memorandum

TO: Summit Equities, LLC
Kenneth G. Livadas

FROM: Olivia Chan, Associate Analyst

SUBJECT: Hallmark at Shenandoah Warehouse
Noise Analysis

DATE: January 15, 2015

Introduction

Construction-related and operational noise impacts were modeled and analyzed for the proposed building located at the southeast corner of Hallmark Parkway and Shenandoah Way, City of San Bernardino, California. This noise impact analysis contains analysis of the impacts generated by project operation and traffic and analysis of construction noise and vibration impacts. This report analyzes the project's consistency with applicable federal, State, and local regulations.

Project Description

The proposed project includes the construction of a 335,400 square-foot high-cube warehouse on 14.43 acres. The building will be located at the northeast corner of Hallmark Parkway and Shenandoah Way in the City of San Bernardino, California. The project also includes demolition of an existing asphalt parking lot on the southern portion of the project site. The project site is generally located west of Interstate 215 and east of Cajon Boulevard, between Lexington Way and Saratoga Way. The project will provide 190 parking spaces, 91 trailer parking space, and 51 dock doors. In addition, 44,143 square feet of landscaping is proposed.

Methodology

Construction Noise

To assess construction impacts, a worst-case construction scenario was modeled using the Federal Highway Administration's Roadway Construction Noise Model (RCNM). Modeling parameters and output are provided in Attachment A. RCNM utilizes standard noise emission levels for different types of equipment and includes utilization percentage, impact, and shielding parameters.

Pursuant to Section 8.54.070 of the City of San Bernardino Municipal Code, no person shall be engaged or employed in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 AM and 8:00 PM.

Vibration

Construction activities that use vibratory rollers and bulldozers are repetitive sources of vibration; therefore, the *continuous* threshold is used. Industrial structures are located to the east and south of the project site. As a worst case scenario, the *historic and some older buildings* threshold is used. Construction of the project does not require rock blasting, pile driving, or the use of a jack hammer, but will use a vibratory roller, and large bulldozer, and loaded trucks. The Caltrans vibration manual establishes thresholds for vibration impacts on buildings and humans. These thresholds are summarized in Tables 1 (Vibration Damage Potential Threshold Criteria) and 2

(Vibration Annoyance Potential Threshold Criteria).

Table 1
Vibration Damage Potential Threshold Criteria

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans 2013		

Table 2
Vibration Annoyance Potential Threshold Criteria

Human Response	PPV Threshold (in/sec)	
	Transient	Continuous
Barely perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severely perceptible	2.00	0.40
Source: Caltrans 2013		

Operational Noise
To assess current and opening year traffic noise levels, vehicle trips associated with surrounding roadways were modeled utilizing the SoundPLAN software. SoundPLAN is a three-dimensional noise modeling software that accounts for the shielding and reflective effects associated with intervening topography and nearby buildings. Traffic noise from vehicular traffic generated by the proposed project was projected using SoundPLAN software was based on estimated trip generation provided by Kunzman Associates, Inc.[1]

According to the City of San Bernardino General Plan Noise Element Noise and Land Use Compatibility Matrix, noise levels up to 70 dBA for industrial uses, 65 dBA for commercial uses, and 60 dBA for residential uses are normally acceptable.

A substantial increase in ambient noise is an increase that is *barely perceptible* (3 dBA). Operationally, the proposed project will result in periodic landscaping and other occasional noise generating activities. These activities are common in industrial uses and do not represent a substantial increase in periodic noise in consideration that the project site is located in an industrialized area.

Thresholds of Significance

Appendix G of the State CEQA Guidelines indicates that a project could result in potentially significant impacts related to noise if it would:

A. Exposure of persons or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
B. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
D. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
E. For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

F. For a project within a vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Noise Impact Analysis

Construction Noise

Construction noise levels were estimated for nearby receptors using the FHWA Roadway Construction Noise Model (RCNM) (see Attachment A for output data). Temporary noise increases will be greatest during the demolition phase. The model indicates that the use of construction equipment such as excavators, dozers, and concrete saws could expose the industrial use located approximately 350 feet to the west of the center of the project site to a combined noise level of 72.7 dBA $L_{max.}$ Construction equipment could expose the industrial use located to the northwest, northeast, and southeast of the center of the project site to a combined noise level of 67.2 dBA L_{max}, 71 dBA L_{max}, and 64.2 dBA L_{max}, respectively. Construction activity could result in noise levels in excess of the allowable noise levels at the industrial uses to the northeast and west during the demolition phase. Therefore, Mitigation Measure N-1 has been incorporated to reduce the impact to neighboring uses during construction.

Because noise levels during construction activities are anticipated to exceed the City's exterior noise standards, mitigation measures will be necessary to minimize noise levels at the industrial uses to the northeast and west. Mitigation Measure N-1 will be incorporated to minimize noise associated with general construction activities. Mitigation Measure N-1 requires preparation of a construction noise reduction plan to reduce temporary noise impacts by a minimum of 2.7 dBA which is a feasible performance standard based on available technology. Engineered controls include retrofitting equipment with improved exhaust and intake muffling, disengaging equipment fans, and installation of sound panels around equipment engines. These types of controls can achieve noise level reductions of approximately 10 dBA.[2 3] Implementation of Mitigation Measure N-1 will reduce temporary noise impacts by a minimum of 2.7 dBA, resulting in a maximum construction noise level of 70 dBA at the industrial use to the west of the project site. Therefore, with implementation of Mitigation Measure N-1, construction noise will feasibly be reduced to unsubstantial levels.

Vibration

Construction activities that use vibratory rollers and bulldozers are repetitive sources of vibration; therefore, the *continuous* threshold is used. Industrial structures are located to the east and south of the project site. As a worst case scenario, the *historic and some older buildings* threshold is used. Based on the threshold criteria summarized in Tables 1 and 2, vibration from use of heavy construction equipment for the proposed project would be below the thresholds to cause damage to nearby structures shown in Table 3 (Distances to Vibration Receptors) and Table 4 (Construction Vibration Impacts).

Table 3
Distances to Vibration Receptors

Receptors	Distance from Center of Project Site (ft)
1 – Industrial (NW)	661
2 – Industrial (NE)	425
3 – Industrial (SE)	930
4 – Industrial (W)	350

Construction of the project does not require rock blasting, pile driving, or the use of a jack hammer, but will use a vibratory roller, and large bulldozer, and loaded trucks. All of the receptors will experience less than *barely perceptible* vibration from construction of the proposed project. Furthermore, these construction activities will be limited to the allowable hours as discussed in above. With regard to long-term operational impacts, activities associated with the project will not result in any vibration-related impacts to adjacent or on-site properties.

Table 4
Construction Vibration Impacts

Receptors	Equipment	PPVref	Distance (feet)	PPV
1 – Industrial (NW)	Vibratory Roller	0.21	661	0.0030
2 – Industrial (NE)	Vibratory Roller	0.21	425	0.0053
3 – Industrial (SE)	Vibratory Roller	0.21	930	0.0019
4 – Industrial (W)	Vibratory Roller	0.21	350	0.0068
1 – Industrial (NW)	Large Bulldozer	0.089	661	0.0013
2 – Industrial (NE)	Large Bulldozer	0.089	425	0.0022
3 – Industrial (SE)	Large Bulldozer	0.089	930	0.0008
4 – Industrial (W)	Large Bulldozer	0.089	350	0.0029
1 – Industrial (NW)	Loaded Truck	0.076	661	0.0011
2 – Industrial (NE)	Loaded Truck	0.076	425	0.0040
3 – Industrial (SE)	Loaded Truck	0.076	930	0.0022
4 – Industrial (W)	Loaded Truck	0.076	350	0.0034

Operational Noise

Traffic noise from vehicular traffic generated by the proposed project was projected using SoundPLAN software was based on estimated trip generation provided by Kunzman Associates, Inc.[4] The Opening Year 2017 and Year 2035 Without Project and With Project noise levels at neighboring uses were calculated using SoundPLAN software (see Attachment B for SoundPLAN output data). Noise levels at neighboring industrial uses were calculated (see Attachment B for output data) and projected at the ground floor. The 2017 Opening Year Without Project and With Project traffic noise levels during the AM and PM peak hours at neighboring uses are summarized in Table 5 (Opening Year 2017 Peak Hour Roadway Noise Levels) and Year 2035 Without Project and With Project noise levels during the AM and PM peak hours are summarized in Table 6 (Year 2035 Peak Hour Roadway Noise Levels). Exterior noise levels during Opening Year 2017 will be within the allowable exterior noise levels established by the City of San Bernardino at all studied industrial receptors. In addition, increases in traffic due to the proposed project will not result in a perceptible noise increase at any of the studied receptors. Therefore, no substantial impacts will result.

Table 5
Opening Year 2017 Peak Hour Roadway Noise Levels

Receptors	Without Project dBA CNEL		With Project dBA CNEL		Difference AM/PM	Significant? AM/PM
	AM	PM	AM	PM		
1 – Industrial (NW)	58.0	59.7	57.9	60.1	-0.1 / +0.4	No / No
2 – Industrial (NE)	58.9	60.6	58.8	61.0	-0.1 / +0.4	No / No
3 – Industrial (SE)	56.7	58.3	56.6	58.7	-0.1 / +0.4	No / No
4 – Industrial (W)	50.8	50.6	50.8	51.7	0.0 / +1.1	No / No
5 – Industrial (NW2)	59.6	61.4	59.5	61.8	-0.1 / +0.4	No / No
6 – Industrial (SE2)	57.8	59.5	57.7	59.9	-0.1 / +0.4	No / No

Table 6
Year 2035 Peak Hour Roadway Noise Levels

Receptors	Without Project dBA CNEL		With Project dBA CNEL		Difference AM/PM	Significant? AM/PM
	AM	PM	AM	PM		
1 – Industrial (NW)	58.0	59.7	57.9	60.1	-0.1 / +0.4	No / No
2 – Industrial (NE)	58.9	60.6	58.8	61.0	-0.1 / +0.4	No / No
3 – Industrial (SE)	56.7	58.3	56.6	58.7	-0.1 / +0.4	No / No
4 – Industrial (W)	50.8	50.6	50.8	51.7	0.0 / +1.1	No / No
5 – Industrial (NW2)	59.6	61.4	59.5	61.8	-0.1 / +0.4	No / No
6 – Industrial (SE2)	57.8	59.5	57.7	59.9	-0.1 / +0.4	No / No

Project operational noise levels were also modeled. The proposed project includes 25 dock doors at the western side of building. Anticipated activities at the eastern side of the building include truck engine start-up, idling, backup alarms, and door slamming. These activities will occur adjacent to the industrial uses to the west of the project site. According to SoundPLAN default noise levels for truck activity, project operation would result in noise levels reaching 56.0 dBA at the industrial use to the west. Project operation will not exceed the allowable 70 dBA noise level at industrial uses; therefore no substantial impacts will occur.

Airport Noise

The project site is not located within two miles of any airport or airstrip. Therefore, no substantial impacts will occur.

Conclusion

With implementation of Mitigation Measure N-1, impacts related to construction noise will be less than significant. Project construction will not cause damage to nearby structures and result in less than *barely perceptible* vibration at neighboring uses.

Exterior noise levels under Without and With Project traffic scenarios and on-site operation of the proposed project will not exceed the acceptable noise standard for industrial uses. Impacts are less than significant.

Mitigation Measures

N-1 Prior to issuance of grading permits, the Applicant shall submit a mitigation plan prepared by a qualified engineer or other acoustical expert for review and approval by the Planning Division that identifies noise control measures that achieve a minimum 2.7 dBA reduction in construction-related noise levels. The mitigation plan may include use of sound curtains, engineered equipment controls, or other methods. Noise control requirements shall be noted on project construction drawings and verified by the Building Department during standard inspection procedures.

References

[1] Kunzman Associates, Inc. 4982 Hallmark Parkway Project Traffic Impact Analysis. December 1, 2015
[2] United States Bureau of Mines. Mining Machinery Noise Control Guidelines. 1983
[3] United States Bureau of Mines. Noise Abatement Techniques for Construction Equipment. August 1979
[4] Kunzman Associates, Inc. 4982 Hallmark Parkway Project Traffic Impact Analysis. December 1, 2015

attachment a – Construction Noise Output Data

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/15/2016
Case Description: 1 - Demolition

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NW)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	661	0
Excavator	No	40		80.7	661	0
Excavator	No	40		80.7	661	0
Excavator	No	40		80.7	661	0
Dozer	No	40		81.7	661	0
Dozer	No	40		81.7	661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	67.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.2	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	425	0
Excavator	No	40		80.7	425	0
Excavator	No	40		80.7	425	0
Excavator	No	40		80.7	425	0
Dozer	No	40		81.7	425	0
Dozer	No	40		81.7	425	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	71	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71	67.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (SE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	930	0
Excavator	No	40		80.7	930	0
Excavator	No	40		80.7	930	0
Excavator	No	40		80.7	930	0
Dozer	No	40		81.7	930	0
Dozer	No	40		81.7	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	64.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	55.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	55.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	55.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	56.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	56.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.2	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (W)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	350	0
Excavator	No	40		80.7	350	0
Excavator	No	40		80.7	350	0
Excavator	No	40		80.7	350	0
Dozer	No	40		81.7	350	0
Dozer	No	40		81.7	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	72.7	65.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.7	69.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/15/2016
Case Description: 2 - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NW)	Industrial	70	70	70

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	661	0
Dozer	No	40		81.7	661	0
Dozer	No	40		81.7	661	0
Tractor	No	40	84		661	0
Tractor	No	40	84		661	0
Backhoe	No	40		77.6	661	0
Backhoe	No	40		77.6	661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.6	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NE)	Industrial	70	70	70

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	425	0
Dozer	No	40		81.7	425	0
Dozer	No	40		81.7	425	0
Tractor	No	40	84		425	0
Tractor	No	40	84		425	0
Backhoe	No	40		77.6	425	0
Backhoe	No	40		77.6	425	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.4	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (SE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	930	0
Dozer	No	40		81.7	930	0
Dozer	No	40		81.7	930	0
Tractor	No	40	84		930	0
Tractor	No	40	84		930	0
Backhoe	No	40		77.6	930	0
Backhoe	No	40		77.6	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	56.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	56.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	56.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.2	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.2	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.6	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (W)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	350	0
Dozer	No	40		81.7	350	0
Dozer	No	40		81.7	350	0
Tractor	No	40	84		350	0
Tractor	No	40	84		350	0
Backhoe	No	40		77.6	350	0
Backhoe	No	40		77.6	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.1	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/15/2016
Case Description: 3 - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NW)	Industrial	70	70	70

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	661	0
Excavator	No	40		80.7	661	0
Grader	No	40	85		661	0
Dozer	No	40		81.7	661	0
Tractor	No	40	84		661	0
Backhoe	No	40		77.6	661	0
Scraper	No	40		83.6	661	0
Scraper	No	40		83.6	661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	62.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NE)	Industrial	70	70	70

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	425	0
Excavator	No	40		80.7	425	0
Grader	No	40	85		425	0
Dozer	No	40		81.7	425	0
Tractor	No	40	84		425	0
Backhoe	No	40		77.6	425	0
Scraper	No	40		83.6	425	0
Scraper	No	40		83.6	425	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.4	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (SE)	Industrial	70	70	70

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	930	0
Excavator	No	40		80.7	930	0
Grader	No	40	85		930	0
Dozer	No	40		81.7	930	0
Tractor	No	40	84		930	0
Backhoe	No	40		77.6	930	0
Scraper	No	40		83.6	930	0
Scraper	No	40		83.6	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)								Noise Limit Exceedance (dBA)			
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	55.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	55.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	56.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.2	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	62.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (W)	Industrial	70	70	70

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	350	0
Excavator	No	40		80.7	350	0
Grader	No	40	85		350	0
Dozer	No	40		81.7	350	0
Tractor	No	40	84		350	0
Backhoe	No	40		77.6	350	0
Scraper	No	40		83.6	350	0
Scraper	No	40		83.6	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)								Noise Limit Exceedance (dBA)			
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	66.7	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	66.7	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	70.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/15/2016
Case Description: 4 - Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NW)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	661	0
All Other Equipment > 5 HP	No	50	85		661	0
All Other Equipment > 5 HP	No	50	85		661	0
All Other Equipment > 5 HP	No	50	85		661	0
Generator	No	50		80.6	661	0
Tractor	No	40	84		661	0
Tractor	No	40	84		661	0
Backhoe	No	40		77.6	661	0
Welder / Torch	No	40		74	661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	58.1	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.1	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	51.6	47.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	425	0
All Other Equipment > 5 HP	No	50	85		425	0
All Other Equipment > 5 HP	No	50	85		425	0
All Other Equipment > 5 HP	No	50	85		425	0
Generator	No	50		80.6	425	0
Tractor	No	40	84		425	0
Tractor	No	40	84		425	0
Backhoe	No	40		77.6	425	0
Welder / Torch	No	40		74	425	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	62	54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	66.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	66.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	66.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (SE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	930	0
All Other Equipment > 5 HP	No	50	85		930	0
All Other Equipment > 5 HP	No	50	85		930	0
All Other Equipment > 5 HP	No	50	85		930	0
Generator	No	50		80.6	930	0
Tractor	No	40	84		930	0
Tractor	No	40	84		930	0
Backhoe	No	40		77.6	930	0
Welder / Torch	No	40		74	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	55.2	47.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.2	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	48.6	44.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (W)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	350	0
All Other Equipment > 5 HP	No	50	85		350	0
All Other Equipment > 5 HP	No	50	85		350	0
All Other Equipment > 5 HP	No	50	85		350	0
Generator	No	50		80.6	350	0
Tractor	No	40	84		350	0
Tractor	No	40	84		350	0
Backhoe	No	40		77.6	350	0
Welder / Torch	No	40		74	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	63.6	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	63.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/15/2016
Case Description: 5 - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NW)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	661	0
Paver	No	50		77.2	661	0
All Other Equipment > 5 HP	No	50	85		661	0
All Other Equipment > 5 HP	No	50	85		661	0
Roller	No	20		80	661	0
Roller	No	20		80	661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.1	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	61.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	425	0
Paver	No	50		77.2	425	0
All Other Equipment > 5 HP	No	50	85		425	0
All Other Equipment > 5 HP	No	50	85		425	0
Roller	No	20		80	425	0
Roller	No	20		80	425	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	62	54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	66.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	66.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	66.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	62	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (SE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	930	0
Paver	No	50		77.2	930	0
All Other Equipment > 5 HP	No	50	85		930	0
All Other Equipment > 5 HP	No	50	85		930	0
Roller	No	20		80	930	0
Roller	No	20		80	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	55.2	47.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	55.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (W)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	350	0
Paver	No	50		77.2	350	0
All Other Equipment > 5 HP	No	50	85		350	0
All Other Equipment > 5 HP	No	50	85		350	0
Roller	No	20		80	350	0
Roller	No	20		80	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	60.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	60.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.1	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.1	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/15/2016
Case Description: 6 - Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NW)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	661	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	55.2	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.2	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (NE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	425	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (SE)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	52.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	52.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (W)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	350	0

				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		60.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	60.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Hallmark & Shenandoah
Construction Vibration Screening

Receptors	Distance (ft)
1 – Industrial (NW	661
2 – Industrial (NE)	425
3 - Industrial (SE)	930
3 – Industrial (W)	350

Equipment	PPVref	D	n	Eref	Eequip	PPV
Vibratory Roller	0.21	661	1.3			0.0030
Vibratory Roller	0.21	425	1.3			0.0053
Vibratory Roller	0.21	930	1.3			0.0019
Vibratory Roller	0.21	350	1.3			0.0068
Large Bulldozer	0.089	661	1.3			0.0013
Large Bulldozer	0.089	425	1.3			0.0022
Large Bulldozer	0.089	930	1.3			0.0008
Large Bulldozer	0.089	350	1.3			0.0029
Loaded Truck	0.076	661	1.3			0.0011
Loaded Truck	0.076	240	1.3			0.0040
Loaded Truck	0.076	376	1.3			0.0022
Loaded Truck	0.076	271	1.3			0.0034

attachment b – SoundPLAN Output Data

Hallmark Warehouse
2017 Without Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Hallmark Pkwy NB	Traffic direction:	In entry direction									
0+000	5272	Total	-	228	203	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Automobiles	-	156	139	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Medium trucks	-	59	52	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Heavy trucks	-	11	10	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Motorcycles	-	2	2	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
3+129	-						-	-	-	-	-
Hallmark Pkwy SB	Traffic direction:	In entry direction									
1+292	5128	Total	-	144	353	-	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Automobiles	-	99	243	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Medium trucks	-	37	91	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Heavy trucks	-	7	17	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Motorcycles	-	1	2	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
4+434	-						-	-	-	-	-
Shenandoan Way EB	Traffic direction:	In entry direction									
1+292	-						-	-	-	-	0
1+768	-						-	-	-	-	-
Shenandoan Way WB	Traffic direction:	In entry direction									
1+292	2128	Total	-	105	56	-	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Automobiles	-	72	38	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Medium trucks	-	27	14	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Heavy trucks	-	5	3	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Motorcycles	-	1	1	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+770	-						-	-	-	-	-

Hallmark Warehouse
2017 Without Project
Receivers

No.	Receiver name	Level AM	Level PM
		dB(A)	
1	1 - Industrial (NW)	58.0	59.7
2	2 - Industrial (NE)	58.9	60.6
3	3 - Industrial (SE)	56.7	58.3
4	4 - Industrial (W)	50.8	50.6
5	5 - Industrial (NW2)	59.6	61.4
6	6 - Industrial (SE2)	57.8	59.5

Hallmark Warehouse
2017 Without Project
Contributions

Source name		Level AM	Level PM
		dB(A)	
1 - Industrial (NW)	GF	58.0	59.7
Hallmark Pkwy NB		55.9	55.4
Hallmark Pkwy SB		53.9	57.8
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		32.2	29.8
2 - Industrial (NE)	GF	58.9	60.6
Hallmark Pkwy NB		56.8	56.3
Hallmark Pkwy SB		54.7	58.6
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		37.1	34.6
3 - Industrial (SE)	GF	56.7	58.3
Hallmark Pkwy NB		54.3	53.8
Hallmark Pkwy SB		52.4	56.3
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		44.7	42.2
4 - Industrial (W)	GF	50.8	50.6
Hallmark Pkwy NB		45.0	44.6
Hallmark Pkwy SB		43.0	46.9
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		48.3	45.8
5 - Industrial (NW2)	GF	59.6	61.4
Hallmark Pkwy NB		57.5	57.0
Hallmark Pkwy SB		55.5	59.4
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		23.2	20.8
6 - Industrial (SE2)	GF	57.8	59.5
Hallmark Pkwy NB		55.7	55.2
Hallmark Pkwy SB		53.6	57.5
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		27.4	25.0

Hallmark Warehouse
2017 Without Project
Receiver Spectra

No.	Name	Floor	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 - Industrial (NW)	GF	AM	27.8	34.4	38.5	40.8	42.4	43.9	45.1	45.5	45.3	45.4	46.4	47.6	47.4	48.1	46.8	46.8	45.4	44	43.6	41.8	39.8	37.1	34.2	30.4
1	1 - Industrial (NW)	GF	PM	29.8	36.4	40.5	42.8	44.4	45.9	47	47.3	47.1	47	47.9	49.1	49.1	49.9	48.6	48.7	46.9	45.6	45.2	43.4	41.5	38.7	35.8	31.9
2	2 - Industrial (NE)	GF	AM	28.5	35.1	39.2	41.5	43.1	44.7	45.8	46.2	46.2	46.4	47.5	48.6	48.4	49.1	47.9	47.6	46.1	44.7	44.2	42.3	40.5	37.6	34.8	31
2	2 - Industrial (NE)	GF	PM	29.9	36.5	40.6	42.9	44.6	46.1	47.3	47.8	47.9	48.2	49.4	50.5	50.1	50.7	49.6	49.3	48.1	46.7	46	44.2	42.3	39.5	36.7	33
3	3 - Industrial (SE)	GF	AM	27.4	34	38	40.4	41.9	43.4	44.4	44.6	44	43.5	44.4	45.8	45.7	46.7	45.5	45.4	44.3	43.1	42.1	40.4	38.3	35.2	32.2	28.2
3	3 - Industrial (SE)	GF	PM	29.1	35.7	39.8	42.1	43.6	45.1	46.1	46.3	45.7	45	45.7	47.2	47.3	48.4	47.1	47.2	46	44.4	43.7	41.8	39.9	36.7	33.7	29.7
4	4 - Industrial (W)	GF	AM	23.6	30.1	34.2	36.4	37.9	39.2	39.9	38.5	36.8	35.3	35.9	37.8	38.2	39.7	38.9	39.4	38.6	38.8	38.2	36.2	33.9	31	27.8	23.5
4	4 - Industrial (W)	GF	PM	24	30.5	34.6	36.8	38.3	39.6	40.1	37.8	35.7	34.2	35.4	37.2	37.3	38.7	38.2	38.8	38.4	39	39	36.7	34.3	31.6	28.5	24
5	5 - Industrial (NW2)	GF	AM	29.1	35.8	39.8	42.2	43.8	45.3	46.5	46.9	47	47.1	48.2	49.2	49.1	49.8	48.7	48.5	46.9	45.7	45.2	43.3	41.3	38.5	35.7	32
5	5 - Industrial (NW2)	GF	PM	31	37.6	41.7	44	45.7	47.2	48.3	48.7	48.7	48.8	49.8	50.9	50.9	51.7	50.5	50.2	48.4	47.2	46.7	44.8	43	40.1	37.2	33.5
6	6 - Industrial (SE2)	GF	AM	28	34.6	38.6	41	42.6	44.1	45.2	45.5	45.2	45	45.8	47.1	47.1	48	46.6	46.9	45.1	43.7	43.2	41.5	39.6	36.6	33.7	29.8
6	6 - Industrial (SE2)	GF	PM	29.5	36.1	40.2	42.5	44.1	45.6	46.7	47.1	46.9	46.7	47.7	48.9	48.9	49.6	48.3	48.4	47	45.5	45	43.3	41.3	38.5	35.6	31.8

Hallmark Warehouse
2017 With Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Hallmark Pkwy NB		Traffic direction:	In entry direction								
0+000	5248	Total	-	221	214	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Automobiles	-	151	146	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Medium trucks	-	57	55	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Heavy trucks	-	11	11	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Motorcycles	-	2	2	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
3+129	-						-	-	-	-	-
Hallmark Pkwy SB		Traffic direction:	In entry direction								
1+292	5368	Total	-	140	391	-	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Automobiles	-	96	269	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Medium trucks	-	36	101	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Heavy trucks	-	7	19	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Motorcycles	-	1	2	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
4+434	-						-	-	-	-	-
Shenandoan Way EB		Traffic direction:	In entry direction								
1+292	-						-	-	-	-	0
1+768	-						-	-	-	-	-
Shenandoan Way WB		Traffic direction:	In entry direction								
1+292	2368	Total	-	103	90	-	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Automobiles	-	70	61	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Medium trucks	-	27	23	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Heavy trucks	-	5	5	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Motorcycles	-	1	1	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+770	-						-	-	-	-	-

Hallmark Warehouse
2017 With Project
Receivers

No.	Receiver name	Level AM	Level PM
		dB(A)	
1	1 - Industrial (NW)	57.9	60.1
2	2 - Industrial (NE)	58.8	61.0
3	3 - Industrial (SE)	56.6	58.7
4	4 - Industrial (W)	50.8	51.7
5	5 - Industrial (NW2)	59.5	61.8
6	6 - Industrial (SE2)	57.7	59.9

Hallmark Warehouse
2017 With Project
Contributions

Source name		Level AM	Level PM
		dB(A)	
1 - Industrial (NW)	GF	57.9	60.1
Hallmark Pkwy NB		55.8	55.7
Hallmark Pkwy SB		53.8	58.2
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		32.2	31.9
2 - Industrial (NE)	GF	58.8	61.0
Hallmark Pkwy NB		56.7	56.5
Hallmark Pkwy SB		54.6	59.0
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		37.1	36.7
3 - Industrial (SE)	GF	56.6	58.7
Hallmark Pkwy NB		54.2	54.1
Hallmark Pkwy SB		52.3	56.7
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		44.6	44.3
4 - Industrial (W)	GF	50.8	51.7
Hallmark Pkwy NB		45.0	44.9
Hallmark Pkwy SB		43.0	47.3
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		48.3	47.9
5 - Industrial (NW2)	GF	59.5	61.8
Hallmark Pkwy NB		57.4	57.3
Hallmark Pkwy SB		55.4	59.8
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		23.2	22.9
6 - Industrial (SE2)	GF	57.7	59.9
Hallmark Pkwy NB		55.6	55.5
Hallmark Pkwy SB		53.5	58.0
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		27.4	27.0

Hallmark Warehouse
2017 With Project
Receiver Spectra

No.	Name	Floor	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 - Industrial (NW)	GF	AM	27.7	34.3	38.4	40.7	42.3	43.9	45	45.4	45.2	45.2	46.3	47.5	47.3	48	46.7	46.7	45.3	43.9	43.5	41.7	39.8	37	34.1	30.3
1	1 - Industrial (NW)	GF	PM	30.2	36.8	40.9	43.2	44.8	46.3	47.4	47.7	47.5	47.3	48.3	49.5	49.5	50.3	49	49.1	47.3	46	45.7	43.9	42	39.1	36.2	32.3
2	2 - Industrial (NE)	GF	AM	28.4	35	39.1	41.4	43	44.6	45.7	46.1	46.1	46.3	47.4	48.5	48.3	49	47.8	47.5	46	44.6	44.2	42.2	40.4	37.6	34.7	31
2	2 - Industrial (NE)	GF	PM	30.3	36.9	41	43.3	44.9	46.5	47.6	48.2	48.3	48.5	49.8	50.9	50.5	51.1	50	49.7	48.5	47.1	46.4	44.6	42.7	40	37.1	33.4
3	3 - Industrial (SE)	GF	AM	27.3	33.9	37.9	40.3	41.8	43.3	44.4	44.5	43.9	43.4	44.3	45.7	45.6	46.6	45.4	45.3	44.3	43.1	42	40.3	38.3	35.1	32.1	28.1
3	3 - Industrial (SE)	GF	PM	29.5	36.1	40.2	42.5	44.1	45.5	46.6	46.7	46.1	45.4	46.1	47.6	47.8	48.9	47.5	47.7	46.5	44.9	44.2	42.3	40.3	37.2	34.2	30.2
4	4 - Industrial (W)	GF	AM	23.5	30	34.1	36.4	37.9	39.2	39.9	38.4	36.8	35.2	35.9	37.7	38.2	39.7	38.9	39.4	38.5	38.8	38.2	36.2	33.9	30.9	27.8	23.4
4	4 - Industrial (W)	GF	PM	24.8	31.3	35.4	37.6	39.1	40.4	41	39	37.1	35.5	36.5	38.3	38.7	40.1	39.5	40	39.5	40	39.8	37.5	35.2	32.4	29.3	24.9
5	5 - Industrial (NW2)	GF	AM	29	35.6	39.7	42.1	43.7	45.2	46.4	46.8	46.9	47	48.1	49.1	49	49.7	48.6	48.4	46.8	45.6	45.1	43.2	41.2	38.4	35.6	31.9
5	5 - Industrial (NW2)	GF	PM	31.4	38	42.1	44.4	46.1	47.6	48.7	49.1	49.1	49.2	50.2	51.3	51.3	52.1	50.9	50.5	48.8	47.6	47.1	45.2	43.4	40.5	37.6	33.9
6	6 - Industrial (SE2)	GF	AM	27.8	34.5	38.5	40.9	42.5	44	45.1	45.4	45.1	44.8	45.7	47	47.1	47.9	46.5	46.8	45	43.6	43.2	41.4	39.5	36.6	33.7	29.8
6	6 - Industrial (SE2)	GF	PM	29.9	36.5	40.6	42.9	44.5	46	47.1	47.5	47.2	47.1	48.1	49.3	49.3	50	48.7	48.8	47.4	46	45.4	43.8	41.8	38.9	36	32.2

Hallmark Warehouse
2035 Without Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Hallmark Pkwy NB	Traffic direction:	In entry direction									
0+000	5272	Total	-	228	203	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Automobiles	-	156	139	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Medium trucks	-	59	52	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Heavy trucks	-	11	10	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Motorcycles	-	2	2	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5272	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
3+129	-						-	-	-	-	-
Hallmark Pkwy SB	Traffic direction:	In entry direction									
1+292	5128	Total	-	144	353	-	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Automobiles	-	99	243	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Medium trucks	-	37	91	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Heavy trucks	-	7	17	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Motorcycles	-	1	2	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5128	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
4+434	-						-	-	-	-	-
Shenandoan Way EB	Traffic direction:	In entry direction									
1+292	-						-	-	-	-	0
1+768	-						-	-	-	-	-
Shenandoan Way WB	Traffic direction:	In entry direction									
1+292	2128	Total	-	105	56	-	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Automobiles	-	72	38	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Medium trucks	-	27	14	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Heavy trucks	-	5	3	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Motorcycles	-	1	1	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2128	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+770	-						-	-	-	-	-

Hallmark Warehouse
2035 Without Project
Receivers

No.	Receiver name	Level AM	Level PM
		dB(A)	
1	1 - Industrial (NW)	58.0	59.7
2	2 - Industrial (NE)	58.9	60.6
3	3 - Industrial (SE)	56.7	58.3
4	4 - Industrial (W)	50.8	50.6
5	5 - Industrial (NW2)	59.6	61.4
6	6 - Industrial (SE2)	57.8	59.5

Hallmark Warehouse
2035 Without Project
Contributions

Source name		Level AM	Level PM
		dB(A)	
1 - Industrial (NW)	GF	58.0	59.7
Hallmark Pkwy NB		55.9	55.4
Hallmark Pkwy SB		53.9	57.8
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		32.2	29.8
2 - Industrial (NE)	GF	58.9	60.6
Hallmark Pkwy NB		56.8	56.3
Hallmark Pkwy SB		54.7	58.6
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		37.1	34.6
3 - Industrial (SE)	GF	56.7	58.3
Hallmark Pkwy NB		54.3	53.8
Hallmark Pkwy SB		52.4	56.3
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		44.7	42.2
4 - Industrial (W)	GF	50.8	50.6
Hallmark Pkwy NB		45.0	44.6
Hallmark Pkwy SB		43.0	46.9
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		48.3	45.8
5 - Industrial (NW2)	GF	59.6	61.4
Hallmark Pkwy NB		57.5	57.0
Hallmark Pkwy SB		55.5	59.4
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		23.2	20.8
6 - Industrial (SE2)	GF	57.8	59.5
Hallmark Pkwy NB		55.7	55.2
Hallmark Pkwy SB		53.6	57.5
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		27.4	25.0

Hallmark Warehouse
2035 Without Project
Receiver Spectra

No.	Name	Floor	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 - Industrial (NW)	GF	AM	27.8	34.4	38.5	40.8	42.4	43.9	45.1	45.5	45.3	45.4	46.4	47.6	47.4	48.1	46.8	46.8	45.4	44	43.6	41.8	39.8	37.1	34.2	30.4
1	1 - Industrial (NW)	GF	PM	29.8	36.4	40.5	42.8	44.4	45.9	47	47.3	47.1	47	47.9	49.1	49.1	49.9	48.6	48.7	46.9	45.6	45.2	43.4	41.5	38.7	35.8	31.9
2	2 - Industrial (NE)	GF	AM	28.5	35.1	39.2	41.5	43.1	44.7	45.8	46.2	46.2	46.4	47.5	48.6	48.4	49.1	47.9	47.6	46.1	44.7	44.2	42.3	40.5	37.6	34.8	31
2	2 - Industrial (NE)	GF	PM	29.9	36.5	40.6	42.9	44.6	46.1	47.3	47.8	47.9	48.2	49.4	50.5	50.1	50.7	49.6	49.3	48.1	46.7	46	44.2	42.3	39.5	36.7	33
3	3 - Industrial (SE)	GF	AM	27.4	34	38	40.4	41.9	43.4	44.4	44.6	44	43.5	44.4	45.8	45.7	46.7	45.5	45.4	44.3	43.1	42.1	40.4	38.3	35.2	32.2	28.2
3	3 - Industrial (SE)	GF	PM	29.1	35.7	39.8	42.1	43.6	45.1	46.1	46.3	45.7	45	45.7	47.2	47.3	48.4	47.1	47.2	46	44.4	43.7	41.8	39.9	36.7	33.7	29.7
4	4 - Industrial (W)	GF	AM	23.6	30.1	34.2	36.4	37.9	39.2	39.9	38.5	36.8	35.3	35.9	37.8	38.2	39.7	38.9	39.4	38.6	38.8	38.2	36.2	33.9	31	27.8	23.5
4	4 - Industrial (W)	GF	PM	24	30.5	34.6	36.8	38.3	39.6	40.1	37.8	35.7	34.2	35.4	37.2	37.3	38.7	38.2	38.8	38.4	39	39	36.7	34.3	31.6	28.5	24
5	5 - Industrial (NW2)	GF	AM	29.1	35.8	39.8	42.2	43.8	45.3	46.5	46.9	47	47.1	48.2	49.2	49.1	49.8	48.7	48.5	46.9	45.7	45.2	43.3	41.3	38.5	35.7	32
5	5 - Industrial (NW2)	GF	PM	31	37.6	41.7	44	45.7	47.2	48.3	48.7	48.7	48.8	49.8	50.9	50.9	51.7	50.5	50.2	48.4	47.2	46.7	44.8	43	40.1	37.2	33.5
6	6 - Industrial (SE2)	GF	AM	28	34.6	38.6	41	42.6	44.1	45.2	45.5	45.2	45	45.8	47.1	47.1	48	46.6	46.9	45.1	43.7	43.2	41.5	39.6	36.6	33.7	29.8
6	6 - Industrial (SE2)	GF	PM	29.5	36.1	40.2	42.5	44.1	45.6	46.7	47.1	46.9	46.7	47.7	48.9	48.9	49.6	48.3	48.4	47	45.5	45	43.3	41.3	38.5	35.6	31.8

Hallmark Warehouse
2035 With Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Hallmark Pkwy NB	Traffic direction:	In entry direction									
0+000	5248	Total	-	221	214	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Automobiles	-	151	146	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Medium trucks	-	57	55	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Heavy trucks	-	11	11	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Motorcycles	-	2	2	72	none	-	-	Average (of DGAC and PCC)	0
0+000	5248	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
3+129	-						-	-	-	-	-
Hallmark Pkwy SB	Traffic direction:	In entry direction									
1+292	5368	Total	-	140	391	-	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Automobiles	-	96	269	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Medium trucks	-	36	101	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Heavy trucks	-	7	19	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Motorcycles	-	1	2	72	none	-	-	Average (of DGAC and PCC)	0
1+292	5368	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
4+434	-						-	-	-	-	-
Shenandoan Way EB	Traffic direction:	In entry direction									
1+292	-						-	-	-	-	0
1+768	-						-	-	-	-	-
Shenandoan Way WB	Traffic direction:	In entry direction									
1+292	2368	Total	-	103	90	-	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Automobiles	-	70	61	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Medium trucks	-	27	23	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Heavy trucks	-	5	5	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Buses	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Motorcycles	-	1	1	72	none	-	-	Average (of DGAC and PCC)	0
1+292	2368	Auxiliary Vehicle	-	-	-	72	none	-	-	Average (of DGAC and PCC)	0
1+770	-						-	-	-	-	-

Hallmark Warehouse
2035 With Project
Receivers

No.	Receiver name	Level AM	Level PM
		dB(A)	
1	1 - Industrial (NW)	57.9	60.1
2	2 - Industrial (NE)	58.8	61.0
3	3 - Industrial (SE)	56.6	58.7
4	4 - Industrial (W)	50.8	51.7
5	5 - Industrial (NW2)	59.5	61.8
6	6 - Industrial (SE2)	57.7	59.9

Hallmark Warehouse
2035 With Project
Contributions

Source name		Level AM	Level PM
		dB(A)	
1 - Industrial (NW)	GF	57.9	60.1
Hallmark Pkwy NB		55.8	55.7
Hallmark Pkwy SB		53.8	58.2
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		32.2	31.9
2 - Industrial (NE)	GF	58.8	61.0
Hallmark Pkwy NB		56.7	56.5
Hallmark Pkwy SB		54.6	59.0
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		37.1	36.7
3 - Industrial (SE)	GF	56.6	58.7
Hallmark Pkwy NB		54.2	54.1
Hallmark Pkwy SB		52.3	56.7
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		44.6	44.3
4 - Industrial (W)	GF	50.8	51.7
Hallmark Pkwy NB		45.0	44.9
Hallmark Pkwy SB		43.0	47.3
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		48.3	47.9
5 - Industrial (NW2)	GF	59.5	61.8
Hallmark Pkwy NB		57.4	57.3
Hallmark Pkwy SB		55.4	59.8
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		23.2	22.9
6 - Industrial (SE2)	GF	57.7	59.9
Hallmark Pkwy NB		55.6	55.5
Hallmark Pkwy SB		53.5	58.0
Shenandoan Way EB		0.0	0.0
Shenandoan Way WB		27.4	27.0

Hallmark Warehouse
2035 With Project
Receiver Spectra

No.	Name	Floor	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 - Industrial (NW)	GF	AM	27.7	34.3	38.4	40.7	42.3	43.9	45	45.4	45.2	45.2	46.3	47.5	47.3	48	46.7	46.7	45.3	43.9	43.5	41.7	39.8	37	34.1	30.3
1	1 - Industrial (NW)	GF	PM	30.2	36.8	40.9	43.2	44.8	46.3	47.4	47.7	47.5	47.3	48.3	49.5	49.5	50.3	49	49.1	47.3	46	45.7	43.9	42	39.1	36.2	32.3
2	2 - Industrial (NE)	GF	AM	28.4	35	39.1	41.4	43	44.6	45.7	46.1	46.1	46.3	47.4	48.5	48.3	49	47.8	47.5	46	44.6	44.2	42.2	40.4	37.6	34.7	31
2	2 - Industrial (NE)	GF	PM	30.3	36.9	41	43.3	44.9	46.5	47.6	48.2	48.3	48.5	49.8	50.9	50.5	51.1	50	49.7	48.5	47.1	46.4	44.6	42.7	40	37.1	33.4
3	3 - Industrial (SE)	GF	AM	27.3	33.9	37.9	40.3	41.8	43.3	44.4	44.5	43.9	43.4	44.3	45.7	45.6	46.6	45.4	45.3	44.3	43.1	42	40.3	38.3	35.1	32.1	28.1
3	3 - Industrial (SE)	GF	PM	29.5	36.1	40.2	42.5	44.1	45.5	46.6	46.7	46.1	45.4	46.1	47.6	47.8	48.9	47.5	47.7	46.5	44.9	44.2	42.3	40.3	37.2	34.2	30.2
4	4 - Industrial (W)	GF	AM	23.5	30	34.1	36.4	37.9	39.2	39.9	38.4	36.8	35.2	35.9	37.7	38.2	39.7	38.9	39.4	38.5	38.8	38.2	36.2	33.9	30.9	27.8	23.4
4	4 - Industrial (W)	GF	PM	24.8	31.3	35.4	37.6	39.1	40.4	41	39	37.1	35.5	36.5	38.3	38.7	40.1	39.5	40	39.5	40	39.8	37.5	35.2	32.4	29.3	24.9
5	5 - Industrial (NW2)	GF	AM	29	35.6	39.7	42.1	43.7	45.2	46.4	46.8	46.9	47	48.1	49.1	49	49.7	48.6	48.4	46.8	45.6	45.1	43.2	41.2	38.4	35.6	31.9
5	5 - Industrial (NW2)	GF	PM	31.4	38	42.1	44.4	46.1	47.6	48.7	49.1	49.1	49.2	50.2	51.3	51.3	52.1	50.9	50.5	48.8	47.6	47.1	45.2	43.4	40.5	37.6	33.9
6	6 - Industrial (SE2)	GF	AM	27.8	34.5	38.5	40.9	42.5	44	45.1	45.4	45.1	44.8	45.7	47	47.1	47.9	46.5	46.8	45	43.6	43.2	41.4	39.5	36.6	33.7	29.8
6	6 - Industrial (SE2)	GF	PM	29.9	36.5	40.6	42.9	44.5	46	47.1	47.5	47.2	47.1	48.1	49.3	49.3	50	48.7	48.8	47.4	46	45.4	43.8	41.8	38.9	36	32.2

Hallmark Warehouse
On-Site Operation
Industry

				Frequency spectrum [dB(A)]							
Source name	Reference	Level		63	125	250	500	1	2	4	8
			dB(A)	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz
On-Site Operation	Unit	Day	110	77	87	94	100	103	104	104	102
On-Site Operation	Unit	Night	110	77	87	94	100	103	104	104	102

Hallmark Warehouse
On-Site Operation
Receivers

No.	Receiver name	Level AM	Level PM
		dB(A)	
1	1 - Industrial (NW)	49.6	49.6
2	2 - Industrial (NE)	48.9	48.9
3	3 - Industrial (SE)	44.9	44.9
4	4 - Industrial (W)	56.0	56.0
5	5 - Industrial (NW2)	34.6	34.6
6	6 - Industrial (SE2)	32.5	32.5

Hallmark Warehouse
On-Site Operation
Contributions

Source name		Level AM	Level PM
		dB(A)	
1 - Industrial (NW)	GF		
On-Site Operation		49.6	49.6
2 - Industrial (NE)	GF		
On-Site Operation		48.9	48.9
3 - Industrial (SE)	GF		
On-Site Operation		44.9	44.9
4 - Industrial (W)	GF		
On-Site Operation		56.0	56.0
5 - Industrial (NW2)	GF		
On-Site Operation		34.6	34.6
6 - Industrial (SE2)	GF		
On-Site Operation		32.5	32.5

Hallmark Warehouse
On-Site Operation
Receiver Spectra

No.	Name	Floor	Time slice	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
1	1 - Industrial (NW)	GF	AM	19.2	29.2	36.1	41.9	44.6	44.6	40.8	26.5
1	1 - Industrial (NW)	GF	PM	19.2	29.2	36.1	41.9	44.6	44.6	40.8	26.5
2	2 - Industrial (NE)	GF	AM	18.8	28.7	35.6	41.4	44.1	44	39.5	21.6
2	2 - Industrial (NE)	GF	PM	18.8	28.7	35.6	41.4	44.1	44	39.5	21.6
3	3 - Industrial (SE)	GF	AM	15.3	25.3	32.1	37.8	40.4	39.8	33.8	12.6
3	3 - Industrial (SE)	GF	PM	15.3	25.3	32.1	37.8	40.4	39.8	33.8	12.6
4	4 - Industrial (W)	GF	AM	24.7	34.7	41.6	47.5	50.4	50.9	49.1	41.7
4	4 - Industrial (W)	GF	PM	24.7	34.7	41.6	47.5	50.4	50.9	49.1	41.7
5	5 - Industrial (NW2)	GF	AM	7.3	17.1	23.7	29	30.8	27.7	11.9	-45
5	5 - Industrial (NW2)	GF	PM	7.3	17.1	23.7	29	30.8	27.7	11.9	-45
6	6 - Industrial (SE2)	GF	AM	5.7	15.5	22	27.2	28.8	24.8	5.9	0
6	6 - Industrial (SE2)	GF	PM	5.7	15.5	22	27.2	28.8	24.8	5.9	0