



LSC TRANSPORTATION CONSULTANTS, INC.
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November 18, 2020

Mr. Jim Morley
Morley-Bentley Investments
20 Boulder Crescent, 1st Floor
Colorado Springs, CO 80903

RE: Villas at Claremont Ranch
Noise Impact Study
El Paso County, Colorado
LSC #204131

Dear Mr. Morley:

In response to your request, LSC Transportation Consultants, Inc. has completed this analysis of the noise impacts of Marksheffel Road on the proposed Villas at Claremont Ranch residential development to be located north of Meadowbrook Parkway and east of Marksheffel Road in El Paso County, Colorado. LSC has completed an evaluation of the noise exposure in accordance with Federal Highway Administration (FHWA) and El Paso County requirements.

LSC used the software program Traffic Noise Model Version 2.5, developed by FHWA, to predict the noise levels at four locations on the west side of the development adjacent to Marksheffel Road. Figure 1 shows the location of the receivers. An elevation of five feet was assumed for the receivers.


The input data for the noise predictions included the projected traffic volumes, roadway geometries, topographic elevations, and receiver locations. The analysis was completed using the projected 2040 afternoon peak-hour traffic volumes at the intersection of Marksheffel Road and Meadowbrook Parkway. The volumes were taken from the *Villas at Claremont Ranch Traffic Impact Study* by LSC dated November 16, 2020. The noise analysis input and output reports are attached.

The southernmost noise receiver has a predicted noise levels that would just exceed 67 decibels Leq. If a five-foot-high noise barrier is assumed on the west property line, the noise level at all of the noise receivers are projected to be below the 67 decibels Leq. threshold. The noise barrier could be a berm, a wall, or a combination of the two.

We trust that this noise impact study will assist you in planning the proposed Villas at Claremont Ranch residential development. Please contact me if you have any questions or need further assistance.

Respectfully submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By 
Kirstin Day Ferrin, P.E.
Senior Transportation Engineer



KDF:jas

Enclosures: Figure 1
Noise Analysis Input and Output Reports

Figures





Approximate Scale
Scale: 1" = 200'

Marksheffel Rd.

Meadowbrook Pkwy.

LEGEND:
● = Receiver



Figure 1

Noise Analysis Receiver Locations

Villas at Claremont Ranch Noise Analysis (LSC #174081)



Noise Analysis Inputs/Outputs



RESULTS: SOUND LEVELS

Villas at Claremont Ranch

LSC								18 November 2020					
KDF								TNM 2.5					
								Calculated with TNM 2.5					
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		Villas at Claremont Ranch											
RUN:		2040 PM Peak Hour											
BARRIER DESIGN:		INPUT HEIGHTS							Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.				
ATMOSPHERICS:		68 deg F, 50% RH											

Receiver												
Name	No.	#DUs	Without Barrier				With Barrier					
			Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dB	dB	dB	dB	dB		dB	dB	dB	dB
Receiver1	1	1	0.0	67.4	67	67.4	10	Snd Lvl	65.7	1.7	8	-6.3
Receiver2	2	1	0.0	65.3	67	65.3	10	----	62.0	3.3	8	-4.7
Receiver3	3	1	0.0	63.7	67	63.7	10	----	61.8	1.9	8	-6.1
Receiver4	4	1	0.0	65.4	67	65.4	10	----	64.9	0.5	8	-7.5
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		4	0.5	1.9	3.3							
All Impacted		1	1.7	1.7	1.7							
All that meet NR Goal		0	0.0	0.0	0.0							

INPUT: BARRIERS

Villas at Claremont Ranch

LSC	18 November 2020
KDF	TNM 2.5

INPUT: BARRIERS

PROJECT/CONTRACT: Villas at Claremont Ranch
 RUN: 2040 PM Peak Hour

Barrier									Points										
Name	Type	Height		If Wall		If Berm		Add'nl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	\$ per	\$ per	Top	Run:Rise	\$ per			X	Y	Z	at	Seg	Ht	Perturbs	On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft			ft	ft	ft	ft	ft				
Noise Wall	W	0.00	5.00	0.00				0.00	point1	1	4,294.3	5,182.6	6,386.00	5.00	1.00	0	1		
									point3	3	4,294.4	5,227.6	6,386.00	5.00	1.00	0	1		
									point4	4	4,295.1	5,393.1	6,386.00	5.00	1.00	0	1		
									point5	5	4,295.1	5,528.6	6,388.00	5.00	1.00	0	1		
									point6	6	4,296.1	5,594.9	6,390.00	5.00	1.00	0	1		
									point7	7	4,295.5	5,769.6	6,390.00	5.00	1.00	0	1		
									point8	8	4,295.8	5,812.7	6,388.00	5.00	1.00	0	1		
									point9	9	4,296.1	5,870.1	6,386.00	5.00	1.00	0	1		
									point10	10	4,296.0	5,958.2	6,384.00	5.00	1.00	0	1		
									point11	11	4,295.9	5,981.5	6,382.00	5.00	1.00	0	1		
									point2	2	4,296.1	5,997.1	6,382.00	5.00					

INPUT: ROADWAYS

Villas at Claremont Ranch

		point34	34	4,206.3	5,166.8	6,382.00				Average
		point35	35	4,206.3	5,278.5	6,380.00				Average
		point36	36	4,205.9	5,535.4	6,380.00				Average
		point37	37	4,207.0	5,901.8	6,382.00				Average
		point38	38	4,207.0	6,032.9	6,384.00				Average
		point39	39	4,207.0	6,237.7	6,386.00				Average
		point40	40	4,207.8	6,379.5	6,388.00				Average
		point41	41	4,207.9	6,461.0	6,390.00				Average
		point33	33	4,208.3	6,696.0	6,392.00				
Marksheffel NB Accel @ Meadowbrook	12.0	point42	42	4,224.0	5,149.9	6,380.00	Signal	0.00	100	Average
		point45	45	4,224.2	5,360.1	6,378.00				Average
		point46	46	4,224.2	5,525.3	6,380.00				Average
		point43	43	4,224.6	5,555.0	6,380.00				
Marksheffel SB Accel @ Meadowbrook	12.0	point47	47	4,143.8	5,111.6	6,376.00	Signal	0.00	100	Average
		point49	49	4,143.7	5,057.6	6,378.00				Average
		point50	50	4,143.0	5,020.8	6,380.00				Average
		point51	51	4,143.0	5,010.0	6,382.00				Average
		point52	52	4,143.0	5,000.3	6,384.00				Average
		point53	53	4,143.7	4,961.6	6,384.00				Average
		point54	54	4,143.7	4,907.6	6,384.00				Average
		point55	55	4,142.4	4,865.4	6,386.00				Average
		point56	56	4,142.4	4,833.0	6,388.00				Average
		point57	57	4,142.1	4,803.9	6,390.00				Average
		point58	58	4,142.2	4,763.3	6,392.00				Average
		point59	59	4,142.3	4,729.4	6,394.00				Average
		point60	60	4,142.2	4,690.4	6,396.00				Average
		point48	48	4,141.8	4,658.6	6,398.00				
Marksheffel SB S/O Meadowbrook	24.0	point61	61	4,164.2	5,138.7	6,381.00	Signal	0.00	50	Average
		point63	63	4,163.5	5,101.1	6,382.00				Average
		point64	64	4,162.9	5,026.4	6,384.00				Average
		point65	65	4,161.9	5,001.2	6,386.00				Average
		point66	66	4,161.4	4,931.3	6,388.00				Average
		point67	67	4,160.4	4,885.6	6,390.00				Average
		point68	68	4,160.4	4,848.2	6,392.00				Average
		point69	69	4,159.9	4,808.6	6,394.00				Average
		point70	70	4,159.9	4,769.5	6,396.00				Average
		point71	71	4,158.6	4,730.6	6,398.00				Average
		point62	62	4,157.8	4,664.5	6,402.00				
Marksheffel NB LT @ Meadowbrook	12.0	point72	72	4,182.9	4,707.0	6,402.00				Average

INPUT: ROADWAYS

Villas at Claremont Ranch

		point74	74	4,182.9	4,761.6	6,398.00				Average
		point75	75	4,184.1	4,807.3	6,396.00				Average
		point76	76	4,184.6	4,856.5	6,394.00				Average
		point77	77	4,185.2	4,898.5	6,392.00				Average
		point78	78	4,185.8	4,939.2	6,390.00				Average
		point79	79	4,187.2	4,981.2	6,388.00				Average
		point80	80	4,187.2	5,026.4	6,386.00				Average
		point81	81	4,187.8	5,104.6	6,384.00				Average
		point73	73	4,188.4	5,138.3	6,383.00				
Marksheffel NB S/O Meadowbrook	24.0	point82	82	4,200.9	4,702.8	6,402.00				Average
		point84	84	4,201.5	4,762.4	6,398.00				Average
		point85	85	4,201.9	4,799.4	6,396.00				Average
		point86	86	4,202.5	4,841.9	6,394.00				Average
		point87	87	4,203.3	4,881.4	6,392.00				Average
		point88	88	4,203.8	4,929.7	6,390.00				Average
		point89	89	4,204.3	4,974.0	6,388.00				Average
		point90	90	4,205.0	5,020.0	6,386.00				Average
		point91	91	4,205.7	5,087.1	6,384.00				Average
		point83	83	4,206.4	5,138.1	6,383.00				
Marksheffel NB RT @ Meadowbrook	12.0	point92	92	4,218.3	4,662.9	6,402.00				Average
		point94	94	4,219.0	4,724.6	6,398.00				Average
		point95	95	4,219.4	4,755.5	6,396.00				Average
		point96	96	4,219.9	4,793.2	6,394.00				Average
		point97	97	4,220.2	4,832.6	6,392.00				Average
		point98	98	4,220.9	4,863.1	6,390.00				Average
		point99	99	4,221.5	4,908.1	6,388.00				Average
		point100	100	4,221.9	4,947.7	6,386.00				Average
		point101	101	4,222.3	4,995.6	6,384.00				Average
		point102	102	4,223.3	5,051.6	6,382.00				Average
		point93	93	4,224.4	5,137.9	6,380.00				

INPUT: TRAFFIC FOR LAeq1h Volumes

Villas at Claremont Ranch

LSC		18 November 2020										
KDF		TNM 2.5										
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:		Villas at Claremont Ranch										
RUN:		2040 PM Peak Hour										
Roadway	Points											
Name	Name	No.	Segment		MTrucks		HTrucks		Buses		Motorcycles	
			Autos		V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Marksheffel SB RT @ Meadowbrook	point8	8	285	50	34	50	17	50	0	0	0	0
	point10	10	285	50	34	50	17	50	0	0	0	0
	point11	11	285	50	34	50	17	50	0	0	0	0
	point12	12	285	50	34	50	17	50	0	0	0	0
	point13	13	285	50	34	50	17	50	0	0	0	0
	point9	9										
Marksheffel SB N/O Meadowbrook	point14	14	1104	50	60	50	36	50	0	0	0	0
	point16	16	1104	50	60	50	36	50	0	0	0	0
	point17	17	1104	50	60	50	36	50	0	0	0	0
	point18	18	1104	50	60	50	36	50	0	0	0	0
	point19	19	1104	50	60	50	36	50	0	0	0	0
	point20	20	1104	50	60	50	36	50	0	0	0	0
	point21	21	1104	50	60	50	36	50	0	0	0	0
	point22	22	1104	50	60	50	36	50	0	0	0	0
	point23	23	1104	50	60	50	36	50	0	0	0	0
	point24	24	1104	50	60	50	36	50	0	0	0	0
	point25	25	1104	50	60	50	36	50	0	0	0	0
	point26	26	1104	50	60	50	36	50	0	0	0	0
	point15	15										
Marksheffel SB LT @ Meadowbrook	point27	27	123	50	4	50	3	50	0	0	0	0
	point29	29	123	50	4	50	3	50	0	0	0	0
	point30	30	123	50	4	50	3	50	0	0	0	0
	point31	31	123	50	4	50	3	50	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes

Villas at Claremont Ranch

	point28	28										
Marksheffel NB N/O Meadowbrook	point32	32	2086	50	113	33	68	50	0	0	0	0
	point34	34	2086	50	113	50	68	50	0	0	0	0
	point35	35	2086	50	113	50	68	50	0	0	0	0
	point36	36	2086	50	113	50	68	50	0	0	0	0
	point37	37	2086	50	113	50	68	50	0	0	0	0
	point38	38	2086	50	113	50	68	50	0	0	0	0
	point39	39	2086	50	113	50	68	50	0	0	0	0
	point40	40	2086	50	113	50	68	50	0	0	0	0
	point41	41	2086	50	113	50	68	50	0	0	0	0
	point33	33										
Marksheffel NB Accel @ Meadowbrook	point42	42	124	50	4	50	3	50	0	0	0	0
	point45	45	124	50	4	50	3	50	0	0	0	0
	point46	46	124	50	4	50	3	50	0	0	0	0
	point43	43										
Marksheffel SB Accel @ Meadowbrook	point47	47	145	50	17	50	9	50	0	0	0	0
	point49	49	145	50	17	50	9	50	0	0	0	0
	point50	50	145	50	17	50	9	50	0	0	0	0
	point51	51	145	50	17	50	9	50	0	0	0	0
	point52	52	145	50	17	50	9	50	0	0	0	0
	point53	53	145	50	17	50	9	50	0	0	0	0
	point54	54	145	50	17	50	9	50	0	0	0	0
	point55	55	145	50	17	50	9	50	0	0	0	0
	point56	56	145	50	17	50	9	50	0	0	0	0
	point57	57	145	50	17	50	9	50	0	0	0	0
	point58	58	145	50	17	50	9	50	0	0	0	0
	point59	59	145	50	17	50	9	50	0	0	0	0
	point60	60	145	50	17	50	9	50	0	0	0	0
	point48	48										
Marksheffel SB S/O Meadowbrook	point61	61	1288	50	70	50	42	50	0	0	0	0
	point63	63	1288	50	70	50	42	50	0	0	0	0
	point64	64	1288	50	70	50	42	50	0	0	0	0
	point65	65	1288	50	70	50	42	50	0	0	0	0
	point66	66	1288	50	70	50	42	50	0	0	0	0
	point67	67	1288	50	70	50	42	50	0	0	0	0
	point68	68	1288	50	70	50	42	50	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes

Villas at Claremont Ranch

	point69	69	1288	50	70	50	42	50	0	0	0	0
	point70	70	1288	50	70	50	42	50	0	0	0	0
	point71	71	1288	50	70	50	42	50	0	0	0	0
	point62	62										
Marksheffel NB LT @ Meadowbrook	point72	72	98	50	12	50	6	50	0	0	0	0
	point74	74	98	50	12	50	6	50	0	0	0	0
	point75	75	98	50	12	50	6	50	0	0	0	0
	point76	76	98	50	12	50	6	50	0	0	0	0
	point77	77	98	50	12	50	6	50	0	0	0	0
	point78	78	98	50	12	50	6	50	0	0	0	0
	point79	79	98	50	12	50	6	50	0	0	0	0
	point80	80	98	50	12	50	6	50	0	0	0	0
	point81	81	98	50	12	50	6	50	0	0	0	0
	point73	73										
Marksheffel NB S/O Meadowbrook	point82	82	1701	50	93	50	56	50	0	0	0	0
	point84	84	1701	50	93	50	56	50	0	0	0	0
	point85	85	1701	50	93	50	56	50	0	0	0	0
	point86	86	1701	50	93	50	56	50	0	0	0	0
	point87	87	1701	50	93	50	56	50	0	0	0	0
	point88	88	1701	50	93	50	56	50	0	0	0	0
	point89	89	1701	50	93	50	56	50	0	0	0	0
	point90	90	1701	50	93	50	56	50	0	0	0	0
	point91	91	1701	50	93	50	56	50	0	0	0	0
	point83	83										
Marksheffel NB RT @ Meadowbrook	point92	92	235	50	7	50	5	50	0	0	0	0
	point94	94	235	50	7	50	5	50	0	0	0	0
	point95	95	235	50	7	50	5	50	0	0	0	0
	point96	96	235	50	7	50	5	50	0	0	0	0
	point97	97	235	50	7	50	5	50	0	0	0	0
	point98	98	235	50	7	50	5	50	0	0	0	0
	point99	99	235	50	7	50	5	50	0	0	0	0
	point100	100	235	50	7	50	5	50	0	0	0	0
	point101	101	235	50	7	50	5	50	0	0	0	0
	point102	102	235	50	7	50	5	50	0	0	0	0
	point93	93										