Appendix F:
Noise Supporting Information

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Memo

Date: April 30, 2019

To: Krinjal Mathur
City of San Jose, Planning Division
200 E. Santa Clara Street, 3rd Floor
San Jose, CA 95113

From: FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597

Subject: Technical Memo Appendix D: Noise, Supporting Information

Dear Krinjal Mathur:

The following is supporting noise information, summarizing the resources used in the Noise Analysis for the 1410 South Bascom Avenue Project Initial Study/Mitigated Negative Declaration in San Jose, Santa Clara County, California.

Noise Fundamentals

Noise is defined as unwanted sound. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. Noise is typically generated by transportation, specific land uses, and ongoing human activity.

The standard unit of measurement of the loudness of sound is the decibel (dB). The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. A change of 3 dB is the lowest change that can be perceptible to the human ear in outdoor environments. While a change of 5 dBA is considered to be the minimum readily perceptible change to the human ear in outdoor environments.

Since the human ear is not equally sensitive to sound at all frequencies, the A-weighted decibel scale (dBA) was derived to relate noise to the sensitivity of humans, it gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for a number of various sound level metrics, including the day/night sound level (DNL) and the Community Noise Equivalent Level (CNEL), both of which represent how humans are more sensitive to sound at night.[1]

[1] DNL is the 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m. CNEL is the 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 decibels to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m. Source: Harris, Cyril M. 1998. *Handbook of Acoustical Measurement and Noise Control.*

In addition, the equivalent continuous sound level (Leq) is the average sound energy of time-varying noise over a sample period and the Lmax is the maximum instantaneous noise level occurring over a sample period.

Noise Measurement Methodology

The existing ambient noise levels at the project site were documented through a noise monitoring effort. The noise measurements were taken using Larson-Davis Model LxT2 Type 2 precision sound level meters programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 150. The accuracy of the calibrator is maintained through a program established through the manufacturer and is traceable to the National Bureau of Standards. All noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4 1983 identified in Chapter 19.68.020.AA). The noise measurements included three short-term and one long-term measurement located within the project site (Exhibit TBD, Noise Measurement Locations, see attachment).

Vibration Modeling Methodology

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil type, but it has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

Several different methods are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (RMS) amplitude of the vibration velocity. The vibration level (PPV) at a distance from a point source can generally be calculated using the vibration reference equation:

$$PPV = PPV_{ref} * (25/D)^n \text{ (in/sec)}$$

Where:

PPV_{ref} = reference measurement at 25 feet from vibration source
D = distance from equipment to the receptor
n = vibration attenuation rate through ground

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving and operating heavy earthmoving equipment. Typical vibration source levels from construction equipment are shown in Table 11.

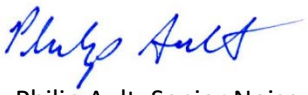
Table 1: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	RMS Velocity in Decibels (VdB) at 25 Feet
Concrete Mixer	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Excavator	0.051	82
Grader	0.051	82
Loader	0.051	82
Loaded Trucks	0.076	86
Vibratory Roller (small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (large)	0.210	94
Pile Driver (impact-typical)	0.644	104
Pile Driver (impact-upper range)	1.518	112
Source: Compilation of scientific and academic literature, generated by FTA and FHWA.		

Traffic Noise Modeling Methodology

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions in the vicinity of the project site. Model input data includes without- and with-project average daily traffic volumes on adjacent roadway segments, day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. The roadway speeds are based on the posted speed limits observed during site visits. Traffic modeling was performed using the data obtained from the project-specific traffic study prepared for the project. This traffic study provides data for existing (year 2018), near-term, and cumulative (year 2040) traffic conditions. The resultant noise levels were weighed and summed over a 24-hour period to determine the CNEL values.

Sincerely,



Philip Ault, Senior Noise & Air Quality Specialist

FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597

Enc: Exhibit 5: Noise Measurement Locations
Noise Measurement Data Sheets
Noise Measurement Data
FHWA Traffic Noise Model Data

Source: ESRI Aerial Imagery.

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225 112.5 0 225 Feet

Exhibit 5
Noise Measurement Locations

Project Number: 5026.0001 Sheet ___of ____
Project Name: 1410 South Bascom Ave.
Test Personnel: Spencer

Noise Measurement Survey

Site Number: ST-1 Date: 5/16 Time: From 11:48 a.m. To 12:03 p.m.

Site Location:
Southwest corner of site 30 ft. from center of Bascom Ave.
20 feet to closest rail line

Primary Noise Sources: Car traffic along Bascom Ave., Train Crossings

Measurement Results

	dBA
Leq	68.5
Lmax	83.6
Lmin	49.5
Lpeak	—
L5	73.1
L10	72.0
L50	65.7
L90	58.5
SEL	—

Observed Noise Sources/Events

Time	Noise Source/Event	dBA
11:50	Electric Train Passing	83.6
11:51	Electric Train Passing	76.9

Comments: Hundreds of cars passed during measurement

Equipment: LXT-1 Measured Difference: 0.02 dBA
Settings: A-Weighted☒ Other☐ _____ Slow☐ Fast☐ Windscreen☒

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
5.8	1.7	70.6		
Comments:				

Project Number: 5026.000 1 Sheet ___of ____
Project Name: 1410 South Bascom Ave.
Test Personnel: Spencer

Noise Measurement Survey

Site Number: ST-2 Date: 5/16 Time: From 12:07 To 12:22

Site Location:
20 feet to center of Bascom Ave., near sidewalk, 50 ft south of "Dicks Center" sign

Primary Noise Sources: Cars along Bascom Ave., pedestrians in parking lot

Measurement Results

	dBA
Leq	66.2
Lmax	80.8
Lmin	51.0
Lpeak	—
L5	70.6
L10	69.4
L50	64.5
L90	56.9
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments:

Equipment: LXT-1 Measured Difference: 0.02 dBA
Settings: A-Weighted☒ Other☐ Slow☐ Fast☐ Windscreen☒

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
5.8	1.7	70.6		
Comments:				

Project Number: 5026.0001 Sheet ___of ____
Project Name: 1410 South Bascom Ave.
Test Personnel: Spencer

Noise Measurement Survey

Site Number: ST-3 Date: 5/16 Time: From 12:26pm To 12:41 p.m.

Site Location:
20 feet to southwest corner of adjacent apartments in north of project site.

Primary Noise Sources: Car noise from Bascom Ave. parking lot activity

Measurement Results

	dBA
Leq	55.5
Lmax	62.9
Lmin	50.0
Lpeak	—
L5	58.7
L10	58.0
L50	54.7
L90	52.2
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments:

Equipment: LXT-1 Measured Difference: 0.02 dBA
Settings: A-Weighted☒ Other☐ Slow☐ Fast☐ Windscreen☒

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
5.8	1.7	70.6		
Comments:				

Summary

Filename	LxT_Data.040
Serial Number	4397
Model	SoundTrack LxT®
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2018/05/16 13:04:46
Stop	2018/05/18 14:33:01
Duration	1 Day 11:32:55.7
Run Time	1 Day 11:32:55.7
Pause	0:00:00.0
Pre Calibration	2018/05/16 13:02:30
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	Direct
Microphone Correction	Off
Integration Method	Exponential
Overload	225.6 dB

	A	**C**	**Z**	
Under Range Peak	**181.8**	178.8	183.8	dB
Under Range Limit	**77.9**	75.9	83.9	dB
Noise Floor	64.7	65.4	73.0	dB

Results

LASeq	71.5	dB	
LASE	122.6	dB	
EAS	200.863	mPa²h	
EAS8	45.203	mPa²h	
EAS40	226.014	mPa²h	
LApeak (max)	2018/05/18 14:32:53	134.3	dB
LASmax	2018/05/18 14:33:01	113.2	dB
LASmin	2018/05/18 0:12:45	44.2	dB
SEA	153.3	dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	3	14.8 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	71.5	73.1	55.3	71.8	74.4	58.9	55.3

LCSeq	71.9	dB
LASeq	71.5	dB
LCSeq - LASeq	0.4	dB
LAleq	71.5	dB
LAeq	71.3	dB
LAleq - LAeq	0.2	dB
# Overloads	1	
Overload Duration	2.1	s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exch. Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	0.73	0.75 %
Projected Dose	0.16	0.17 %
TWA (Projected)	43.7	43.9 dB
TWA (t)	54.5	54.7 dB
Lep (t)	78.0	78.0 dB

Statistics

LAS5.00	63.1	dB
LAS10.00	60.2	dB
LAS33.30	54.4	dB
LAS50.00	52.7	dB
LAS75.00	50.0	dB
LAS90.00	48.0	dB

TABLE Existing (2018)-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Stokes Street to Whitethorne Drive
NOTES: 1410 - Existing (2018)

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 25900 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	93.6	189.5	402.3

TABLE Existing (2018)-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Whitethorne Drive to Pamlar Avenue
NOTES: 1410 - Existing (2018)

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27100 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.85

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	96.0	195.1	414.6

TABLE Existing (2018)-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Pamlar Avenue to Southwest Expressway
NOTES: 1410 - Existing (2018)

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28800 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	99.4	202.9	431.6

TABLE Existing (2018)-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Stokes Street - Bascom Avenue to Southwest Expressway
NOTES: 1410 - Existing (2018)

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6400 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	58.8	124.5

TABLE Existing (2018)-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Southwest Expressway - Bascom Avnenue to Stokes Street
NOTES: 1410 - Existing (2018)

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6300 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.57

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	91.0	194.6

TABLE Background-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Stokes Street to Whitethorne Drive
NOTES: 1410 - Background

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 26300 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.72

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	94.4	191.4	406.4

TABLE Background-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Whitethorne Drive to Pamlar Avenue
NOTES: 1410 - Background

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27600 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.93

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	97.0	197.4	419.6

TABLE Background-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Pamlar Avenue to Southwest Expressway
NOTES: 1410 - Background

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29200 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.18

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	100.2	204.7	435.6

TABLE Background-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Stokes Street - Bascom Avenue to Southwest Expressway
NOTES: 1410 - Background

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6400 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	58.8	124.5

TABLE Background-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Southwest Expressway - Bascom Avnenue to Stokes Street
NOTES: 1410 - Background

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6500 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.70

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	92.8	198.7

TABLE Background + Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Stokes Street to Whitethorne Drive
NOTES: 1410 - Background + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28300 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.04

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	98.4	200.6	426.6

TABLE Background + Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Whitethorne Drive to Pamlar Avenue
NOTES: 1410 - Background + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29700 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.25

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	101.2	207.0	440.5

TABLE Background + Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Pamlar Avenue to Southwest Expressway
NOTES: 1410 - Background + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32200 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.60

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	106.1	218.1	464.7

TABLE Background + Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Stokes Street - Bascom Avenue to Southwest Expressway
NOTES: 1410 - Background + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6800 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.90

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	61.1	129.6

TABLE Background + Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Southwest Expressway - Bascom Avnenue to Stokes Street
NOTES: 1410 - Background + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6700 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.83

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	94.7	202.7

TABLE Cumulative-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Stokes Street to Whitethorne Drive
NOTES: 1410 - Cumulative

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27500 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	96.8	196.9	418.6

TABLE Cumulative-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Whitethorne Drive to Pamlar Avenue
NOTES: 1410 - Cumulative

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28700 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.10

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	99.2	202.4	430.6

TABLE Cumulative-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Pamlar Avenue to Southwest Expressway
NOTES: 1410 - Cumulative

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 30400 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.35

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	102.6	210.1	447.3

TABLE Cumulative-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Stokes Street - Bascom Avenue to Southwest Expressway
NOTES: 1410 - Cumulative

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7400 SPEED (MPH): 30 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.27

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn 70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	64.5	137.0

TABLE Cumulative-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Southwest Expressway - Bascom Avnenue to Stokes Street
NOTES: 1410 - Cumulative

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8000 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.60

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	106.4	228.1

TABLE Cumulative + Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Stokes Street to Whitethorne Drive
NOTES: 1410 - Cumulative + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29500 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.22

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	100.8	206.1	438.5

TABLE Cumulative + Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Whitethorne Drive to Pamlar Avenue
NOTES: 1410 - Cumulative + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 30900 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.42

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	103.6	212.3	452.2

TABLE Cumulative + Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Bascom Avenue - Pamlar Avenue to Southwest Expressway
NOTES: 1410 - Cumulative + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33400 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 36 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.76

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	108.5	223.3	476.1

TABLE Cumulative + Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Stokes Street - Bascom Avenue to Southwest Expressway
NOTES: 1410 - Cumulative + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7900 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.55

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	67.3	143.1

TABLE Cumulative + Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/24/2018
ROADWAY SEGMENT: Southwest Expressway - Bascom Avnenue to Stokes Street
NOTES: 1410 - Cumulative + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8200 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.71

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	108.2	231.9

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