



LSC TRANSPORTATION CONSULTANTS, INC.  
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## Copper Chase at Sterling Ranch Noise Impact Study (LSC #184991) December 20, 2018

### Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



### Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

A handwritten signature in black ink, which appears to read 'Janet Worley', written over a horizontal line.

1/11/19  
Date



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December 20, 2018

Mr. Jim Byers  
Challenger Homes  
8605 Explorer Drive, Suite 250  
Colorado Springs, CO 80920

RE: Copper Chase at Sterling Ranch  
Noise Impact Study  
El Paso County, Colorado  
LSC #184991

Dear Mr. Byers:

In response to your request, LSC Transportation Consultants, Inc. has completed a detailed analysis of the noise impacts of Marksheffel Road and Vollmer Road on the proposed Copper Chase at Sterling Ranch residential development. The site is located northeast of the future intersection of Marksheffel Road and Vollmer Road in Colorado Springs, Colorado. LSC has completed an evaluation of the noise exposure for submittal to El Paso County in accordance with the Federal Highway Administration (FHWA) requirements.

LSC used the software program Traffic Noise Model Version 2.5—developed by FHWA—to predict the noise levels at 14 locations on the south side of the development closest to Marksheffel Road and eight locations on the west side of the development closest to Vollmer Road. The locations are shown in Figure 1. An elevation of five feet was assumed for the receivers.

The input data for the noise predictions included traffic volumes, roadway geometry, topographic elevations, and the locations of the receivers. The analysis was completed using projected 2040 afternoon peak-hour traffic volumes. These volumes are estimates by LSC based on the 2030 afternoon peak-hour traffic volumes from the *Sterling Ranch Updated Traffic Impact Analysis* by LSC dated June 5, 2008. The 2030 traffic volumes shown in that report were adjusted to 2040 volumes assuming a growth rate of two percent per year.

The results of the noise prediction show that in the year 2040, all locations have predicted noise levels that would exceed 67 decibels Leq. If a seven-foot-high noise barrier were constructed at the locations shown on Figure 1, all noise receiver locations are predicted to be below the

threshold. This barrier should be made of a rigid material with a density of at least four pounds per square foot and should have no gaps. The noise analysis inputs and outputs are attached.

\* \* \* \* \*

Please contact me if you have any questions or need further assistance.

Respectfully submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

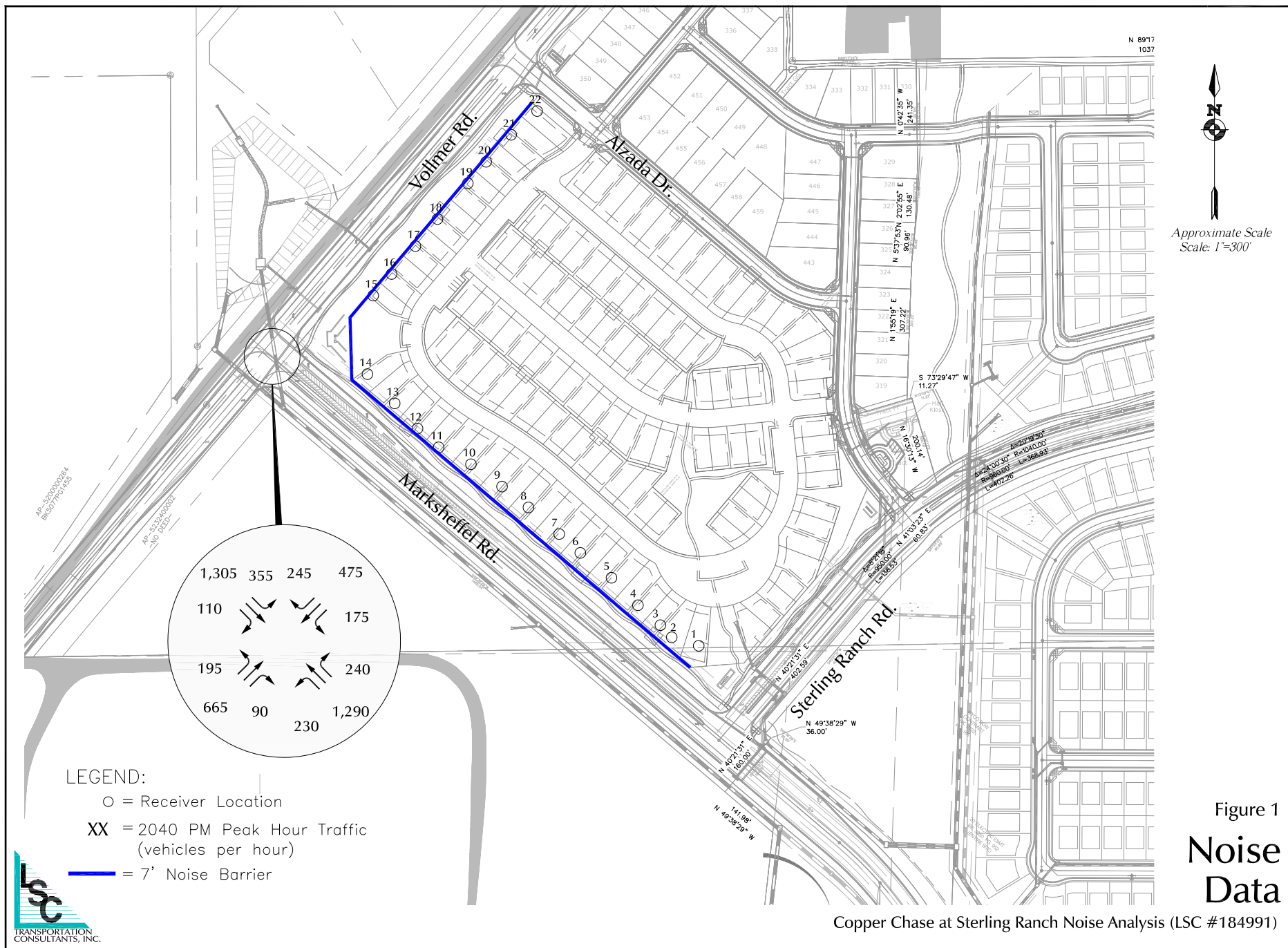


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By: Kirstin D. Ferrin, P.E.  
Senior Transportation Engineer

KDF:bjwb

Enclosures: Figure 1  
Noise Analysis Inputs/Outputs



**RESULTS: SOUND LEVELS**
**Copper Chase at Sterling Ranch**

LSC													
KDF													
<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>			<b>Copper Chase at Sterling Ranch</b>										
<b>RUN:</b>			<b>2040 PM Peak Hour</b>										
<b>BARRIER DESIGN:</b>			<b>INPUT HEIGHTS</b>										
<b>ATMOSPHERICS:</b>			<b>68 deg F, 50% RH</b>										
<b>Receiver</b>													
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing Calculated</b>	<b>Crit'n Sub'l Inc</b>	<b>Type Impact</b>	<b>With Barrier Calculated LAeq1h</b>	<b>Noise Reduction Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
Receiver1	1	1	0.0	69.3	67	69.3	10	Snd Lvl	66.7	2.6	8	-5.4	
Receiver2	2	1	0.0	70.4	67	70.4	10	Snd Lvl	63.6	6.8	8	-1.2	
Receiver3	3	1	0.0	70.1	67	70.1	10	Snd Lvl	63.0	7.1	8	-0.9	
Receiver4	4	1	0.0	70.1	67	70.1	10	Snd Lvl	63.0	7.1	8	-0.9	
Receiver5	5	1	0.0	69.6	67	69.6	10	Snd Lvl	63.4	6.2	8	-1.8	
Receiver6	6	1	0.0	69.8	67	69.8	10	Snd Lvl	63.6	6.2	8	-1.8	
Receiver7	7	1	0.0	69.8	67	69.8	10	Snd Lvl	63.8	6.0	8	-2.0	
Receiver8	8	1	0.0	69.9	67	69.9	10	Snd Lvl	63.7	6.2	8	-1.8	
Receiver9	9	1	0.0	70.1	67	70.1	10	Snd Lvl	63.8	6.3	8	-1.7	
Receiver10	10	1	0.0	70.4	67	70.4	10	Snd Lvl	64.1	6.3	8	-1.7	
Receiver11	11	1	0.0	71.4	67	71.4	10	Snd Lvl	65.1	6.3	8	-1.7	
Receiver12	12	1	0.0	71.4	67	71.4	10	Snd Lvl	65.4	6.0	8	-2.0	
Receiver13	13	1	0.0	71.0	67	71.0	10	Snd Lvl	64.9	6.1	8	-1.9	
Receiver14	14	1	0.0	70.8	67	70.8	10	Snd Lvl	63.7	7.1	8	-0.9	
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>										
			<b>Min</b>	<b>Avg</b>	<b>Max</b>								
			<b>dB</b>	<b>dB</b>	<b>dB</b>								
All Selected		14	2.6	6.2	7.1								
All Impacted		14	2.6	6.2	7.1								
All that meet NR Goal		0	0.0	0.0	0.0								

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**Copper Chase at Sterling Ranch**

LSC												
KDF												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	Copper Chase at Sterling 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	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Marksheffel NW RT @ Sterling Ranch	point1	1	446	45	19	45	5	45	0	0	0	0
	point3	3	446	45	19	45	5	45	0	0	0	0
	point2	2										
Marksheffel NW S/O Sterling Ranch RT	point4	4	1908	45	125	45	42	45	0	0	0	0
	point6	6	1908	45	125	45	42	45	0	0	0	0
	point7	7	1908	45	125	45	42	45	0	0	0	0
	point5	5										
Marksheffel NW S/O Sterling Ranch	point8	8	1477	45	96	45	32	45	0	0	0	0
	point10	10	1477	45	96	45	32	45	0	0	0	0
	point9	9										
Marksheffel NW N/O Sterling Ranch	point11	11	1642	45	107	45	36	45	0	0	0	0
	point13	13	1642	45	107	45	36	45	0	0	0	0
	point14	14	1642	45	107	45	36	45	0	0	0	0
	point15	15	1642	45	107	45	36	45	0	0	0	0
	point16	16	1642	45	107	45	36	45	0	0	0	0
	point17	17	1642	45	107	45	36	45	0	0	0	0
	point18	18	1642	45	107	45	36	45	0	0	0	0
	point19	19	1642	45	107	45	36	45	0	0	0	0
	point20	20	1642	45	107	45	36	45	0	0	0	0
	point21	21	1642	45	107	45	36	45	0	0	0	0
	point22	22	1642	45	107	45	36	45	0	0	0	0
	point23	23	1642	45	107	45	36	45	0	0	0	0
	point12	12										

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**Copper Chase at Sterling Ranch**

Marksheffel NW S/O Vollmer RT Lane	point24	24	1642	45	107	45	36	45	0	0	0	0
	point27	27										
Marksheffel NW S/O Vollmer	point28	28	1187	45	77	45	26	45	0	0	0	0
	point30	30	1187	45	77	45	26	45	0	0	0	0
	point31	31	1187	45	77	45	26	45	0	0	0	0
	point29	29										
Marksheffel NW N/O Vollmer	point32	32	1591	45	104	45	35	45	0	0	0	0
	point35	35	1591	45	104	45	35	45	0	0	0	0
	point36	36	1591	45	104	45	35	45	0	0	0	0
	point37	37	1591	45	104	45	35	45	0	0	0	0
	point38	38	1591	45	104	45	35	45	0	0	0	0
	point39	39	1591	45	104	45	35	45	0	0	0	0
	point40	40	1591	45	104	45	35	45	0	0	0	0
	point41	41	1591	45	104	45	35	45	0	0	0	0
	point42	42	1591	45	104	45	35	45	0	0	0	0
	point43	43	1591	45	104	45	35	45	0	0	0	0
	point44	44	1591	45	104	45	35	45	0	0	0	0
	point45	45	1591	45	104	45	35	45	0	0	0	0
	point33	33										
Marksheffel NW LT @Vollmer	point46	46	216	45	9	45	5	45	0	0	0	0
	point48	48	216	45	9	45	5	45	0	0	0	0
	point49	49	216	45	9	45	5	45	0	0	0	0
	point50	50	216	45	9	45	5	45	0	0	0	0
	point51	51	216	45	9	45	5	45	0	0	0	0
	point52	52	216	45	9	45	5	45	0	0	0	0
	point53	53	216	45	9	45	5	45	0	0	0	0
	point47	47										
Marksheffel NW RT @Vollmer	point54	54	225	45	10	45	5	45	0	0	0	0
	point56	56	225	45	10	45	5	45	0	0	0	0
	point57	57	225	45	10	45	5	45	0	0	0	0
	point55	55										
Marksheffel SE LT @Vollmer	point58	58	334	45	14	45	7	45	0	0	0	0
	point60	60	334	45	14	45	7	45	0	0	0	0
	point61	61	334	45	14	45	7	45	0	0	0	0
	point62	62	334	45	14	45	7	45	0	0	0	0
	point63	63	334	45	14	45	7	45	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**Copper Chase at Sterling Ranch**

	point64	64	334	45	14	45	7	45	0	0	0	0
	point65	65	334	45	14	45	7	45	0	0	0	0
	point66	66	334	45	14	45	7	45	0	0	0	0
	point67	67	334	45	14	45	7	45	0	0	0	0
	point68	68	334	45	14	45	7	45	0	0	0	0
	point59	59										
Marksheffel SE RT @Vollmer	point69	69	104	45	4	45	2	45	0	0	0	0
	point71	71	104	45	4	45	2	45	0	0	0	0
	point72	72	104	45	4	45	2	45	0	0	0	0
	point73	73	104	45	4	45	2	45	0	0	0	0
	point74	74	104	45	4	45	2	45	0	0	0	0
	point75	75	104	45	4	45	2	45	0	0	0	0
	point76	76	104	45	4	45	2	45	0	0	0	0
	point77	77	104	45	4	45	2	45	0	0	0	0
	point70	70										
Marksheffel SE N/O Vollmer	point78	78	1201	45	78	45	26	45	0	0	0	0
	point80	80	0	45	78	45	26	45	0	0	0	0
	point81	81	1201	45	78	45	26	45	0	0	0	0
	point82	82	1201	45	78	45	26	45	0	0	0	0
	point83	83	1201	45	78	45	26	45	0	0	0	0
	point84	84	1201	45	78	45	26	45	0	0	0	0
	point85	85	1201	45	78	45	26	45	0	0	0	0
	point86	86	1201	45	78	45	26	45	0	0	0	0
	point87	87	1201	45	78	45	26	45	0	0	0	0
	point88	88	1201	45	78	45	26	45	0	0	0	0
	point79	79										
Marksheffel SE S/O Vollmer	point89	89	1445	45	94	45	31	45	0	0	0	0
	point91	91	1445	45	94	45	31	45	0	0	0	0
	point92	92	1445	45	94	45	31	45	0	0	0	0
	point93	93	1445	45	94	45	31	45	0	0	0	0
	point94	94	1445	45	94	45	31	45	0	0	0	0
	point95	95	1445	45	94	45	31	45	0	0	0	0
	point96	96	1445	45	94	45	31	45	0	0	0	0
	point97	97	1445	45	94	45	31	45	0	0	0	0
	point98	98	1445	45	94	45	31	45	0	0	0	0
	point99	99	1445	45	94	45	31	45	0	0	0	0



**INPUT: TRAFFIC FOR LAeq1h Volumes**
**Copper Chase at Sterling Ranch**

	point100	100	1445	45	94	45	31	45	0	0	0	0
	point101	101	1445	45	94	45	31	45	0	0	0	0
	point90	90										
Marksheffel SE N/O Sterling Ranch	point102	102	1218	45	80	45	27	45	0	0	0	0
	point104	104	1218	45	80	45	27	45	0	0	0	0
	point105	105	1218	45	80	45	27	45	0	0	0	0
	point106	106	1218	45	80	45	27	45	0	0	0	0
	point107	107	1218	45	80	45	27	45	0	0	0	0
	point108	108	1218	45	80	45	27	45	0	0	0	0
	point103	103										
Marksheffel SE S/O Sterling Ranch	point109	109	1499	45	98	45	33	45	0	0	0	0
	point111	111	1499	45	98	45	33	45	0	0	0	0
	point112	112	1499	45	98	45	33	45	0	0	0	0
	point113	113	1499	45	98	45	33	45	0	0	0	0
	point110	110										
Marksheffel SE LT @Sterling Ranch	point114	114	251	45	11	45	3	45	0	0	0	0
	point116	116	251	45	11	45	3	45	0	0	0	0
	point117	117	251	45	11	45	3	45	0	0	0	0
	point118	118	251	45	11	45	3	45	0	0	0	0
	point119	119	251	45	11	45	3	45	0	0	0	0
	point120	120	251	45	11	45	3	45	0	0	0	0
	point115	115										
Vollmer NE RT @Marksheffel	point121	121	84	45	4	45	2	45	0	0	0	0
	point122	122										
Vollmer NE LT @Marksheffel	point123	123	183	45	8	45	4	45	0	0	0	0
	point125	125	183	45	8	45	4	45	0	0	0	0
	point126	126	183	45	8	45	4	45	0	0	0	0
	point124	124										
Vollmer NE S/O Marksheffel	point127	127	625	45	27	45	13	45	0	0	0	0
	point128	128										
Vollmer NE N/O Marksheffel	point129	129	1185	45	50	45	25	45	0	0	0	0
	point131	131	1185	45	50	45	25	45	0	0	0	0
	point132	132	1185	45	50	45	25	45	0	0	0	0
	point133	133	1185	45	50	45	25	45	0	0	0	0
	point134	134	1185	45	50	45	25	45	0	0	0	0
	point135	135	1185	45	50	45	25	45	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**Copper Chase at Sterling Ranch**

	point130	130										
Vollmer NE S/O Alzada	point136	136	1103	45	47	45	23	45	0	0	0	0
	point138	138	1103	45	47	45	23	45	0	0	0	0
	point139	139	1103	45	47	45	23	45	0	0	0	0
	point137	137										
Vollmer NE N/O Alzada	point140	140	1193	45	51	45	25	45	0	0	0	0
	point142	142	1193	45	51	45	25	45	0	0	0	0
	point143	143	1193	45	51	45	25	45	0	0	0	0
	point141	141										
Vollmer NE RT @Alzada	point144	144	83	45	3	45	1	45	0	0	0	0
	point146	146	83	45	3	45	1	45	0	0	0	0
	point147	147	83	45	3	45	1	45	0	0	0	0
	point145	145										
Vollmer SW LT @Alzada	point148	148	57	45	2	45	1	45	0	0	0	0
	point150	150	57	45	2	45	1	45	0	0	0	0
	point149	149										
Vollmer SW N/O Alzada	point151	151	776	45	33	45	17	45	0	0	0	0
	point153	153	776	45	33	45	17	45	0	0	0	0
	point154	154										
Vollmer SW S/O Alzada	point156	156	841	45	36	45	18	45	0	0	0	0
	point158	158	841	45	36	45	18	45	0	0	0	0
	point159	159	841	45	36	45	18	45	0	0	0	0
	point160	160	841	45	36	45	18	45	0	0	0	0
	point161	161	841	45	36	45	18	45	0	0	0	0
	point162	162	841	45	36	45	18	45	0	0	0	0
	point157	157										
Vollmer SW N/O Marksheffel	point163	163	446	45	19	45	10	45	0	0	0	0
	point165	165	446	45	19	45	10	45	0	0	0	0
	point166	166	446	45	19	45	10	45	0	0	0	0
	point167	167	446	45	19	45	10	45	0	0	0	0
	point164	164										
Vollmer SW S/O Marksheffel	point168	168	766	45	33	45	16	45	0	0	0	0
	point170	170	766	45	33	45	16	45	0	0	0	0
	point171	171	766	45	33	45	16	45	0	0	0	0
	point169	169										
Vollmer SW LT @Marksheffel	point172	172	164	45	7	45	4	45	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes****Copper Chase at Sterling Ranch**

	point174	174	164	45	7	45	4	45	0	0	0	0
	point175	175	164	45	7	45	4	45	0	0	0	0
	point176	176	164	45	7	45	4	45	0	0	0	0
	point173	173										
Vollmer SW RT @Marksheffel	point190	190	230	45	10	45	5	45	0	0	0	0
	point192	192	230	45	10	45	5	45	0	0	0	0
	point193	193	230	45	10	45	5	45	0	0	0	0
	point191	191										

## Copper Chase at Sterling Ranch

14 November

**INPUT: ROADWAYS**
**Copper Chase at Sterling Ranch**

Marksheffel NW S/O Vollmer	36.0	point28	28	232,876.1	410,579.3	7,006.00				Average	
		point30	30	232,811.2	410,634.4	7,006.00				Average	
		point31	31	232,741.0	410,694.3	7,008.00				Average	
		point29	29	232,710.2	410,719.9	7,010.00					
Marksheffel NW N/O Vollmer	36.0	point32	32	232,708.6	410,721.6	7,010.00	Signal	0.00	50	Average	
		point35	35	232,703.3	410,726.6	7,012.00				Average	
		point36	36	232,695.6	410,732.6	7,014.00				Average	
		point37	37	232,688.4	410,738.8	7,016.00				Average	
		point38	38	232,681.4	410,744.7	7,018.00				Average	
		point39	39	232,655.5	410,766.7	7,020.00				Average	
		point40	40	232,638.3	410,781.7	7,022.00				Average	
		point41	41	232,611.0	410,804.4	7,022.00				Average	
		point42	42	232,572.4	410,837.3	7,022.00				Average	
		point43	43	232,512.6	410,888.2	7,022.00				Average	
		point44	44	232,467.4	410,926.5	7,024.00				Average	
		point45	45	232,434.8	410,954.3	7,026.00				Average	
		point33	33	232,340.4	411,034.7	7,028.00					
Marksheffel NW LT @Vollmer	12.0	point46	46	233,035.0	410,415.3	7,004.00				Average	
		point48	48	232,777.9	410,634.0	7,006.00				Average	
		point49	49	232,705.2	410,695.6	7,008.00				Average	
		point50	50	232,694.1	410,705.0	7,010.00				Average	
		point51	51	232,687.0	410,711.0	7,012.00				Average	
		point52	52	232,680.3	410,717.4	7,014.00				Average	
		point53	53	232,672.9	410,723.1	7,016.00				Average	
		point47	47	232,665.9	410,729.0	7,018.00					
Marksheffel NW RT @Vollmer	12.0	point54	54	232,895.7	410,591.5	7,006.00				Average	
		point56	56	232,767.2	410,700.6	7,008.00				Average	
		point57	57	232,727.2	410,734.7	7,010.00				Average	
		point55	55	232,719.2	410,741.1	7,012.00					
Marksheffel SE LT @Vollmer	12.0	point58	58	232,312.1	411,024.4	7,028.00				Average	
		point60	60	232,392.4	410,956.6	7,026.00				Average	
		point61	61	232,444.4	410,912.0	7,024.00				Average	
		point62	62	232,510.5	410,855.7	7,022.00				Average	
		point63	63	232,516.1	410,850.5	7,022.00				Average	
		point64	64	232,548.8	410,823.3	7,022.00				Average	
		point65	65	232,577.0	410,799.2	7,020.00				Average	
		point66	66	232,587.1	410,790.6	7,020.00				Average	
		point67	67	232,595.5	410,783.5	7,022.00				Average	
		point68	68	232,620.4	410,763.1	7,022.00				Average	

**INPUT: ROADWAYS**
**Copper Chase at Sterling Ranch**

		point59	59	232,634.2	410,750.7	7,020.00					
Marksheffel SE RT @Vollmer	12.0	point69	69	232,281.1	411,003.5	7,028.00				Average	
		point71	71	232,349.5	410,945.4	7,026.00				Average	
		point72	72	232,438.6	410,869.2	7,024.00				Average	
		point73	73	232,509.8	410,809.4	7,022.00				Average	
		point74	74	232,551.0	410,773.9	7,020.00				Average	
		point75	75	232,565.4	410,761.9	7,020.00				Average	
		point76	76	232,575.5	410,753.9	7,022.00				Average	
		point77	77	232,587.4	410,743.2	7,022.00				Average	
		point70	70	232,603.9	410,729.2	7,020.00					
Marksheffel SE N/O Vollmer	36.0	point78	78	232,297.1	411,013.6	7,028.00				Average	
		point80	80	232,369.9	410,951.7	7,026.00				Average	
		point81	81	232,442.2	410,890.2	7,024.00				Average	
		point82	82	232,510.1	410,832.6	7,022.00				Average	
		point83	83	232,518.8	410,825.2	7,022.00				Average	
		point84	84	232,524.5	410,819.9	7,022.00				Average	
		point85	85	232,564.3	410,786.4	7,020.00				Average	
		point86	86	232,576.6	410,776.0	7,020.00				Average	
		point87	87	232,584.8	410,769.1	7,022.00				Average	
		point88	88	232,607.4	410,749.7	7,022.00				Average	
		point79	79	232,618.0	410,740.8	7,020.00					
Marksheffel SE S/O Vollmer	36.0	point89	89	232,620.2	410,739.0	7,020.00	Signal	0.00	50	Average	
		point91	91	232,649.3	410,714.3	7,018.00				Average	
		point92	92	232,657.6	410,707.2	7,016.00				Average	
		point93	93	232,664.7	410,701.1	7,014.00				Average	
		point94	94	232,671.7	410,694.8	7,012.00				Average	
		point95	95	232,679.1	410,688.9	7,010.00				Average	
		point96	96	232,686.0	410,683.1	7,008.00				Average	
		point97	97	232,747.8	410,630.6	7,006.00				Average	
		point98	98	232,938.5	410,468.5	7,004.00				Average	
		point99	99	233,180.1	410,263.1	7,002.00				Average	
		point100	100	233,389.3	410,085.4	7,000.00				Average	
		point101	101	233,413.4	410,064.3	6,998.00				Average	
		point90	90	233,437.8	410,044.0	6,996.00					
Marksheffel SE N/O Sterling Ranch	36.0	point102	102	233,440.5	410,041.9	6,996.00				Average	
		point104	104	233,459.7	410,025.6	6,994.00				Average	
		point105	105	233,498.3	409,992.8	6,992.00				Average	
		point106	106	233,524.7	409,970.3	6,992.00				Average	
		point107	107	233,546.2	409,952.1	6,992.00				Average	

**INPUT: ROADWAYS**
**Copper Chase at Sterling Ranch**

		point108	108	233,575.9	409,926.8	6,990.00				Average	
		point103	103	233,664.9	409,851.6	6,988.00					
Marksheffel SE S/O Sterling Ranch	36.0	point109	109	233,667.4	409,849.0	6,988.00	Signal	0.00	50	Average	
		point111	111	233,894.2	409,656.3	6,986.00				Average	
		point112	112	233,970.7	409,590.1	6,984.00				Average	
		point113	113	234,029.5	409,529.5	6,982.00				Average	
		point110	110	234,064.5	409,486.6	6,980.00					
Marksheffel SE LT @Sterling Ranch	12.0	point114	114	233,455.1	410,051.7	6,695.50				Average	
		point116	116	233,471.7	410,037.9	6,694.00				Average	
		point117	117	233,505.2	410,009.2	6,692.00				Average	
		point118	118	233,549.1	409,971.9	6,692.00				Average	
		point119	119	233,562.5	409,960.6	6,692.00				Average	
		point120	120	233,594.3	409,933.8	6,690.00				Average	
		point115	115	233,645.6	409,889.8	6,689.00					
Vollmer NE RT @Marksheffel	12.0	point121	121	232,470.3	410,470.8	7,012.50				Average	
		point122	122	232,636.7	410,666.6	7,013.50					
Vollmer NE LT @Marksheffel	12.0	point123	123	232,433.8	410,474.1	7,016.00				Average	
		point125	125	232,547.8	410,608.3	7,018.00				Average	
		point126	126	232,569.0	410,633.3	7,018.00				Average	
		point124	124	232,640.7	410,717.7	7,018.50					
Vollmer NE S/O Marksheffel	24.0	point127	127	232,460.9	410,487.8	7,016.00				Average	
		point128	128	232,649.8	410,709.8	7,017.50					
Vollmer NE N/O Marksheffel	24.0	point129	129	232,682.7	410,748.5	7,018.00	Signal	0.00	50	Average	
		point131	131	232,738.1	410,814.0	7,020.00				Average	
		point132	132	232,785.0	410,868.4	7,022.00				Average	
		point133	133	232,831.3	410,923.1	7,024.00				Average	
		point134	134	232,927.5	411,036.7	7,026.00				Average	
		point135	135	233,012.0	411,135.4	7,028.00				Average	
		point130	130	233,046.1	411,176.4	7,030.00					
Vollmer NE S/O Alzada	24.0	point136	136	233,047.9	411,178.8	7,030.00				Average	
		point138	138	233,083.2	411,220.3	7,032.00				Average	
		point139	139	233,122.5	411,267.0	7,034.00				Average	
		point137	137	233,232.4	411,395.0	7,034.00					
Vollmer NE N/O Alzada	24.0	point140	140	233,234.0	411,397.3	7,034.00				Average	
		point142	142	233,309.7	411,486.3	7,036.00				Average	
		point143	143	233,414.8	411,609.9	7,038.00				Average	
		point141	141	233,488.3	411,697.3	7,040.00					
Vollmer NE RT @Alzada	12.0	point144	144	233,054.7	411,158.5	7,026.50				Average	
		point146	146	233,086.7	411,196.1	7,028.00				Average	

**INPUT: ROADWAYS**
**Copper Chase at Sterling Ranch**

		point147	147	233,124.5	411,241.3	7,030.00				Average	
		point145	145	233,206.9	411,337.5	7,030.00					
Vollmer SW LT @Alzada	12.0	point148	148	233,407.8	411,632.6	7,038.50				Average	
		point150	150	233,379.8	411,598.6	7,038.00				Average	
		point149	149	233,255.6	411,453.6	7,036.00					
Vollmer SW N/O Alzada	24.0	point151	151	233,424.8	411,679.5	7,040.00				Average	
		point153	153	233,349.1	411,591.4	7,038.00				Average	
		point154	154	233,201.6	411,417.9	7,036.00					
Vollmer SW S/O Alzada	24.0	point156	156	233,198.5	411,414.1	7,036.00				Average	
		point158	158	233,106.3	411,306.2	7,036.00				Average	
		point159	159	233,056.5	411,247.1	7,034.00				Average	
		point160	160	233,005.1	411,186.0	7,032.00				Average	
		point161	161	232,967.7	411,141.6	7,030.00				Average	
		point162	162	232,909.5	411,074.1	7,028.00				Average	
		point157	157	232,857.6	411,013.0	7,027.00					
Vollmer SW N/O Marksheffel	24.0	point163	163	232,855.0	411,009.9	7,027.00				Average	
		point165	165	232,819.9	410,969.0	7,026.00				Average	
		point166	166	232,769.6	410,909.1	7,024.00				Average	
		point167	167	232,724.9	410,856.8	7,022.00				Average	
		point164	164	232,653.3	410,772.6	7,020.50					
Vollmer SW S/O Marksheffel	24.0	point168	168	232,621.2	410,734.8	7,019.50	Signal	0.00	50	Average	
		point170	170	232,497.4	410,589.7	7,020.00				Average	
		point171	171	232,483.3	410,572.8	7,020.00				Average	
		point169	169	232,434.7	410,514.5	7,018.00					
Vollmer SW LT @Marksheffel	12.0	point172	172	232,872.2	411,000.8	7,026.50				Average	
		point174	174	232,849.9	410,975.4	7,026.00				Average	
		point175	175	232,791.1	410,905.4	7,024.00				Average	
		point176	176	232,743.5	410,849.3	7,022.00				Average	
		point173	173	232,691.3	410,788.4	7,020.00					
Vollmer SW RT @Marksheffel	12.0	point190	190	232,841.3	411,021.6	7,026.50				Average	
		point192	192	232,797.7	410,970.8	7,026.00				Average	
		point193	193	232,731.3	410,892.5	7,024.00				Average	
		point191	191	232,686.5	410,839.5	7,022.50					



**INPUT: RECEIVERS**
**Copper Chase at Sterling Ranch**

LSC												
KDF												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	Copper Chase at Sterling Ranch											
RUN:	2040 PM Peak Hour											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
Receiver1	1	1	233,637.6	410,076.8	6,996.50	4.92	0.00	67	10.0	8.0	Y	
Receiver2	2	1	233,576.5	410,096.0	6,997.00	4.92	0.00	67	10.0	8.0	Y	
Receiver3	3	1	233,550.9	410,123.3	6,997.50	4.92	0.00	67	10.0	8.0	Y	
Receiver4	4	1	233,500.1	410,168.6	6,999.00	4.92	0.00	67	10.0	8.0	Y	
Receiver5	5	1	233,440.3	410,230.7	7,001.50	4.92	0.00	67	10.0	8.0	Y	
Receiver6	6	1	233,369.9	410,286.9	7,003.50	4.92	0.00	67	10.0	8.0	Y	
Receiver7	7	1	233,322.1	410,329.5	7,005.50	4.92	0.00	67	10.0	8.0	Y	
Receiver8	8	1	233,252.5	410,389.7	7,008.00	4.92	0.00	67	10.0	8.0	Y	
Receiver9	9	1	233,192.8	410,436.9	7,010.50	4.92	0.00	67	10.0	8.0	Y	
Receiver10	10	1	233,122.5	410,487.3	7,012.50	4.92	0.00	67	10.0	8.0	Y	
Receiver11	11	1	233,049.4	410,525.6	7,014.00	4.92	0.00	67	10.0	8.0	Y	
Receiver12	12	1	233,001.6	410,568.1	7,016.00	4.92	0.00	67	10.0	8.0	Y	
Receiver13	13	1	232,950.0	410,625.0	7,018.00	4.92	0.00	67	10.0	8.0	Y	
Receiver14	14	1	232,888.4	410,691.2	7,020.00	4.92	0.00	67	10.0	8.0	Y	

INPUT: BARRIERS

Copper Chase at Sterling Ranch

LSC																			
KDF																			
				14 November 2018															
				TNM 2.5															
INPUT: BARRIERS																			
PROJECT/CONTRACT:				Copper Chase at Sterling Ranch															
RUN:				2040 PM Peak Hour															
Barrier																			
Name	Type	Height		If Wall	If Berm			Add'tnl	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	ft			
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	233,618.4	410,027.8	6,995.00	7.00	7.00	1	0		
									point3	3	233,574.2	410,066.4	6,996.00	7.00	7.00	1	0		
									point4	4	233,501.5	410,127.8	6,998.00	7.00	7.00	1	0		
									point5	5	233,426.0	410,191.4	7,000.00	7.00	7.00	1	0		
									point6	6	233,345.2	410,260.0	7,002.00	7.00	7.00	1	0		
									point7	7	233,268.2	410,325.6	7,004.00	7.00	7.00	1	0		
									point8	8	233,207.3	410,377.0	7,006.00	7.00	7.00	1	0		
									point9	9	233,168.9	410,409.8	7,008.00	7.00	7.00	1	0		
									point10	10	233,088.4	410,478.2	7,010.00	7.00	7.00	1	0		
									point11	11	233,033.1	410,525.0	7,012.00	7.00	7.00	1	0		
									point12	12	232,977.6	410,572.4	7,014.00	7.00	7.00	1	0		
									point13	13	232,881.7	410,654.3	7,016.00	7.00	7.00	1	0		
									point14	14	232,865.8	410,667.4	7,018.00	7.00	7.00	1	0		
									point24	24	232,853.1	410,678.2	7,020.00	7.00	7.00	1	0		
									point15	15	232,849.0	410,818.3	7,021.00	7.00					