Noise Calculations

BASELINE NOISE MEASUREMENTS

Site Number: 1			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-195			
Date: 1/18/2022			
Time: 12:58 p.m. – 1:13 p.m.			
Location: On the corner of Raley Boulevard and Katharine Avenue			
Source of Peak Noise: Vehicles on adjacent roadways			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
71.9	49.8	90.3	108.9

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0005120	11/29/2021	
	Microphone	Larson Davis	377B02	334361	11/30/2021	
	Preamp	Larson Davis	PRMLxT1L	042852	11/30/2021	
	Calibrator	Larson Davis	CAL200	14105	11/10/2021	

Weather Data			
Est.	Duration: 15 min.		Sky: Clear
	Note: dBA Offset = 0.02		Sensor Height (ft): 4 feet
	Wind Ave Speed (mph)	Temperature (degrees Fahrenheit)	Barometer Pressure (hPa)
	3-5	62	

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.399	Computer's File Name	SLM_0005120_LxT_Data_399.01.ldbin
Meter	LxT SE		
Firmware	2.404		
User		Location	
Description			
Note			
Start Time	2022-01-18 00:12:58	Duration	0:15:00.0
End Time	2022-01-18 00:13:13	Run Time	0:15:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	71.9 dB		
LAE	101.4 dB	SEA	--- dB
EA	1.5 mPa²h		
LZ_{peak}	108.9 dB		
LAS_{max}	90.3 dB		
LAS_{min}	49.8 dB		
LA_{eq}	71.9 dB		
LC_{eq}	79.3 dB	LC_{eq} - LA_{eq}	7.4 dB
LAI_{eq}	73.7 dB	LAI_{eq} - LA_{eq}	1.8 dB

Exceedances	Count	Duration
LAS > 85.0 dB	1	0:00:02.10
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	81.9 dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	81.9 dB	--- dB	--- dB	71.9 dB

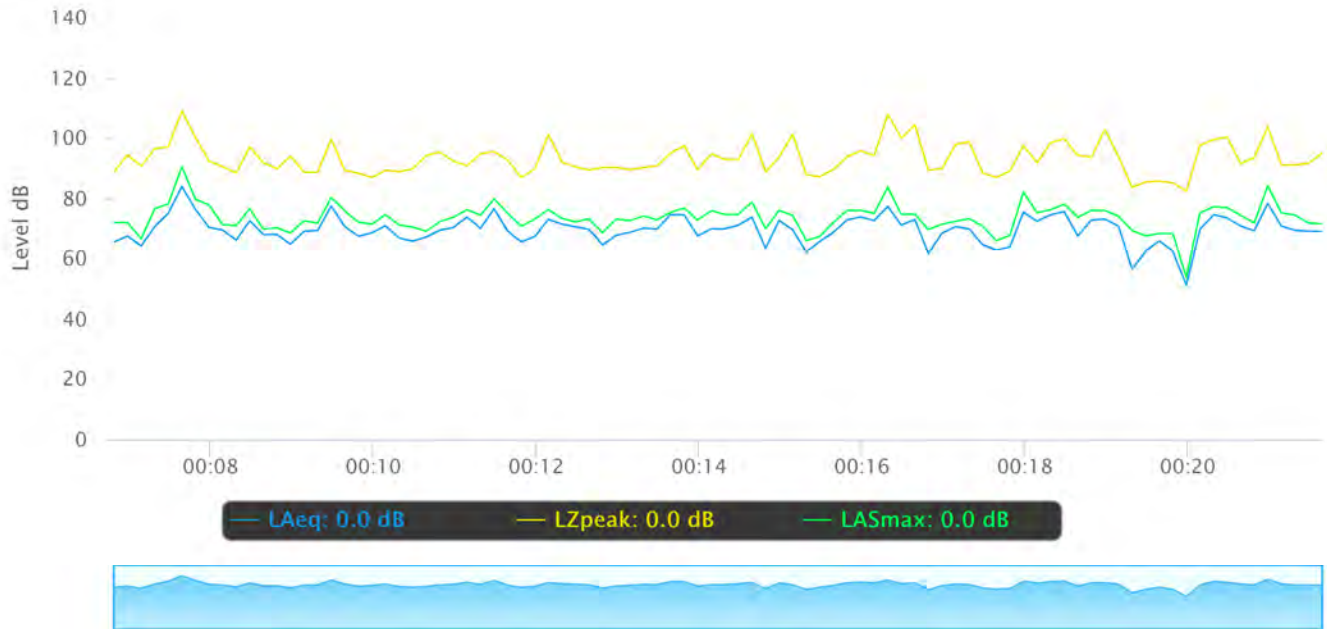
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	71.9 dB		79.3 dB		--- dB	
$LS_{(max)}$	90.3 dB		--- dB		--- dB	
$LS_{(min)}$	49.8 dB		--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		108.9 dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	76.2 dB
LAS 10.0	74.9 dB
LAS 33.3	71.0 dB
LAS 50.0	68.9 dB
LAS 66.6	66.6 dB
LAS 90.0	60.6 dB

Time History



Site Number: 2			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-195			
Date: 1/18/2022			
Time: 1:18 p.m. – 1:33 p.m.			
Location: On the corner of Katharine Avenue and Balsam Street			
Source of Peak Noise: Neighborhood noise and vehicles on adjacent roadways			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
51.1	42.5	69.0	90.8

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0005120	11/29/2021	
	Microphone	Larson Davis	377B02	334361	11/30/2021	
	Preamp	Larson Davis	PRMLxT1L	042852	11/30/2021	
	Calibrator	Larson Davis	CAL200	14105	11/10/2021	

Weather Data			
Est.	Duration: 15 min.		Sky: Clear
	Note: dBA Offset = 0.02		Sensor Height (ft): 4 feet
	Wind Ave Speed (mph)	Temperature (degrees Fahrenheit)	Barometer Pressure (hPa)
	3-5	62	

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.400	Computer's File Name	SLM_0005120_LxT_Data_400.00.ldbin
Meter	LxT SE		
Firmware	2.404		
User		Location	
Description			
Note			
Start Time	2022-01-18 00:13:18	Duration	0:15:00.0
End Time	2022-01-18 00:13:33	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	51.1 dB		
LAE	80.6 dB	SEA	--- dB
EA	12.8 µPa²h		
LZ_{peak}	90.8 dB		
LAS_{max}	69.0 dB		
LAS_{min}	42.5 dB		
LA_{eq}	51.1 dB		
LC_{eq}	64.7 dB	LC_{eq} - LA_{eq}	13.6 dB
LAI_{eq}	53.5 dB	LAI_{eq} - LA_{eq}	2.4 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	61.1 dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	61.1 dB	--- dB	--- dB	51.1 dB

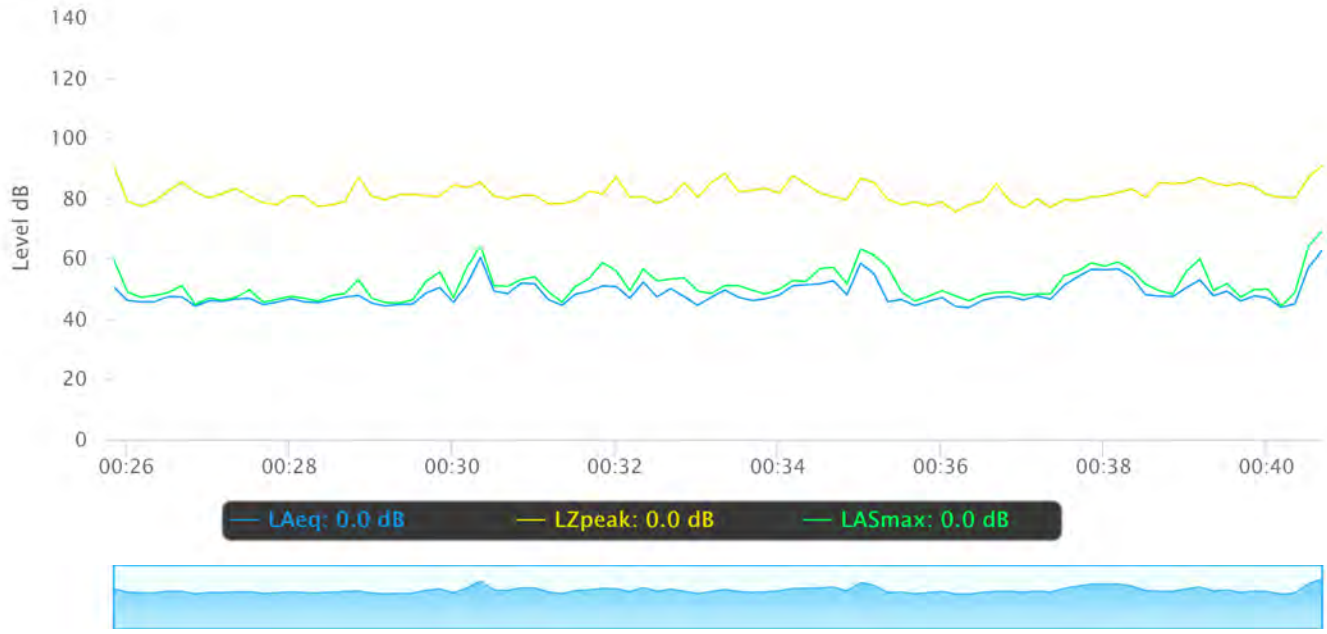
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	51.1 dB		64.7 dB		--- dB	
$LS_{(max)}$	69.0 dB		--- dB		--- dB	
$LS_{(min)}$	42.5 dB		--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB			

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	56.2 dB
LAS 10.0	53.6 dB
LAS 33.3	48.3 dB
LAS 50.0	46.8 dB
LAS 66.6	45.9 dB
LAS 90.0	44.5 dB

Time History



Site Number: 3			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-195			
Date: 1/18/2022			
Time: 1:40 p.m. – 1:55 p.m.			
Location: On Balsam Street residence to residents			
Source of Peak Noise: Neighborhood noise and vehicles on adjacent roadways			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
59.4	44.4	76.7	96.0

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0005120	11/29/2021	
	Microphone	Larson Davis	377B02	334361	11/30/2021	
	Preamp	Larson Davis	PRMLxT1L	042852	11/30/2021	
	Calibrator	Larson Davis	CAL200	14105	11/10/2021	

Weather Data			
Est.	Duration: 15 min.		Sky: Clear
	Note: dBA Offset = 0.02		Sensor Height (ft): 4 feet
	Wind Ave Speed (mph)	Temperature (degrees Fahrenheit)	Barometer Pressure (hPa)
	3-5	62	

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.401	Computer's File Name	SLM_0005120_LxT_Data_401.00.ldbin
Meter	LxT SE		
Firmware	2.404		
User		Location	
Description			
Note			
Start Time	2022-01-18 00:13:40	Duration	0:15:00.0
End Time	2022-01-18 00:13:55	Run Time	0:15:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	59.4 dB		
LAE	88.9 dB	SEA	--- dB
EA	86.2 µPa²h		
LZ_{peak}	96.0 dB		
LAS_{max}	76.7 dB		
LAS_{min}	44.4 dB		
LA_{eq}	59.4 dB		
LC_{eq}	69.1 dB	LC_{eq} - LA_{eq}	9.7 dB
LAI_{eq}	62.1 dB	LAI_{eq} - LA_{eq}	2.7 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	69.4 dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	69.4 dB	--- dB	--- dB	59.4 dB

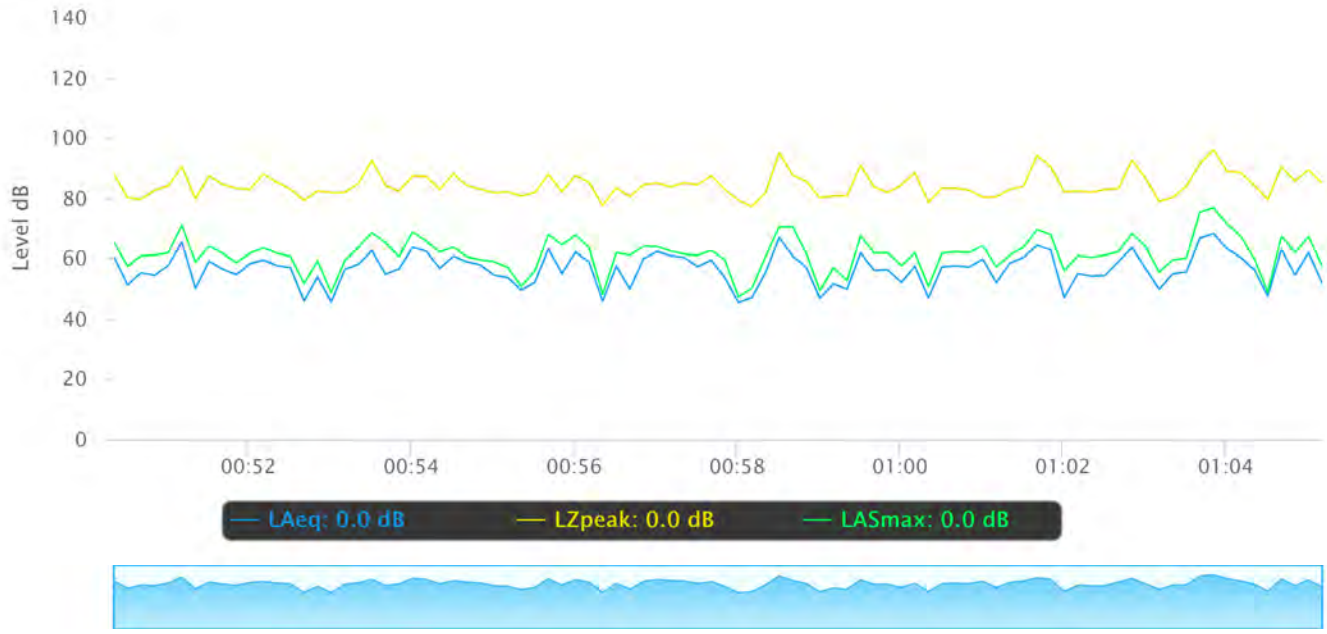
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	59.4 dB		69.1 dB		--- dB	
$LS_{(max)}$	76.7 dB		--- dB		--- dB	
$LS_{(min)}$	44.4 dB		--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB			

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	64.9 dB
LAS 10.0	62.4 dB
LAS 33.3	58.5 dB
LAS 50.0	55.6 dB
LAS 66.6	51.6 dB
LAS 90.0	46.7 dB

Time History



Site Number: 4			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-195			
Date: 1/18/2022- 1/19/2022			
Time: 2:30 p.m.- 2:30 p.m.			
Location: On Balsam Street adjacent to residents			
Source of Peak Noise: On Project Site along fence			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	CNEL
60.0	45.4	84.8	65.8

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0005120	11/29/2021	
	Microphone	Larson Davis	377B02	334361	11/30/2021	
	Preamp	Larson Davis	PRMLxT1L	042852	11/30/2021	
	Calibrator	Larson Davis	CAL200	14105	11/10/2021	

Weather Data			
Est.	Duration: 24 hours		Sky: Clear
	Note: dBA Offset = 0.02		Sensor Height (ft): 4 feet
	Wind Ave Speed (mph)	Temperature (degrees Fahrenheit)	Barometer Pressure (hPa)
	3-5	62	

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.402	Computer's File Name	SLM_0005120_LxT_Data_402.00.ldbin
Meter	LxT SE		
Firmware	2.404		
User		Location	
Description			
Note			
Start Time	2022-01-18	Duration	25:00:00.0
End Time	2022-01-19	Run Time	25:00:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	60.0 dB		
LAE	109.6 dB	SEA	--- dB
EA	10.0 mPa²h		
LZ_{peak}	115.5 dB		
LAS_{max}	84.8 dB		
LAS_{min}	45.4 dB		
LA_{eq}	60.0 dB		
LC_{eq}	70.4 dB	LC_{eq} - LA_{eq}	10.3 dB
LAI_{eq}	61.8 dB	LAI_{eq} - LA_{eq}	1.8 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	65.8 dB	60.5 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	66.1 dB	60.8 dB	59.1 dB	59.2 dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	60.0 dB		70.4 dB		--- dB	
$LS_{(max)}$	84.8 dB		--- dB		--- dB	
$LS_{(min)}$	45.4 dB		--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		115.5 dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	64.2 dB
LAS 10.0	63.0 dB
LAS 33.3	59.6 dB
LAS 50.0	57.5 dB
LAS 66.6	55.8 dB
LAS 90.0	52.9 dB

Time History

ROADWAY CONSTRUCTION NOISE MODEL-CONSTRUCTION NOISE OUTPUTS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/2/2022
Case Description: Demolition

Description	**Affected Land Use**
Demolition	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Concrete/Industrial Saws	No	20		89.6	140
Rubber Tired Dozer	No	40		81.7	140
Tractor/Loader/Backhoe	No	40	84		140
Tractor/Loader/Backhoe	No	40	84		140
Tractor/Loader/Backhoe	No	40	84		140

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Concrete/Industrial Saws	80.6	73.6
Rubber Tired Dozer	72.7	68.7
Tractor/Loader/Backhoe	75.1	71.1
Tractor/Loader/Backhoe	75.1	71.1
Tractor/Loader/Backhoe	75.1	71.1
Total	**80.6**	**78.4**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/2/2022
Case Description: Site Preparation

Description	**Affected Land Use**
Site Preparation	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		140
Scraper	No	40		83.6	140
Tractor/Loader/Backhoe	No	40	84		140

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	76.1	72.1
Scraper	74.6	70.7
TraTractor/Loader/Backhoe	75.1	71.1
Total	**76.1**	**76.1**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/2/2022
Case Description: Grading

Description	**Affected Land Use**
Site Preparation	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		140
Rubber Tired Dozer	No	40		81.7	140
Tractor/Loader/Backhoe	No	40	84		140
Tractor/Loader/Backhoe	No	40	84		140

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	76.1	72.1
Rubber Tired Dozer	72.7	68.7
Tractor/Loader/Backhoe	75.1	71.1
Tractor/Loader/Backhoe	75.1	71.1
Total	**76.1**	**76.9**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/2/2022
Case Description: Building Construction, Paving, Architectural Coating

Description
Building Construction, Paving, Architectural Coating

Affected Land Use
Residential

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)
Crane	No	16		80.6	140
Forklift	No	40		83.4	140
Forklift	No	40		83.4	140
Generator Set	No	50		80.6	140
Welder / Torch	No	40		74	140
Cement and Mortar Mixer	No	40		78.8	140
Paver	No	50		77.2	140
Paving Equipment	No	50		77.2	140
Roller	No	20		80	140
Roller	No	20		80	140
Tractor/Loader/Backhoe	No	40	84		140
Tractor/Loader/Backhoe	No	40	84		140
Compressor (air)	No	40		77.7	140

	Calculated (dBA)	
Equipment	***Lmax**	**Leq**
Crane	71.6	63.6
Forklift	74.5	70.5
Forklift	74.5	70.5
Generator Set	71.7	68.7
Welder / Torch	65.1	61.1

Cement and Mortar Mixer		69.9	65.9
Paver		68.3	65.3
Paving Equipment		68.3	65.3
Roller		71.1	64.1
Roller		71.1	64.1
Tractor/Loader/Backhoe		75.1	71.1
Tractor/Loader/Backhoe		75.1	71.1
Compressor (air)		68.7	64.7
	Total	**75.1**	**78.9**

*Calculated Lmax is the Loudest value.

SOUNDPLAN OUTPUT DATA

SoundPLAN
Output Source Information

Number	Reciever Name	Floor	Level at Receiver
1	On the corner of Raley Boulevard and Katharine Avenue	Ground Floor	45.7
2	On the corner of Katharine Avenue and Balsam Street	Ground Floor	22.7
3	On Balsam Street adjacent to residence	Ground Floor	18.7
4	On Katharine Avenue adjacent to residence	Ground Floor	46.4
5	Residence west of Project Site (backyard)	Ground Floor	48.1
	Residence west of Project Site (backyard)	Ground Floor	43.6

Number	Noise Source Information	Citation	Level at Source
1	Drive Thru Speaker	ECORP Consulting, Inc. refrence noise measurment	74.3 dBA
2	Parking Loat Activity/ Internal Circulation	ECORP Consulting, Inc. refrence noise measurment	61.1 dBA

TRAFFIC NOISE

TRAFFIC NOISE LEVELS

Project Number: 2021-192
Project Name: Bell Avenue

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s):	Existing
Source of Traffic Volumes:	Kimley Horn 2020
Community Noise Descriptor:	L_{dn}: ____ CNEL: X

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Traffic Noise Levels

Analysis Condition Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[1]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) CNEL
Analysis Condition													
Raley Boulevard													
North of Bell Avenue	Residential and Commercial	4	0	6,840	0	40	100	0	0	1.8%	0.7%	72.4	0.0
South of Bell Avenue	Residential and Commercial	4	0	9,981	0	40	100	0	0	1.8%	0.7%	74.0	0.0
Bell Avnue													
East of Raley Boulevard	Residential and Commercial	4	0	3,330	0	40	100	0	0	1.8%	0.7%	69.2	0.0
West of Raley Boulevard	Residential and Commercial	2	0	4,653	0	40	100	0	0	1.8%	0.7%	70.6	0.0

[1] Distance is from the centerline of the roadway segment to the receptor location.

TRAFFIC NOISE LEVELS

Project Number: 2021-192
Project Name: Bell Avenue

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s):	Existing + Project
Source of Traffic Volumes:	Kimley Horn 2020
Community Noise Descriptor:	L_{dn}: ____ CNEL: X

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Traffic Noise Levels

Analysis Condition Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[1]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) CNEL
Analysis Condition													
Raley Boulevard													
North of Bell Avenue	Residential and Commercial	4	0	6,975	0	40	100	0	0	1.8%	0.7%	72.4	0.0
South of Bell Avenue	Residential and Commercial	4	0	11,561	0	40	100	0	0	1.8%	0.7%	74.6	0.0
Bell Avnue													
East of Raley Boulevard	Residential and Commercial	4	0	3,618	0	40	100	0	0	1.8%	0.7%	69.6	0.0
West of Raley Boulevard	Residential and Commercial	2	0	4,770	0	40	100	0	0	1.8%	0.7%	70.7	0.0

[1] Distance is from the centerline of the roadway segment to the receptor location.