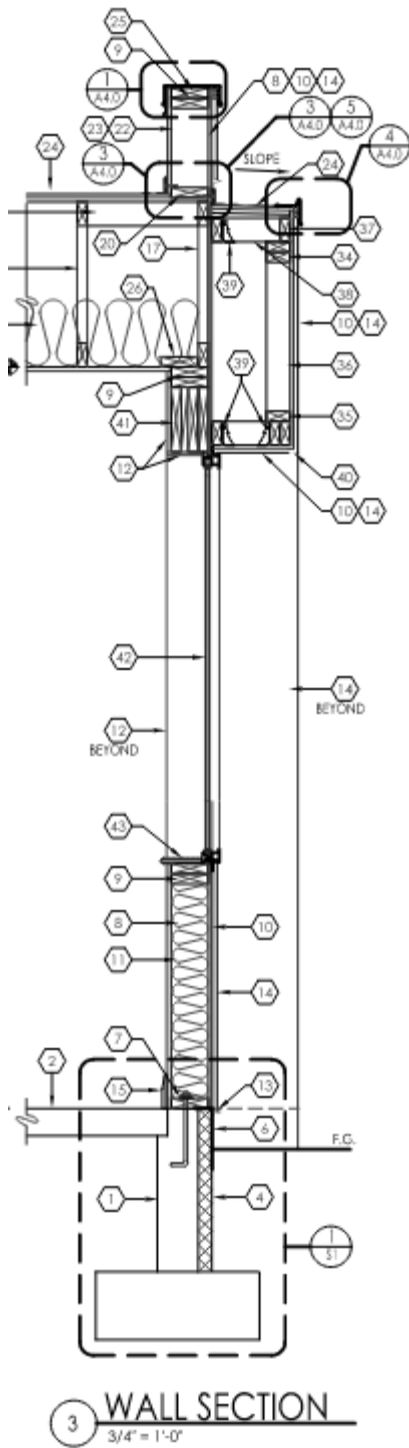
* In this chart, Standard Wall/ Window construction refers to walls made with 5/8" drywall with a standard STC of 33, and standard double pane windows with an STC of 26. CMU block walls have an STC rating of 46.

** None of the proposed homes are located where average existing noise exceeds 65 dBA. See Figure 5 above.

Table 2: Construction Performance Specifications

The recommended performance specifications for construction include standard walls and windows (defined in the footnotes above) and for three lots, 8'-tall outdoor CMU walls (standard 6" wide, hollow bricks). See the below (on the next page) cross-sectional drawings of a wall with 5/8" drywall construction and double pane windows (left), and a Noise Screening CMU and retaining wall. In the drawing on the left, Note 12 calls out 5/8" Gypsum Board, and Note 42 calls out Double Pane Glass Windows. Note 11 indicates R-20 Batt Insulation installed along the full height of the wall, and Note 14 refers to 2-coat stucco, over 20 ga. Metal lath over Tyvex Weather Barrier or Equal.

There is a significant drop-off in noise levels with distance away from Coors Blvd in the northeast corner of the site. Closest to Coors, measured from just above the traffic barrier wall, the measured noise was 79.80 dBA on average. At the northeast property corner, the maximum noise level measured was 63.3 dBA. As seen in Figure 4, most of the lots are in the noise level range of 55-59.9 dBA. Only one home falls fully in the range of 60-64.9 dBA noise, and only this lot and the other two partially in this range are where 8' CMU walls are strictly recommended. In all other places, existing outdoor noise already meets the standards described in this Report.



CMU NOISE SCREENING WALL
NTS

* HEIGHT EQUAL TO THE DIFFERENCE IN ELEVATION BETWEEN RESIDENTIAL YARDS AND OTHER FINISHED GRADES ON EITHER SIDE OF THE WALL AT THE BOTTOM

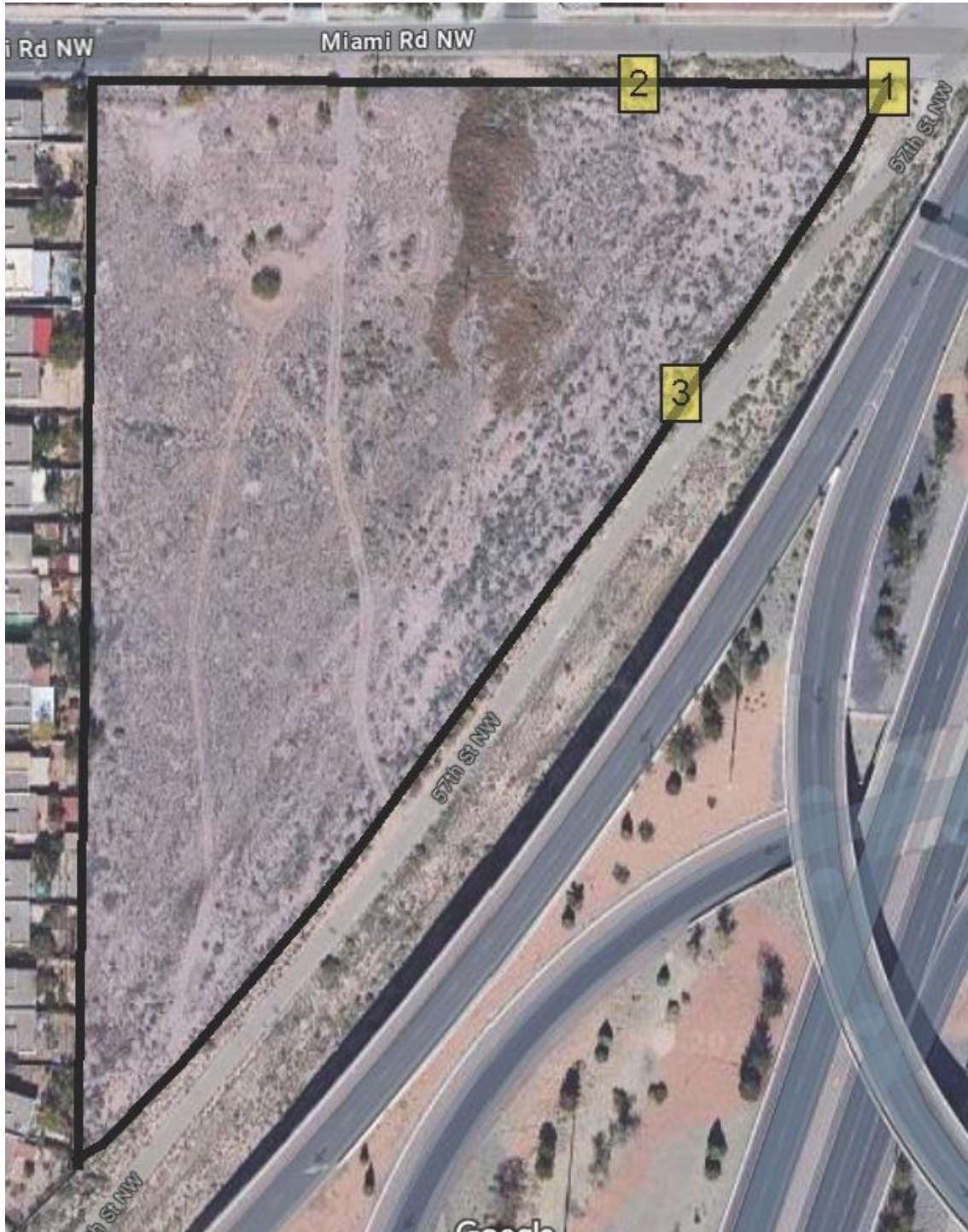
Figures 6 and 7: Home Construction and Backyard Wall Design Specs.

5. Summary

A sound study was completed to evaluate noise levels at the northwest corner of I-40 and Coors Blvd to promote healthy and safe noise levels by design in the proposed single-family development. To do this, measurements of the existing sound environment were taken at six points across the site, the data was analyzed, and research was completed to identify noise abatement measures and recommend construction performance specifications for this site. Whereas City of Albuquerque Article 9 requirements do not protect properties from existing noise and the site is exempt due to its proximity to a Mass Transit System, it was found to be feasible and was therefore recommended to meet the Article 9 requirements for residential receptor noise limits by adhering to the recommendations and construction performance specifications outlined in this Report. The noise measured at the site was minimal and should not provide any issues to mitigate via well-planned and designed construction. It was found that indoor noise could be satisfactorily reduced with standard construction materials for all lots, and outdoor noise could be satisfactorily reduced with 8' CMU walls for the three affected lots subject to noise greater than 60 dBA. At the request of City Staff, additional readings were taken for three points closest to Coors Blvd. The closest point averaged 65.11 dBA, the other two were below 65 dB. A wall will be installed that wraps around the corner to further mitigate the sound in conjunction with the construction measures provided by the individual houses.

6. Addendum

On May 6th, 2024, Tierra West met with City of Albuquerque Planning staff to discuss potential design concerns of this project, follow up measurements were requested. Those additional readings were completed on May 8th, 2024. Three points of delineation were requested by City staff for additional noise concerns and are marked on the map below.



The same Reed R8060 device was used on the same settings. Every fifteen minutes from 5:30AM to 8:30AM, a reading was taken at each of the three points. The results are as follows:

Time	Location 1 (Corner)	Location 2 (North)	Location 3 (East)
5:30 AM	54.2	57.5	60.1
5:45 AM	65.5	62.1	60.2
6:00 AM	64.3	61.2	61.9
6:15 AM	63.6	64.2	64.2
6:30 AM	64.7	65.6	62.8
6:45 AM	71.4	64.3	64.8
7:00 AM	66.0	61.3	64.7
7:15 AM	66.9	71.6	62.7
7:30 AM	66.1	66.7	67.1
7:45 AM	65.7	62.4	65.0
8:00 AM	64.4	64.0	58.2
8:15 AM	62.1	60.7	61.4
8:30 AM	71.5	67.2	68.4
Average	65.11	63.75	63.19

The average at the corner location, which is nearest to the Coors/I-40 Intersection, was 65.11 dB. The other two points were below 65db. Since the project is not generating any new noise but is mitigating the existing noise being created by Coors and the ramp, we are proposing a CMU wall along the property line wrapping to the front of the lot. This mitigation method will reduce the noise for houses in these target areas below 60 dB.