Attachment D

City of Phoenix
PLANNING AND DEVELOPMENT DEPARTMENT

To: City of Phoenix Planning Commission **Date:** May 4, 2021

From: David Simmons
Planner II – Village Planner

Subject: ITEM NO. 9 (Z-3-21-1) – APPROXIMATELY 825 FEET SOUTH OF THE SOUTHWEST CORNER OF 23RD AVENUE AND PINNACLE PEAK ROAD

This memo is to address an updated site plan and a request by the applicant regarding the recommended stipulation for a sound mitigation wall.

The Deer Valley Village Planning Committee recommended approval of case Z-3-20-1 on March 8, 2021 per the staff recommendation by a vote of 10 to 1. After the Deer Valley Village Planning Committee meeting, the applicant submitted an updated site plan, date stamped April 19, 2021 (attached), reflecting updates to the side yard setbacks. The previous site plan reflected 10-foot side yard setbacks, which would have required variances. The updated site plan reflects 15-foot side yard setbacks, which complies with code requirements.

In addition, the applicant has requested a modification to Stipulation No. 23 in regard to the sound mitigation wall. The request would allow the sound mitigation wall to wrap around the northwest and southwest corners of the site by 90 feet, rather than 120 feet. The applicant conducted a noise assessment (attached) that determined that the required decibel level could be achieved by the proposed 90-foot distance.

Staff recommends the requested modification to Stipulation No. 23 to allow for the sound mitigation wall to wrap around the site by 90 feet, rather than 120 feet.

Staff recommends approval, subject to the revised stipulations below:

1. The maximum building height shall be 30 feet.

2. The development shall be limited to 297 units.

3. The development shall be in general conformance with the elevations date stamped March 24, 2021, as modified by the following stipulations and approved by the Planning and Development Department.

4. An enhanced landscaped entry shall be provided at the main entryway into the development off of 23rd Avenue with a minimum 300 square feet of landscaped area on each side of the entrance. The landscaped entries shall be planted and maintained with a variety of at least three different plant materials, as approved by the Planning and Development Department.

5. A minimum landscape setback of 25 feet shall be required along the west property line along the Interstate 17 (I-17) frontage road and shall include minimum 3-inch caliper large canopy shade trees planted a minimum of 20 feet on center or in equivalent groupings, as approved by the Planning and Development Department.

6. There shall be a minimum of four private open space amenity areas, three of which shall be centrally located. A minimum of 6 percent of the area shall be preserved as open space exclusive of landscape setbacks. Each area shall provide, at a minimum, one of the following amenity elements or other similar elements, as approved by the Planning and Development Department:

    - Swimming Pool
    - Fire Pit
    - Pavilion or Ramada
    - Dog park

7. The perimeter pedestrian pathway shall be provided as depicted on the site plan date stamped March 24, 2021 and shall reflect a common landscaping theme and include a minimum of three-inch caliper shade trees placed 20 feet on center exclusive of driveway/roadway crossings, as approved by the Planning and Development Department.

8. Where pedestrian pathways cross drive aisles, the pathway shall be constructed of decorative pavers, stamped or colored concrete, or another material, other than those used to pave parking surfaces and drive aisles, as approved by the Planning and Development Department.

9. Clearly defined, accessible pedestrian pathways shall be provided to connect building entrances, public sidewalks, and bus stops, using the most direct route for pedestrians, as approved by the Planning and Development Department.

10. Perimeter walls shall incorporate stone veneer, stonework, integral color CMU block, split face block or faux stone, as approved by the Planning and Development Department.

11. A minimum 5-foot-wide detached sidewalk shall be provided along 23rd Avenue with a minimum 13-foot-wide landscape area located between the sidewalk and back of curb and planted to the following standards, as approved by the Planning and Development Department.

    a. Minimum 3-inch caliper large canopy, single-trunk, shade trees placed a minimum of 25 feet on center or in equivalent groupings to provide a minimum of 75 percent shade on the adjacent sidewalk.

b. Drought tolerant shrubs and vegetative groundcovers with a maximum mature height of 24 inches to provide a minimum of 75% live coverage at maturity.

12. Structural or vegetative shade shall be provided for every 8 parking spaces, as approved by the Planning and Development Department.

13. The developer shall provide secured bicycle parking provide parking per Section 1307 of the City of Phoenix Zoning Ordinance. In addition, a minimum of eight inverted U-bicycle racks shall be provided for guests located near the club house/leasing office and installed per the requirements of Section 1307.H of the Zoning Ordinance, as approved by the Planning and Development Department.

14. The developer shall dedicate minimum 50-feet of right-of-way and construct the west half of 23rd Avenue for the full limits of the project, per Cross Section D standards identified on the City of Phoenix Street Classification Map, as approved by the Planning and Development Department.

15. In compliance with the Complete Streets Ordinance, the developer shall submit a signing and striping plan to include an extension of the bike lane for the full limits of the project frontage.

16. A Red Border Letter shall be processed for this development, as approved by the Street Transportation Department.

17. The developer shall construct all streets within and adjacent to the development with paving, curb, gutter, sidewalk, curb ramps, streetlights, median islands, landscaping and other incidentals, as per plans approved by the Planning and Development Department. All improvements shall comply with all ADA accessibility standards.

18. The developer must file FAA Form 7460 and provide City FAA's no hazard determination prior to construction permit approval, as per plans approved by the Planning and Development Department.

19. The developer shall grant and record an avigation easement to the City of Phoenix Aviation Department for the site, per the content and form prescribed by the City Attorney prior to final site plan approval.

20. The property owner shall record documents that disclose the existence, and operational characteristics of Phoenix Deer Valley Airport (DVT) to future owners or tenants of the property. The form and content of such documents shall be according to the templates and instructions provided which have been reviewed and approved by the City Attorney.

21. Prior to issuance of a final certificate of occupancy, the developer must install a sign (approximately 8 inches by 11 inches in size) within the development's sales/leasing office that is visible to prospective renters or purchases which discloses the proximity of the Deer Valley Airport and increased frequency of overflight and related aircraft noise, as approved by the Aviation Department.

22. The indoor noise levels shall not exceed a decibel day night-level (DNL) of 45 decibels and that along with the building plans submitted for Phoenix Building Construction Code compliance review to the Planning and Development Department there shall be a sealed and signed analysis by an engineer licensed in Arizona with a proficiency in residential sound mitigation or noise control. The engineer shall note in the analysis that the building design is capable of achieving the required Noise Level Reduction.

23. Noise mitigation walls shall be provided along the western boundary of the development. The wall height shall be determined through a noise analysis prepared and sealed by a registered professional engineer. The walls shall contain no openings unless they are above the minimum height required for adequate noise mitigation or for drainage. The walls shall wrap around to the north and south property lines and shall continue for at least ~~**120**~~ **90** feet, as approved by the Planning and Development Department. A wall detail sealed by a registered professional engineer, demonstrating that the walls will reduce noise to 65 Decibels or lower shall be submitted prior to preliminary site plan approval.

24. If determined necessary by the Phoenix Archaeology Office, the applicant shall conduct Phase I data testing and submit an archaeological survey report of the development area for review and approval by the City Archaeologist prior to clearing and grubbing, landscape salvage, and/or grading approval.

25. If Phase I data testing is required, and if, upon review of the results from the Phase I data testing, the City Archaeologist, in consultation with a qualified archaeologist, determines such data recovery excavations are necessary, the applicant shall conduct Phase II archaeological data recovery excavations.

26. In the event archaeological materials are encountered during construction, the developer shall immediately cease all ground-disturbing activities within a 33-foot radius of the discovery, notify the City Archaeologist, and allow time for the Archaeology Office to properly assess the materials.

Enclosures:
Revised Site Plan date stamped April 20, 2021
Noise Assessment (19 pages)

CITY OF PHOENIX
APR 1 9 2021
Planning & Development Department

SITE LEGEND

A = 1 BEDROOM, 1 STORY	730SF
B = 2 BEDROOM, 1 STORY	1147SF
C = 3 BEDROOM, 2 STORY	1300SF
D = CARRIAGE 2 STORY	1600SF
⊕ = BUILDING ENTRY	

SITE DATA

SITE BASICS:

PROJECT ADDRESS:	22635 N. BLACK CANYON HWY PHOENIX, AZ 85027
ASSESSORS PARCEL #:	209-03-009B
SITE AREA:	855,136 S.F., 19.63 ACRES
CURRENT ZONING:	RE-43
PROPOSED ZONING:	R-3
LOT COVERAGE ALLOWED:	50%
LOT COVERAGE:	256,004 / 855,136 = 29%
PERIMETER STANDARDS:	20' ADJ. TO PUBLIC STREET 10' ADJ. TO PROPERTY LINE
SETBACKS: FRONT	10'
REQUIRED COMMON AREA:	5% GROSS AREA = 42,756 SF
PROVIDED COMMON AREA:	6.65% (56,943 SF)
MAX HEIGHT:	40' FOR FIRST 150' (3 STORY) 48' MAX (4 STORY MAX)
MAX DENSITY:	30.45 DU/AC
PROPOSED DENSITY:	15.12 DU/AC

UNIT DATA:

UNIT MIX:

1BEDROOM =	88 UNITS	(29.4%)
2BEDROOM =	150 UNITS	(50.6%)
3BEDROOM =	59 UNITS	(20%)
TOTAL =	297 UNITS	

PARKING DATA:

REQUIRED PARKING:	**+/-610 SPACES TOTAL**
1 BEDROOM (88X1.5)	132 SPACES
2 BEDROOM (150X2)	300 SPACES
3 BEDROOM (59X2)	118 SPACES
GUEST (297X.2)	59.4 SPACES
PROVIDED PARKING:	
GARAGE:	140 SPACES
COVERED:	323 SPACES
SURFACE:	209 SPACES
TOTAL =	**672 SPACES**

SYNECTIC DESIGN
1111 West University Drive, Suite 104, Tempe, AZ 85281
t:480.948.9766
f:480.948.9211

1 SITE PLAN - PRESENTATION
1" = 50'-0"

PINNACLE PEAK & 23RD AVENUE MULTI-FAMILY DEVELOPMENT

22635 N. BLACK CANYON HWY
PHOENIX, AZ 85027

REGISTERED ARCHITECT
35529
LANCE D. BAKER
ARIZONA, U.S.A.

REVISIONS

Phase:	SD
Drawn By:	SB
Reviewd By:	LDB
SDI Project No:	3987
Date:	04/14/2021

Sheet:
G2.0
PRESENTATION SITE PLAN

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

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

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

April 15, 2021

Mr. Andrew Dutton
Mack Real Estate Development, LLC
1150 S Olive Street, Ste 2250
Los Angeles, CA 90015

Subject: I17 & Pinnacle Peak Road Multi-Family Development – Noise Review Letter – Phoenix, AZ

Dear Mr. Dutton:

MD Acoustics, LLC (MD) is pleased to submit this letter as part of the noise assessment for the proposed I17 & Pinnacle Peak Road project located 22635 N Black Canyon Highway, Phoenix, AZ. The project proposes the construction of approximately 297 apartment units with 671 parking spaces, open space including outdoor pool on 19.6 acres. Exhibit A provides the location map and Exhibit B provides the project site plan. A glossary of acoustical terms is located in Appendix A.

1.0 Local Acoustical Requirements

The Black Canyon Freeway Specific Plan outlines the acoustical requirements and is as follows:

703.A.2.a.(3) (Landscaping, Fences and Walls)

Where a property line abuts or is adjacent to a freeway right-of-way, a noise mitigation wall exceeding the height limits in Section 703.A.2 may be erected under the following circumstances:

a. *The lot is in an area for which there is an approved Freeway Mitigation Specific Plan; and*
b. *Wall height is indicated for that area in the Specific Plan or a noise analysis prepared by a registered professional engineer is submitted to the Planning and Development Department, which analysis demonstrates that the proposed wall height is required to reduce the noise level from freeway traffic to sixty-five dB(a) Ldn in outdoor living areas adjacent to the freeway.*

The Staff Report dated April 6, 20201 outlines additional acoustical requirements and is as follows:

c. *Noise mitigation walls shall be provided along the western boundary of the development. The wall height shall be determined through a noise analysis prepared and sealed by a registered professional engineer. The walls shall contain no openings unless they are above the minimum height required for adequate noise mitigation or for drainage. The walls shall wrap around to the north and south property lines and shall continue for at least 120 feet, as approved by the Planning and Development Department. A wall detail sealed by a registered professional engineer, demonstrating that the walls will reduce noise to 65 Decibels or lower shall be submitted prior to preliminary site plan approval.*

Exhibit A
Location Map

Exhibit B
Site Plan

2.0 Existing Noise Readings

On 3/17/2021 to 3/19/20021, MD conducted a 48-hour noise survey at the site to evaluate the baseline noise conditions (*I-17 & Pinnacle Peak Road Multi-Family Development – 48-Hour Noise Survey – Phoenix, AZ, dated 3/24/2021*) . The data indicates the Ldn measured 67 dBA at the western property line and 60 dBA at the center of the site.

3.0 Evaluation Procedure

3.1 FHWA Traffic Noise Calculator

ADOT 2019 traffic counts were input into the Federal Highway Administration Traffic Noise Calculator along with 2019 truck percentages and calibrated the model to the real-world measurements. These counts are in Appendix B. The model predicts a Ldn of 67 dBA at the west property line.

3.2 3D Model and Contour Map

The noise level was modeled using SoundPLAN 3D (SP) acoustic modeling software. SP is capable of evaluating roadway at various receptor locations. SP's software utilizes algorithms (based on FHWA traffic noise modelling software) to calculate the noise projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography and noise sensitive receptors. The site is slightly elevated when compared to the centerline I17 Freeway elevation. The model uses ADOT 2019 traffic counts for SR-17 and vehicle mix data from ADOT. The model aligns with the Traffic Noise Model 2.5 and the baseline readings performed at the site. Appendix C provides the model's inputs and outputs.

4.0 Findings

4.1 Exterior Traffic Noise Levels

Four (4) receptors (R1 thru R4) were used to analyze the impact of noise from the freeway to the proposed project. R1 thru R4 evaluates the noise along the project site's western property line. Exhibit C provides the baseline noise level contours at the project site with no sound walls.

Exhibit D provides the abated sound levels at the project site which incorporates a 6-foot wall at the western property line and wraps around the north and south corners with a 90-foot length. With the incorporation on a 6-foot sound wall that wraps the corners (90-feet in length) the exterior level meets the City's Specific Plan requirement of 65 dBA Ldn. Exhibit D illustrates the approximate location of the wall.

Exhibit E provides the abated sound levels at the project site which incorporates a 6-foot wall along the backyards of the westerly dwelling units and wraps around the north and south corners with a 90-foot length. With the incorporation on a 6-foot sound wall that wraps the corners (90-feet in length) the exterior level meets the City's Specific Plan requirement of 65 dBA Ldn. Exhibit D illustrates the approximate location of the wall.

5.0 Summary of Recommendations

The following provides the recommendations for the project:

1. A 6-foot tall or higher CMU privacy wall either placed at the western property line or at the backyards of the westerly dwelling units is required and must wrap the north and south corners of the site and extend east at least 90-feet in length.

5.0 Conclusions

MD has evaluated the baseline noise condition for the I17 & Pinnacle Peak Road Multi-Family Development project located in Phoenix, AZ. The study shows that the unabated existing noise levels at the western property line is 67 dBA Ldn. With the incorporation of a 6-foot-tall CMU privacy wall, either at the western property line or at the backyard of the westerly dwelling units will reduced the exterior levels to approximately 60 dBA, which meets the City's Black Canyon Freeway Specific Plan noise requirements. MD is pleased to provide this noise assessment. If you have any questions regarding this analysis, call us at (602) 774-1950.

Sincerely,
MD Acoustics, LLC

Mike Dickerson, INCE
Principal

Exhibit C
Traffic Noise Level Impact to Project Site

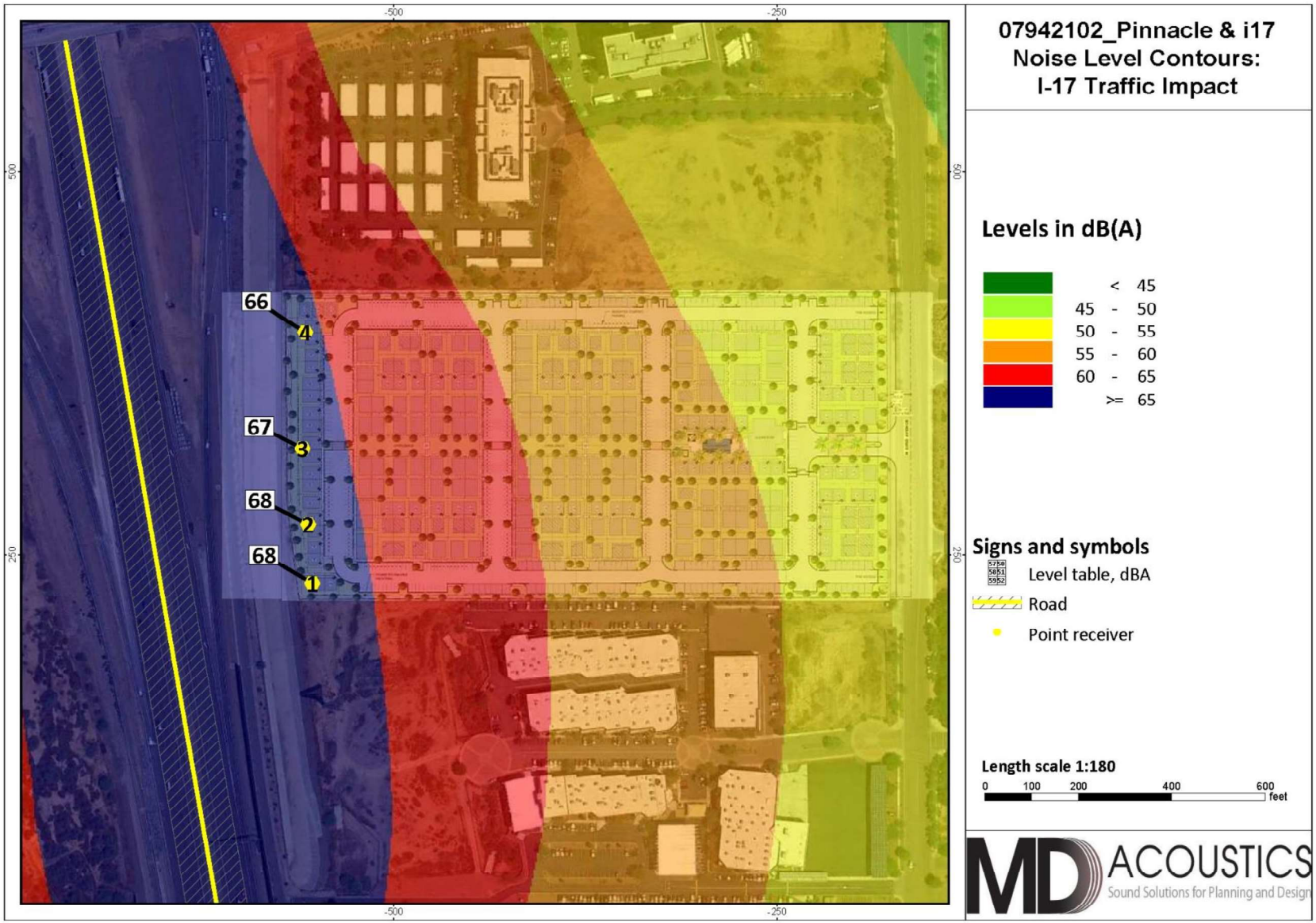
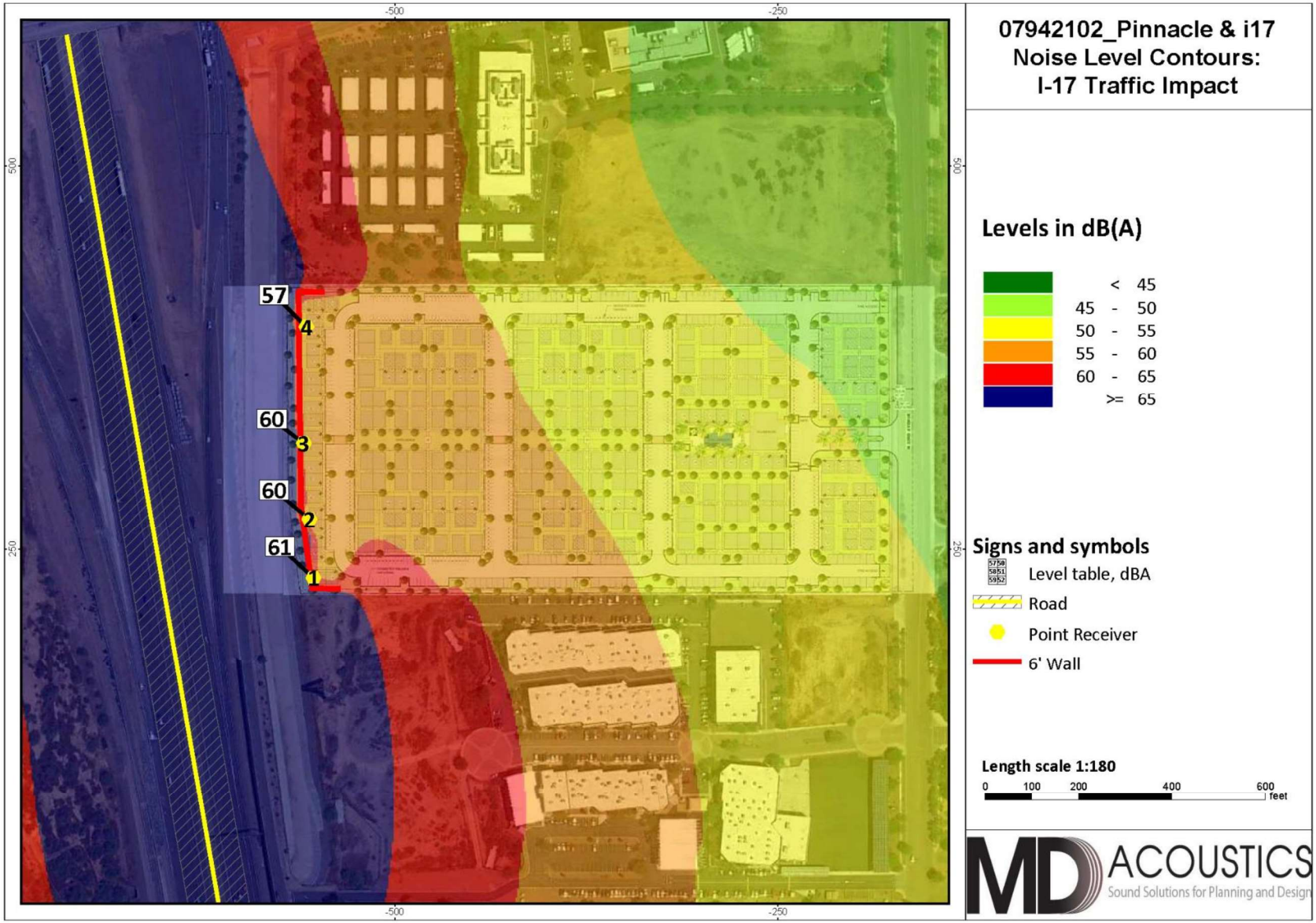


Exhibit D

Traffic Noise Level Impact to Project Site – 6’ Wall Placed on Property Line

Exhibit D

Traffic Noise Level Impact to Project Site – 6' Wall Placed at Proposed Privacy Wall Location



Appendix A

Glossary of Acoustical Terms

Glossary of Terms

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

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

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Field Sound Transmission Class (FSTC): The field sound transmission class (FSTC) rating is used for in situ wall and floor/ceiling sound isolation performance assessment. The standard requires the measurement of sound transmission loss and includes required procedure to show that the FSTC rating, as it has been determined by the test procedure, was not influenced by flanking of sound around the partition intended to be tested. Sound transmission class and FSTC ratings are intended by standard to be equivalent; however, practical experience indicates that FSTC ratings tend to be up to five ratings points less than laboratory-measured STC ratings.

Day-Night Level (LDN or DNL): LDN is the average noise level over a 24-hour period. The noise between the hours of 10PM to 7AM is artificially increased by 10 dB. This noise is weighted to take into account the decrease in community background noise of 10 dB during this period.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Appendix B
Traffic Data

ADOT Multimodal Planning

Arizona Department of Transportation
AVERAGE ANNUAL DAILY TRAFFIC REPORT 2019

Loc ID	Route	BMP	Start	TCS MP	EMP	End	AADT 2019	K Factor %	D Factor %	AADT Single Trucks	AADT Combo	T Factor %	2040 Future AADT
100328	I 15	27.47	Exit 27 Black Rock Rd	27.8	29.4	Utah State Line	21,028	11	56	862	5,762	31.5	29,923
100333	I 17	193.89	Exit 150A I-10 (Exit 150A)	194.4	195.07	Exit 195A 16th St (SB only)	108,474	8	56	3,580	6,942	9.7	153,371
100334	I 17	195.07	Exit 195A 16th St (SB only)	195.17	195.99	Exit 195B 7th St (NB only)	135,099	7	52	4,323	7,295	8.6	185,067
100335	I 17	195.99	Exit 195B 7th St (NB only)	196.18	196.93	Exit 196 7th Ave (SB only)	128,381	8	54	4,365	8,473	10	179,632
100336	I 17	196.93	Exit 196 7th Ave (SB only)	197.43	197.94	Exit 197 19th Ave	125,582	7	56	4,521	7,409	9.5	178,175
100337	I 17	197.94	Exit 197 19th Ave	198.41	199.17	Exit 199A Grant St	114,718	8	50	4,130	6,654	9.4	178,175
100338	I 17	199.17	Exit 199A Grant St	199.34	199.71	Exit 199B Adams St	117,170	5	53	4,335	6,679	9.4	212,672
100339	I 17	199.71	Exit 199B Adams St	199.86	200.6	Exit 200A I-10 (Exit 143A)	111,313	7	58	3,896	6,568	9.4	155,207
100340	I 17	200.6	Exit 200A I-10 (Exit 143A)	200.7	200.88	Exit 200B Mcdowell Rd	73,946	5	62	3,666	2,285	8	109,615
100341	I 17	200.88	Exit 200B McDowell Rd	200.75	201.91	Exit 201 Thomas Rd	192,704	7	64	5,588	4,432	5.2	356,371
100342	I 17	201.91	Exit 201 Thomas Rd	202.29	202.9	Exit 202 Indian School Rd	194,100	7	53	6,211	4,853	5.7	337,199
100343	I 17	202.9	Exit 202 Indian School Rd	203.33	203.91	Exit 203 Camelback Rd	195,000	12	53	6,435	5,963	6.4	248,508
100344	I 17	203.91	Exit 203 Camelback Rd	204.32	204.91	Exit 204 Bethany Home Rd	196,300	8	53	5,496	4,122	4.9	254,382
100345	I 17	204.91	Exit 204 Bethany Home Rd	205.39	205.92	Exit 205 Glendale Ave	199,100	8	51	6,371	5,575	6	271,853
100346	I 17	205.92	Exit 205 Glendale Ave	206.28	206.91	Exit 206 Northern Ave	201,100	9	51	6,837	5,631	6.2	206,107
100347	I 17	206.91	Exit 206 Northern Ave	207.52	207.97	Exit 207 Dunlap Ave	202,400	7	56	6,564	5,465	5.9	210,087
100348	I 17	207.97	Exit 207 Dunlap Ave	208.46	208.95	Exit 208 Peoria Ave	194,000	6	67	6,208	5,432	6	309,858
100349	I 17	208.95	Exit 208 Peoria Ave	209.3	209.96	Exit 209 Cactus Rd	209,446	7	50	5,655	5,766	5.5	380,527
100350	I 17	209.96	Exit 209 Cactus Rd	210.4	210.95	Exit 210 Thunderbird Rd	207,707	7	50	6,024	6,118	5.8	311,627
100351	I 17	210.95	Exit 210 Thunderbird Rd	211.4	211.95	Exit 211 Greenway Rd	199,470	7	50	6,383	6,184	6.3	257,577
100352	I 17	211.95	Exit 211 Greenway Rd	212.6	212.95	Exit 212 Bell Rd	188,507	7	51	6,221	6,221	6.6	311,163
100353	I 17	212.95	Exit 212 Bell Rd	213.62	213.98	Exit 214 Union Hills Rd	182,099	7	51	6,191	6,777	7.1	288,058
100354	I 17	213.98	Exit 214 Union Hills Rd	214.2	214.48	Yorkshire Dr / Utopia Rd	159,651	7	51	5,747	6,546	7.7	249,020
100355	I 17	214.48	Yorkshire Dr / Utopia Rd	214.71	214.95	Exit 215 SR 101	137,919	6	74	5,241	6,482	8.5	222,668
100356	I 17	214.95	Exit 215 SR 101	215.21	215.49	Exit 217A Rose Garden Ln	84,718	8	61	3,050	4,067	8.4	240,500
100357	I 17	215.49	Exit 217A Rose Garden Ln	215.71	215.99	Exit 217B Deer Valley Rd	126,043	7	60	5,041	6,807	9.4	268,393
100358	I 17	215.99	Exit 215 Deer Valley Rd	217	217.1	Exit 217 Pinnacle Peak Rd	150,115	7	58	5,855	8,407	9.5	154,946
100359	I 17	217.1	Exit 217 Pinnacle Peak Rd	217.5	218.02	Exit 218 Happy Valley Rd	125,949	7	56	760	4,863	4.5	160,864
100392	I 17	218.02	Happy Valley Rd.	218.48	218.91	Jomax Rd	123,694	8	53	6,110	4,577	8.6	155,502
100393	I 17	218.91	Jomax Rd	220	220.94	Dixileta Rd.	109,214	8	55	3,932	5,241	8.4	196,249
100394	I 17	220.94	Dixileta Rd.	221.11	221.94	Sonoran Drive	114,992	9	56	4,128	4,314	7.3	128,817
100395	I 17	221.94	Sonoran Drive	222.46	222.97	Sonoran Blvd	97,424	9	53	3,651	4,209	8.1	128,817
100396	I 17	222.97	Sonoran Blvd	223.51	223.99	Carefree Hwy	105,580	9	50	4,583	4,614	8.7	151,700
100397	I 17	223.99	Carefree Hwy	225	225.54	Pioneer Rd.	75,517	8	53	2,719	3,627	8.4	99,895

Appendix C

SoundPLAN Input/Outputs

Pinnacle & i17 P2
Emission calculation road - Situation 1: Outdoor SP

Road	Section name	KM km	ADT Veh/24h	Gradient %	
I-17		0.000	150000	0.0	

Pinnacle & i17 P2
Contribution level - Situation 1: Outdoor SP

Source	Source ty	Tr. lane	Ldn dB(A)	A dB	
Receiver Receiver 1 Fl G	dB(A) Ldn 68.4 dB(A)				
I-17	Road		68.4	0.0	
Receiver Receiver 2 Fl G	dB(A) Ldn 68.0 dB(A)				
	Road		68.0	0.0	
Receiver Receiver 3 Fl G	dB(A) Ldn 67.5 dB(A)				
	Road		67.5	0.0	
Receiver Receiver 4 Fl G	dB(A) Ldn 65.9 dB(A)				
	Road		65.9	0.0	

Pinnacle & i17 P2
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	10kHz dB(A)
Receiver Receiver 1 FI G dB(A) Ldn 68.4 dB(A)																										
I-17	Ldn	68.4	23.7	32.2	36.9	39.5	41.3	43.2	45.2	47.4	50.0	52.8	55.9	58.1	59.4	60.7	60.3	59.9	58.4	55.8	52.3	47.7	43.8	42.1	38.6	34.9
Remaining contrib. of src ""	Ldn																									
Receiver Receiver 2 FI G dB(A) Ldn 68.0 dB(A)																										
1	Ldn	68.0	23.3	31.8	36.6	39.1	40.9	42.8	44.8	47.1	49.7	52.5	55.5	57.8	59.0	60.3	59.9	59.5	58.0	55.4	52.1	47.1	43.3	41.8	38.4	34.5
Remaining contrib. of src ""	Ldn																									
Receiver Receiver 3 FI G dB(A) Ldn 67.5 dB(A)																										
1	Ldn	67.5	22.6	31.1	35.9	38.5	40.3	42.2	44.3	46.6	49.3	52.0	55.1	57.3	58.5	59.8	59.3	58.9	57.4	54.9	51.7	46.5	42.4	41.1	37.7	33.9
Remaining contrib. of src ""	Ldn																									
Receiver Receiver 4 FI G dB(A) Ldn 65.9 dB(A)																										
1	Ldn	65.9	20.6	29.2	34.0	36.6	38.5	40.5	42.7	45.1	47.8	50.6	53.6	55.7	56.9	58.1	57.7	57.2	55.7	53.4	50.6	45.0	39.6	39.2	35.7	32.0
Remaining contrib. of src ""	Ldn																									

Pinnacle & i17 P2
Emission calculation road - Situation 2: Outdoor SP

Road	Section name	KM km	ADT Veh/24h	Gradient %	
I-17		0.000	150000	0.0	

Pinnacle & i17 P2
Contribution level - Situation 2: Outdoor SP

Source	Source ty	Tr. lane	Ldn dB(A)	A dB	
Receiver Receiver 1 Fl G dB(A) Ldn 60.7 dB(A)					
I-17	Road		60.7	0.0	
Receiver Receiver 2 Fl G dB(A) Ldn 60.1 dB(A)					
	Road		60.1	0.0	
Receiver Receiver 3 Fl G dB(A) Ldn 59.8 dB(A)					
	Road		59.8	0.0	
Receiver Receiver 4 Fl G dB(A) Ldn 57.0 dB(A)					
	Road		57.0	0.0	

Pinnacle & i17 P2
Contribution spectra - Situation 2: Outdoor SP

Source	Time slice	Sum	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Receiver Receiver 1 FI G dB(A) Ldn 60.7 dB(A)																										
I-17	Ldn	60.7	17.2	25.7	30.5	33.0	34.8	36.8	38.9	41.5	45.2	46.6	50.3	52.4	52.4	53.3	52.0	51.0	48.4	44.6	40.8	36.1	28.7	30.5	27.1	23.2
Remaining contrib. of src ""	Ldn																									
Receiver Receiver 2 FI G dB(A) Ldn 60.1 dB(A)																										
1	Ldn	60.1	19.6	28.0	32.7	35.2	36.9	38.5	40.1	42.1	43.9	45.7	49.7	51.9	51.8	52.5	51.1	50.5	47.7	44.4	41.1	36.6	29.7	31.2	27.7	23.4
Remaining contrib. of src ""	Ldn																									
Receiver Receiver 3 FI G dB(A) Ldn 59.8 dB(A)																										
1	Ldn	59.8	17.1	25.6	30.3	32.8	34.6	36.4	38.3	40.7	43.6	46.2	48.9	51.2	51.3	52.3	51.2	50.2	47.7	44.0	40.1	35.6	29.3	30.1	26.7	22.7
Remaining contrib. of src ""	Ldn																									
Receiver Receiver 4 FI G dB(A) Ldn 57.0 dB(A)																										
1	Ldn	57.0	17.4	25.8	30.4	32.9	34.4	35.9	37.4	39.0	41.3	42.7	46.5	49.7	48.0	49.0	47.4	47.4	44.5	41.9	38.2	33.7	29.2	28.4	24.8	20.3
Remaining contrib. of src ""	Ldn																									