

A P P E N D I X I

S U P P L E M E N T A L N O I S E A P P E N D I X







<b>ANALYST</b>
NJF

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6 75.55%  
13.6 13.96%  
10.22 10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tr  
Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to Evening (7 Night (10 PM to 7 AM)		
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Palo Alto Comprehensive Plan  
SCENARIO 5 CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	TRAFFIC VOLUMES	LEVEL AT 50 FT.	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Sand Hill Road	I-280 to El Camino Real	36,622	71.9	66	143	308
2	El Camino Real	Sand Hill Road to Page Mill Road	42,860	75.7	119	257	554
3	El Camino Real	Page Mill Road to San Antonio Road	36,850	75.0	108	232	501
4	Page Mill Road	I-280 to El Camino Real	38,836	72.1	69	149	321
5	Arastradero Road	I-280 to El Camino Real	20,053	65.5	25	54	117
6	Alma Street	University Avenue to San Antonio Road	34,160	71.1	60	128	277
7	Middlefield road	University Avenue to San Antonio Road	12,492	63.1	17	37	80
8	University Avenue	El Camino Real to Route 101	20,385	65.2	24	51	111
9	Embarcadero Road	El Camino Real to Route 101	32,241	67.6	34	74	160
10	Oregon Expressway	El Camino Real to Route 101	30,925	71.1	59	128	275
11	Charleston Road	El Camino Real to San Antonio Road	15,514	64.1	20	44	94
12	San Antonio Road	El Camino Real to Route 101	37,177	71.9	67	145	311
13	Foothill /Junipero Serra	Sand Hill Road to Arastradero Road	21,336	71.4	62	133	287
14							
15							
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Scenario: SCENARIO 5  
 Roadway: Sand Hill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	36,622
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2246	42	17	1660	31	13	416	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.5	-18.4	1.5	-15.8	-19.7	-4.6	-21.8	-25.8
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	61.1	62.4	67.3	59.8	61.1	61.3	53.8	55.0
VEHICULAR NOISE	DAY=	70.1	Leq	EVENING=	68.8	Leq	NIGHT=	62.8	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 71.2</b> <b>CNEL= 71.9</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>60 130 280</b>
		<b>CNEL:</b>	<b>66 143 308</b>

Scenario: SCENARIO 5  
 Roadway: El Camino Real  
 Segment: Sand Hill Road to Page Mill Road

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	42,860
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2629	50	20	1943	37	15	487	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.5	-13.8	-17.7	2.1	-15.1	-19.1	-3.9	-21.1	-25.1
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.4	64.9	66.2	71.1	63.6	64.9	65.1	57.6	58.9
VEHICULAR NOISE	DAY=	73.9	Leq	EVENING=	72.6	Leq	NIGHT=	66.6	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 75.0 CNEL= 75.7
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	108 233 503
		CNEL:	119 257 554

Scenario: SCENARIO 5  
 Roadway: El Camino Real  
 Segment: Page Mill Road to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	36,850
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2260	43	17	1671	32	13	418	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.4	-18.4	1.5	-15.8	-19.7	-4.5	-21.8	-25.7
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	71.8	64.3	65.5	70.5	62.9	64.2	64.5	56.9	58.2
VEHICULAR NOISE	DAY=	73.3	Leq	EVENING=	72.0	Leq	NIGHT=	66.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 74.4 CNEL= 75.0
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			Ldn: 98 211 455 CNEL: 108 232 501



Scenario: SCENARIO 5  
 Roadway: Page Mill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	38,836
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2382	45	18	1761	33	13	441	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.0	-14.2	-18.2	1.7	-15.5	-19.5	-4.3	-21.5	-25.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.9	61.4	62.6	67.6	60.0	61.3	61.6	54.0	55.3
VEHICULAR NOISE	DAY=	70.4	Leq	EVENING=	69.1	Leq	NIGHT=	63.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.5 CNEL= 72.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	63 135 291
		CNEL:	69 149 321

Scenario: SCENARIO 5  
 Roadway: Arastradero Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	20,053
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1230	23	9	909	17	7	228	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.6	-15.6	-19.6	0.3	-16.9	-20.9	-5.7	-22.9	-26.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.4	55.8	58.0	60.1	54.5	56.7	54.1	48.5	50.7
VEHICULAR NOISE	DAY=	63.8	Leq	EVENING=	62.5	Leq	NIGHT=	56.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.9 CNEL= 65.5
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	23 49 106
		CNEL:	25 54 117

Scenario: SCENARIO 5  
 Roadway: Alma Street  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	34,160
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2095	40	16	1549	29	12	388	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.8	-18.7	1.2	-16.1	-20.0	-4.9	-22.1	-26.1
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.7	66.6	59.1	60.4	60.6	53.1	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 117 251
		CNEL:	60 128 277

Scenario: SCENARIO 5  
 Roadway: Middlefield road  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	12,492
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	766	14	6	566	11	4	142	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-0.4	-17.7	-21.6	-1.8	-19.0	-22.9	-7.8	-25.0	-29.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	58.9	53.3	55.5	57.6	52.0	54.2	51.6	46.0	48.2
VEHICULAR NOISE	DAY=	61.3	Leq	EVENING=	60.0	Leq	NIGHT=	54.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 62.4 CNEL= 63.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			Ldn: 16 34 73 CNEL: 17 37 80

Scenario: SCENARIO 5  
 Roadway: University Avenue  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	20,385
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1250	24	9	924	17	7	231	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.7	-15.6	-19.5	0.4	-16.9	-20.8	-5.6	-22.9	-26.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	55.5	57.7	59.8	54.2	56.4	53.7	48.2	50.3
VEHICULAR NOISE	DAY=	63.5	Leq	EVENING=	62.1	Leq	NIGHT=	56.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.6 CNEL= 65.2
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	22 47 101
		CNEL:	24 51 111

Scenario: SCENARIO 5  
 Roadway: Embarcadero Road  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	32,241
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1977	37	15	1462	28	11	366	7	3
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	3.7	-13.6	-17.5	2.4	-14.9	-18.8	-3.6	-20.9	-24.8
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.5	57.9	60.1	62.2	56.6	58.8	56.1	50.5	52.7
VEHICULAR NOISE	DAY=	65.9	Leq	EVENING=	64.5	Leq	NIGHT=	58.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 66.9 CNEL= 67.6
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	31 67 145
		CNEL:	34 74 160

Scenario: SCENARIO 5  
 Roadway: Oregon Expressway  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: NJF  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	30,925
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1897	36	14	1402	26	11	351	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.0	-15.2	-19.2	0.7	-16.5	-20.5	-5.3	-22.5	-26.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.6	66.6	59.1	60.3	60.6	53.0	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 116 250
		CNEL:	59 128 275

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 5** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Charleston Road** Analyst: **NJF**  
 Segment: **El Camino Real to San Antonio Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	15,514
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	24
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	952	18	7	703	13	5	176	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	0.5	-16.7	-20.7	-0.8	-18.1	-22.0	-6.8	-24.1	-28.0
Distance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.0	54.4	56.6	58.7	53.1	55.3	52.7	47.1	49.3
VEHICULAR NOISE	DAY=	62.4	Leq	EVENING=	61.1	Leq	NIGHT=	55.1	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn=</b>	<b>63.5</b>
		<b>CNEL=</b>	<b>64.1</b>
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>18 40 86</b>
		<b>CNEL:</b>	<b>20 44 94</b>



FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 5**  
 Roadway: **San Antonio Road**  
 Segment: **El Camino Real to Route 101**

Project: **Palo Alto Comprehensive Plan**  
 Analyst: **NJF**  
 Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	37,177
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2280	43	17	1685	32	13	422	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.4	-18.4	1.5	-15.7	-19.7	-4.5	-21.7	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	61.2	62.4	67.4	59.9	61.1	61.4	53.8	55.1
VEHICULAR NOISE	DAY=	70.2	Leq	EVENING=	68.9	Leq	NIGHT=	62.9	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	71.3
		CNEL=	71.9
NOISE CONTOUR:		70 dBA	65 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	61
		CNEL:	67
			131
			283
			145
			311

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 5** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Foothill /Junipero Serra** Analyst: **NJF**  
 Segment: **Sand Hill Road to Arastradero Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	21,336
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1309	25	10	967	18	7	242	5	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.7	-17.9	-21.9	-2.0	-19.2	-23.2	-8.0	-25.2	-29.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	59.7	60.2	67.3	58.3	58.9	61.3	52.3	52.9
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.3	Leq	NIGHT=	62.3	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn= 70.8</b>	
		<b>CNEL= 71.4</b>	
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn: 56 121 261</b>	
		<b>CNEL: 62 133 287</b>	



<b>ANALYST</b>
CTS

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6 75.55%  
 13.6 13.96%  
 10.22 10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tr  
 Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to Evening (7 Night (10 PM to 7 AM)		
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Palo Alto Comprehensive Plan  
SCENARIO 5M CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	TRAFFIC VOLUMES	LEVEL AT 50 FT.	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Sand Hill Road	I-280 to El Camino Real	36,619	71.9	66	143	308
2	El Camino Real	Sand Hill Road to Page Mill Road	42,463	75.6	119	255	550
3	El Camino Real	Page Mill Road to San Antonio Road	36,595	75.0	107	231	498
4	Page Mill Road	I-280 to El Camino Real	38,251	72.0	68	147	317
5	Arastradero Road	I-280 to El Camino Real	20,016	65.5	25	54	116
6	Alma Street	University Avenue to San Antonio Road	33,875	71.1	59	128	275
7	Middlefield road	University Avenue to San Antonio Road	12,492	63.1	17	37	80
8	University Avenue	El Camino Real to Route 101	19,849	65.1	23	50	109
9	Embarcadero Road	El Camino Real to Route 101	30,476	67.3	33	71	154
10	Oregon Expressway	El Camino Real to Route 101	30,922	71.1	59	128	275
11	Charleston Road	El Camino Real to San Antonio Road	15,501	64.1	20	44	94
12	San Antonio Road	El Camino Real to Route 101	37,181	71.9	67	145	311
13	Foothill /Junipero Serra	Sand Hill Road to Arastradero Road	21,077	71.3	61	132	285
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Scenario: SCENARIO 5M  
 Roadway: Sand Hill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	36,619
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2246	42	17	1660	31	13	416	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.5	-18.4	1.5	-15.8	-19.7	-4.6	-21.8	-25.8
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	61.1	62.4	67.3	59.8	61.1	61.3	53.8	55.0
VEHICULAR NOISE	DAY=	70.1	Leq	EVENING=	68.8	Leq	NIGHT=	62.8	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 71.2</b> <b>CNEL= 71.9</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>60 130 280</b>
		<b>CNEL:</b>	<b>66 143 308</b>

Scenario: SCENARIO 5M  
 Roadway: El Camino Real  
 Segment: Sand Hill Road to Page Mill Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	42,463
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2604	49	20	1925	36	15	482	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.4	-13.8	-17.8	2.1	-15.1	-19.1	-3.9	-21.2	-25.1
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.4	64.9	66.1	71.1	63.6	64.8	65.1	57.6	58.8
VEHICULAR NOISE	DAY=	73.9	Leq	EVENING=	72.6	Leq	NIGHT=	66.6	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 75.0 CNEL= 75.6
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	108 232 500
		CNEL:	119 255 550

Scenario: SCENARIO 5M  
 Roadway: El Camino Real  
 Segment: Page Mill Road to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	36,595
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2244	42	17	1659	31	13	416	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.5	-18.4	1.5	-15.8	-19.7	-4.6	-21.8	-25.8
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	71.8	64.2	65.5	70.4	62.9	64.2	64.4	56.9	58.2
VEHICULAR NOISE	DAY=	73.3	Leq	EVENING=	71.9	Leq	NIGHT=	65.9	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 74.4 CNEL= 75.0
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			Ldn: 98 210 453 CNEL: 107 231 498



Scenario: SCENARIO 5M  
 Roadway: Page Mill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	38,251
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2346	44	18	1734	33	13	434	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.0	-14.3	-18.2	1.6	-15.6	-19.6	-4.4	-21.6	-25.6
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.8	61.3	62.6	67.5	60.0	61.2	61.5	54.0	55.2
VEHICULAR NOISE	DAY=	70.3	Leq	EVENING=	69.0	Leq	NIGHT=	63.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.4 CNEL= 72.0
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	62 134 288
		CNEL:	68 147 317

Scenario: SCENARIO 5M  
 Roadway: Arastradero Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	20,016
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1228	23	9	907	17	7	227	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.6	-15.6	-19.6	0.3	-16.9	-20.9	-5.7	-23.0	-26.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.4	55.8	58.0	60.1	54.5	56.7	54.1	48.5	50.7
VEHICULAR NOISE	DAY=	63.8	Leq	EVENING=	62.5	Leq	NIGHT=	56.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 64.9</b> <b>CNEL= 65.5</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>23 49 106</b>
		<b>CNEL:</b>	<b>25 54 116</b>

Scenario: SCENARIO 5M  
 Roadway: Alma Street  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	33,875
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2078	39	16	1536	29	12	385	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.4	-14.8	-18.8	1.1	-16.1	-20.1	-4.9	-22.1	-26.1
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.6	66.6	59.1	60.3	60.6	53.0	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 116 250
		CNEL:	59 128 275

Scenario: SCENARIO 5M  
 Roadway: Middlefield road  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	12,492
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	766	14	6	566	11	4	142	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-0.4	-17.7	-21.6	-1.8	-19.0	-22.9	-7.8	-25.0	-29.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	58.9	53.3	55.5	57.6	52.0	54.2	51.6	46.0	48.2
VEHICULAR NOISE	DAY=	61.3	Leq	EVENING=	60.0	Leq	NIGHT=	54.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 62.4 CNEL= 63.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	16 34 73
		CNEL:	17 37 80

Scenario: SCENARIO 5M  
 Roadway: University Avenue  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	19,849
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1217	23	9	900	17	7	225	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.6	-15.7	-19.6	0.3	-17.0	-20.9	-5.8	-23.0	-26.9
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.0	55.4	57.6	59.6	54.0	56.2	53.6	48.0	50.2
VEHICULAR NOISE	DAY=	63.3	Leq	EVENING=	62.0	Leq	NIGHT=	56.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.4 CNEL= 65.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	21 46 99
		CNEL:	23 50 109

Scenario: SCENARIO 5M  
 Roadway: Embarcadero Road  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	30,476
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1869	35	14	1382	26	10	346	7	3
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	3.4	-13.8	-17.8	2.1	-15.1	-19.1	-3.9	-21.1	-25.1
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.2	57.6	59.8	61.9	56.3	58.5	55.9	50.3	52.5
VEHICULAR NOISE	DAY=	65.6	Leq	EVENING=	64.3	Leq	NIGHT=	58.3	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 66.7 CNEL= 67.3
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	30 65 140
		CNEL:	33 71 154

Scenario: SCENARIO 5M  
 Roadway: Oregon Expressway  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	30,922
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1897	36	14	1402	26	11	351	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.0	-15.2	-19.2	0.7	-16.5	-20.5	-5.3	-22.5	-26.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.6	66.6	59.1	60.3	60.6	53.0	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 116 250
		CNEL:	59 128 275

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 5M** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Charleston Road** Analyst: **CTS**  
 Segment: **El Camino Real to San Antonio Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	15,501
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	24
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	951	18	7	703	13	5	176	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	0.5	-16.7	-20.7	-0.8	-18.1	-22.0	-6.8	-24.1	-28.0
Distance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.0	54.4	56.6	58.7	53.1	55.3	52.7	47.1	49.3
VEHICULAR NOISE	DAY=	62.4	Leq	EVENING=	61.1	Leq	NIGHT=	55.1	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn=</b>	<b>63.5</b>
		<b>CNEL=</b>	<b>64.1</b>
NOISE CONTOUR:		<i>70 dBA</i>	<i>65 dBA</i> <i>60 dBA</i>
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>18</b> <b>40</b> <b>86</b>
		<b>CNEL:</b>	<b>20</b> <b>44</b> <b>94</b>



FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 5M**  
 Roadway: **San Antonio Road**  
 Segment: **El Camino Real to Route 101**

Project: **Palo Alto Comprehensive Plan**  
 Analyst: **CTS**  
 Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	37,181
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2280	43	17	1686	32	13	422	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.4	-18.4	1.5	-15.7	-19.7	-4.5	-21.7	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	61.2	62.4	67.4	59.9	61.1	61.4	53.8	55.1
VEHICULAR NOISE	DAY=	70.2	Leq	EVENING=	68.9	Leq	NIGHT=	62.9	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn= 71.3</b>	
		<b>CNEL= 71.9</b>	
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn: 61 131 283</b>	
		<b>CNEL: 67 145 311</b>	

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 5M** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Foothill /Junipero Serra** Analyst: **CTS**  
 Segment: **Sand Hill Road to Arastradero Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	21,077
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1293	24	10	955	18	7	239	5	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.7	-18.0	-21.9	-2.0	-19.3	-23.2	-8.0	-25.3	-29.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	59.6	60.2	67.3	58.3	58.9	61.2	52.3	52.8
VEHICULAR NOISE	DAY=	69.6	Leq	EVENING=	68.3	Leq	NIGHT=	62.3	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	70.7
		CNEL=	71.3
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	56 120 259
		CNEL:	61 132 285



<b>ANALYST</b>
CTS

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6 75.55%  
 13.6 13.96%  
 10.22 10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tr  
 Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to Evening (7 Night (10 PM to 7 AM)		
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Palo Alto Comprehensive Plan  
SCENARIO 6 CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	TRAFFIC VOLUMES	LEVEL AT 50 FT.	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Sand Hill Road	I-280 to El Camino Real	36,698	71.9	67	143	309
2	El Camino Real	Sand Hill Road to Page Mill Road	41,624	75.5	117	252	543
3	El Camino Real	Page Mill Road to San Antonio Road	33,315	74.6	101	217	468
4	Page Mill Road	I-280 to El Camino Real	40,382	72.3	71	153	329
5	Arastradero Road	I-280 to El Camino Real	19,607	65.4	25	53	115
6	Alma Street	University Avenue to San Antonio Road	34,215	71.2	60	129	277
7	Middlefield road	University Avenue to San Antonio Road	13,071	63.2	18	38	82
8	University Avenue	El Camino Real to Route 101	20,618	65.2	24	52	112
9	Embarcadero Road	El Camino Real to Route 101	32,214	67.6	34	74	160
10	Oregon Expressway	El Camino Real to Route 101	30,925	71.1	59	128	275
11	Charleston Road	El Camino Real to San Antonio Road	16,690	64.5	21	46	99
12	San Antonio Road	El Camino Real to Route 101	37,419	71.9	67	145	313
13	Foothill /Junipero Serra	Sand Hill Road to Arastradero Road	20,971	71.3	61	132	284
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Scenario: SCENARIO 6  
 Roadway: Sand Hill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	36,698
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2251	43	17	1664	31	13	417	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.5	-18.4	1.5	-15.8	-19.7	-4.5	-21.8	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	61.1	62.4	67.3	59.8	61.1	61.3	53.8	55.1
VEHICULAR NOISE	DAY=	70.1	Leq	EVENING=	68.8	Leq	NIGHT=	62.8	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.2 CNEL= 71.9
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	60 130 280
		CNEL:	67 143 309

Scenario: SCENARIO 6  
 Roadway: El Camino Real  
 Segment: Sand Hill Road to Page Mill Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	41,624
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2553	48	19	1887	36	14	473	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.3	-13.9	-17.9	2.0	-15.2	-19.2	-4.0	-21.2	-25.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.3	64.8	66.1	71.0	63.5	64.7	65.0	57.5	58.7
VEHICULAR NOISE	DAY=	73.8	Leq	EVENING=	72.5	Leq	NIGHT=	66.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 74.9 CNEL= 75.5
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	106 229 493
		CNEL:	117 252 543

Scenario: SCENARIO 6  
 Roadway: El Camino Real  
 Segment: Page Mill Road to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	33,315
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2043	39	16	1510	29	11	378	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.4	-14.9	-18.8	1.0	-16.2	-20.2	-5.0	-22.2	-26.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	71.3	63.8	65.1	70.0	62.5	63.8	64.0	56.5	57.8
VEHICULAR NOISE	DAY=	72.8	Leq	EVENING=	71.5	Leq	NIGHT=	65.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 73.9 CNEL= 74.6
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	92 197 425
		CNEL:	101 217 468



Scenario: SCENARIO 6  
 Roadway: Page Mill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	40,382
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2477	47	19	1831	35	14	459	9	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.2	-14.0	-18.0	1.9	-15.4	-19.3	-4.1	-21.4	-25.3
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.1	61.5	62.8	67.7	60.2	61.5	61.7	54.2	55.5
VEHICULAR NOISE	DAY=	70.6	Leq	EVENING=	69.2	Leq	NIGHT=	63.2	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.6 CNEL= 72.3
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			Ldn: 64 139 299 CNEL: 71 153 329

Scenario: SCENARIO 6  
 Roadway: Arastradero Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	19,607
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1203	23	9	889	17	7	223	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.5	-15.7	-19.7	0.2	-17.0	-21.0	-5.8	-23.0	-27.0
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.3	55.7	57.9	60.0	54.4	56.6	54.0	48.4	50.6
VEHICULAR NOISE	DAY=	63.7	Leq	EVENING=	62.4	Leq	NIGHT=	56.4	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.8 CNEL= 65.4
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	22 48 104
		CNEL:	25 53 115

Scenario: SCENARIO 6  
 Roadway: Alma Street  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	34,215
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2099	40	16	1551	29	12	389	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.8	-18.7	1.2	-16.1	-20.0	-4.9	-22.1	-26.0
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.7	66.6	59.1	60.4	60.6	53.1	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.2
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 117 252
		CNEL:	60 129 277

Scenario: SCENARIO 6  
 Roadway: Middlefield road  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	13,071
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	802	15	6	593	11	5	148	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-0.2	-17.5	-21.4	-1.6	-18.8	-22.8	-7.6	-24.8	-28.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.1	53.5	55.7	57.8	52.2	54.4	51.8	46.2	48.4
VEHICULAR NOISE	DAY=	61.5	Leq	EVENING=	60.2	Leq	NIGHT=	54.2	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 62.6 CNEL= 63.2
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	16 35 75
		CNEL:	18 38 82

Scenario: SCENARIO 6  
 Roadway: University Avenue  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	20,618
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1265	24	10	935	18	7	234	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.7	-15.5	-19.5	0.4	-16.8	-20.8	-5.6	-22.8	-26.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	55.5	57.7	59.8	54.2	56.4	53.8	48.2	50.4
VEHICULAR NOISE	DAY=	63.5	Leq	EVENING=	62.2	Leq	NIGHT=	56.2	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.6 CNEL= 65.2
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	22 47 101
		CNEL:	24 52 112

Scenario: SCENARIO 6  
 Roadway: Embarcadero Road  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	32,214
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1976	37	15	1460	28	11	366	7	3
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	3.7	-13.6	-17.5	2.4	-14.9	-18.8	-3.7	-20.9	-24.8
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.5	57.9	60.1	62.1	56.6	58.8	56.1	50.5	52.7
VEHICULAR NOISE	DAY=	65.8	Leq	EVENING=	64.5	Leq	NIGHT=	58.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 66.9 CNEL= 67.6
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	31 67 145
		CNEL:	34 74 160

Scenario: SCENARIO 6  
 Roadway: Oregon Expressway  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	30,925
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1897	36	14	1402	26	11	351	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.0	-15.2	-19.2	0.7	-16.5	-20.5	-5.3	-22.5	-26.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.6	66.6	59.1	60.3	60.6	53.0	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 116 250
		CNEL:	59 128 275

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 6** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Charleston Road** Analyst: **CTS**  
 Segment: **El Camino Real to San Antonio Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	16,690
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	24
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1024	19	8	757	14	6	190	4	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	0.8	-16.4	-20.4	-0.5	-17.7	-21.7	-6.5	-23.7	-27.7
Distance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.3	54.8	57.0	59.0	53.4	55.6	53.0	47.4	49.6
VEHICULAR NOISE	DAY=	62.7	Leq	EVENING=	61.4	Leq	NIGHT=	55.4	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn=</b>	<b>63.8</b>
		<b>CNEL=</b>	<b>64.5</b>
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>19 42 90</b>
		<b>CNEL:</b>	<b>21 46 99</b>



FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 6**  
 Roadway: **San Antonio Road**  
 Segment: **El Camino Real to Route 101**

Project: **Palo Alto Comprehensive Plan**  
 Analyst: **CTS**  
 Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	37,419
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2295	43	17	1696	32	13	425	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.9	-14.4	-18.3	1.5	-15.7	-19.6	-4.5	-21.7	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	61.2	62.5	67.4	59.9	61.1	61.4	53.9	55.1
VEHICULAR NOISE	DAY=	70.2	Leq	EVENING=	68.9	Leq	NIGHT=	62.9	Leq

RESULTS					
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	71.3		
		CNEL=	71.9		
NOISE CONTOUR:		70 dBA	65 dBA	60 dBA	
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	61	132	284
		CNEL:	67	145	313

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 6** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Foothill /Junipero Serra** Analyst: **CTS**  
 Segment: **Sand Hill Road to Arastradero Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	20,971
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1286	24	10	951	18	7	238	4	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.7	-18.0	-21.9	-2.1	-19.3	-23.3	-8.1	-25.3	-29.3
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.5	59.6	60.1	67.2	58.3	58.8	61.2	52.3	52.8
VEHICULAR NOISE	DAY=	69.6	Leq	EVENING=	68.3	Leq	NIGHT=	62.3	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	70.7
		CNEL=	71.3
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	56 120 258
		CNEL:	61 132 284



<b>ANALYST</b>
CTS

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6 75.55%  
 13.6 13.96%  
 10.22 10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tr  
 Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to Evening (7 Night (10 PM to 7 AM)		
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Palo Alto Comprehensive Plan  
SCENARIO 6M CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	TRAFFIC VOLUMES	LEVEL AT 50 FT.	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Sand Hill Road	I-280 to El Camino Real	36,642	71.9	66	143	308
2	El Camino Real	Sand Hill Road to Page Mill Road	40,965	75.5	116	249	537
3	El Camino Real	Page Mill Road to San Antonio Road	32,753	74.5	100	215	463
4	Page Mill Road	I-280 to El Camino Real	39,730	72.2	70	151	326
5	Arastradero Road	I-280 to El Camino Real	19,339	65.4	25	53	114
6	Alma Street	University Avenue to San Antonio Road	34,207	71.2	60	129	277
7	Middlefield road	University Avenue to San Antonio Road	12,492	63.1	17	37	80
8	University Avenue	El Camino Real to Route 101	19,654	65.0	23	50	108
9	Embarcadero Road	El Camino Real to Route 101	31,732	67.5	34	73	158
10	Oregon Expressway	El Camino Real to Route 101	30,922	71.1	59	128	275
11	Charleston Road	El Camino Real to San Antonio Road	16,690	64.5	21	46	99
12	San Antonio Road	El Camino Real to Route 101	37,411	71.9	67	145	313
13	Foothill /Junipero Serra	Sand Hill Road to Arastradero Road	20,959	71.3	61	132	284
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Scenario: SCENARIO 6M  
 Roadway: Sand Hill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	36,642
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2247	42	17	1661	31	13	416	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.8	-14.5	-18.4	1.5	-15.8	-19.7	-4.6	-21.8	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	61.1	62.4	67.3	59.8	61.1	61.3	53.8	55.0
VEHICULAR NOISE	DAY=	70.1	Leq	EVENING=	68.8	Leq	NIGHT=	62.8	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 71.2</b> <b>CNEL= 71.9</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>60 130 280</b>
		<b>CNEL:</b>	<b>66 143 308</b>

Scenario: SCENARIO 6M  
 Roadway: El Camino Real  
 Segment: Sand Hill Road to Page Mill Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	40,965
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2513	47	19	1857	35	14	465	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.3	-14.0	-17.9	1.9	-15.3	-19.3	-4.1	-21.3	-25.3
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.2	64.7	66.0	70.9	63.4	64.7	64.9	57.4	58.7
VEHICULAR NOISE	DAY=	73.7	Leq	EVENING=	72.4	Leq	NIGHT=	66.4	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 74.8</b> <b>CNEL= 75.5</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>105 226 488</b>
		<b>CNEL:</b>	<b>116 249 537</b>

Scenario: SCENARIO 6M  
 Roadway: El Camino Real  
 Segment: Page Mill Road to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	32,753
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2009	38	15	1485	28	11	372	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.3	-15.0	-18.9	1.0	-16.3	-20.2	-5.0	-22.3	-26.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	71.3	63.8	65.0	70.0	62.4	63.7	63.9	56.4	57.7
VEHICULAR NOISE	DAY=	72.8	Leq	EVENING=	71.5	Leq	NIGHT=	65.4	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 73.9</b> <b>CNEL= 74.5</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>91 195 420</b>
		<b>CNEL:</b>	<b>100 215 463</b>



Scenario: SCENARIO 6M  
 Roadway: Page Mill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	39,730
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2437	46	19	1801	34	14	451	9	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.1	-14.1	-18.1	1.8	-15.4	-19.4	-4.2	-21.4	-25.4
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.0	61.5	62.7	67.7	60.1	61.4	61.7	54.1	55.4
VEHICULAR NOISE	DAY=	70.5	Leq	EVENING=	69.2	Leq	NIGHT=	63.2	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.6 CNEL= 72.2
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	64 137 296
		CNEL:	70 151 326

Scenario: SCENARIO 6M  
 Roadway: Arastradero Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	19,339
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1186	22	9	877	17	7	220	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.5	-15.8	-19.7	0.1	-17.1	-21.1	-5.9	-23.1	-27.1
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.2	55.7	57.8	59.9	54.3	56.5	53.9	48.3	50.5
VEHICULAR NOISE	DAY=	63.6	Leq	EVENING=	62.3	Leq	NIGHT=	56.3	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.7 CNEL= 65.4
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	22 48 103
		CNEL:	25 53 114

Scenario: SCENARIO 6M  
 Roadway: Alma Street  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	34,207
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2098	40	16	1551	29	12	388	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.8	-18.7	1.2	-16.1	-20.0	-4.9	-22.1	-26.0
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.7	66.6	59.1	60.4	60.6	53.1	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.2
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 117 252
		CNEL:	60 129 277

Scenario: SCENARIO 6M  
 Roadway: Middlefield road  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	12,492
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	766	14	6	566	11	4	142	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-0.4	-17.7	-21.6	-1.8	-19.0	-22.9	-7.8	-25.0	-29.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	58.9	53.3	55.5	57.6	52.0	54.2	51.6	46.0	48.2
VEHICULAR NOISE	DAY=	61.3	Leq	EVENING=	60.0	Leq	NIGHT=	54.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 62.4 CNEL= 63.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			Ldn: 16 34 73 CNEL: 17 37 80

Scenario: SCENARIO 6M  
 Roadway: University Avenue  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	19,654
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1205	23	9	891	17	7	223	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.5	-15.7	-19.7	0.2	-17.0	-21.0	-5.8	-23.0	-27.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.9	55.3	57.5	59.6	54.0	56.2	53.6	48.0	50.2
VEHICULAR NOISE	DAY=	63.3	Leq	EVENING=	62.0	Leq	NIGHT=	56.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.4 CNEL= 65.0
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	21 46 98
		CNEL:	23 50 108

Scenario: SCENARIO 6M  
 Roadway: Embarcadero Road  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	31,732
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1946	37	15	1439	27	11	360	7	3
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	3.6	-13.6	-17.6	2.3	-14.9	-18.9	-3.7	-21.0	-24.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.4	57.8	60.0	62.1	56.5	58.7	56.1	50.5	52.7
VEHICULAR NOISE	DAY=	65.8	Leq	EVENING=	64.5	Leq	NIGHT=	58.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 66.9 CNEL= 67.5
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	31 67 144
		CNEL:	34 73 158

Scenario: SCENARIO 6M  
 Roadway: Oregon Expressway  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	30,922
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1897	36	14	1402	26	11	351	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.0	-15.2	-19.2	0.7	-16.5	-20.5	-5.3	-22.5	-26.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.6	66.6	59.1	60.3	60.6	53.0	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 116 250
		CNEL:	59 128 275

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 6M** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Charleston Road** Analyst: **CTS**  
 Segment: **El Camino Real to San Antonio Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	16,690
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	24
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1024	19	8	757	14	6	190	4	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	0.8	-16.4	-20.4	-0.5	-17.7	-21.7	-6.5	-23.7	-27.7
Distance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.3	54.8	57.0	59.0	53.4	55.6	53.0	47.4	49.6
VEHICULAR NOISE	DAY=	62.7	Leq	EVENING=	61.4	Leq	NIGHT=	55.4	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn=</b>	<b>63.8</b>
		<b>CNEL=</b>	<b>64.5</b>
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	<b>Ldn:</b>	<b>19</b>	<b>42 90</b>
	<b>CNEL:</b>	<b>21</b>	<b>46 99</b>



FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 6M**  
 Roadway: **San Antonio Road**  
 Segment: **El Camino Real to Route 101**

Project: **Palo Alto Comprehensive Plan**  
 Analyst: **CTS**  
 Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	37,411
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2295	43	17	1696	32	13	425	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.9	-14.4	-18.3	1.5	-15.7	-19.6	-4.5	-21.7	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	61.2	62.5	67.4	59.9	61.1	61.4	53.9	55.1
VEHICULAR NOISE	DAY=	70.2	Leq	EVENING=	68.9	Leq	NIGHT=	62.9	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	71.3
		CNEL=	71.9
NOISE CONTOUR:		70 dBA	65 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	61
		CNEL:	67
			132
			284
			145
			313

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **SCENARIO 6M** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Foothill /Junipero Serra** Analyst: **CTS**  
 Segment: **Sand Hill Road to Arastradero Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	20,959
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1285	24	10	950	18	7	238	4	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.7	-18.0	-21.9	-2.1	-19.3	-23.3	-8.1	-25.3	-29.3
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.5	59.6	60.1	67.2	58.3	58.8	61.2	52.3	52.8
VEHICULAR NOISE	DAY=	69.6	Leq	EVENING=	68.3	Leq	NIGHT=	62.3	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn=</b>	<b>70.7</b>
		<b>CNEL=</b>	<b>71.3</b>
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>55 120 258</b>
		<b>CNEL:</b>	<b>61 132 284</b>



<b>ANALYST</b>
CTS

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6 75.55%  
 13.6 13.96%  
 10.22 10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tr  
 Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to Evening (7 Night (10 PM to 7 AM)		
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Palo Alto Comprehensive Plan  
No Growth CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	TRAFFIC VOLUMES	LEVEL AT 50 FT.	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Sand Hill Road	I-280 to El Camino Real	35,473	71.7	65	140	302
2	El Camino Real	Sand Hill Road to Page Mill Road	41,213	75.5	116	250	539
3	El Camino Real	Page Mill Road to San Antonio Road	34,934	74.8	104	224	483
4	Page Mill Road	I-280 to El Camino Real	35,860	71.8	66	141	304
5	Arastradero Road	I-280 to El Camino Real	20,183	65.5	25	54	117
6	Alma Street	University Avenue to San Antonio Road	32,894	71.0	58	125	270
7	Middlefield road	University Avenue to San Antonio Road	12,492	63.1	17	37	80
8	University Avenue	El Camino Real to Route 101	19,719	65.0	23	50	108
9	Embarcadero Road	El Camino Real to Route 101	31,429	67.5	34	73	157
10	Oregon Expressway	El Camino Real to Route 101	30,925	71.1	59	128	275
11	Charleston Road	El Camino Real to San Antonio Road	14,699	63.9	20	42	91
12	San Antonio Road	El Camino Real to Route 101	37,436	71.9	67	145	313
13	Foothill /Junipero Serra	Sand Hill Road to Arastradero Road	19,447	71.0	58	125	270
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Scenario: No Growth  
 Roadway: Sand Hill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	35,473
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2176	41	17	1608	30	12	403	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.6	-14.6	-18.6	1.3	-15.9	-19.9	-4.7	-21.9	-25.9
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.5	61.0	62.2	67.2	59.7	60.9	61.2	53.6	54.9
VEHICULAR NOISE	DAY=	70.0	Leq	EVENING=	68.7	Leq	NIGHT=	62.7	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.1 CNEL= 71.7
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	59 127 274
		CNEL:	65 140 302

Scenario: No Growth  
 Roadway: El Camino Real  
 Segment: Sand Hill Road to Page Mill Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	41,213
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2528	48	19	1868	35	14	468	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.3	-14.0	-17.9	2.0	-15.3	-19.2	-4.0	-21.3	-25.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.3	64.7	66.0	71.0	63.4	64.7	64.9	57.4	58.7
VEHICULAR NOISE	DAY=	73.8	Leq	EVENING=	72.5	Leq	NIGHT=	66.4	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 74.9 CNEL= 75.5
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	106 227 490
		CNEL:	116 250 539

Scenario: No Growth  
 Roadway: El Camino Real  
 Segment: Page Mill Road to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	34,934
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2143	40	16	1584	30	12	397	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.6	-14.7	-18.6	1.3	-16.0	-19.9	-4.8	-22.0	-26.0
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	71.6	64.0	65.3	70.2	62.7	64.0	64.2	56.7	58.0
VEHICULAR NOISE	DAY=	73.1	Leq	EVENING=	71.7	Leq	NIGHT=	65.7	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 74.1 CNEL= 74.8
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	95 204 439
		CNEL:	104 224 483



Scenario: No Growth  
 Roadway: Page Mill Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	35,860
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2199	42	17	1626	31	12	407	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.7	-14.6	-18.5	1.4	-15.9	-19.8	-4.6	-21.9	-25.8
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.5	61.0	62.3	67.2	59.7	61.0	61.2	53.7	55.0
VEHICULAR NOISE	DAY=	70.0	Leq	EVENING=	68.7	Leq	NIGHT=	62.7	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 71.1 CNEL= 71.8
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	59 128 276
		CNEL:	66 141 304

Scenario: No Growth  
 Roadway: Arastradero Road  
 Segment: I-280 to El Camino Real

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	20,183
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1238	23	9	915	17	7	229	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.6	-15.6	-19.6	0.3	-16.9	-20.9	-5.7	-22.9	-26.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.4	55.8	58.0	60.1	54.5	56.7	54.1	48.5	50.7
VEHICULAR NOISE	DAY=	63.8	Leq	EVENING=	62.5	Leq	NIGHT=	56.5	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	<b>Ldn= 64.9</b> <b>CNEL= 65.5</b>
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>23 49 106</b>
		<b>CNEL:</b>	<b>25 54 117</b>

Scenario: No Growth  
 Roadway: Alma Street  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	32,894
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2017	38	15	1491	28	11	374	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.3	-14.9	-18.9	1.0	-16.2	-20.2	-5.0	-22.3	-26.2
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.8	60.2	61.5	66.4	58.9	60.2	60.4	52.9	54.2
VEHICULAR NOISE	DAY=	69.3	Leq	EVENING=	67.9	Leq	NIGHT=	61.9	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.4 CNEL= 71.0
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	53 114 245
		CNEL:	58 125 270

Scenario: No Growth  
 Roadway: Middlefield road  
 Segment: University Avenue to San Antonio Road

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	12,492
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	766	14	6	566	11	4	142	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-0.4	-17.7	-21.6	-1.8	-19.0	-22.9	-7.8	-25.0	-29.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	58.9	53.3	55.5	57.6	52.0	54.2	51.6	46.0	48.2
VEHICULAR NOISE	DAY=	61.3	Leq	EVENING=	60.0	Leq	NIGHT=	54.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 62.4 CNEL= 63.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			Ldn: 16 34 73 CNEL: 17 37 80

Scenario: No Growth  
 Roadway: University Avenue  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	19,719
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1209	23	9	894	17	7	224	4	2
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	1.5	-15.7	-19.7	0.2	-17.0	-21.0	-5.8	-23.0	-27.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.9	55.3	57.5	59.6	54.0	56.2	53.6	48.0	50.2
VEHICULAR NOISE	DAY=	63.3	Leq	EVENING=	62.0	Leq	NIGHT=	56.0	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 64.4 CNEL= 65.0
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	21 46 98
		CNEL:	23 50 108

Scenario: No Growth  
 Roadway: Embarcadero Road  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	31,429
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1928	36	15	1425	27	11	357	7	3
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	3.6	-13.7	-17.6	2.3	-15.0	-18.9	-3.8	-21.0	-25.0
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.4	57.8	60.0	62.0	56.4	58.6	56.0	50.4	52.6
VEHICULAR NOISE	DAY=	65.7	Leq	EVENING=	64.4	Leq	NIGHT=	58.4	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 66.8 CNEL= 67.5
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	31 66 143
		CNEL:	34 73 157

Scenario: No Growth  
 Roadway: Oregon Expressway  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	30,925
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1897	36	14	1402	26	11	351	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.0	-15.2	-19.2	0.7	-16.5	-20.5	-5.3	-22.5	-26.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.9	60.4	61.6	66.6	59.1	60.3	60.6	53.0	54.3
VEHICULAR NOISE	DAY=	69.4	Leq	EVENING=	68.1	Leq	NIGHT=	62.1	Leq

RESULTS			
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):	Ldn= 70.5 CNEL= 71.1
NOISE CONTOUR:			70 dBA 65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	54 116 250
		CNEL:	59 128 275

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: **No Growth** Project: **Palo Alto Comprehensive Plan**  
 Roadway: **Charleston Road** Analyst: **CTS**  
 Segment: **El Camino Real to San Antonio Road** Date: **29-Nov-16**

ROADWAY INPUTS	
ADT	14,699
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	24
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	902	17	7	666	13	5	167	3	1
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	0.3	-17.0	-20.9	-1.0	-18.3	-22.2	-7.1	-24.3	-28.3
Distance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.8	54.2	56.4	58.5	52.9	55.1	52.5	46.9	49.1
VEHICULAR NOISE	DAY=	62.2	Leq	EVENING=	60.9	Leq	NIGHT=	54.9	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		<b>Ldn=</b>	<b>63.3</b>
		<b>CNEL=</b>	<b>63.9</b>
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		<b>Ldn:</b>	<b>18 38 83</b>
		<b>CNEL:</b>	<b>20 42 91</b>



FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: No Growth  
 Roadway: San Antonio Road  
 Segment: El Camino Real to Route 101

Project: Palo Alto Comprehensive Plan  
 Analyst: CTS  
 Date: 29-Nov-16

ROADWAY INPUTS	
ADT	37,436
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2296	43	17	1697	32	13	425	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.9	-14.4	-18.3	1.6	-15.7	-19.6	-4.5	-21.7	-25.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	61.2	62.5	67.4	59.9	61.2	61.4	53.9	55.1
VEHICULAR NOISE	DAY=	70.2	Leq	EVENING=	68.9	Leq	NIGHT=	62.9	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	71.3
		CNEL=	71.9
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	61 132 284
		CNEL:	67 145 313

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: No Growth Project: Palo Alto Comprehensive Plan  
 Roadway: Foothill /Junipero Serra Analyst: CTS  
 Segment: Sand Hill Road to Arastradero Road Date: 29-Nov-16

ROADWAY INPUTS	
ADT	19,447
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA									
	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1193	23	9	882	17	7	221	4	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-1.1	-18.3	-22.3	-2.4	-19.6	-23.6	-8.4	-25.6	-29.6
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.2	59.3	59.8	66.9	57.9	58.5	60.9	51.9	52.5
VEHICULAR NOISE	DAY=	69.3	Leq	EVENING=	67.9	Leq	NIGHT=	61.9	Leq

RESULTS			
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):		Ldn=	70.4
		CNEL=	71.0
NOISE CONTOUR:		70 dBA	65 dBA 60 dBA
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):		Ldn:	53 114 245
		CNEL:	58 125 270