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MASER CONSULTING

Noise Evaluation

Proposed Manufacturing Facility
850 Route 28

NYS Route 28 (Onteora Trail)
Town of Kingston, Ulster County, New York

MARCH 9, 2021

Prepared For

U.S. Crane & Rigging, LLC
1520 Decatur Street
Ridgewood, NY 11385

Prepared By

Maser Consulting Connecticut, P.C.
400 Columbus Avenue, Suite 180E
Valhalla, NY 10595
914.347.7500

Philip J. Grealy, Ph.D., P.E.; Principal
License No. 59858

MC Project No. 20003360A

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APPENDICES

A. INTRODUCTION AND BACKGROUND

A Noise Study dated February 2019 was prepared by H2H Associates for the property located at 850 Route 28 in the Town of Kingston, New York. This study was subsequently updated by H2H in November 2019 in response to comments received on the original document. As a result of the requests for a more detailed and comprehensive evaluation to address all components of noise sources that would be generated at this site during both the site preparation/construction and operational phases of the project, Maser Consulting was retained to prepare this updated evaluation. The evaluation contained herein was prepared to provide this comprehensive evaluation of potential noise impacts both during the site preparation process and after the construction of the buildings and resulting operations.

B. PROJECT DESCRIPTION AND LOCATION

(Figure No. 1)

The Project Applicant (850 Route 28 LLC) is proposing a phased construction project to build two manufacturing structures on the property located at 850 Route 28 located in the Town of Kingston, Ulster County, New York (see Figure No. 1 for location). As described in more detail in the EAF Addendum, "the 110-acre project site, currently located in the Mixed Use -2 (MU 2) zoning district, is an unreclaimed quarry heavily scarred by mining operations conducted during the 1950s -1970s. The proposed area of disturbance will occupy approximately 37.7 acres (34%) of the site and lies primarily within the footprint of the former mine. The remaining 72 acres of the site will remain undisturbed and serve as a buffer between the proposed facility and adjoining properties." The facility will be used for fabrication and assembly of steel and precast concrete bridge decking components for road and bridge projects in the region.

Currently, the site has one building along with parking/storage area served by an existing driveway. The site is used as a storage and assembly area for cranes and other related items. Under existing conditions, the primary noise sources in the area are associated with the existing traffic along the NYS Route 28 corridor, some miscellaneous background noise from overall area commercial operations, occasional airplane flyovers, and existing site-specific noise sources. More remotely, the existing noise characteristics of the area also has other contributing noise sources, including Eastern Materials Quarry (Jockey Hill Road) further to the east, closer to the Bluestone Forest and another quarry located on the north side of NYS Route 28 east of Morey Hill Road. Under future conditions, the project calls for the construction of two 120,000 square foot buildings, one for structural steel and the other for concrete products. The proposed operations are also described in more detail on Page 7 of the EAF Addendum. As part of future conditions, the operational noises of trucks, forklifts, and other equipment on site, as well as other sounds related to manufacturing, including building related sources, are evaluated herein. Figure No. 1 also indicates the receptor locations which were evaluated in this study.

It should also be noted that the potential noise impacts of construction related activities was also analyzed in this study. These noise sources during this stage of the project would be from the excavation process and include the rockdrill and other equipment and machinery necessary to complete this task.

C. SCOPE OF STUDY

This evaluation has been prepared to identify the existing noise levels in the area and to analyze future conditions both during the site preparation/construction as well as with the proposed facility operations to identify any potential impacts due to increased noise generated by the project. The evaluation included both during construction and after completion of the new buildings, due to increased traffic, onsite equipment vehicle movements, assembly operations, and other building related sources. In addition, to evaluate future conditions with the operation, site plan information regarding the building placement, level of traffic, and other activities to be occurring on the site were identified and evaluated. During the construction and preparation of the site, the Applicant is proposing to crush, process, and stockpile the significant amount of excavated material and plans to use a mobile onsite crushing plant to process the material (see also mitigation discussion in Section K).

Existing noise levels were measured using a standard Type 1 Sound Level Meter (SLM) to obtain the ambient (background) noise levels at area receptor locations onsite and offsite at area public and private locations. Upon establishing existing and future noise levels, these values were then compared to recommended noise level guidelines as per NYSDEC publication entitled *Assessing and Mitigating, Noise Impacts*, revised February 2001 to determine whether there will be any significant impact at the various receptors in the area. Recommendations for improvements to mitigate any potential noise impacts were then identified.

A description of the noise receptors, noise guidelines, and the analysis methodology utilized in evaluating the noise levels is described in the following sections.

D. CHARACTERISTICS OF ENVIRONMENTAL NOISE

(Tables No. 1 and 2)

Sound Pressure Level (SPL) or perceived loudness is expressed in decibels (dB). The pitch or frequency, which the unit of measure is hertz (Hz) which represents the rate at which a sound source either vibrates or makes the air vibrate. A single value of broad band noise levels is typically established using a frequency weighting that simulates human perception to characterize the noise environment and to assess any impact on noise sensitive areas. Governmental noise criteria generally specify noise level guidelines in the units of A-weighted noise or decibels (dBA). The A-weighted noise measurement has been found to correlate well with the response of the human ear which is relatively insensitive to low frequencies. Table No. 1 provides a summary of some typical A-weighted noise levels. Governmental guidelines typically stipulate that noise impacts be evaluated in terms of noise levels designated L_{eq} or L_{10}. The L_{eq} (Equivalent Sound Level) is an equivalent level "energy averaged" over a specified period of time to express them as a steady state sound level. This measure is useful for characterizing environmental noise including highway/roadway traffic noise since it specifically accounts for both the duration and magnitude of sound and based on NYSDEC, is considered to be directly related to the effects of sound on people since it expresses the equivalent magnitude of the sound as a function of frequency of occurrence and time. Other descriptors include L_{max} and L_{90}. The L_{max} represents the maximum level observed for a specific time period of observation while the L_{90} represents the noise level which is exceeded 90% of the time.

Community noise guidelines are specified by several agencies including the Environmental Protection Agency (EPA), the Federal Highway Administration (FHWA), and the Department of Housing and Urban Development (HUD). These agencies have established certain criteria for acceptable noise levels for various land uses and development types. The NY State implementation of FHWA Criteria 23 CFR772 are summarized in Table No. 2 recommend an exterior noise level of 57 dBA expressed in terms of L_{eq} for activity Category A, and for activity Categories B and C, recommends an exterior level of 67 dBA and for Category E, a level of 72 dBA. Note that Category D is for interior levels in institutional uses.

The NYSDEC publication, *Assessing and Mitigating Noise Impacts*, revised February 2, 2001[(1)], provides guidance for evaluating noise impact assessments. As defined in this referenced document, noise is described as any loud, discordant, or disagreeable sound or sounds and certain activities inherently produce sound levels or characteristics that have the potential to create noise. Thus, the sound generated by existing or proposed facilities may become noise due to the presence of other land uses surrounding such facility.

This publication also identifies typical thresholds for establishing significant impacts and discusses potential methods of avoidance and measures to reduce or mitigate noise impacts. This publication sets forth thresholds that are recommended to be used in determining whether a noise increase due to a project may constitute a significant adverse impact.

The guidelines summarize the following threshold ranges:

- Increases in noise of under 3 dBA should have no appreciable effect on receptors.
- Increases of between 3 to 6 dBA may have the potential for impacts where the sensitive receptors such as hospitals or schools are present.
- Increases of more than 6 dBA may require a more detailed analysis of potential impacts depending on the ambient noise levels under existing conditions and the character of surrounding receptors: and
- Increases of 10 dBA are very significant and mitigation measures should be implemented to avoid impacts in such cases.

The document also suggests that the addition of a noise source should generally not result in the L_{eq} noise levels exceeding 65 dBA near residential receptors during daytime hours and 55 dBA for nighttime levels (see Section K for additional discussion).

E. EXISTING NOISE LEVELS

(Figure No. 1 and Table No. 3)

Noise measurement surveys were conducted at several locations (receptors) on and off the site to provide a representative sampling and to identify the existing ambient noise levels in the area. The receptor locations were chosen to include representative residential, commercial, and recreational receptors within close proximity to the site and included areas to the south and west of the site. Traffic volumes were also observed along NYS Route 28 for correlation with ambient noise levels.

Noise measurements were collected by representatives of Maser Consulting. The noise measurements were taken with Bruel and Kjaer Type 1-Precision Integrating Sound Level Meter-Type 2236. The meter was calibrated prior to actual measurements utilizing a standard Bruel and Kjaer Acoustical Calibrator Model No. 4231. The actual measurements and calibration procedures followed were completed in conformance with the American National Standards Institute (ANSI) criteria.

The microphones used in the measurements were located without obstruction from stationary objects at a height of five feet above a ground surface. Measurements taken included a L_{eq} level, a L_{10} level, and a L_{max} level. The measurements were collected on intervals varying between 10 and 30 minutes to identify noise character at each receptor. The existing sound level measurements were taken during on September 3, 2020 and September 24, 2020 and weather conditions were clear on the days of the measurements. Existing measured noise levels represented in terms of L_{eq} (dBA) during the peak periods ranged from the high 40's to low 60's with the higher levels closer to the NYS Route 28 corridor. The receptor locations considered are shown on Figure No. 1.

The sound level measurements were taken at the various receptor locations in the area to address the residential receptors along Waughkonk Road as well as receptors on adjacent State lands, including Pickerel Pond, Onteora Lake, and area trails used for recereational purposes. The receptors evaluated are identified on Figure No.1 and described below:

R1 – Near the northeastern portion of the Site, off of the gravel trail to the east

R2 – Near the northern portion of the Site, on the gravel trail to Pickerel Pond

R3 – Near the northwestern portion of the Site, to the west of the existing building

R4 – On Onteora Lake property, on gravel area on the west side of the lake (past second public parking lot)

R5 – On the west side of the Onteora Lake property, near the fork in the access road

R6 – On Waughkonk Road in the vicinity of the residential properties near the northern terminus of the road

R7 – Near Morey Hill Road, on gravel trail located to the west

Copies of the measurement particulars, including detailed descriptions of the receptors are contain in Appendix C.

Summary of Existing Noise Levels

Tables No. 3 summarizes the existing noise levels measured at each receptor location in terms of L_{eq} (dBA). As indicated in Tables No. 3, the L_{eq} sound levels observed at the various receptors ranged in the high 40's to the low 50's dBA. Note that the noise levels in the table show the decibel levels rounded to the nearest whole decibel since typically levels can be completely valid within ± 1 dBA. The observations of each of the receptors are described in more detail below.

Receptors 1, 2 & 3:	These receptors are located on the perimeter of the site and are characterized by background noise levels primarily associated with the surrounding nature/noises, wildlife noises, as well as traffic along the NYS Route 28 corridor. Additional noise generators include the operational noises of trucks, forklifts and other equipment on site.
Receptors 4 & 5:	These receptors are located on the west side of Onteora Lake and are characterized by background noise levels primarily associated with the surrounding nature and wildlife noise sources as well as from traffic along the NYS Route 28 corridor. These locations include the ambient sounds related to public activities on the nearby trails and near the lake as well as from vehicles entering and exiting the recreational area.
Receptor 6:	This receptor is representative of the residential area to the south of the site and is characterized by background traffic along the NYS Route 28 corridor and localized natural background sources.
Receptor 7:	This receptor is characterized by background traffic along Morey Hill Road and other natural background sources.

F. PROPOSED MANUFACTURING OPERATIONS

The proposed manufacturing operations are described on Page 7 of the EAF Addendum; a copy of this portion of that document is contained in Appendix “F”.

Traffic to and from the site will be via the existing driveway connection to NYS Route 28 which will be upgraded as part of the project. No truck traffic on local roads is proposed. Based on information provided by the project Applicant, traffic from the site would be periodic or sporadic and not a constant flow of vehicles. Typical hours of operation for the manufacturing facility would be on three (3) shifts. Shifts 1 and 2 are the primary production shifts including indoor and outdoor, and as described in the EAF Addendum, will occur between 6:00 AM and 10:00 PM. The 3rd shift, 10:00 PM to 6:00 AM, will be primarily indoors. Delivery trucks would enter the site from NYS Route 28 and enter the proposed buildings to be offloaded. The loaded trucks would leave the building and exit the site onto NYS Route 28 (see also Section H for the construction/site preparation discussion).

G. NOISE ANALYSIS METHODOLOGY AND DISCUSSION OF POTENTIAL IMPACTS

In order to evaluate the potential noise impacts, two criteria are generally utilized:

1. Will the predicted noise levels exceed the recommended guidelines for a particular area?

2. Will there be a significant increase above the existing levels (i.e. 3 dBA or greater)?

As indicated previously, community noise guidelines are published by several Federal Agencies including the Environmental Protection Agency (EPA), the Federal Highway Administration (FHWA), and the Department of Housing and Urban Development (HUD). These guidelines establish recommended design noise levels for specific land uses. With respect to roadway and traffic noise, FHWA [(2)] has established certain guidelines for various land use categories.

The FHWA recommends L_{eq} exterior design levels of 72 dBA for commercial areas, 67 dBA for residential areas, and 57 dBA for other more noise sensitive areas. As previously noted, Table No. 2 summarizes the design level/land use relationships for various land use categories. Additional discussion of how the existing and future noise levels compare to the various noise guidelines is presented in the next section.

Table No. 4 summarizes the relationship between noise increases and significance of impacts. It is important to note that in order to produce a 3-dBA increase in the sound pressure level, which represents a perceptible change relative to human response, a doubling of the noise source (i.e. traffic volume) must occur. For example, if a highway has an hourly volume of 2,000 vehicles and a L_{eq} of 62 dBA and the volume increases to 4,000 vehicles with similar speeds and vehicle mix, the L_{eq} would increase to 65 dBA. Thus, a sound level of 60 dBA measured at 100 feet from the sound source (point source) would drop to approximately 54 dBA at 200 feet away. Furthermore, with regard to sound propagation in the air, as distance doubles from the sound source the amplitude drops by half. This is a drop of approximately 6 dBA for a point source (see page 8 Reference 1).

For a line source such as mobile sources, reductions of 3 dBA for doubling distances are encountered under typical field conditions. Also, note that based on NYSDEC [(1)] page 21 and FHWA [(4)] page 54, "dense vegetation that is at least 100 feet in depth will reduce the sound levels by 3 to 7 dBA." Furthermore, FHWA (4) reference page 52, indicates that "a berm can provide noise attenuation of up to 15 dBA if it is several feet higher than the line of sight between the source and receiver."

Typical Thresholds for Significant Sound Pressure Level (SPL) Increases

Based on published data including the previously referenced NYSDEC publication on assessing noise impacts, increases ranging from 0-3 dB should have no appreciable effect on receptors. Increases from 3-6 dB may have potential for adverse noise impact only in cases where the most sensitive of receptors are present. Sound pressure increases of more than 6 dB may require a closer analysis of impact potential depending on existing SPLs and the character of surrounding land use and receptors. SPL increases approaching 10 dB result in a perceived doubling of SPL. The perceived doubling of the SPL results from the fact that SPLs are measured on a logarithmic scale. An increase of 10 dB(A) deserves consideration of avoidance and mitigation measures in most cases. NYSDEC recommends that the above thresholds referenced above and as summarized below as indicators of impact potential, should be viewed as guidelines to be used.

Typical Human Reaction to Increases in Sound Pressure Level

Increase in Sound Pressure (dB)	Human Reaction
Under 5	Unnoticed to tolerable
5 - 10	Intrusive
10 - 15	Very noticeable
15 - 20	Objectionable
Over 20	Very objectionable to intolerable

Source: NYSDEC "Assessing and Mitigating Noise Impacts" revised February 2, 2001 (Table B, Page 15)

H. SITE PREPARATION AND CONSTRUCTION ACTIVITY NOISE LEVELS

During the site preparation phase, noise will be produced from drilling, blasting, rock processing, hauling, and excavating activities on the site. Once the site highwall has been leveled, the construction on the site will be reduced to noise generated by haul trucks and excavators finishing the final grading of the building pads. As with any construction project, there still will be temporary increases in sound levels due to construction equipment, associated with excavation, and the processing of the consolidated bedrock. In addition, during the construction of the building and facilities, sound levels will also be associated with those construction activities.

In order to identify noise impacts during this phase, a review of the types of construction equipment which will be used on the job site during construction of the Project was completed. It can be anticipated that the types of equipment used on the site will be for the following purposes:

- Removing of existing vegetation
- Earth work and excavation
- Rock Drilling and Crushing (Processing)
- Paving and construction of the internal roadway parking areas

For these activities, the types of construction equipment generally utilized would include a blast hole drill rig, front end loaders, dump trucks and crushers. At a reference distance of 50 feet, the above equipment generally has sound levels ranging from 70 to 95 dBA (A-weighted dBA). (See Tables C and D from Page 18 of the previously referenced NYSDEC publication and Table 5.6 from reference (3) for the typical Equipment Sound Levels that are considered in the projected sound levels as discussed in the next section.) Due to the significant distance separation from where these activities will occur to the majority of the offsite receptors, there will be significant attenuation resulting from this distance separation and the extensive vegetative buffers between them. The hours of these activities will occur during normal daytime hours, which is coincident with the period of highest background existing ambient noise levels.

All construction equipment will have to be inspected periodically to ensure that proper mufflers and other equipment is functioning properly.

I. FUTURE SOUND LEVELS

Site Preparation/Construction

The future sound levels in the area will be the result of existing sound levels (primarily from existing traffic, nature, and other area sources), sound levels from equipment operating on the site, sounds emitting from the grading activities on site as well as from increased traffic generation for the movement of vehicles to and from the site during these construction operations. In order to assess the future sound levels during the site preparation/construction, the noise from various sources including the blast hole drill rig, the front-end loader loading haul truck, the rock crusher, and other equipment were accounted for as well as the traffic added to the adjoining network. These activities including crushing and screening would be ongoing during the site preparation phase and these activities would be limited to hours between 7:00 AM and 7:00 PM. Appendix D contains copies of the noise computation worksheets and Table C-1 summarizes the noise levels associated with each.

The results of the levels with these activities ongoing are summarized in Tables 3 AM and PM (Site Preparation Conditions), which also indicate the existing L_{eq} levels as well as future projected levels both with and without mitigation. They also include typical and "leaf off" (leaves off trees) conditions at certain receptors. As summarized in Table No. 3, the projected noise levels during the site preparation and construction phase will vary at the receptors evaluated. As summarized in the table, during the highest peak hour, the projected noise levels will vary between 57 dBA and 72 dBA without any mitigation. The higher noise levels expected are at Receptors 1 and 2, which are in the closest proximity to the property boundaries on the north perimeter. The other receptors have levels at the lower end of the range.

The sound mitigation measures as summarized on the Sound Barrier Plan contained in Appendix A and related mitigation measures as summarized in Section K, will result in significant reductions in the noise levels at the area receptors. The levels will be reduced to between 51 dBA and 62 dBA during the busiest time periods. These levels with mitigation would fall within the criteria summarized in Table No. 2. The resulting noise levels with mitigation for Receptors 3 through 7 would be increases of 5 dBA or less above No-Build levels, which would be within in the criteria for minimal to tolerable change. Note that at Receptors 1 and 2 with all onsite activities occurring simultaneously with mitigation, the noise levels are projected to increase by approximately 11 dBA over No-Build conditions. This would be a noticeable increase above the No-Build levels but would still fall within the impact level criteria for the adjacent area as summarized in Table No. 2. Again, these conditions would be during the site preparation/construction phase with full activities occurring simultaneously on the site. Throughout this phase, periodic blasting would also be ongoing and that would be part of a blasting plan to be provided by the contractor.

<u>Post Construction (Building/Facility Operational)</u>

The proposed external activities on the site after construction of the buildings, which include tractor movements, are expected to have some sound levels of in excess of 75 dBA at a 50' reference distance moving to and from the site. This would result in Leq levels of up to 60 dBA at the southern and southwestern property lines. Tables No. 3 – Operational AM, PM, and Nighttime summarize the results for Existing, No-Build and Build conditions with the buildings operational. As summarized in Section K, several mitigation measures were identified for both the during construction phase and then the operations phase of the project. See also the Sound Barrier Plan prepared by Medenbach and Eggers.

After the construction of the buildings and the operational phases of the project, the noise levels as summarized in Table No. 3-O represent the noise levels expected with the facility operating. This would include vehicle movements to and from the site and the site transporting materials, as well as other building related noise including HVAC noise.

As summarized in the table, without mitigation the increases in noise levels would range from approximately 1 dBA to as high as 7 dBA. The higher levels would occur at Receptors 1 and 2 with the lower noise level increases of approximately 3 dBA or less at the other receptor locations including residential receptors for conditions without any mitigation. The noise levels with mitigation would be reduced significant to where the noise level increases would be less than 3 dBA increases above No-Build at all receptor locations. These levels are for daytime conditions and they represent noise levels below the land use criteria for the surrounding area.

Additionally, an evaluation of nighttime conditions where the existing ambient and No-Build background noise levels are significantly lower, was also completed. The projected noise levels in terms of increases above No-Build expected without mitigation range from approximately 1 dBA up to 9 dBA. Once the mitigation is implemented, the increase in noise levels over the No-Build condition would be approximately 4 dBA or less. Note that these fall within the criteria for minimal impact as summarized in Table No. 4 and the implementation of the mitigation would result in no significant impact at the area residential receptors.

J. BLASTING CONSIDERATIONS

Blasting can excite the ground resulting in vibration waves that move through soil and rock strata and potentially reach structures away from the blast location. It can include perceptible movement of building floors, windows, or even shaking of items on walls or shelves. Evaluation criteria for determining vibration impacts due to construction activities typically include thresholds for human perception and or damage to structures. The Peak Particle Velocity is typically used for evaluating impulsive vibration associated with sources such as blasting.

Blasting activities typically generate the greatest vibrations but rarely reach levels that can damage structures but reach audible and perceptible levels to humans. The U.S. Bureau of Mines refers to PPV values of 0.50 PPV at which damage to normal buildings occur and values of 0.12 in/sec for fragile buildings. However, vibration levels as low as in the range of 0.017 to 0.035 PPV may be felt by humans and may be bothersome. The general guidelines for the blasting were outlined in the blasting plan previously prepared by H2H. A site-specific blasting plan will still need to be prepared by the blasting contractor including identifying the exact monitoring locations during blasting activities. As described on Page 21 of the EAF Addendum, the blasting will occur intermittently over the course of this site preparation phase of the project.

K. RECOMMENDED MITIGATION MEASURES

As can be seen from a review of the sound level tables, the increases in noise levels at the receptors as a result of the project traffic movements and other onsite activities are expected to be less than 5 dBA at most receptors, although others could experience higher levels without certain mitigation measures. The Sound Barrier Plan prepared by Medenbach and Eggers identifies areas of both temporary and permanent berming and other noise fencing that are proposed to help mitigate any noise increases. The following is a summary of recommendations to be implemented as mitigation as part of the construction activities and after completion and operation of the proposed facility and have been coordinated with the above referenced plan:

1. The construction equipment used on-site will have to be inspected periodically to ensure that properly functioning muffler systems are used on all equipment.

2. All equipment should not idle unnecessarily while on site.

3. Limiting drilling operation hours to specific times of the day on weekdays only between 7:00 AM and 7:00 PM.

4. Installing temporary, movable noise fences/barriers with noise absorptive materials around drilling operations should be included (see Appendix “E” for Acoustiblok – Acoustic Fence and other acoustic recommendation treatments). See Sound Barrier Plan for proposed locations.

5. During the site preparation and construction phases of development, erecting sound barriers and berms around the perimeter of the areas where the noise generating equipment are to be located. These should be located as close as possible to the noise source since the closer the barrier is located to the source or the receptor, the greater the angle of deflection of the sound waves will be creating a larger “sound shadow” on the side opposite the barrier. Stockpiles of raw material or finished product can be an added as temporary sound barrier dependent on their placement in relation to the noise generating activities.

6. The differences in grade will provide some natural attenuation between the sound levels from the proposed activities on the site and some surrounding area receptors. Along the south and southwest property lines the combination of earth berm and sound barrier fence treatment should be provided as per the Medenbach and Eggers Sound Barrier Plan. This will reduce the propagation of sound resulting from vehicle movements to and from the building entrances primarily by cutting off the line of sight to the adjacent properties.

7. As described in the EAF, all mobile equipment used for production is planned to be equipped with “white noise” back up alarms. These or other alternative radar or infrared activated safety alarm systems should be utilized on the equipment, if permitted.

8. A blasting plan was previously developed by H2H Associates, LLC for this site. As previously mentioned in Section J above, a site-specific blasting plan will still need to be provided by the blasting contractor for review by the Town prior to work. The blasting should be restricted to Weekday daytime hours.

9. The building construction should incorporate acoustical insulation/sound attenuation measures internally, and the provision of baffling/enclosures around any external HVAC equipment. The HVAC equipment should also be positioned to face away from the residential and other sensitive areas as part of the final building design/HVAC equipment layout.

10. As summarized in Table 3, the provision of the above improvements will result in future levels at the adjacent property lines that will be in compliance with the NYS DEC guidelines for avoiding adverse impacts to the greatest extent practicable.

11. A set of noise measurements at each receptor should be collected during the time of the site preparation/construction process to verify the future sound levels actually

experienced at the area receptors at that time. Based on these results, any adjustments to the construction operations, including any necessary added temporary barriers as mitigation measures, will be identified to ensure the facility is operating within the projected noise parameters. A similar set of noise measurements should be collected at each receptor after the completion of the buildings and the facility operating. The measurement results for both conditions would be reviewed with the Town's noise consultant for their review. Any levels found to exceed the projected levels by over 3 dBA as a result of the operation will require additional mitigation measures to reduce them under the 3 dBA threshold.

12. Data is supplied for the acoustic fencing (Acoustiblok) as well as other possible building wall attenuation treatments and included in Appendix "E" including the data sheets summarizing the results for the Thermal Safe Panel. This or an equivalent product is recommended for use in the buildings to absorb the internally generated noise.

13. There are several building openings/overhead doors to allow vehicles to enter and exit the buildings for loading activities. These access points should be kept closed except when vehicles are entering or exiting the building to minimize any noise leakage to the outside.

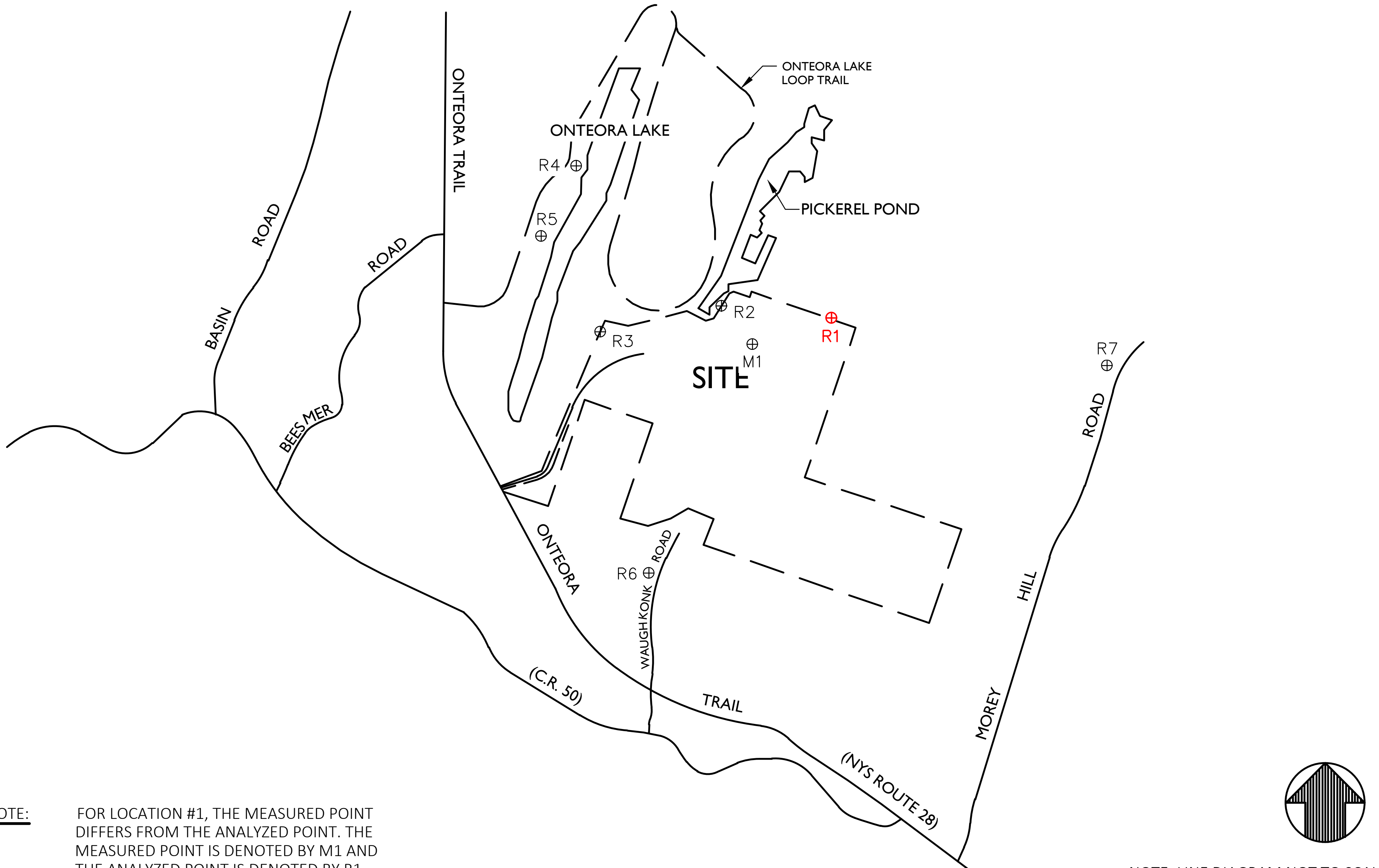
L. SUMMARY AND CONCLUSION

Based on the results of the field measurements and projections of the future noise levels, the Project will result in some increased noise levels over those that are currently being experienced at the area receptors during the site preparation and construction process. The use of berms and other measures identified above and as depicted on the Medanbach and Eggers Sound Barrier Plan will be implemented to mitigate any impacts. Similarly, after the completion of the construction of the building and future operations will also incorporate the recommended measures. It is recommended that noise measurements be collected during the site preparation/construction phase and also once the facility is operational to ensure that the predicted levels are being achieved as per the thresholds described above and any necessary adjustments be made to the site and operations based on those results.

850 ROUTE 28

APPENDIX A

FIGURES



NOTE: FOR LOCATION #1, THE MEASURED POINT DIFFERS FROM THE ANALYZED POINT. THE MEASURED POINT IS DENOTED BY M1 AND THE ANALYZED POINT IS DENOTED BY R1.

NOTE: LINE DIAGRAM NOT TO SCALE

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NOISE IMPACT EVALUATION

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	8/11/20	R.H.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
20003360A	210216JFM_NOISE READING MAP

SHEET TITLE:
NOISE RECEPTOR LOCATIONS

SHEET NUMBER:
1

3360A\Reports\Noise\Figures\210216JFM_Noise Reading Map.dwg\1 By: JMUCCIN

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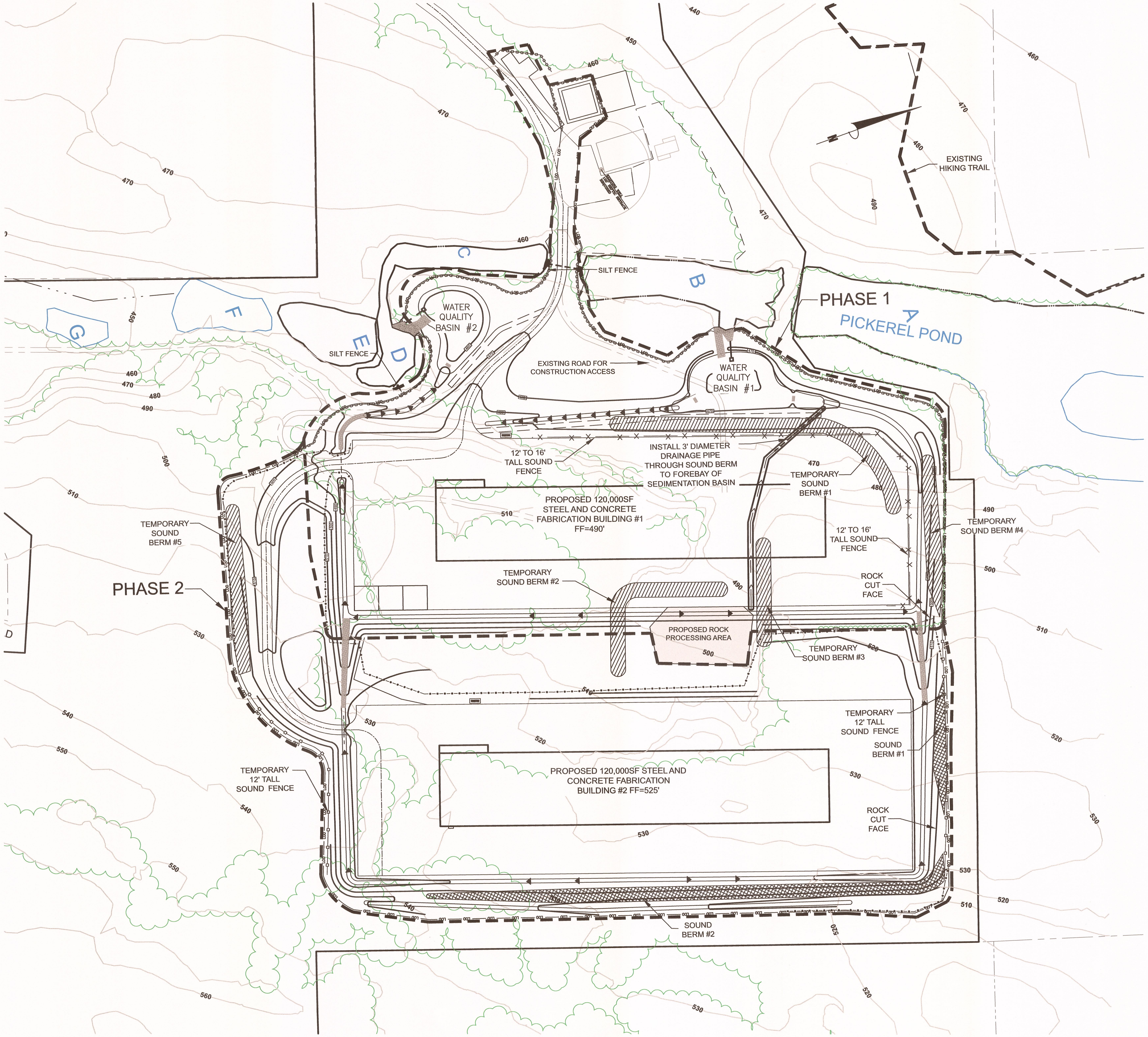
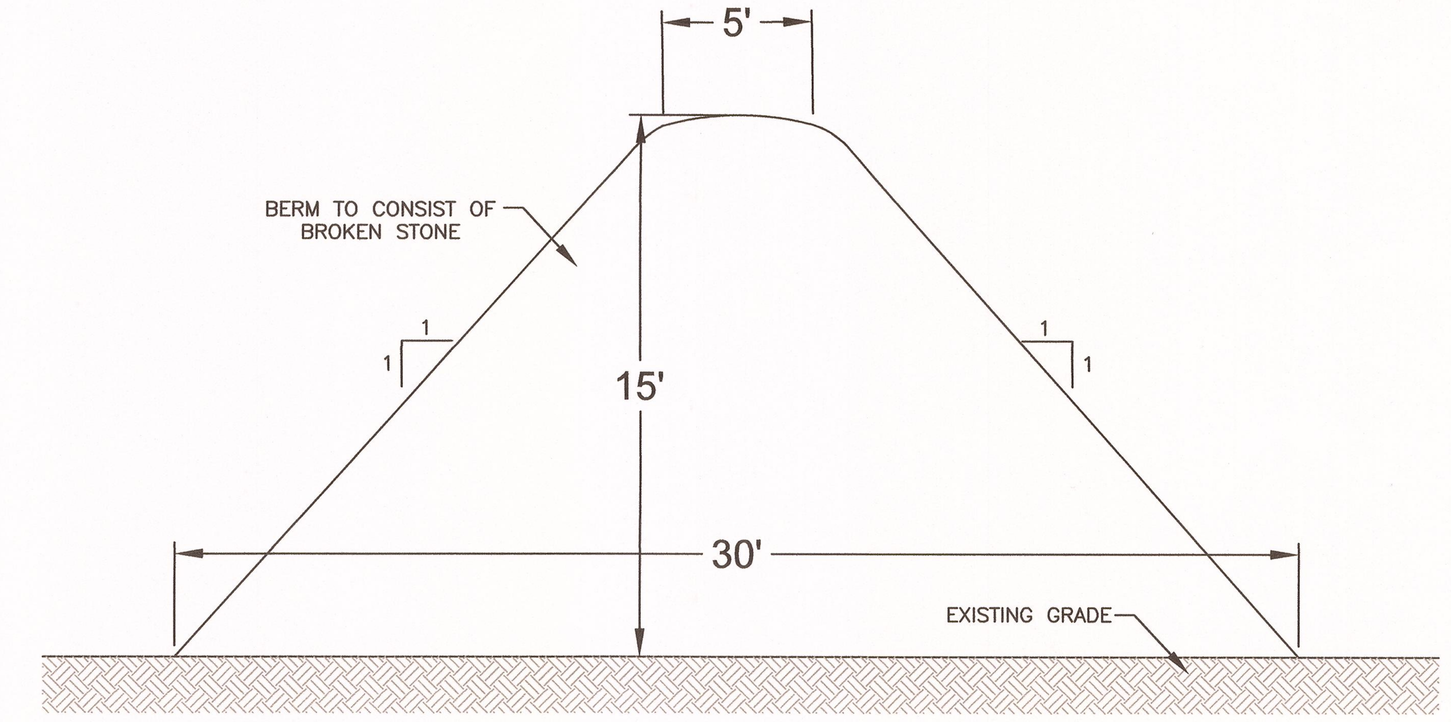
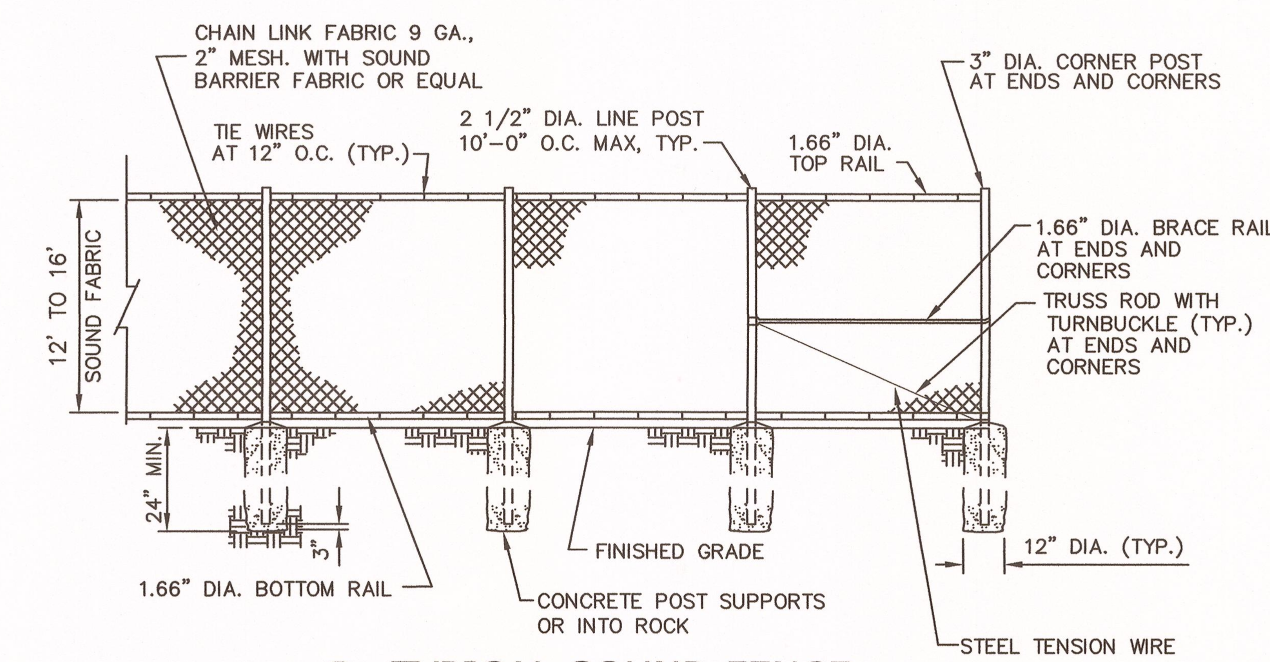
SOUND BARRIER PLAN





TYPICAL SOUND BERM

NOT TO SCALE



TYPICAL SOUND FENCE

NOT TO SCALE

NOTE: FINAL HEIGHT OF SOUND WALL TO BE FIELD VERIFIED AFTER CONSTRUCTION

PHASE 1 SOUND BARRIERS

- TEMPORARY SOUND BARRIERS #1, #2, #3 AND #4.
- SOUND FENCE ALONG NORTH AND WEST SIDES OF PHASE 1 PARKING
- FINAL BERM HEIGHT TO BE FIELD VERIFIED AFTER PLACEMENT AND OPERATION OF ROCK CRUSHER

PHASE 2 SOUND BARRIERS

- SOUND BERMS #1, #2, TEMPORARY SOUND BERM #5 AND SOUND FENCE ALONG SOUTH AND NORTH SIDE OF PHASE 2 AREA.

SEE PHASING PLAN, SHEET PH-1 FOR PHASING OF SOUND BARRIERS.

- DURING EACH STAGE OF PHASE/WORK, THE FINAL POSITION OF THE TEMPORARY SOUND BERMS AND FENCES SHOWN ON THE PLAN SHALL BE VERIFIED AND APPROVED BY THE TOWN'S NOISE CONSULTANT

KEY LEGEND

- PROCESSING AREA
- SOUND BERM – TEMPORARY
- SOUND BERM – PERMANENT
- SOUND FENCE – TEMPORARY
- SOUND FENCE – PERMANENT

MAP REVISION DATES

DATE	REVISION	BY
02/03/2021	REVISED SOUND BERM AND SOUND FENCE DETAILS	CC
03/03/2021	REVISION PER CONSULTANT COMMENTS	SL

SOUND BARRIER PLAN

FOR

850 ROUTE 28 LLC

TOWN OF KINGSTON

ULSTER COUNTY NEW YORK

100 0 100 200 300

Scale: 1" = 100'

NOVEMBER 26, 2019

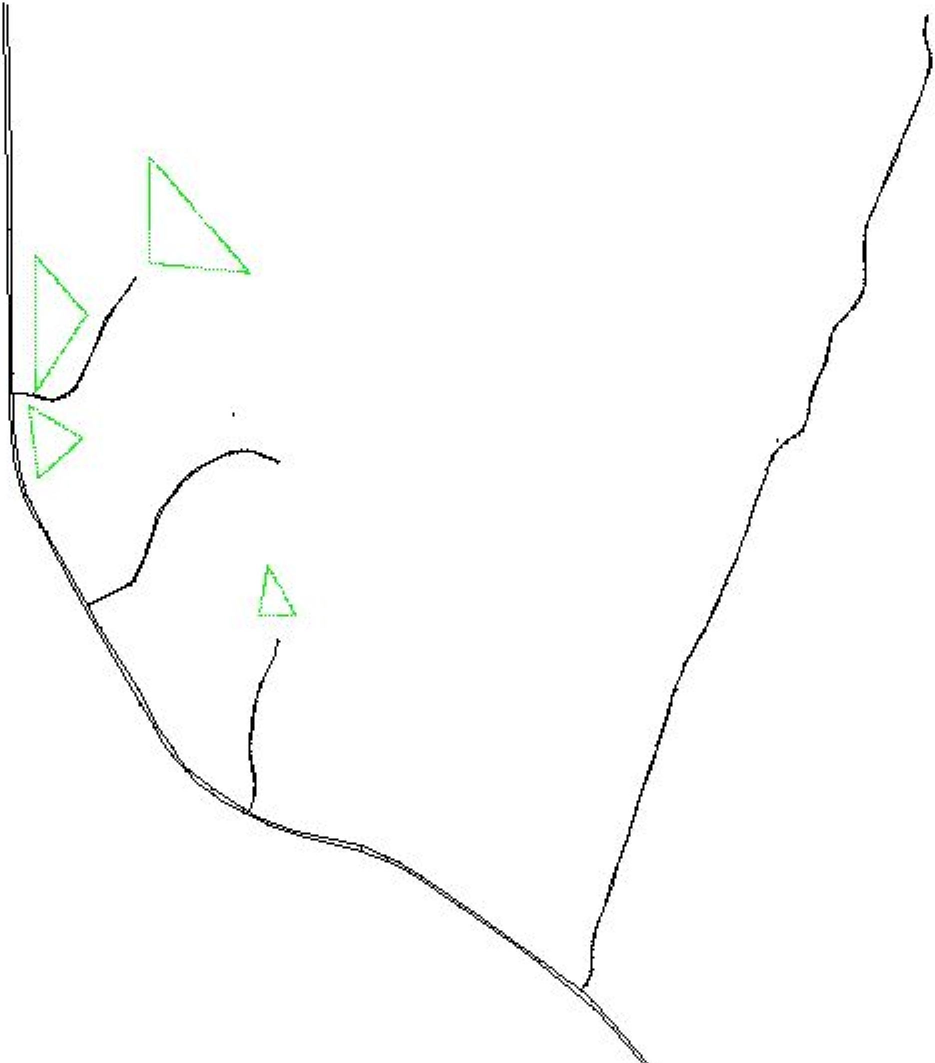
MEDENBACH & EGGERS
CIVIL ENGINEERING & LAND SURVEYING, P.C.
STONE RIDGE, NEW YORK (845) 687-0047

BARRY MEDENBACH, P.E.
NEW YORK LIC. NO. 60142

PH-2
B17 064
SHEET 6 OF 21

400 Columbus Avenue, Suite 180E
Valhalla, NY 10595
T: 914.347.7500
F: 914.347.7266
www.maserconsulting.com

COPY OF NOISE MODEL MAPPING FIGURE



Maser Consulting 8 March 2021
J.F.M. TNM 2.5

INPUT: RECEIVERS

PROJECT/CONTRACT: 850 Route 28

RUN: Weekday Peak AM Hour (Build)

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	607,161.7	1,146,785.6	466.60	4.92	0.00	66	10.0	8.0	Y
Receiver2	3	1	607,028.1	1,147,097.2	465.70	4.92	0.00	66	10.0	8.0	Y
Receiver3	4	1	606,293.7	1,146,943.5	459.90	4.92	0.00	66	10.0	8.0	Y
Receiver4	6	1	606,299.6	1,148,502.9	422.00	4.92	0.00	66	10.0	8.0	Y
Receiver5	7	1	605,403.4	1,147,651.0	451.20	4.92	0.00	66	10.0	8.0	Y
Receiver6	8	1	606,699.3	1,145,607.0	507.60	4.92	0.00	66	10.0	8.0	Y
Receiver7	9	1	610,347.2	1,146,749.9	462.40	4.92	0.00	66	10.0	8.0	Y

Name: Morey Hill Road NB

Width (ft): 12.00

Pavement Type: Average

On Structure ?

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z[pavement] [ft]	Pvmt Type	On Struct?
1	point207	207	608,884.1	1,142,657.3	310.0	Average	
2	point208	208	608,923.7	1,142,703.0	319.0	Average	
3	point209	209	608,933.4	1,142,717.9	325.0	Average	
4	point210	210	608,943.1	1,142,740.8	330.0	Average	
5	point211	211	608,958.0	1,142,777.8	334.0	Average	
6	point212	212	608,961.5	1,142,789.1	334.0	Average	
7	point213	213	608,965.9	1,142,821.6	336.0	Average	
8	point214	214	608,965.9	1,142,909.6	338.0	Average	
9	point215	215	608,965.0	1,142,967.6	342.0	Average	
10	point216	216	608,982.6	1,143,057.6	356.0	Average	
11	point217	217	608,985.3	1,143,075.1	362.0	Average	
12	point218	218	609,007.3	1,143,135.9	390.0	Average	
13	point219	219	609,050.0	1,143,259.6	404.0	Average	
14	point220	220	609,117.7	1,143,454.0	418.0	Average	
15	point221	221	609,157.8	1,143,579.6	440.0	Average	
16	point222	222	609,222.0	1,143,772.1	447.0	Average	
17	point223	223	609,260.4	1,143,888.3	454.0	Average	
18	point224	224	609,351.8	1,144,168.9	461.0	Average	
19	point225	225	609,399.0	1,144,314.6	468.0	Average	
20	point226	226	609,460.6	1,144,504.6	473.0	Average	
21	point227	227	609,533.2	1,144,735.6	478.0	Average	
22	point228	228	609,552.6	1,144,796.4	485.0	Average	
23	point229	229	609,560.4	1,144,820.1	483.0	Average	
24	point230	230	609,591.8	1,144,903.3	482.0	Average	
25	point231	231	609,634.0	1,145,016.9	480.0	Average	
26	point232	232	609,654.2	1,145,074.9	479.0	Average	
27	point233	233	609,692.0	1,145,138.3	477.0	Average	
28	point234	234	609,767.0	1,145,267.4	476.0	Average	
29	point235	235	609,802.2	1,145,327.1	474.0	Average	
30	point236	236	609,808.3	1,145,340.4	473.0	Average	
31	point237	237	609,833.8	1,145,399.3	471.0	Average	
32	point238	238	609,906.8	1,145,561.5	469.0	Average	
33	point239	239	609,964.0	1,145,689.0	468.0	Average	
34	point240	240	610,028.7	1,145,837.5	468.0	Average	
35	point241	241	610,081.1	1,145,983.0	468.0	Average	
36	point242	242	610,104.9	1,146,044.6	467.0	Average	
37	point243	243	610,171.4	1,146,236.8	466.0	Average	
38	point244	244	610,212.7	1,146,359.9	465.0	Average	

Name: Morey Hill Road SB

On Structure ?

Width (ft): 12.00

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z[pavement] [ft]	Pvmt Type	On Struct?
1	point297	297	611,465.3	1,149,907.5	431.0	Average	
2	point298	298	611,452.4	1,149,877.1	432.0	Average	
3	point299	299	611,445.4	1,149,852.5	433.0	Average	
4	point300	300	611,441.4	1,149,839.1	434.0	Average	
5	point301	301	611,439.9	1,149,828.3	435.0	Average	
6	point302	302	611,437.6	1,149,806.8	436.0	Average	
7	point303	303	611,437.6	1,149,795.8	437.0	Average	
8	point304	304	611,437.9	1,149,774.4	438.0	Average	
9	point305	305	611,440.3	1,149,752.9	439.0	Average	
10	point306	306	611,443.4	1,149,735.4	440.0	Average	
11	point307	307	611,448.9	1,149,715.8	441.0	Average	
12	point308	308	611,455.1	1,149,693.9	442.0	Average	
13	point309	309	611,468.8	1,149,651.4	443.0	Average	
14	point310	310	611,472.8	1,149,633.5	444.0	Average	
15	point311	311	611,477.4	1,149,602.1	445.0	Average	
16	point312	312	611,479.8	1,149,534.3	445.0	Average	
17	point313	313	611,462.6	1,149,481.4	445.0	Average	
18	point314	314	611,428.2	1,149,371.6	445.0	Average	
19	point315	315	611,395.4	1,149,290.8	445.0	Average	
20	point316	316	611,289.7	1,149,037.3	445.0	Average	
21	point317	317	611,269.2	1,148,982.6	445.0	Average	
22	point318	318	611,252.8	1,148,942.8	445.0	Average	
23	point319	319	611,198.5	1,148,810.8	445.0	Average	
24	point320	320	611,138.9	1,148,665.1	445.0	Average	
25	point321	321	611,111.4	1,148,600.0	445.0	Average	
26	point322	322	611,085.6	1,148,536.5	445.0	Average	
27	point323	323	611,051.6	1,148,468.5	445.0	Average	
28	point324	324	611,041.3	1,148,449.6	445.0	Average	
29	point325	325	611,010.1	1,148,360.0	445.0	Average	
30	point326	326	611,005.4	1,148,333.6	445.0	Average	
31	point327	327	610,992.0	1,148,271.3	445.0	Average	
32	point328	328	610,987.9	1,148,183.3	445.0	Average	
33	point329	329	610,987.3	1,148,139.3	445.0	Average	
34	point330	330	610,992.0	1,148,012.5	446.0	Average	
35	point331	331	610,993.8	1,147,946.1	447.0	Average	
36	point332	332	610,992.6	1,147,917.4	448.0	Average	
37	point333	333	610,984.9	1,147,867.6	449.0	Average	
38	point334	334	610,972.6	1,147,838.3	450.0	Average	

Name: NYS Route 28 NWB

On Structure ?

Width (ft): 24.00

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z(pavement) [ft]	Pvmt Type	On Struct?
1	point36	36	609,464.1	1,142,006.8	288.00	Average	
2	point35	35	609,108.1	1,142,425.1	297.00	Average	
3	point34	34	608,957.8	1,142,580.6	303.00	Average	
4	point33	33	608,833.1	1,142,690.4	310.00	Average	
5	point32	32	608,764.9	1,142,740.9	317.00	Average	
6	point31	31	608,610.6	1,142,862.5	323.00	Average	
7	point30	30	608,417.7	1,142,996.0	330.00	Average	
8	point29	29	608,091.3	1,143,227.5	336.00	Average	
9	point28	28	607,685.8	1,143,504.1	342.00	Average	
10	point27	27	607,522.6	1,143,610.9	348.00	Average	
11	point26	26	607,416.8	1,143,653.6	355.00	Average	
12	point25	25	607,244.7	1,143,727.8	361.00	Average	
13	point24	24	606,756.1	1,143,841.1	367.00	Average	
14	point23	23	606,477.2	1,143,945.0	373.00	Average	
15	point22	22	606,361.4	1,144,013.3	380.00	Average	
16	point21	21	606,129.9	1,144,161.6	386.00	Average	
17	point20	20	605,958.9	1,144,304.6	392.00	Average	
18	point19	19	605,893.6	1,144,375.9	398.00	Average	
19	point18	18	605,831.3	1,144,470.9	398.00	Average	
20	point17	17	605,742.3	1,144,598.5	398.00	Average	
21	point16	16	605,576.1	1,144,904.8	405.00	Average	
22	point15	15	605,301.2	1,145,359.3	411.00	Average	
23	point14	14	605,188.4	1,145,549.3	417.00	Average	
24	point13	13	604,992.6	1,145,894.0	423.00	Average	
25	point12	12	604,901.6	1,146,067.4	430.00	Average	
26	point11	11	604,782.9	1,146,292.9	436.00	Average	
27	point10	10	604,735.4	1,146,420.5	442.00	Average	
28	point9	9	604,696.9	1,146,551.6	448.00	Average	
29	point8	8	604,661.3	1,146,845.4	455.00	Average	
30	point7	7	604,658.3	1,146,923.1	451.00	Average	
31	point6	6	604,649.4	1,147,255.5	457.00	Average	
32	point5	5	604,643.4	1,147,612.8	463.00	Average	
33	point4	4	604,640.5	1,147,853.8	470.00	Average	
34	point3	3	604,640.5	1,148,491.8	476.00	Average	
35	point2	2	604,637.5	1,148,733.9	482.00	Average	
36	point1	1	604,616.8	1,150,001.0	488.00	Average	

Name: NYS Route 28 SEB | Width (ft): 24.00 | On Structure ? | Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X (ft)	Y (ft)	Z(pavement) (ft)	Pvmt Type	On Struct?
1	point37	37	604,587.4	1,150,004.8	488.0	Average	
2	point38	38	604,614.1	1,148,495.8	482.0	Average	
3	point39	39	604,618.6	1,148,307.0	476.0	Average	
4	point40	40	604,627.5	1,147,358.9	470.0	Average	
5	point41	41	604,631.9	1,146,973.5	463.0	Average	
6	point42	42	604,640.8	1,146,808.8	457.0	Average	
7	point43	43	604,658.6	1,146,617.4	451.0	Average	
8	point44	44	604,707.6	1,146,421.5	455.0	Average	
9	point45	45	604,738.8	1,146,336.9	448.0	Average	
10	point46	46	604,796.6	1,146,207.9	442.0	Average	
11	point47	47	604,858.9	1,146,095.8	436.0	Average	
12	point48	48	605,121.6	1,145,628.3	430.0	Average	
13	point49	49	605,241.8	1,145,409.4	423.0	Average	
14	point50	50	605,446.5	1,145,057.6	417.0	Average	
15	point51	51	605,602.3	1,144,780.0	411.0	Average	
16	point52	52	605,709.2	1,144,606.4	405.0	Average	
17	point53	53	605,780.4	1,144,495.1	398.0	Average	
18	point54	54	605,847.1	1,144,392.6	392.0	Average	
19	point55	55	605,945.1	1,144,281.4	386.0	Average	
20	point56	56	606,029.7	1,144,196.9	380.0	Average	
21	point57	57	606,154.3	1,144,098.9	373.0	Average	
22	point58	58	606,207.7	1,144,054.4	367.0	Average	
23	point59	59	606,376.9	1,143,965.4	361.0	Average	
24	point60	60	606,559.4	1,143,876.4	355.0	Average	
25	point61	61	606,835.4	1,143,791.8	348.0	Average	
26	point62	62	607,247.8	1,143,693.0	342.0	Average	
27	point63	63	607,443.7	1,143,621.8	336.0	Average	
28	point64	64	607,612.8	1,143,519.4	330.0	Average	
29	point65	65	607,988.1	1,143,273.6	323.0	Average	
30	point66	66	608,335.3	1,143,028.9	317.0	Average	
31	point67	67	608,578.6	1,142,858.9	310.0	Average	
32	point68	68	608,983.7	1,142,511.6	303.0	Average	
33	point69	69	609,124.6	1,142,368.3	297.0	Average	
34	point70	70	609,436.2	1,142,003.3	288.0	Average	

Name: Onteora Lake Road NB

Width (ft): 12.00

On Structure ?

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z[pavement] [ft]	Pvmt Type	On Struct?
1	point71	71	604,657.6	1,147,096.1	472.0	Average	
2	point72	72	604,704.3	1,147,096.1	474.0	Average	
3	point74	74	604,736.8	1,147,094.4	476.0	Average	
4	point75	75	604,780.8	1,147,085.6	478.0	Average	
5	point76	76	604,848.4	1,147,066.3	478.0	Average	
6	point77	77	604,874.8	1,147,054.9	480.0	Average	
7	point78	78	604,908.3	1,147,047.8	478.0	Average	
8	point79	79	604,943.4	1,147,046.0	478.0	Average	
9	point80	80	604,996.2	1,147,057.5	476.0	Average	
10	point81	81	605,046.3	1,147,078.6	475.0	Average	
11	point82	82	605,073.6	1,147,091.8	475.0	Average	
12	point83	83	605,100.9	1,147,113.8	475.0	Average	
13	point84	84	605,133.0	1,147,150.3	475.0	Average	
14	point85	85	605,162.9	1,147,210.1	473.0	Average	
15	point86	86	605,226.2	1,147,343.8	473.0	Average	
16	point87	87	605,310.6	1,147,544.8	463.0	Average	
17	point88	88	605,368.3	1,147,670.9	448.0	Average	
18	point89	89	605,435.1	1,147,768.5	442.0	Average	
19	point90	90	605,500.7	1,147,857.6	435.0	Average	
20	point91	91	605,571.9	1,147,955.3	427.0	Average	

Name: Onteora Lake Road SB

Width (ft): 12.00

Pavement Type: Average

On Structure ?

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z[pavement] [ft]	Pvmt Type	On Struct?
1	point111	111	605,567.4	1,147,957.9	472.0	Average	
2	point110	110	605,470.7	1,147,828.6	471.0	Average	
3	point109	109	605,414.4	1,147,748.5	478.0	Average	
4	point108	108	605,362.1	1,147,675.1	480.0	Average	
5	point107	107	605,333.0	1,147,614.4	480.0	Average	
6	point106	106	605,255.6	1,147,426.6	479.0	Average	
7	point105	105	605,167.7	1,147,235.8	479.0	Average	
8	point104	104	605,124.6	1,147,150.9	480.0	Average	
9	point103	103	605,094.7	1,147,116.6	477.0	Average	
10	point102	102	605,058.6	1,147,092.0	476.0	Average	
11	point101	101	604,992.7	1,147,063.9	475.0	Average	
12	point100	100	604,949.6	1,147,052.4	473.0	Average	
13	point99	99	604,909.1	1,147,053.3	472.0	Average	
14	point98	98	604,875.7	1,147,061.3	472.0	Average	
15	point97	97	604,830.0	1,147,077.0	467.0	Average	
16	point96	96	604,793.9	1,147,090.3	462.0	Average	
17	point95	95	604,752.6	1,147,099.0	452.0	Average	
18	point94	94	604,729.8	1,147,100.8	438.0	Average	
19	point93	93	604,698.9	1,147,102.5	432.0	Average	
20	point92	92	604,657.6	1,147,102.5	427.0	Average	

Name: Site Access NB

On Structure ?

Width (ft): 12.00

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z[pavement] [ft]	Pvmt Type	On Struct?
1	point112	112	605,225.6	1,145,515.8	422.0	Average	☐
2	point113	113	605,494.6	1,145,658.1	437.0	Average	☐
3	point114	114	605,534.2	1,145,679.9	441.0	Average	☐
4	point115	115	605,559.9	1,145,707.6	441.0	Average	☐
5	point116	116	605,579.7	1,145,743.3	443.0	Average	☐
6	point117	117	605,625.2	1,145,850.0	442.0	Average	☐
7	point118	118	605,656.8	1,145,915.4	441.0	Average	☐
8	point119	119	605,724.1	1,146,148.8	438.0	Average	☐
9	point120	120	605,780.7	1,146,246.6	440.0	Average	☐
10	point121	121	605,871.7	1,146,375.1	445.0	Average	☐
11	point122	122	605,907.3	1,146,422.6	447.0	Average	☐
12	point123	123	605,974.6	1,146,489.9	448.0	Average	☐
13	point124	124	606,055.7	1,146,547.3	449.0	Average	☐
14	point125	125	606,263.4	1,146,644.3	450.0	Average	☐
15	point126	126	606,285.2	1,146,652.1	451.0	Average	☐
16	point127	127	606,326.7	1,146,660.1	452.0	Average	☐
17	point128	128	606,356.4	1,146,664.0	453.0	Average	☐
18	point129	129	606,421.7	1,146,662.0	455.0	Average	☐
19	point130	130	606,494.9	1,146,642.3	457.0	Average	☐
20	point132	132	606,627.4	1,146,584.9	459.0	Average	☐

Name: Site Access SB

Width (ft): 12.00

On Structure ?

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X (ft)	Y (ft)	Z(pavement) (ft)	Pvmt Type	On Struct?
1	point159	159	606,635.6	1,146,591.5	459.0	Average	
2	point158	158	606,494.0	1,146,654.9	457.0	Average	
3	point157	157	606,435.9	1,146,668.0	455.0	Average	
4	point156	156	606,392.0	1,146,673.4	453.0	Average	
5	point155	155	606,345.4	1,146,671.6	452.0	Average	
6	point154	154	606,321.6	1,146,668.9	451.0	Average	
7	point153	153	606,277.7	1,146,660.1	450.0	Average	
8	point152	152	606,181.8	1,146,617.0	449.0	Average	
9	point151	151	606,094.8	1,146,577.5	448.0	Average	
10	point150	150	606,054.3	1,146,558.1	447.0	Average	
11	point149	149	605,972.9	1,146,503.1	445.0	Average	
12	point148	148	605,929.8	1,146,461.8	440.0	Average	
13	point147	147	605,898.1	1,146,429.3	438.0	Average	
14	point146	146	605,862.1	1,146,382.6	441.0	Average	
15	point145	145	605,826.4	1,146,333.9	442.0	Average	
16	point144	144	605,785.1	1,146,277.5	443.0	Average	
17	point143	143	605,764.9	1,146,242.4	443.0	Average	
18	point142	142	605,718.3	1,146,158.0	443.0	Average	
19	point141	141	605,693.2	1,146,079.9	443.0	Average	
20	point140	140	605,641.3	1,145,915.4	443.0	Average	
21	point139	139	605,636.0	1,145,898.8	443.0	Average	
22	point138	138	605,569.2	1,145,742.6	443.0	Average	
23	point137	137	605,553.3	1,145,714.5	443.0	Average	
24	point136	136	605,534.9	1,145,696.9	441.0	Average	
25	point135	135	605,521.7	1,145,684.5	441.0	Average	
26	point134	134	605,491.8	1,145,667.0	437.0	Average	
27	point133	133	605,214.8	1,145,526.3	422.0	Average	

Name: Waughkonk Road NB

Width (ft): 12.00

On Structure ?

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X [ft]	Y [ft]	Z[pavement] [ft]	Pvmt Type	On Struct?
1	point160	160	606,416.3	1,143,986.8	444.0	Average	
2	point161	161	606,434.4	1,144,027.3	448.0	Average	
3	point162	162	606,445.6	1,144,064.3	450.0	Average	
4	point163	163	606,449.1	1,144,081.8	453.0	Average	
5	point164	164	606,454.3	1,144,118.8	455.0	Average	
6	point165	165	606,459.6	1,144,179.8	455.0	Average	
7	point166	166	606,459.6	1,144,192.0	456.0	Average	
8	point167	167	606,454.9	1,144,236.0	456.0	Average	
9	point168	168	606,440.9	1,144,312.5	467.0	Average	
10	point169	169	606,427.9	1,144,374.6	476.0	Average	
11	point170	170	606,419.8	1,144,440.3	479.0	Average	
12	point171	171	606,420.3	1,144,495.0	479.0	Average	
13	point172	172	606,425.0	1,144,537.1	480.0	Average	
14	point173	173	606,438.5	1,144,627.5	488.0	Average	
15	point174	174	606,464.9	1,144,805.3	494.0	Average	
16	point175	175	606,497.1	1,144,925.1	498.0	Average	
17	point176	176	606,521.8	1,144,976.1	501.0	Average	
18	point177	177	606,565.1	1,145,064.8	505.0	Average	
19	point178	178	606,608.6	1,145,147.5	506.0	Average	
20	point179	179	606,628.4	1,145,263.1	507.0	Average	

Name: Waughkonk Road SB

On Structure ?

Width (ft): 12.00

Pavement Type: Average

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

	Pnt.Name	Pnt.No	X (ft)	Y (ft)	Z(pavement) (ft)	Pvmt Type	On Struct?
1	point180	180	606,622.5	1,145,264.3	507.0	Average	
2	point181	181	606,602.6	1,145,150.5	506.0	Average	
3	point182	182	606,587.3	1,145,119.4	505.0	Average	
4	point183	183	606,541.0	1,145,030.3	501.0	Average	
5	point184	184	606,489.6	1,144,928.8	498.0	Average	
6	point185	185	606,469.7	1,144,856.0	494.0	Average	
7	point186	186	606,458.6	1,144,806.6	488.0	Average	
8	point187	187	606,449.2	1,144,740.4	480.0	Average	
9	point188	188	606,433.4	1,144,632.4	479.0	Average	
10	point189	189	606,417.2	1,144,526.1	479.0	Average	
11	point190	190	606,415.4	1,144,506.1	476.0	Average	
12	point191	191	606,413.1	1,144,467.5	467.0	Average	
13	point192	192	606,413.1	1,144,440.5	467.0	Average	
14	point193	193	606,419.5	1,144,394.8	467.0	Average	
15	point194	194	606,424.2	1,144,363.0	467.0	Average	
16	point195	195	606,433.6	1,144,314.3	467.0	Average	
17	point196	196	606,444.1	1,144,262.0	467.0	Average	
18	point197	197	606,449.1	1,144,234.4	467.0	Average	
19	point198	198	606,452.6	1,144,203.3	467.0	Average	
20	point199	199	606,454.3	1,144,181.0	467.0	Average	
21	point200	200	606,452.6	1,144,160.5	456.0	Average	
22	point201	201	606,450.3	1,144,134.8	455.0	Average	
23	point202	202	606,448.5	1,144,121.3	455.0	Average	
24	point203	203	606,443.8	1,144,086.0	453.0	Average	
25	point204	204	606,437.9	1,144,061.4	450.0	Average	
26	point205	205	606,428.6	1,144,030.3	448.0	Average	
27	point206	206	606,410.4	1,143,988.6	444.0	Average	

850 ROUTE 28

APPENDIX B

TABLES

TABLE NO 1.
RANGE OF TYPICAL ENVIRONMENTAL A-WEIGHTED NOISE LEVELS

SITUATION	NOISE LEVEL (dBA) (1,2)
Discotheque/Rock Band at 5m	110
Jet Flyover at 1,000 feet	105
Gas Lawn Mower at 3 feet	98
Inside Subway Train	95
Shouting at 3 feet	78
Gas Lawn Mower at 100 feet	70
Normal Speech at 3 feet	65
Background Office Noise	50
Library	34 -40
Optimum Sleeping Level	35 or less
Threshold of Hearing	5

1) *The Audible Landscape: Manual for Highway Noise and Land Use* , Table A-16, Page 91, USDOT, 1974

2) *Transportation Planning Handbook* , Institute of Transporation Engineers, Figure 8-2, Edition , 1999

TABLE NO. 2
NYS FHWA CRITERIA[2]

ACTIVITY CATEGORY	DESIGN NOISE LEVEL (dBA)		DESCRIPTION OF ACTIVITY CATEGORY [3]
	L_{eq}	L_{10}	
A	57 (EXTERIOR	60 (EXTERIOR)	Tracts where serentiy and quiet are of extraordinary significance.
B	67 (EXTERIOR)	70 (EXTERIOR)	Residential uses.
C	67 (EXTERIOR)	70 (EXTERIOR)	Active sport areas, campgrounds, trails, etc.
E	72 (EXTERIOR)	75 (EXTERIOR)	Hotels, motels, offices, and other developed lands.

1) Source: Federal Highway Adminstration, *Procedures for the Abatement of Highway Traffic Noise and Construction Noise* , Washington, D.C.

2) NY State Implementation of FHWA 23 CFR 772

3) Either L_{eq} or L_{10} can be used - not both - and an hourly measure applies. The land-use descriptions are further qualified in the reference.

Table No. 3-SP (AM)

Summary of Existing and Projected Noise Levels (Leq-dBA)

Site Preparation Conditions

Weekday Peak AM Hour Conditions

			Typical		**Leaf-Off Conditions**		**Typical**		**Leaf-Off Conditions**	
Receptor Location	Existing	No Build	Build (Site Prep) Without Mitigation	Build (Site Prep) With Mitigation	Build (Site Prep) Without Mitigation	Build (Site Prep) With Mitigation	Change from No Build to Build (Site Prep) Without Mitigation	Change from No Build to Build (Site Prep) With Mitigation	Change from No Build to Build (Site Prep) Without Mitigation	Change from No Build to Build (Site Prep) With Mitigation
1	49	51	72	62	72	62	21	11	21	11
2	49	51	72	62	72	62	21	11	21	11
3	52	53	66	57	66	57	14	5	14	5
4	48	49	60	52	63	56	12	3	15	8
5	46	46	60	52	63	56	14	5	17	10
6	53	53	64	56	67	60	11	2	14	7
7	53	53	57	54	60	58	4	1	7	5

Notes:

1) See Figure No. 1 for Noise Receptor locations.

2) Typical conditions are representative of late spring, summer and early fall periods.

3) Leaf-off conditions are representative of late fall, winter and early spring when deciduous vegetation is without foliage.

Table No. 3-SP (PM)
Summary of Existing and Projected Noise Levels (Leq-dBA)
Site Preparation Conditions
Weekday Peak PM Hour Conditions

			Typical		Leaf-Off Conditions		Typical		Leaf-Off Conditions	
Receptor Location	Existing	No Build	Build (Site Prep) Without Mitigation	Build (Site Prep) With Mitigation	Build (Site Prep) Without Mitigation	Build (Site Prep) With Mitigation	Change from No Build to Build (Site Prep) Without Mitigation	Change from No Build to Build (Site Prep) With Mitigation	Change from No Build to Build (Site Prep) Without Mitigation	Change from No Build to Build (Site Prep) With Mitigation
1	50	51	72	62	72	62	21	11	21	11
2	50	51	72	62	72	62	21	11	21	11
3	53	53	66	57	66	57	13	4	13	4
4	49	49	60	52	63	56	11	3	14	7
5	47	47	60	52	63	56	13	5	16	9
6	54	54	64	56	67	60	10	2	13	6
7	53	53	57	54	60	58	4	1	7	5

Notes:
1) See Figure No. 1 for Noise Receptor locations.
2) Typical conditions are representative of late spring, summer and early fall periods.
3) Leaf-off conditions are representative of late fall, winter and early spring when deciduous vegetation is without foliage.

Table No. 3-O (AM)

Summary of Existing and Projected Noise Levels (Leq-dBA)

Build Operational Conditions

Weekday Peak AM Hour Conditions

			Typical		Leaf-Off Conditions		Typical		Leaf-Off Conditions	
Receptor Location	Existing	No Build	Build (Operational) Without Mitigation	Build (Operational) With Mitigation	Build (Operational) Without Mitigation	Build (Operational) With Mitigation	Change from No Build to Build (Operational) Without Mitigation	Change from No Build to Build (Operational) With Mitigation	Change from No Build to Build (Operational) Without Mitigation	Change from No Build to Build (Operational) With Mitigation
1	49	50	57	52	57	52	8	2	8	2
2	49	50	57	52	57	52	8	2	8	2
3	52	53	56	53	56	53	4	0	4	0
4	48	49	50	49	51	50	1	1	3	1
5	46	46	50	49	51	49	3	3	4	3
6	53	53	54	53	56	54	1	0	2	1
7	53	53	54	54	54	54	1	1	1	1

Notes:

1) See Figure No. 1 for Noise Receptor locations.

2) Typical conditions are representative of late spring, summer and early fall periods.

3) Leaf-off conditions are representative of late fall, winter and early spring when deciduous vegetation is without foliage.

Table No. 3-O (PM)
Summary of Existing and Projected Noise Levels (Leq-dBA)
Build Operational Conditions
Weekday Peak PM Hour Conditions

			Typical		**Leaf-Off Conditions**		**Typical**		**Leaf-Off Conditions**	
Receptor Location	Existing	No Build	Build (Operational) Without Mitigation	Build (Operational) With Mitigation	Build (Operational) Without Mitigation	Build (Operational) With Mitigation	Change from No Build to Build (Operational) Without Mitigation	Change from No Build to Build (Operational) With Mitigation	Change from No Build to Build (Operational) Without Mitigation	Change from No Build to Build (Operational) With Mitigation
1	50	50	57	52	57	52	7	1	7	1
2	50	50	57	51	57	51	7	0	7	0
3	53	53	56	53	56	53	3	0	3	0
4	49	49	50	49	52	50	1	0	2	1
5	47	47	50	49	51	50	3	2	4	3
6	54	54	54	53	56	54	0	0	2	0
7	53	53	54	54	54	54	1	0	1	1

Notes:
1) See Figure No. 1 for Noise Receptor locations.
2) Typical conditions are representative of late spring, summer and early fall periods.
3) Leaf-off conditions are representative of late fall, winter and early spring when deciduous vegetation is without foliage.

Table No. 3-O (Nighttime)

Summary of Existing and Projected Noise Levels (Leq-dBA)

Build Operational Conditions

Nighttime Conditions

			Typical		Leaf-Off Conditions		Typical		Leaf-Off Conditions	
Receptor Location	Existing	No Build	Build (Operational) Without Mitigation	Build (Operational) With Mitigation	Build (Operational) Without Mitigation	Build (Operational) With Mitigation	Change from No Build to Build (Operational) Without Mitigation	Change from No Build to Build (Operational) With Mitigation	Change from No Build to Build (Operational) Without Mitigation	Change from No Build to Build (Operational) With Mitigation
1	47	48	57	52	57	52	9	4	9	4
2	47	48	57	52	57	52	9	4	9	4
3	51	51	54	52	54	52	3	1	3	1
4	46	47	49	49	50	49	3	2	4	3
5	44	45	49	49	50	49	4	4	5	4
6	51	51	53	53	54	53	2	1	3	2
7	50	52	53	53	53	53	1	1	1	1

Notes:

1) See Figure No. 1 for Noise Receptor locations.

2) Typical conditions are representative of late spring, summer and early fall periods.

3) Leaf-off conditions are representative of late fall, winter and early spring when deciduous vegetation is without foliage.

TABLE NO 4
HUMAN REACTION TO INCREASES IN SOUND PRESSURE LEVEL

INCREASE IN SOUND PRESSURE (dBA)	HUMAN REACTION
2-3	BARELY PRECEPTIBLE
3-5	NOTICEABLE
10	SOMEWHAT INTRUSIVE-DOUBLING OF LOUDNESS
10-15	VERY NOTICEABLE
15-20	OBJECTIONABLE
OVER 20	VERY OBJECTIONABLE TO INTOLERABLE

Source: *Fundamentals and Abatement of Highway Traffic Noise*, FHWA, 1973.

850 ROUTE 28

APPENDIX C

NOISE RECEPTOR LOCATIONS & FIELD MEASUREMENT CHARACTERISTICS

Receptor-R1 – Located on the northeast portion of the Site, off of gravel trail to the east

Receptor-R2 – Located on the northern portion of the Site, on gravel trail to Pickerel Pond

Receptor-R3 – Located on the northwest portion of the Site, in field to the west of existing building

Receptor-R4 – Located on Onteora Lake, on gravel area near middle of the lake (past second parking lot)

Receptor-R5 – On Onteora Lake, at fork in road

Receptor-R6 – Located on Waughkonk Road, at end of road

Receptor-R7 – On Morey Hill Road, on gravel trail to the west

Receptor Location #1 Description

Receptor Location #1 is located on the northeastern portion of the Site, off of the gravel trail to the east.

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 9:42 AM, Wind Max: 1.7 MPH, Wind Average: 0.4 MPH, 68°F

9/3/2020 – Start time: 2:23 PM, Wind Max: 0.7 MPH, Wind Average: 0.3 MPH, 79°F

Receptor Location #2 Description

Receptor Location #2 is located on the northern portion of the Site, on the gravel trail to Pickerel Pond.

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 10:15 AM, Wind Max: 1.6 MPH, Wind Average: 0.8 MPH, 70°F

9/3/2020 – Start time: 2:41 PM, Wind Max: 0.4 MPH, Wind Average: 0.2 MPH, 79°F

Receptor Location #3 Description

Receptor Location #3 is located on the northwestern portion of the Site, in the field to the west of the existing building.

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 10:53 AM, Wind Max: 1.0 MPH, Wind Average: 0.6 MPH, 72°F

9/3/2020 – Start time: 3:00 PM, Wind Max: 0.6 MPH, Wind Average: 0.2 MPH, 77°F

Receptor Location #4 Description

Receptor Location #4 is located on Onteora Lake, on gravel area near middle of the lake (past second parking lot).

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 11:35 AM, Wind Max: 0.9 MPH, Wind Average: 0.6 MPH, 75°F

9/3/2020 – Start time: 3:23 PM, Wind Max: 0.5 MPH, Wind Average: 0.2 MPH, 77°F

Receptor Location #5 Description

Receptor Location #5 is located on Onteora Lake, at fork in road.

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 12:11 PM, Wind Max: 0.7 MPH, Wind Average: 0.5 MPH, 73°F

9/3/2020 – Start time: 3:47 PM, Wind Max: 1.0 MPH, Wind Average: 0.3 MPH, 79°F

Receptor Location #6 Description

Receptor Location #6 is located on Waughkonk Road, at end of road.

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 12:51 PM, Wind Max: 0.7 MPH, Wind Average: 0.5 MPH, 77°F

9/3/2020 – Start time: 4:11 PM, Wind Max: 0.7 MPH, Wind Average: 0.4 MPH, 75°F

Receptor Location #7 Description

Receptor Location #7 is located off Morey Hill Road, on gravel trail to the west.

Field Measurement Conditions

Weekday

9/3/2020 – Start time: 1:08 PM, Wind Max: 0.5 MPH, Wind Average: 0.3 MPH, 77°F

9/3/2020 – Start time: 4:28 PM, Wind Max: 0.5 MPH, Wind Average: 0.2 MPH, 73°F

850 ROUTE 28

APPENDIX D

NOISE MODELING SUMMARY WORKSHEETS

onsulting

16 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28
Weekday Peak AM Hour [Existing]

R DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

HERICS: 68 deg F, 50% RH

r

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		Type Impact	With Barrier Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Cal mir Go:
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	49.3	66	49.3	10	—	49.3	0.0	8	
r2	3	1	0.0	49.4	66	49.4	10	—	49.4	0.0	8	
r3	4	1	0.0	52.4	66	52.4	10	—	52.4	0.0	8	
r4	6	1	0.0	48.3	66	48.3	10	—	48.3	0.0	8	
r5	7	1	0.0	46.3	66	46.3	10	—	46.3	0.0	8	
r6	8	1	0.0	53.0	66	53.0	10	—	53.0	0.0	8	
r7	9	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	

j Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

16 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28
Weekday Peak AM Hour (No-Build)

R DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

HERICS: 68 deg F, 50% RH

r

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal mi Go
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	49.5	66	49.5	10	—	49.5	0.0	8	
r2	3	1	0.0	49.5	66	49.5	10	—	49.5	0.0	8	
r3	4	1	0.0	52.5	66	52.5	10	—	52.5	0.0	8	
r4	6	1	0.0	48.5	66	48.5	10	—	48.5	0.0	8	
r5	7	1	0.0	46.4	66	46.4	10	—	46.4	0.0	8	
r6	8	1	0.0	53.2	66	53.2	10	—	53.2	0.0	8	
r7	9	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	

Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

17 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT:	850 Route 28
	Weekday Peak AM Hour (Build Site Prep)
R DESIGN:	INPUT HEIGHTS
HERICS:	68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal min Goa
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	
r2	3	1	0.0	52.5	66	52.5	10	—	52.5	0.0	8	
r3	4	1	0.0	56.4	66	56.4	10	—	56.4	0.0	8	
r4	6	1	0.0	48.5	66	48.5	10	—	48.5	0.0	8	
r5	7	1	0.0	47.3	66	47.3	10	—	47.3	0.0	8	
r6	8	1	0.0	53.5	66	53.5	10	—	53.5	0.0	8	
r7	9	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	

g Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

17 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28

Peak AM Hour (Build Site Prep W/Buffer)

R DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

HERICS: 68 deg F, 50% RH

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Cal mir Go
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	49.0	66	49.0	10	—	49.0	0.0	8	
r2	3	1	0.0	47.7	66	47.7	10	—	47.7	0.0	8	
r3	4	1	0.0	52.6	66	52.6	10	—	52.6	0.0	8	
r4	6	1	0.0	48.4	66	48.4	10	—	48.4	0.0	8	
r5	7	1	0.0	47.0	66	47.0	10	—	47.0	0.0	8	
r6	8	1	0.0	53.5	66	53.5	10	—	53.5	0.0	8	
r7	9	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	

g Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

16 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28
Weekday Peak PM Hour (Existing)

R DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

HERICS: 68 deg F, 50% RH

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Cal mi Go:
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	50.0	66	50.0	10	—	50.0	0.0	8	
r2	3	1	0.0	50.1	66	50.1	10	—	50.1	0.0	8	
r3	4	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	
r4	6	1	0.0	49.0	66	49.0	10	—	49.0	0.0	8	
r5	7	1	0.0	46.9	66	46.9	10	—	46.9	0.0	8	
r6	8	1	0.0	53.8	66	53.8	10	—	53.8	0.0	8	
r7	9	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	

g Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

ɔnsulting

16 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

Γ/CONTRACT:	850 Route 28
	Weekday Peak PM Hour (No-Build)
ɪ DESIGN:	INPUT HEIGHTS
HERICS:	68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal min Go
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	50.1	66	50.1	10	—	50.1	0.0	8	
r2	3	1	0.0	50.2	66	50.2	10	—	50.2	0.0	8	
r3	4	1	0.0	53.1	66	53.1	10	—	53.1	0.0	8	
r4	6	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	
r5	7	1	0.0	47.0	66	47.0	10	—	47.0	0.0	8	
r6	8	1	0.0	53.9	66	53.9	10	—	53.9	0.0	8	
r7	9	1	0.0	53.0	66	53.0	10	—	53.0	0.0	8	

ɪ Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
ɔted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

17 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT:	850 Route 28
	Weekday Peak PM Hour (Build Site Prep)
R DESIGN:	INPUT HEIGHTS
HERICS:	68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal mir Go:
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	53.2	66	53.2	10	—	53.2	0.0	8	
r2	3	1	0.0	52.8	66	52.8	10	—	52.8	0.0	8	
r3	4	1	0.0	56.7	66	56.7	10	—	56.7	0.0	8	
r4	6	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	
r5	7	1	0.0	47.8	66	47.8	10	—	47.8	0.0	8	
r6	8	1	0.0	54.2	66	54.2	10	—	54.2	0.0	8	
r7	9	1	0.0	53.0	66	53.0	10	—	53.0	0.0	8	

Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

17 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28
Peak PM Hour (Build Site Prep W/Buffer)

R DESIGN: INPUT HEIGHTS

HERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal mi Go
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	49.6	66	49.6	10	—	49.6	0.0	8	
r2	3	1	0.0	48.1	66	48.1	10	—	48.1	0.0	8	
r3	4	1	0.0	53.1	66	53.1	10	—	53.1	0.0	8	
r4	6	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	
r5	7	1	0.0	47.5	66	47.5	10	—	47.5	0.0	8	
r6	8	1	0.0	54.2	66	54.2	10	—	54.2	0.0	8	
r7	9	1	0.0	53.0	66	53.0	10	—	53.0	0.0	8	

g Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

18 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28
Nighttime Hour (Existing)

R DESIGN: INPUT HEIGHTS

HERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal min Go
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	47.2	66	47.2	10	—	47.2	0.0	8	
r2	3	1	0.0	47.3	66	47.3	10	—	47.3	0.0	8	
r3	4	1	0.0	50.7	66	50.7	10	—	50.7	0.0	8	
r4	6	1	0.0	46.0	66	46.0	10	—	46.0	0.0	8	
r5	7	1	0.0	44.2	66	44.2	10	—	44.2	0.0	8	
r6	8	1	0.0	50.8	66	50.8	10	—	50.8	0.0	8	
r7	9	1	0.0	49.9	66	49.9	10	—	49.9	0.0	8	

Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

18 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28

Weekday Peak AM Hour (Build)

R DESIGN: INPUT HEIGHTS

HERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

r

	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Cal mir Go:
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	50.5	66	50.5	10	—	50.5	0.0	8	
r2	3	1	0.0	50.5	66	50.5	10	—	50.5	0.0	8	
r3	4	1	0.0	54.8	66	54.8	10	—	54.8	0.0	8	
r4	6	1	0.0	48.5	66	48.5	10	—	48.5	0.0	8	
r5	7	1	0.0	47.5	66	47.5	10	—	47.5	0.0	8	
r6	8	1	0.0	53.6	66	53.6	10	—	53.6	0.0	8	
r7	9	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	

j Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
neet NR Goal	0	0.0	0.0	0.0

onsulting

18 February 2021
TNM 2.5
Calculated with TNM 2.5

S: SOUND LEVELS

T/CONTRACT: 850 Route 28
Weekday Peak PM Hour (Build)

R DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

HERICS: 68 deg F, 50% RH

r

	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Cal mi Go
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
r1	1	1	0.0	50.7	66	50.7	10	—	50.7	0.0	8	
r2	3	1	0.0	50.8	66	50.8	10	—	50.8	0.0	8	
r3	4	1	0.0	54.6	66	54.6	10	—	54.6	0.0	8	
r4	6	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	
r5	7	1	0.0	47.7	66	47.7	10	—	47.7	0.0	8	
r6	8	1	0.0	54.2	66	54.2	10	—	54.2	0.0	8	
r7	9	1	0.0	53.0	66	53.0	10	—	53.0	0.0	8	

g Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
cted	7	0.0	0.0	0.0
cted	0	0.0	0.0	0.0
meet NR Goal	0	0.0	0.0	0.0

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 1)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 71.6 dBA

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 2)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 71.6 dBA

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 3)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + ...)$

Computed Total Onsite Noise Level:
= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
1550	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 65.8 dBA

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 4)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (Distance/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
2165	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
3	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 59.9 dBA

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 5)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:
= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
2140	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
3	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 60.0 dBA

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 6)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:
= **95.7 dBA**

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (Distance/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
1420	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
3	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 63.6 dBA

Table C-1 (Without Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 7)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + ...)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
3170	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 59.6 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 1)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
10	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 61.6 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 2)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:
= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (Distance/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
10	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 61.6 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 3)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + ...)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (Distance/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
1550	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
5	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 60.8 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 4)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + ...)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
2165	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
2	Y -	Attenuation due to Existing Grades/Berm/Hillside
3	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 57.9 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 5)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
2140	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
2	Y -	Attenuation due to Existing Grades/Berm/Hillside
3	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 58.0 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 6)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
1420	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
2	Y -	Attenuation due to Existing Grades/Berm/Hillside
3	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 61.6 dBA

Table C-1 (With Mitigation) - Typical
Summary of Construction Noise Levels (Receptor 7)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
3170	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 59.6 dBA

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 1)

	Construction Vehicle:	**Decibel Level at 50 ft (dBA):**
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= **95.7 dBA**

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

<u>Input</u>		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = **71.6 dBA**

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 2)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 71.6 dBA

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 3)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
1550	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 65.8 dBA

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 4)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma\ (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
2165	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 62.9 dBA

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 5)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
2140	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 63.0 dBA

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 6)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= **95.7 dBA**

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
1420	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = **66.6 dBA**

Table C-1 (Without Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 7)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + ...)$

Computed Total Onsite Noise Level:

= **95.7 dBA**

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
3170	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 59.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 1)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:
= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
10	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 61.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 2)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:
= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
10	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 61.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 3)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
5	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 66.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 4)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:
= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
3	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:
L_A = 68.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 5)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
3	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 68.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 6)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= 95.7 dBA

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (Distance/50) - Y - Z$

where:

<u>Input</u>		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
3	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 68.6 dBA

Table C-1 (With Mitigation) - Leaf Off
Summary of Construction Noise Levels (Receptor 7)

	Construction Vehicle:	Decibel Level at 50 ft (dBA):
1)	Blast Hole Drill Rig	84
2)	Front-End Loader Loading Haul Truck	81
3)	Crusher	95
4)	Dump Truck	78
5)	Concrete Mixer	79
6)	Other	

Step 1: **Summation of Sound Powers Equation**

$L_{pt} = 10 \log \Sigma (10^{a/10} + 10^{b/10} + 10^{c/10} + \ldots)$

Computed Total Onsite Noise Level:

= **95.7 dBA**

Step 2: **Noise Estimation Equation Factoring in Distance and Other Attenuation**

(Input the result of the Sound Powers Equation)

$L_A = L_{pt} - 20 \log (\text{Distance}/50) - Y - Z$

where:

Input		
	L_{pt} -	The result from the summation of Sound Powers Equation.
800	Distance -	The distance between the construction vehicles and point of analysis.
50	50 -	Reference distance at which the decibel levels for construction vehicles were measured and used in the Summation of Sound Powers Equation.
0	Y -	Attenuation due to Existing Grades/Berm/Hillside
0	Z -	Attenuation due to Vegetation Buffer

Noise Level at Receptor:

L_A = 71.6 dBA

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.5	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	46.5	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.4	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	65.9		La(r)=	50.4	

C)SUMMATION OF ALL SOURCES

Lptt= 66.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	48.5	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	60.0		La(r)=	42.5	

C)SUMMATION OF ALL SOURCES

Lptt= 60.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.3	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	60.1		La(r)=	41.3	

C)SUMMATION OF ALL SOURCES

Lptt= 60.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.5	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	63.6		La(r)=	47.5	

C)SUMMATION OF ALL SOURCES

Lptt= 63.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	56.7		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.5	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	46.5	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.4	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	55.9		La(r)=	50.4	

C)SUMMATION OF ALL SOURCES

Lptt= 57.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	48.5	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	12	dbA	atten=	0	dbA
La(r)=	51.0		La(r)=	42.5	

C)SUMMATION OF ALL SOURCES

Lptt= 51.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.3	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	12	dbA	atten=	0	dbA
La(r)=	51.1		La(r)=	41.3	

C)SUMMATION OF ALL SOURCES

Lptt= 51.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.5	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	12	dbA	atten=	0	dbA
La(r)=	54.6		La(r)=	47.5	

C)SUMMATION OF ALL SOURCES

Lptt= 55.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	52.7		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 53.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.5	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	46.5	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.4	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	65.9		La(r)=	50.4	

C)SUMMATION OF ALL SOURCES

Lptt= 66.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	48.5	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	63.0		La(r)=	42.5	

C)SUMMATION OF ALL SOURCES

Lptt= 63.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.3	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	63.1		La(r)=	41.3	

C)SUMMATION OF ALL SOURCES

Lptt= 63.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.5	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	66.6		La(r)=	47.5	

C)SUMMATION OF ALL SOURCES

Lptt= 66.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	59.7		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 59.9

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.5	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	46.5	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.4	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	55.9		La(r)=	50.4	

C)SUMMATION OF ALL SOURCES

Lptt= 57.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	48.5	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	56.0		La(r)=	42.5	

C)SUMMATION OF ALL SOURCES

Lptt= 56.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.3	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	56.1		La(r)=	41.3	

C)SUMMATION OF ALL SOURCES

Lptt= 56.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.5	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	59.6		La(r)=	47.5	

C)SUMMATION OF ALL SOURCES

Lptt= 59.9

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.9	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	2	dbA	atten=	0	dbA
La(r)=	57.7		La(r)=	46.9	

C)SUMMATION OF ALL SOURCES

Lptt= 58.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.2	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	47.2	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.8	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	46.8	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.7	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	65.9		La(r)=	50.7	

C)SUMMATION OF ALL SOURCES

Lptt= 66.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	49.2	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	60.0		La(r)=	43.2	

C)SUMMATION OF ALL SOURCES

Lptt= 60.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.8	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	60.1		La(r)=	41.8	

C)SUMMATION OF ALL SOURCES

Lptt= 60.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	54.2	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	63.6		La(r)=	48.2	

C)SUMMATION OF ALL SOURCES

Lptt= 63.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD Site Prep
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	3	dbA	atten=	0	dbA
La(r)=	56.7		La(r)=	47.0	

C)SUMMATION OF ALL SOURCES

Lptt= 57.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.2	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	47.2	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.8	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	46.8	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.7	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	55.9		La(r)=	50.7	

C)SUMMATION OF ALL SOURCES

Lptt= 57.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	49.2	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	12	dbA	atten=	0	dbA
La(r)=	51.0		La(r)=	43.2	

C)SUMMATION OF ALL SOURCES

Lptt= 51.9

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.8	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	12	dbA	atten=	0	dbA
La(r)=	51.1		La(r)=	41.8	

C)SUMMATION OF ALL SOURCES

Lptt= 51.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	54.2	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	12	dbA	atten=	0	dbA
La(r)=	54.6		La(r)=	48.2	

C)SUMMATION OF ALL SOURCES

Lptt= 55.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD Site Prep W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	52.7		La(r)=	47.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.2	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	47.2	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.8	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	71.6		La(r)=	46.8	

C)SUMMATION OF ALL SOURCES

Lptt= 71.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.7	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	65.9		La(r)=	50.7	

C)SUMMATION OF ALL SOURCES

Lptt= 66.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	49.2	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	63.0		La(r)=	43.2	

C)SUMMATION OF ALL SOURCES

Lptt= 63.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.8	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	63.1		La(r)=	41.8	

C)SUMMATION OF ALL SOURCES

Lptt= 63.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	54.2	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	66.6		La(r)=	48.2	

C)SUMMATION OF ALL SOURCES

Lptt= 66.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD Site Prep
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	0	dbA	atten=	0	dbA
La(r)=	59.7		La(r)=	47.0	

C)SUMMATION OF ALL SOURCES

Lptt= 59.9

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53.2	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	47.2	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	52.8	dbA
rec dist=	800	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	61.6		La(r)=	46.8	

C)SUMMATION OF ALL SOURCES

Lptt= 61.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	56.7	dbA
rec dist=	1550	ft	rec dist=	100	ft
atten=	10	dbA	atten=	0	dbA
La(r)=	55.9		La(r)=	50.7	

C)SUMMATION OF ALL SOURCES

Lptt= 57.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	49.2	dbA
rec dist=	2165	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	56.0		La(r)=	43.2	

C)SUMMATION OF ALL SOURCES

Lptt= 56.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	47.8	dbA
rec dist=	2140	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	56.1		La(r)=	41.8	

C)SUMMATION OF ALL SOURCES

Lptt= 56.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	54.2	dbA
rec dist=	1420	ft	rec dist=	100	ft
atten=	7	dbA	atten=	0	dbA
La(r)=	59.6		La(r)=	48.2	

C)SUMMATION OF ALL SOURCES

Lptt= 60.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD Site Prep W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

CONSTRUCTION			TRAFFIC		
SOURCE 1			SOURCE 2		
La50=	95.7	dbA	La50=	53	dbA
rec dist=	3170	ft	rec dist=	100	ft
atten=	2	dbA	atten=	0	dbA
La(r)=	57.7		La(r)=	47.0	

C)SUMMATION OF ALL SOURCES

Lptt= 58.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.5		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.5		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	54.8		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 56.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	45.5		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 49.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	44.5		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 49.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.6		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 54.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0.0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.9		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.0		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.7		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.1	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.1		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 52.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	43.4		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 49.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	42.4		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 48.9

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.6		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 53.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.9		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.5		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.5		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	54.8		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 56.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.5		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 51.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	47.5		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 50.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	53.6		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 55.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.9		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.0		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.7		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.1	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.1		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 52.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	45.4		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 49.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	44.4		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 49.4

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.6		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 54.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - AMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.9		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.7		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.8		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	54.6		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 56.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	49.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	46.2		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 50.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	44.7		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 49.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	51.2		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 54.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	53.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.6		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.1	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	37.1		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.4

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.2		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 52.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	49	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	44.0		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 49.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	42.7		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 49.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	49.2		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 53.4

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	53.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.7		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	50.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	50.8		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 57.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	54.6		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 56.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	49.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	49.2		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	47.7		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 50.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	54.2		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 56.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	53.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - PMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48.6	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.6		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - PMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.1	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	37.1		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.4

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - PMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.2		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 52.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - PMBD W/Mitigatin
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	49	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	46.0		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 50.0

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - PMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	47.7	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	44.7		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 49.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - PMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	54.2	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	51.2		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 54.3

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - PMBD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	53	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	53.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 53.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.0		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 56.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.0		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 56.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	51.8		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 54.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	46.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	43.5		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 49.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	44.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	41.9		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 48.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.4		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 53.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - Nighttime BD
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 52.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.0		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.0		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	46.8		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 52.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	46.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	41.5		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 48.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	44.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	39.9		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 48.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	46.4		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 52.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - Nighttime BD W/Mitigation
TYPICAL

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 52.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.0		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 56.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.0		La(r)=	55.9		La(r)=	40.9	

C)SUMMATION OF ALL SOURCES

Lptt= 56.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	51.8		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 54.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	46.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	46.5		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 50.2

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	44.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	44.9		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 49.6

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	51.4		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 54.4

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - Nighttime BD
FULL VEGETATION

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

Lptt= 52.7

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 1) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.0		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 2) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	48	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	800	ft	rec dist=	800	ft
atten=	10	dbA	atten=	5	dbA	atten=	5	dbA
La(r)=	38.0		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 51.5

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 3) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.8	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1550	ft	rec dist=	1550	ft
atten=	5	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	46.8		La(r)=	50.2		La(r)=	35.2	

C)SUMMATION OF ALL SOURCES

Lptt= 52.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 4) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	46.5	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2165	ft	rec dist=	2165	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	43.5		La(r)=	47.3		La(r)=	32.3	

C)SUMMATION OF ALL SOURCES

Lptt= 49.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 5) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	44.9	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	2140	ft	rec dist=	2140	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	41.9		La(r)=	47.4		La(r)=	32.4	

C)SUMMATION OF ALL SOURCES

Lptt= 48.8

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 6) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	51.4	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	1420	ft	rec dist=	1420	ft
atten=	3	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	48.4		La(r)=	50.9		La(r)=	35.9	

C)SUMMATION OF ALL SOURCES

Lptt= 53.1

NOISE WORKSHEET SUMMARY OF ALL SOURCES 2-17-2021 (Receptor 7) - Nighttime BD W/Mitigation
LEAF-OFF CONDITIONS

A) ADJUSTMENT FOR DISTANCE

La(RECEPTOR)=La(SOURCE@50')-20LOG10(RECEPTORDISTANCE/50)-ATTEN

TRAFFIC			HVAC			INTERNAL BUILDING NOISE		
SOURCE 1			SOURCE 2			SOURCE 3		
La50=	52	dbA	La50=	80	dbA	La50=	65	dbA
rec dist=	50	ft	rec dist=	3170	ft	rec dist=	3170	ft
atten=	0	dbA	atten=	0	dbA	atten=	0	dbA
La(r)=	52.0		La(r)=	44.0		La(r)=	29.0	

C)SUMMATION OF ALL SOURCES

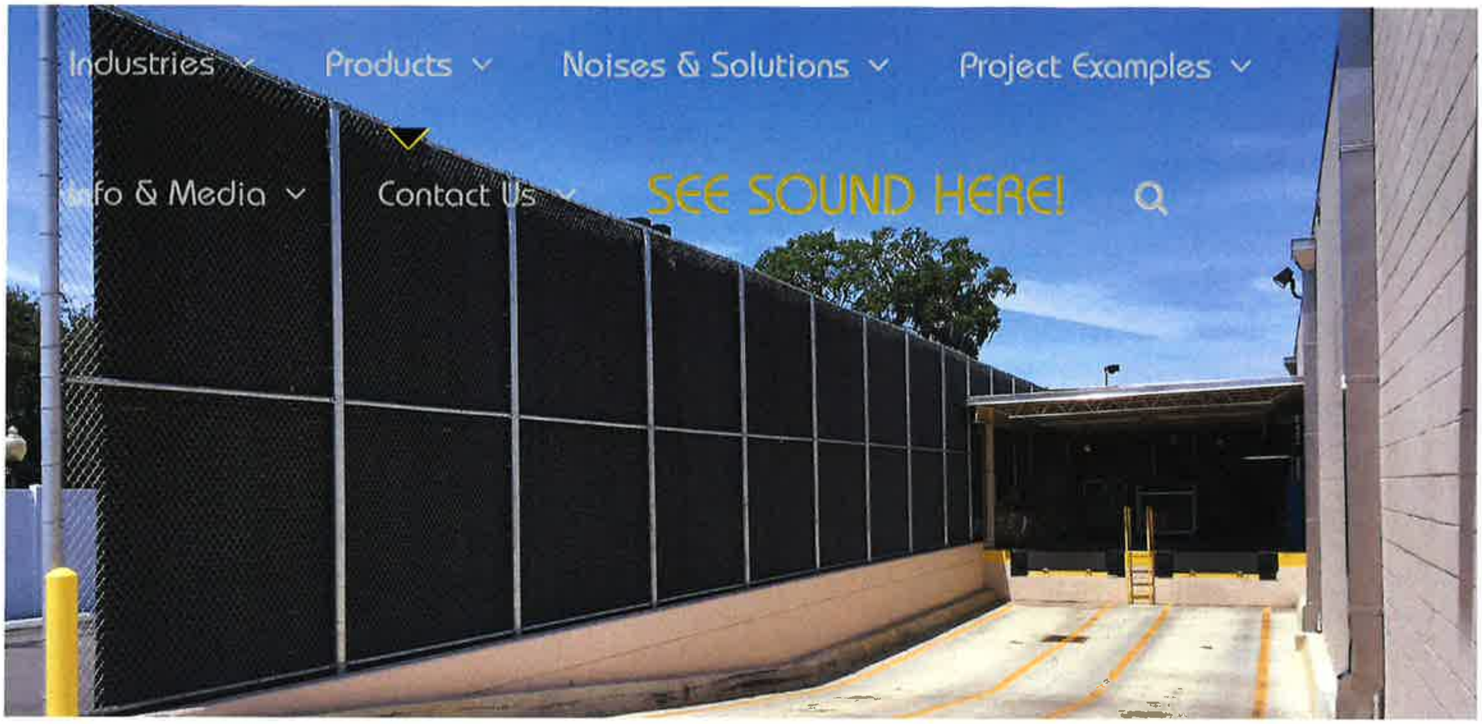
Lptt= 52.7

850 ROUTE 28

APPENDIX E

SOUND ATTENUATION INFORMATION DATA SHEETS

Acoustiblok



Acoustifence® (Patented)

Noise Reducing Fences

The Right Material

Acoustifence-Noise Reducing Fences – Acoustifence® AF-6 is a patented, highly effective, yet simple to install, outdoor acoustical barrier. The U.V. and mold resistant qualities of Acoustifence make it uniquely suited to outdoor use. You can also paint it to blend in to any environment.

at those specific frequencies where rigid barriers have strong deficiencies. As a result you will see much higher levels of performance using Acoustifence than you would using typical construction materials. This also means that Acoustifence is a great solution compared to a wooden fence or any other type of reflective barrier.

Ease of Use

Acoustifence is extremely easy to install. You can secure it to a chain link fence, sandwich it between a wooden shadow box fence, or secure it to a frame as a stand alone material. This allows for a quick installation and a quick resolution to any noise complaints.

Acoustifence comes equipped with standard edge reinforcement and mounting grommets. We offer installation suggestions for each type of installation.

Details

Acoustifence is 1/8" thick and comes in standard sizes of 6' x 30'. You can also order custom lengths and if your project involves greater heights, Acoustifence has an acoustical performance of STC 28, which gives you a transmission loss of 28dB through the material. It is worth noting that the level of attenuation of all outdoor barriers is affected by a variety of factors including end diffraction, angle of diffraction, wind direction, humidity and temperature.

Contact Us

Feel free to contact us to speak with one of our Acoustifence specialist. We look forward to helping you with your outdoor noise and sound issues.

NOISEBLOCK™

Barrier Wall Systems

KINETICS Noise Control®

www.kineticsnoise.com

NOISEBLOCK™ Barrier Wall Systems

Industrial, commercial, and environmental noise control is an important and often overlooked part of the design process. Whether it is to comply with municipal ordinances, conform to OSHA standards or to achieve occupant comfort, it takes knowledge and experience to design an acoustical system that achieves the required sound levels. NOISEBLOCK™ Barrier Wall Systems are modular, cost effective, custom engineered solutions for rooftop equipment, electrical sub-stations, oil and gas compressor stations, residential compliance, loading docks, railways, and airport noise.

NOISEBLOCK™ double-walled acoustic panels are quickly and easily assembled, deliver high levels of sound absorption (noise reduction) and transmission loss (noise blocking). Project management assistance, design, engineering, and manufacturing are included with purchase. Established in 1958, Kinetics Noise Control has the experience and manufacturing capabilities to deliver a noise control solution for your indoor or outdoor application.

Advantages of NOISEBLOCK™ Barrier Wall Systems

- Particularly suitable for outdoor mechanical equipment barriers allowing easy field cutting and sealing for electrical, piping, duct penetrations, etc.
- Panels are shipped knock-down in modular form for inherent freight cost savings.
- Self-draining, "wicking" moisture, durable, easy to install, remove and reuse.
- Acoustic performance is backed by independent tests conducted in a NVLAP accredited laboratory per ASTM E90 (transmission loss) and ASTM C423 (sound absorption). Panel performance is STC 40-43 and NRC 1.0.
- Each system includes AutoCAD submittals and piece-marked installation drawings.
- System structural steel is designed from baseplate upward. The column and base plates are supplied as factory-welded assemblies. The column and angle attachments are factory-punched and supplied with required bolts, washers and nuts. No field welding is required.
- Panels are available in galvanized G90, aluminum and stainless types 304 and 316. Structural steel components are available in various finishes from prime painted, hot dipped galvanized or painted.
- Detailed structural engineering calculations including column baseplate reaction forces.
- Maintenance free

Barrier Wall Comparison

The following tables compare the acoustic performance, physical properties, and application of NOISEBLOCK™ Barrier Wall System to standard concrete, wood, PVC, and metal vision screen barrier walls.

Acoustic Performance

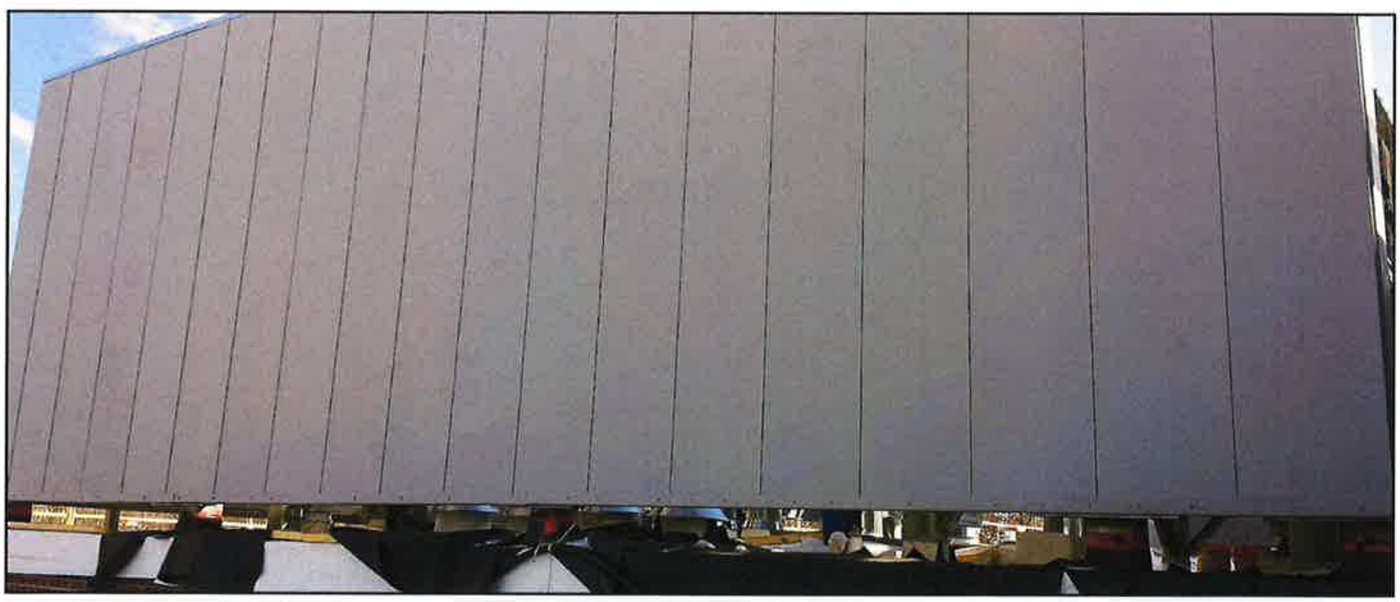
Material	NOISEBLOCK™	Concrete	Wood	PVC	Metal Vision Screen
Type of System	Absorptive/Blocking	Reflective	Reflective	Reflective/Absorptive	Reflective
STC Rating[1]	43	28	26	36	21
NRC Rating[2]	1.0	0.0	0.85	1.0	0.0

Physical Properties

Material	NOISEBLOCK™	Concrete	Wood	PVC	Metal Vision Screen
Type of System	Post/Panel	Post/Panel	Post/Panel	Post/Panel	Post/Panel
Moisture Resistance	Excellent	Good	Poor	Good	Good
Freeze/Thaw Resistance	Excellent	Fair	Poor	Fair	Good
Fire Resistance	Excellent	Excellent	Poor	Unknown	Excellent
Weight (lbs./sf)	6-8	100-125	4-5	3-4	1-2

Application

Material	NOISEBLOCK™	Concrete	Wood	PVC	Metal Vision Screen
Heavy Equipment Needed	Some	Yes	Some	Some	Some
Works on Rooftops	Yes	No	Yes	Yes	Yes
Works on Bridges	Yes	No	Yes	Yes	Yes
Works in Challenging Terrain	Yes	No	Yes	Yes	Yes
Ease of Onsite Changes	Yes	No	Yes	No	Yes



NOISEBLOCK™ rooftop barrier wall surface mounted to structural support steel

NOISEBLOCK™ Acoustical Performance Data

Sound Absorption Coefficients

NOISEBLOCK™ panel acoustic performance is backed by independent testing in a NVLAP accredited laboratory. When tested in accordance with *ASTM C423, Standard Method of Test for Sound Absorption of Acoustic Materials in Reverberant Rooms*, the panel assembly shall have the following minimum airborne sound absorption:

		Sound Absorption						
Model	**Construction**[2]	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**[3]
STL-4[1]	16 ga. solid / 22 ga. perforated	0.60	1.13	1.12	1.09	1.03	0.91	1.00
STL-4[1]	18 ga. solid / 22 ga. perforated	0.60	1.13	1.12	1.09	1.03	0.91	1.00

[1] (4) = 4-inch thickness

[2] solid inner skin available

[3] Noise Reduction Coefficient (NRC) is the average of coefficients at 250, 500, 1K and 2K Hz, expressed in the nearest integral multiple of 0.05.

Sound Transmission Loss

When tested in accordance with *ASTM E90, Standard Recommended Practice for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*, the panel assembly shall have the following minimum airborne sound transmission loss:

		Transmission Loss, dB						
Model	**Construction**[2]	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**[3]
STL-4[1]	16 ga. solid / 22 ga. perforated	24	32	41	51	60	66	43
STL-4[1]	18 ga. solid / 22 ga. perforated	21	28	39	48	56	58	40

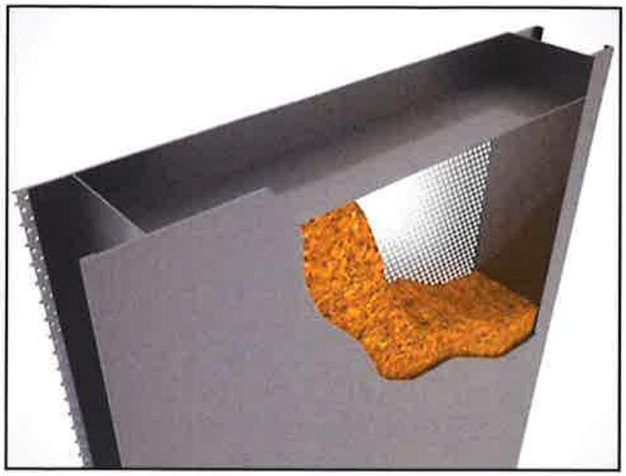
[1] (4) = 4-inch thickness

[2] solid inner skin available

[3] Sound Transmission Class (STC) is determined by comparing test data with a set of standard STC contours as described in *ASTM E413, Standard Classification for Determination of Sound Transmission Class.*

The acoustic performance of NOISEBLOCK™ panel systems is not degraded through prolonged exposure to noise, vibration, pressure differential, rain, wind or snow.

NOISEBLOCK™ Wall Panel Construction



Panel Cutaway

KINETICS STL panels are fabricated with outer solid shell of 16/18 gage and inner perforated shell of 22 gage. Panels are stiffened with 18 gage internal channels and edge rails. The acoustic grade fill is 2.5 to 6 pcf long strand fiberglass or mineral wool depending on the application and are inert, mildew resistant, vermin proof and incombustible and is suitable for wet/dry and freeze/thaw cycling. Mating panels are attached by inherent tongue and groove panel joints. Typical panel joints are horizontal however vertical panel joints are used depending on the project requirements and aesthetics desired by the architect/owner.

Sound Absorption Coefficients

NOISEBLOCK™ panel acoustic performance is backed by independent testing in a NVLAP accredited laboratory. When tested in accordance with *ASTM C423, Standard Method of Test for Sound Absorption of Acoustic Materials in Reverberant Rooms*, the panel assembly shall have the following minimum airborne sound absorption:

		Sound Absorption						
Model	**Construction[2]**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC[3]**
STL-4[1]	16 ga. solid / 22 ga. perforated	0.60	1.13	1.12	1.09	1.03	0.91	1.00
STL-4[1]	18 ga. solid / 22 ga. perforated	0.60	1.13	1.12	1.09	1.03	0.91	1.00

[1] (4) = 4-inch thickness
[2] solid inner skin available
[3] Noise Reduction Coefficient (NRC) is the average of coefficients at 250, 500, 1K and 2K Hz, expressed in the nearest integral multiple of 0.05.

Sound Transmission Loss

When tested in accordance with *ASTM E90, Standard Recommended Practice for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*, the panel assembly shall have the following minimum airborne sound transmission loss:

		Transmission Loss, dB						
Model	**Construction[2]**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC[3]**
STL-4[1]	16 ga. solid / 22 ga. perforated	24	32	41	51	60	66	43
STL-4[1]	18 ga. solid / 22 ga. perforated	21	28	39	48	56	58	40

[1] (4) = 4-inch thickness
[2] solid inner skin available
[3] Sound Transmission Class (STC) is determined by comparing test data with a set of standard STC contours as described in *ASTM E413, Standard Classification for Determination of Sound Transmission Class.*

The acoustic performance of NOISEBLOCK™ panel systems is not degraded through prolonged exposure to noise, vibration, pressure differential, rain, wind or snow.

Industrial
NOISE CONTROL PRODUCTS

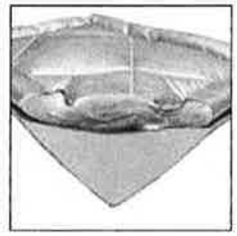
NOISE BARRIER/SOUND ABSORBER COMPOSITE

Spec Data Sheet

BBC-SERIES
NOISE BARRIERS/SOUND ABSORBER COMPOSITES

BBC-13-2" Noise Barrier/Sound Absorber Composite

BBC-13-2" offers the benefits of both a noise barrier and a sound absorber in one composite product. The BBC-13-2" consists of a two-inch thick vinyl-coated-fiberglass-cloth faced quilted fiberglass that is bonded to a one-pound per sq. ft. reinforced loaded vinyl barrier. Curtain panels are constructed with grommets across the top and Velcro seals along the vertical edges. Rolls are available 54" wide x 25' long and can be supplied with edges bound or unbound. (Note: barrier is 54" wide, quilt is 48" wide and is held 3" in from each vertical edge.)



- Class A (or 1) flammability rated per ASTM E- 84
- Available facing colors on quilt: gray, tan, black or off-white
- Available barrier colors: gray, tan, blue or olive drab

Applications:

Typically used as modular curtain panels in acoustical curtain enclosures where abuse resistance or excellent durability as well as maximum noise reduction is required. Also used as sliding acoustical doors, durable acoustical jacket on fans or as a temporary noise barrier on outdoor construction projects.

Product Data:

Description	Vinyl coated fiberglass cloth facing on 2" quilted fiberglass/ 1 lb-psf reinforced loaded vinyl barrier
Flammability	Flame Spread: 23.0 Smoke density: 30.0
Nominal thickness	2.0 inches
Temperature range	-20° to +180° F
Standard Roll size	54" wide x 25' long
Weight	1.43 lb psf

Acoustical Performance:

Sound Transmission Loss

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
BBC-13-2"	13	20	29	40	50	55	32

ASTM E-90 & E 413

Sound Absorption Data

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
BBC-13-2"	.07	.27	.96	1.13	1.08	.99	.85

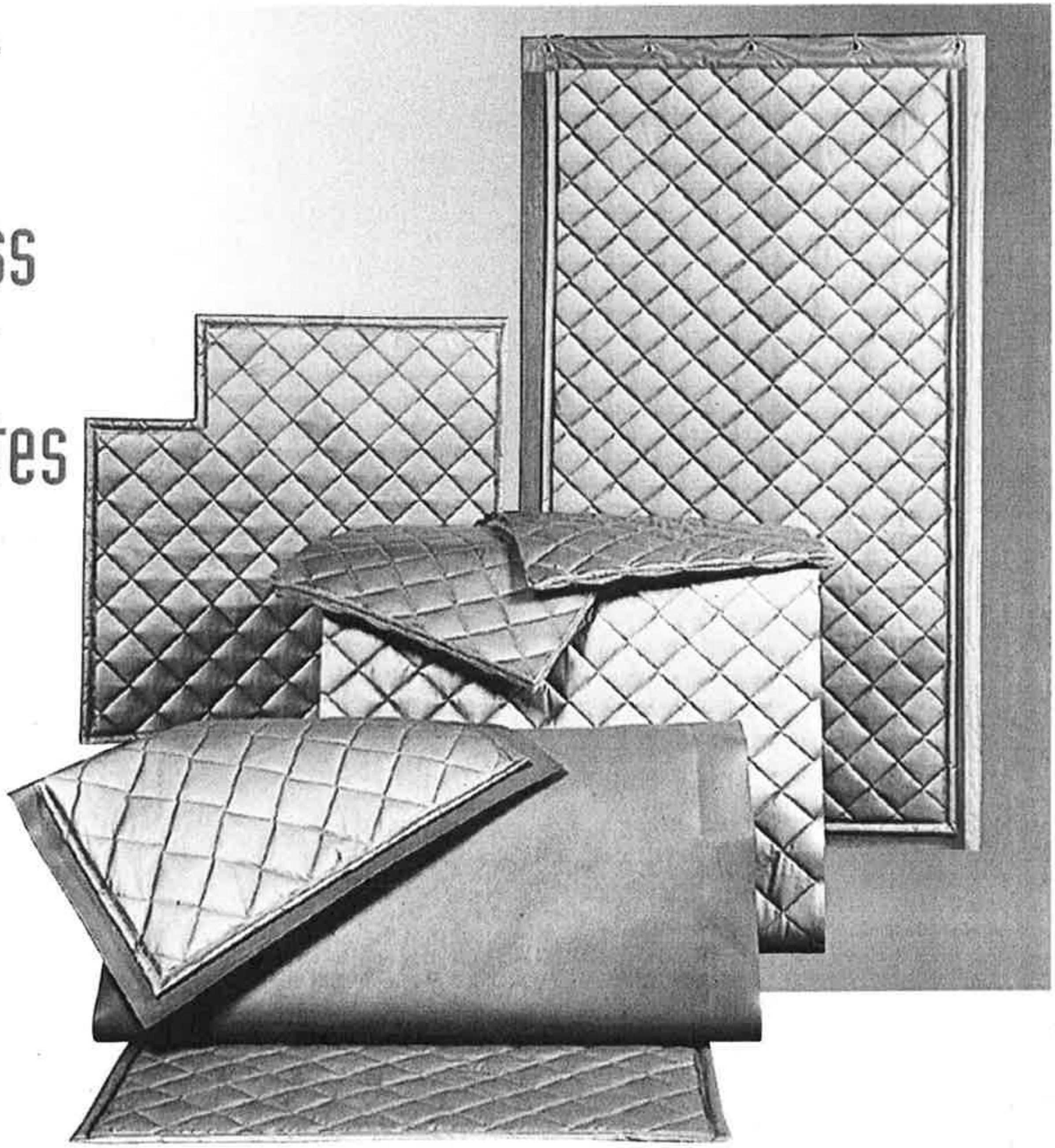
ASTM C 423

50 H.P. Almgren Drive • Agawam, MA 01001 • Ph 413.789.1770 fax 413.789.2248 www.soundseal.com

Industrial
NOISE CONTROL PRODUCTS

Bulletin
SS-108

Barrier & Quilted Fiberglass Absorber Composites



FEATURES:

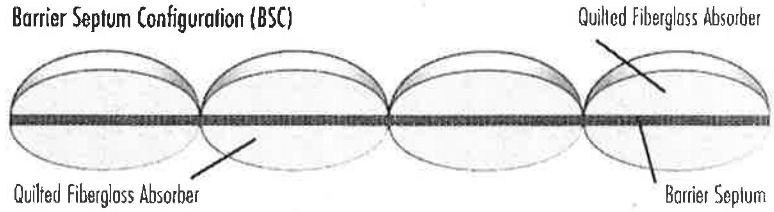
- ♦ Maximum noise reduction by combining sound absorber and noise barrier
- ♦ Sound Absorption Rating to NRC-1.05
- ♦ Transmission Loss Rating to STC-32
- ♦ Offered in two styles with a variety of combinations
- ♦ Acoustical liners, jackets, wraps and panels
- ♦ Available in curtain panels, bound or unbound rolls, custom fabrications or die-cut pieces
- ♦ Flexible composites conform to any shape
- ♦ Fire safe and low smoke emissions per ASTM E-84, Class 1

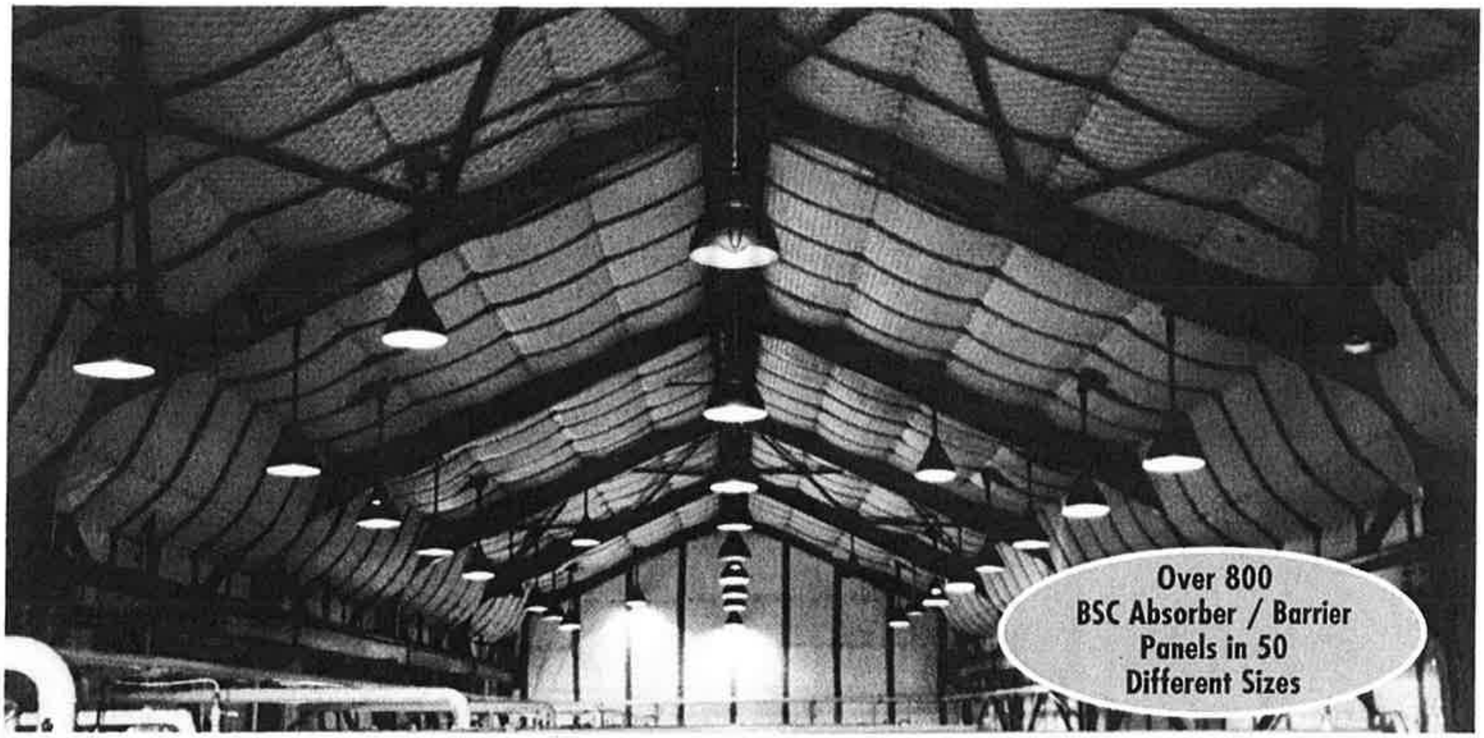
SOUND SEAL®

"BSC" Style: Barrier Septum Composite

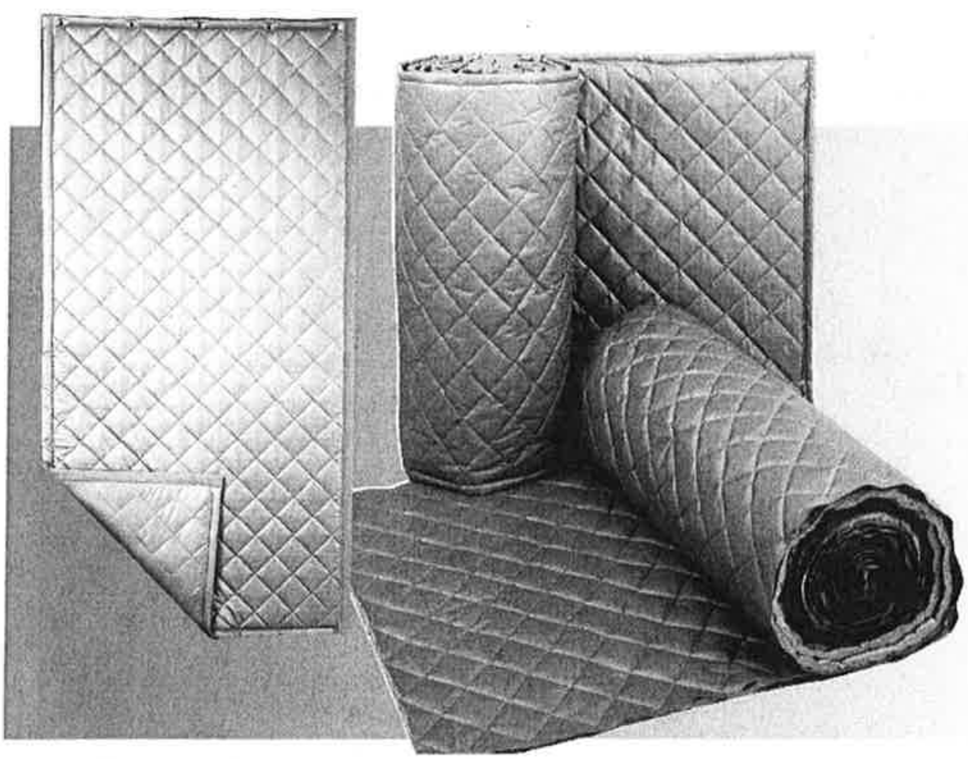
***Sound Seal's Industrial Division "BSC"** composite features a **non-reinforced** loaded vinyl noise barrier septum (middle) with a quilted fiberglass sound absorber on **both** sides. Ideally suited as an acoustical liner, the inner layer of quilted fiberglass decouples the barrier from the surface to improve its noise blocking ability while the outer layer adds sound absorption to the treated environment.*

Barrier Septum Configuration (BSC)





Industrial "BSC" Acoustical Panels were used to line the interior of a large natural gas compressor station. The sound absorptive quilted fiberglass portion of the composite panel reduced the noise levels inside the building by 6 to 8 decibles, and combined with the noise barrier septum and quilted fiberglass decoupler on the opposite side of the product, produced a 15 dB(A) noise reduction outside of the building. See Sound Off Case History Vol. 1, No.1 for additional information.



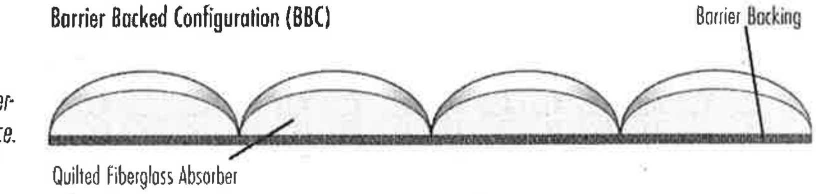
Also Available As:

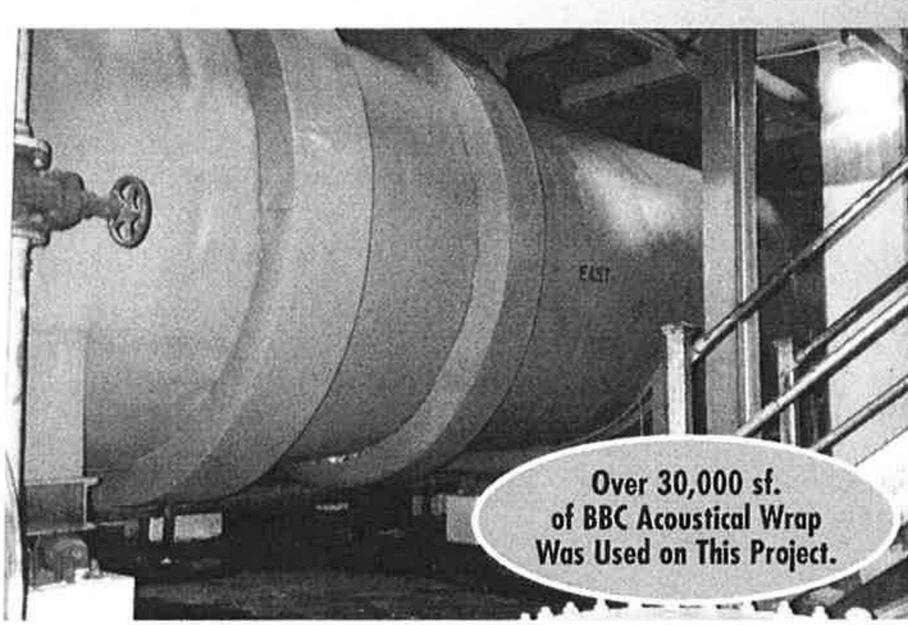
- Rolls with edges bound and sewn with matching edge binding
- Unbound rolls-edges exposed
- Standard roll size 4'W x 25'L
- Curtain panels with grommets at top and Hook & Loop fasteners sewn along edges
- Liner panels with bound edges
- Die-cut pieces, custom fabrications
- **Types of facing material on quilted fiberglass:**
  VCFC — Vinyl - Coated - Fiberglass - Cloth
  SCFC — Silicone - Coated - Fiberglass - Cloth
  NPS — Non-Woven - Porous Scrim
  GUILFORD — Decorative Fabric
- **Available Barriers:**
  BSC products utilize a flexible 1 lb. PSF non-reinforced loaded
  vinyl noise barrier septum (B-10NR).
  Also available with a 2 lb. PSF or 1/2 lb. PSF barrier

See back page for specifications

"BBC" Style: Barrier Backed Composite

Sound Seal's Industrial Division "BBC" composite features a reinforced loaded vinyl noise barrier with a quilted fiberglass sound absorber on one side. The rugged durable exterior barrier is commonly used as a wrap or acoustical jacket due to its ability to conform to any shape. The quilted fiberglass layer decouples the noise barrier to enhance its acoustical performance.





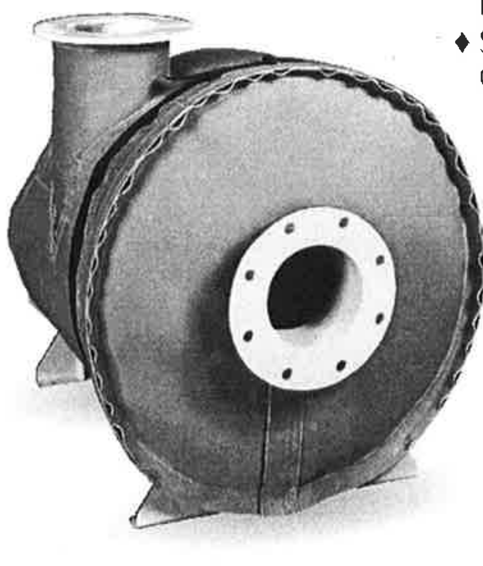
Industrial "BBC" acoustical composite was used as an acoustical wrap on large diameter piping at a Waste Water Treatment facility. The durable reinforced barrier exterior combined with the quilted fiberglass decoupler offers maximum longevity as well as a 15 dB(A) noise reduction.

Also Available As:

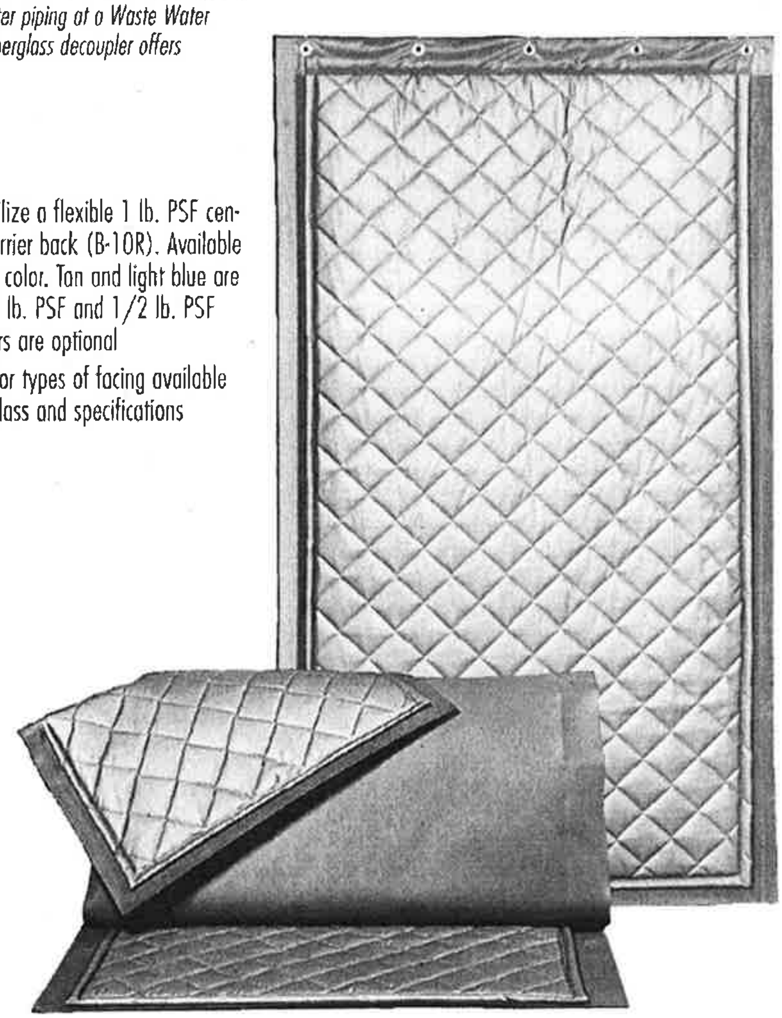
- Rolls with edges bound and sewn with matching edge binding
- Unbound rolls with quilted fiberglass edges exposed
- Standard roll size 54" wide barrier, with 48" wide quilt, 25' long
- Curtain panels with grommets at top and Hook & Loop fasteners sewn along edges
- Custom fabricated acoustical jackets
- Die-cut pieces

Barrier:

- BBC products utilize a flexible 1 lb. PSF center reinforced barrier back (B-10R). Available in standard gray color. Tan and light blue are also available. 2 lb. PSF and 1/2 lb. PSF reinforced barriers are optional
- See back page for types of facing available on quilted fiberglass and specifications



BBC-13-2" acoustical jacket custom fabricated to fit blower. Hook and Loop fasteners allow for quick and easy installation and removal.



The most effective noise reduction products combine both sound absorption and noise barrier properties. Tested under strict compliance to appropriate ASTM standards, we offer the following results.

Acoustical Data:

Sound Transmission Loss (dB) Octave Band Center Frequencies (Hz)									
Product	Thickness (In./Nom.)	Wt. Lb./S.F.	125	250	500	1000	2000	4000	STC
BBC-13-2"	2	1.5	13	20	29	40	50	55	**32**
BBC-13	1	1.3	11	16	24	30	35	35	**27**
BBC-14-2"	2	1.5	13	20	29	40	50	55	**32**
BBC-14	1	1.3	11	16	24	30	35	35	**27**
BSC-25	2	1.5	12	16	27	40	44	43	**29**
BSC-25-2B	2	2.5	19	22	28	40	56	61	**33**
BSC-31	2	1.5	12	16	23	33	38	39	**27**

Per ASTM: E 90

Sound Absorption Data-Absorber Component Random Incident Sound Absorption							
Product	125	250	500	1000	2000	4000	NRC
BBC 1" thick	.12	.47	.85	.84	.64	.62	.70
BBC 2" thick	.07	.27	.96	1.13	1.08	.99	.85
BBC 4" thick	.21	.89	1.09	1.17	1.13	1.07	1.05
BSC 2" thick	.19	.99	.96	.80	.57	.33	.85

Barrier Specifications:

Barrier Component	Style	Weight Lb./Sq. Ft.	Thickness Inches	Composite
B - 10 NR	Non-Reinforced	1	.107	BSC
B - 5 NR	Non-Reinforced	1/2	.042	BSC
B - 20 NR	Non-Reinforced	2	.225	BSC
B - 10 R	Reinforced	1	.090	BBC
B - 5R	Reinforced	1/2	.050	BBC

Available Facings on Quilted Fiberglass:

- Vinyl - Coated - Fiberglass - Cloth (Standard)
  Colors: Gray, White, Tan or Black
  Temp. Range: -20°F to + 180°F
  Durable, resists most chemicals
- Silicone - Coated - Fiberglass - Cloth (High Temp)
  Color: Silver
  Temp. Range: -90°F to + 550°F
  Used on high temperature applications
  Also suitable for outdoor UV exposure
- Non-woven Porous Scrim (Economy)
  Colors: Off White
  Temp. Range: -40°F to + 350°F
  Readily accepts any adhesive
- Guilford fabric facing (Decorative)
  Colors: Over 60 colors to choose from (see swatch booklet)
  Temp. Range: -20°F to + 350°F
  FR 701 Fabric is Class 1 Flammability Rated
  For commercial or architectural applications

For additional information see:
SS101 Curtain Systems
SS104 Flexible Barriers
SS106 Quilted Fiberglass Absorbers

Also Available from Sound Seal:

The tables on this page refer to some of the more common BSC and BBC composites. There are many others which combine the wide variety of barriers and quilted fiberglass absorbers available to address any industrial application. For example, BSC-26 utilizes a silicone-coated-fiberglass cloth faced quilted fiberglass absorber (instead of the vinyl-coated-fiberglass cloth faced quilted fiberglass on BSC-25) combined with a 1 lb. PSF loaded vinyl noise barrier septum for high temperature application.

Likewise, BBC-14 or BBC-14-2" incorporates the silicone facing, instead of the vinyl-faced BBC-13 or BBC-13-2", combined with a 1 lb. PSF reinforced loaded vinyl backing. In addition to high temperature applications, these U.V. resistant curtain panels are suitable for outdoor applications.

Another example such as BSC-25-2B substitutes a 2 lb. PSF noise barrier for the 1 lb. PSF version in BSC-25 to improve acoustical performance, especially at lower frequencies.

Distributed By

SOUND SEAL®

50 H. P. Almgren Drive
Agawam, MA 01001
TEL: 413.789.1770
FAX: 413.789.2248
e-mail: sales@soundseal.com
www.soundseal.com

ACOUSTIC SYSTEMS
ACOUSTICAL RESEARCH FACILITY
OFFICIAL LABORATORY REPORT
AS-TL2912

Subject: **Sound Transmission Loss Test**

Date: 15 April 2006

Contents: Transmission Loss Data, One-third Octave Bands
Transmission Loss Data, Octave Bands
Sound Transmission Class Rating
Outdoor / Indoor Transmission Class Rating
Airborne Sound Reduction Index

on

ThermalSafe™ Insulated Panels – Nominal Thickness 4"

for

Metl-Span 1 Ltd.

ACOUSTIC SYSTEMS ACOUSTICAL RESEARCH FACILITY is NVLAP-Accredited for this and other test procedures.

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

INTRODUCTION

Sound Transmission Loss of a partition in a specified frequency band is defined as ten times the common logarithm of the airborne sound power incident on the partition to the sound power transmitted by the partition and radiated on the other side. The quantity so obtained is expressed in decibels.

APPLICABLE STANDARDS

ASTM E 90-04	"Standard Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements"
ASTM E 413-04	"Standard Classification for Rating Sound Insulation"
ASTM E 1332-90 (2003)	"Classification for Determination of Outdoor-Indoor Transmission Class"
ASTM E 2235-04e1	"Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods"
ISO 717-1:1996	"Acoustics -- Rating of sound insulation in buildings and of building elements Part 1: Airborne sound insulation"

SPECIMEN DESCRIPTION

The test specimen was a symmetrical wall construction whose nominal overall dimensions were 2438 mm in length by 2438 mm in width by 102 mm in depth *[96 by 96 by 4 inches]*. The test specimen was designed, manufactured, submitted for test, and designated "**ThermalSafe™ Insulated Panels – Nominal Thickness 4"**" by Metl-Span I Ltd. of Lewisville, Texas. Three (3) ThermalSafe™ insulated metal panels were utilized in the construction of this specimen – one (1) panel of the nominal plan dimension 305 mm in width by 2438 mm in height *[12 by 96 inches]*; and, two (2) panels of the nominal plan dimensions 1067 mm in width by 2438 mm in height *[42 by 96 inches]*. Actual thickness of these panels was 97 mm *[3.8 inches]*. Panels utilized double tongue and groove joints. The exterior and interior panel faces were 0.55 mm *[26 ga]* galvanized sheet metal with a baked finish. The insulation material was mineral fiber of density 136 kg/m^3 *[8.5 lbs/ft^3]*. Exterior panel joints were sealed with cured bead of 5 mm *[3/16 inch]* silicone sealant.

The surface area of the specimen was 5.9 square meters *[64.0 square feet]*. The weight of the test specimen was measured as 129.3 kg *[285.0 pounds]*, giving a weight per unit area of 21.7 kg/m^2 *[4.5 pounds/ft^2]*.

TEST SPECIMEN MOUNTING

The specimen was mounted in the 2440 mm by 2440 mm transmission loss test opening. The face of the specimen was sealed to the edge of the test aperture with dense mastic putty. The calculated transmission loss of the test specimen was evaluated against facility flanking limits to determine any affects on specimen performance.

DESCRIPTION OF TEST

Two (2) loudspeakers in a 200 cubic meter reverberation chamber, designated as the "Source Room", produced broadband pink noise. A 255.6 cubic meter reverberation chamber, designated as the "Receive Room", is coupled to the Source Room through the transmission loss opening. The steady-state space-time average sound pressure levels in the Source and Receive Room were determined using rotating microphone booms and a Norsonic Dual-Channel Real-Time Analyzer Nor-840. Sound absorption in the Receive Room was determined by performing decay rate measurements. Measurements are made in the ISO-preferred one-third octave bands from 50 Hz to 10000 Hz. Sound Transmission Class (STC) is the single number rating that is calculated from Sound Transmission Loss values to provide a performance estimate of a partition in certain interior sound insulation situations. Airborne Sound Reduction Index (R_w), defined in ISO 717-1, is used internationally and is a similar rating to Sound Transmission Class (STC). Outdoor-Indoor Transmission Class (OITC) is the single number rating that is intended to rate effectiveness of building façade elements at reducing transportation noise intrusion.

Precision of calculated Sound Transmission Loss values varies with frequency band and is included in the table within this document. The test was performed in strict accordance with ASTM E90-04. Data for laboratory flanking limit and reference specimen tests are available on request.

This test took place at **ACOUSTIC SYSTEMS ACOUSTICAL RESEARCH FACILITY**, Austin, Texas, on March 31, 2006.

ENVIRONMENTAL CONDITIONS

During the test, environmental conditions in the Receive Room were 21.9C with 68.0% relative humidity. Conditions in the Source Room were 22.6C with 69.6% relative humidity. Environmental conditions remained within strict limits imposed by the laboratory.

Respectfully Submitted,

Michael C. Black
Laboratory Technical Director

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TRANSMISSION LOSS DATA

Sound Transmission Loss of the test specimen at the preferred one-third octave band center frequencies is tabulated below and then presented graphically. Octave-band Transmission Loss values are calculated as described in Section 12.3 of ASTM E90.

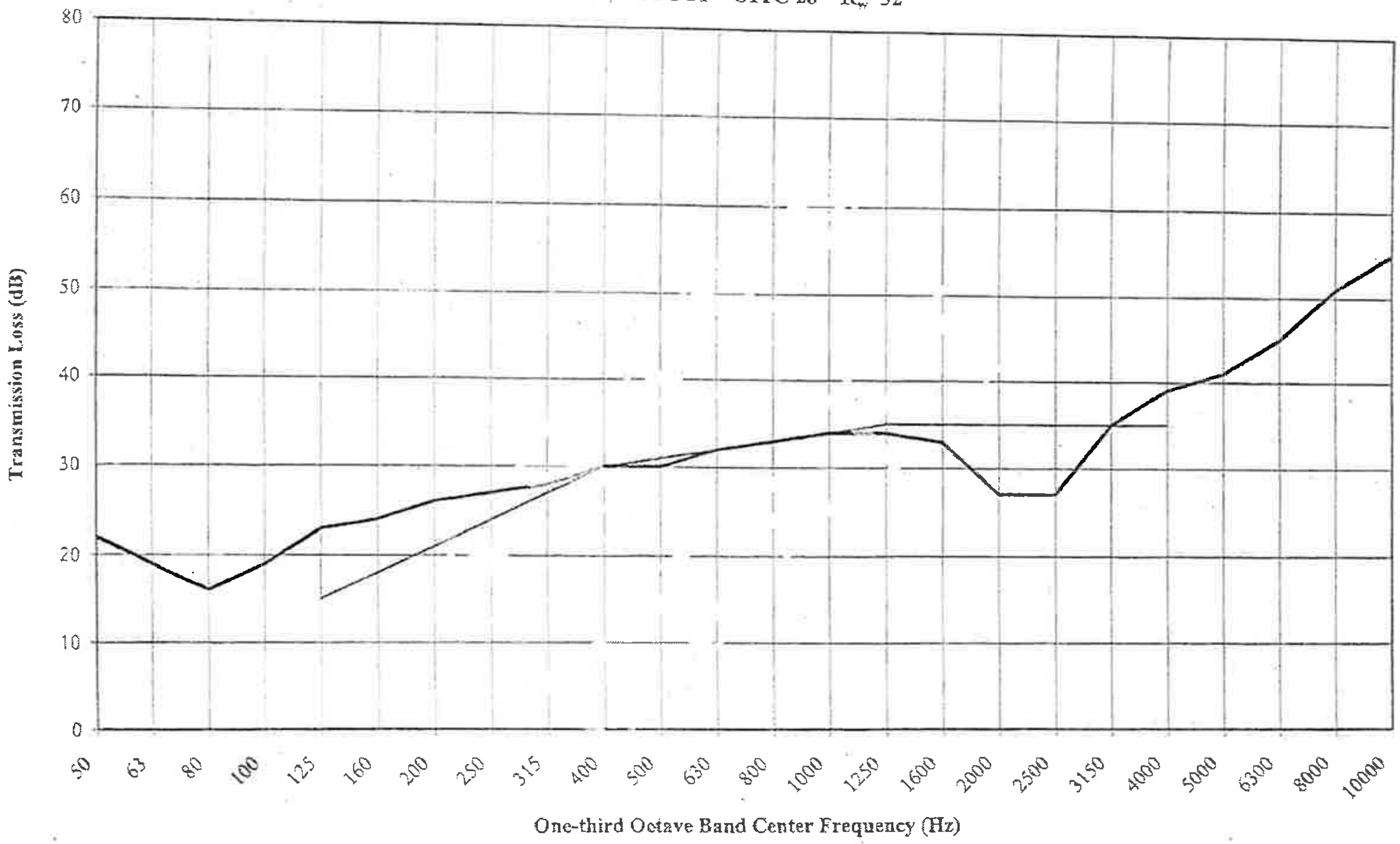
Metl-Span 1 Ltd. – ThermalSafe™ Insulated Panels – Nominal Thickness 4"

1/3 Octave Band Center Freq (Hz)	Transmission Loss (dB)	Uncertainty (+/- dB)	Notes	Octave Band TL (dB)	STC Deficiencies	R_w Deviations >8dB
50	22		[b][f]			
63	19		[f]	18		
80	16	3.0				
100	19	2.9				
125	23	2.1		21		
160	24	1.8				
200	26	1.4				
250	27	0.7		27		
315	28	0.5				
400	30	0.5				
500	30	0.5		31	1	
630	32	0.3				
800	33	0.3				
1000	34	0.3		34		
1250	34	0.2			1	
1600	33	0.2			2	
2000	27	0.2		28	8	9.5
2500	27	0.2			8	9.2
3150	35	0.2				
4000	39	0.2		38		
5000	41	0.3				
6300	45	0.4				
8000	51	0.5		48		
10000	55	0.6				
STC	31					
OITC	28					
R_w	32					

Note: [a]: Sound Pressure Level in Receive Room less than 5 dB above ambient. Correction of 2 dB applied. Value represents lower bound for specimen TL in this band; [b]: Specimen TL within 10 dB of facility flanking limits. No correction applied. Value represents lower bound for specimen TL in this band; [c]: Specimen TL corrected for sound transmission through laboratory filler wall per ASTM E90-04 Section 7.3.1.6; [d]: Specimen TL too close to laboratory filler wall. Values represents lower bound for specimen TL in this band; [e]: Uncertainty in this band exceeds limits of ASTM E90-04 Section A2.2.; [f] Insufficient number of independent microphone samples to determine test uncertainty.

Method Precision, Bias, 95% Confidence Interval – **Precision:** Repeatability depends on the specimen tested. Round robin testing on ASTM E1289 reference specimen produced reproducibility standard deviation of 2 dB or less at all test frequencies 125 Hz to 4000 Hz. **Bias:** No bias in this method as true value defined by the test method. **95% Confidence Interval:** Facilities and microphone systems produce one-third octave band Transmission Loss measurement uncertainties less than: 80 Hz – 6 dB; 100 Hz – 4 dB; 125 Hz, 160 Hz – 3 dB; 200 Hz, 250 Hz – 2 dB; 315 Hz to 4000 Hz – 1 dB.

Metl-Span I Ltd. ThermalSafe™ Insulated Panels - Nominal Thickness 4"
AS-TL2912; STC 31 OITC 28 R_w 32



ACOUSTIC SYSTEMS
ACOUSTICAL
RESEARCH FACILITY

NVLAP LAB CODE 100286-0

850 ROUTE 28

APPENDIX F

OPERATIONAL INFORMATION

1. <u>General Description</u>

850 Route 28 LLC ("the applicant") proposes to construct a manufacturing facility for steel and precast concrete bridge decking for road and bridge projects throughout New York State. The 110-acre project site, currently located in the Mixed Use -2 (MU-2) zoning district, is an unreclaimed quarry heavily scarred by mining operations conducted during the 1950s – 1970s. The proposed area of disturbance will occupy approximately 37.7 acres (34%) of the site and lies primarily within the footprint of the former mine. The remaining 72 acres of the site will remain undisturbed and serve as a buffer between the proposed facility and adjoining properties. The existing vegetation and general topography of the site and surrounding area shields the site from view of Route 28 and the neighboring properties. The applicant will adhere to all NYS environmental regulations and intends to obtain all required permits, including a stormwater pollution prevention plan designed in accordance with SPDES GP-15-02.

The initial Site Plan application was submitted to the Town of Kingston Planning Board (PB) on July 18, 2018. The initial Public Hearing was conducted on March 18, 2019, with subsequent hearings held through July 15, 2019. A Negative Declaration under the State Environmental Quality Review Act (SEQRA) was issued on March 20, 2019. The PB rescinded the Negative Declaration on August 29, 2019 because it determined that the new information presented by the public comments indicated that the project may have a significant adverse environmental impact and, together with the new involvement of the Kingston Town Board as a SEQRA Involved Agency owing to the Town Board's introduction of a Local Law proposing a Zoning Map change to include the property in the MU-1 district. This document provides an updated NYS Environmental Assessment Form (EAF) with supporting documentation and responses to public comments.

Until 2015 the project site was in the Mixed Use 1 (MU-1) zoning district. The purpose of the MU-1 zoning district is to provide a wide variety of highway-oriented commercial uses. In 2015 the Town Board amended the zoning map to place the project site within the (MU-2) zoning district, primarily a commercial district with some industrial uses allowed by right, in order to permit the development of the site as an automobile recycling facility. In 2018 the Town Board undertook the process to amend the zoning map to place the project site back within the MU-1 zoning district, including conducting a public hearing and town board vote approving the amendment. However, due to a processing error, the zoning amendment was not finalized. Now, as part of this coordinated review, the Town Board will consider the zoning amendment as part of the proposed action for the development of the project. This project has been analyzed as though it is contained within the MU-1 district.

2. Manufacturing Operation

There is currently one building, a parking/storage area and a long driveway on site. The facility is approved by the Town of Kingston Building Inspector for use as "Heavy Equipment Storage with Maintenance Building". The applicant proposes to redevelop the unreclaimed quarry as a manufacturing facility for steel and pre-cast concrete beam fabrication. All production, including the mixing of the pre-cast concrete, will occur within two proposed 120,000 SF buildings. No cement will be produced on site - the pre-cast concrete will be mixed with imported cement. The sides of each building will have a 100-ft wide paved area for truck passage and storage for materials with a 170-ft wide paved area at either end for truck movements in and out of the buildings. All mobile equipment used for production will be equipped with white-noise backup alarms.

The public has presented questions and comments[1] regarding the proposed number of employees, hours of operation and the type of work that will be conducted. The applicant intends to hire approximately 60 employees working in three shifts as follows:

- Shift #1 - 6am to 2pm,
- Shift #2 - 2pm to 10pm and
- Shift #3 - 10pm to 6am.

Shifts #1 and #2 are the primary production shifts and will be comprised of both indoor and outdoor work. Shift #3 duties will be primarily conducted indoors and includes maintenance, upkeep, set up, break down, removal of materials and safety duties. Outdoor work during Shift #3 will be limited to security and minor material handling as needed.

[1] See Appendix J: Steve Malloy, letter to T/o Kingston Planning Board, April 15, 2019 and Thomas Auringer, letter to T/o Kingston Planning Board, May 21, 2019.

collected and hauled offsite by a licensed hauler. Supplemental water will be provided by two proposed onsite wells, one at each building. The water required from these wells for concrete production will be 2,000 gpd. This added to the domestic use will require a total of 2,900 gpd from onsite wells and relates to a required total continuous well production of only 2 gpm. The projected Total Average Daily Flow of 2,900 gpd is the water usage equivalent of less than 9 homes. Given the site encompasses over 110 acres, the projected water usage for this site is insignificant.

More specifically, the existing well was tested by Miller Hydrogeologic Inc. and the results are outlined in their report dated May 28, 2019 (Appendix F). The well was tested for 24 hours with a total drawdown of 27 ft. Total well depth is 273 ft. As a result of public comments regarding the potential effects of the proposed facility on neighboring wells, an addendum to this report was prepared on February 3, 2020, with an accompanying drawdown map (See Appendix F). It was concluded the existing well is more than adequate to supply water for the entire factory buildout and determined that the drawdown beyond the site boundary is not significant. The nearest neighboring well is over 1,000 ft. from any well on site. The two additional wells will ensure that the site will have adequate water supply for both domestic and industrial use and the proposed project will not have any impact on neighboring wells or wetlands.

10. Rock Removal

The 110-acre site was formerly a quarry with approximately 56 acres of disturbance. Approximately 26 acres of the quarry is now exposed/shallow bedrock, with 10'-40' highwalls, compacted processing areas and large amounts of scattered and stockpiled rock rubble, some of which is marginally revegetated with brush and small trees. The proposed project area encompasses 37.7 acres of the site and lies primarily within the footprint of the former quarry. The proposed project requires the preparation of two level areas for two proposed 120,000 square foot manufacturing buildings. The majority of the stone excavated during site preparation will be processed onsite and either be used for fill material needed to level the site or incorporated into the concrete required for the proposed precast beam manufacturing. It is anticipated that there may be approximately 62,000 CY of excess rock generated during Phase 1 of the project and additional ±100,000 CY of excess rock generated during Phase 2. This projected ±162,000 CY of excess material is proposed to be removed from the site. All excavation is for the sole purpose of constructing the two manufacturing buildings and is therefore an exempt activity as defined in Article 23, Title 27, Section 23-2705 of the

NYSDEC Mined Land Reclamation Law.

Excavators can remove the existing piles of loose rock within the project area, but blasting will be required to remove the balance. At peak rate, the applicant anticipates blasting approximately 20,000 to 30,000 CY of rock per month, with one drill rig on site to prepare the blast holes. Initial blasts will be smaller while baseline vibrational and airblast levels are assessed, with a maximum frequency of no more than once a week. Once the maximum blast size is determined, the number of blasts should decrease to once per month. One or two mobile crusher units with maximum throughput volumes of 110 tons/hour will process and screen some of the rock. At the proposed rate of extraction, the duration of blasting and drilling activities will be approximately two tothree years.

The 162,000 CY of excess material will be removed primarily by tri-axle dump trucks capable of carrying approximately 12 CY (15 tons) of stone. This translates to approximately 13,500 loads of material. Assuming that rock removal activities will take 3 years to complete, with 20 active workdays per month, there will be approximately 19 trucks per day removing material from the site. The destination of this material will depend on market conditions but it will likely be within 30 miles of the site.

More broadly, Phase 1 site preparation is anticipated to be completed within 12 months. Construction of the first building will start immediately thereafter, and the first of the two proposed buildings is expected to be operational within two years of breaking ground. Excavation for Phase 2 should begin immediately upon completion of site preparation for Phase 1. Total time for site preparation is estimated to be 2-3 years, with total buildout to be completed within 4 years. The proposed building in Phase 1 will be used for steel and concrete fabrication. The proposed building for Phase 2 will be used for steel fabrication.

In order to mitigate the impacts to neighbors and hikers on the adjacent trails, drilling and blasting activities will occur only during the 2-3 years of site preparations and will be limited to weekdays from 7AM to 7PM. There will be no drilling or blasting on weekends or holidays. No blasting or additional rock removal will occur after site preparation is complete.

The following passages regarding the proposed rock removal have been gathered from the public comment letters received from March through August, 2019.

1. *COMMENT: "The Proposed Project Appears to Need a Mining Permit From the New York*

850 ROUTE 28

APPENDIX G

LIST OF REFERENCES

REFERENCES

1. NYSDEC *Assessing and Mitigating, Noise Impacts*, revised February 2001

2. Federal Highway Administration, *Procedures for the Abatement of Highway Traffic Noise and Construction Noise*, Federal Register 41 (80), Washington, D.C.

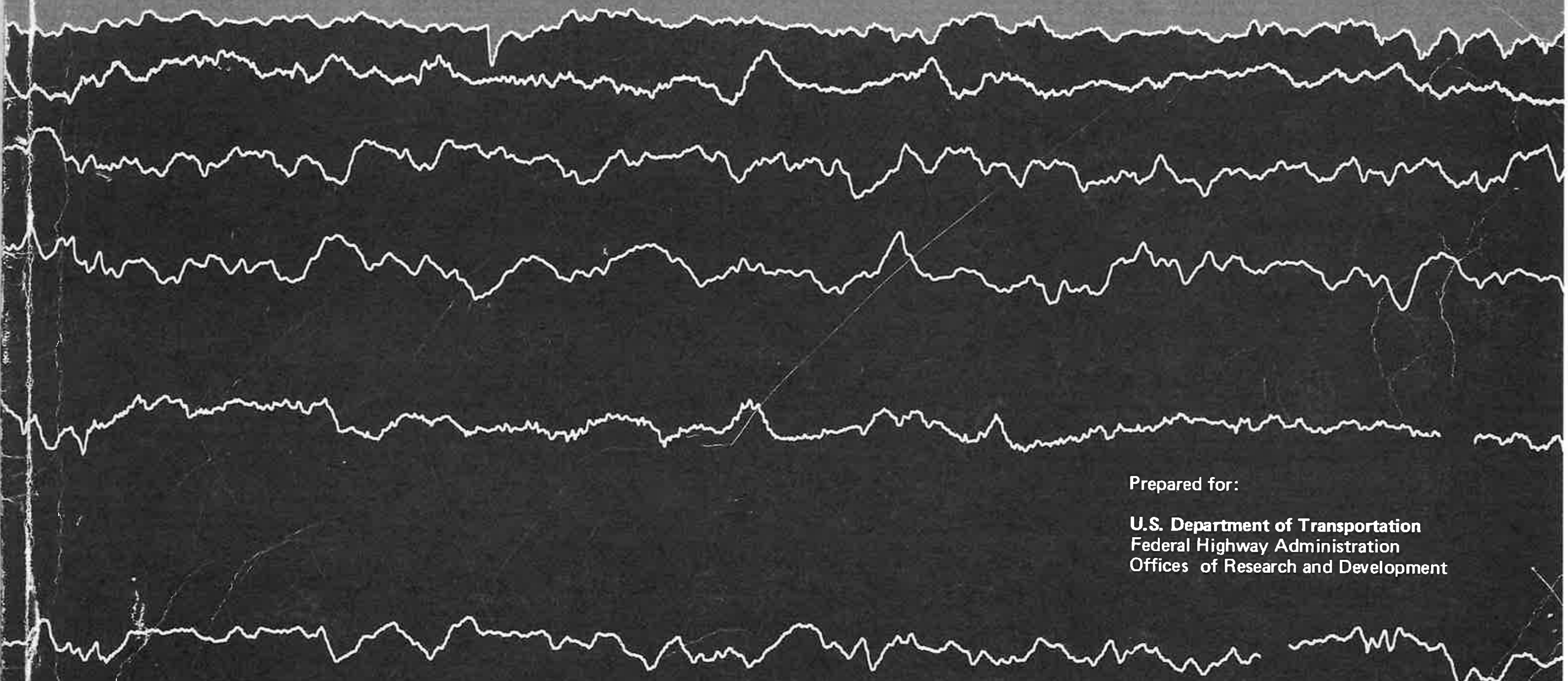
3. *Industrial Noise and Vibration Control*, J.D. Irwin and E.R. Grant, 1979

4. *The Audible Landscape: A Manual for Highway Noise and Land Use*, U.S. DOT, FHWA, 1974

400 Columbus Avenue, Suite 180E
Valhalla, NY 10595
T: 914.347.7500
F: 914.347.7266
www.maserconsulting.com

VARIOUS OTHER REFERENCE DOCUMENTS AND EXCERPTS

The Audible Landscape:
A Manual for Highway Noise and Land Use



Prepared for:

U.S. Department of Transportation
Federal Highway Administration
Offices of Research and Development

tronic devices.

4.4 Barriers

A noise barrier is an obstacle placed between a noise source and a receiver which interrupts the path of the noise. They can be made out of many different substances:

a) sloping mounds of earth, called berms
b) walls and fences made of various materials including concrete, wood, metal, plastic, and stucco
c) regions of dense plantings of shrubs and trees
d) combinations of the above techniques

The choice of a particular alternative depends upon considerations of space, cost, safety and aesthetics, as well as the desired level of sound reduction. The effectiveness of the barrier is dependent on the mass and height of the barrier, and its distance from the noise source and the receiver. To be effective a barrier must block the "line of sight" between the highest point of a noise source, such as a truck's exhaust stack, and the highest part of the receiver. This is illustrated in Figure 4.16.

To be most effective, a barrier must be long and continuous to prevent sounds from passing around the ends. It must also be solid, with few, if any, holes, cracks or openings. It must also be strong and flexible enough to withstand wind pressure.

Safety is another important consideration in barrier construction. These may include such requirements as slope, the distance from the roadway, the use of a guard rail, and discontinuation of barriers at intersections.

Aesthetic design is also important. A barrier constructed without regard for aesthetic considerations could easily be an eyesore. A well designed berm or fence can aesthetically improve an area from viewpoints of both the motorist and the users of nearby land.

A) **Earth Berms** An earth berm, a long mound of earth running parallel to the highway, is one of the most frequently used barriers. Figure 4.17 shows a cross-section of a berm.

Berms can range from five to fifty feet in height. The higher the berm, the more land is required for its construction. Because of the amount of land required, a berm is not always the most practical solution to highway noise. Different techniques must be applied in urban as distinct from rural settings.

A berm can provide noise attenuation of up to 15 dBA if it is several feet higher than the "line of sight" between the noise source and the receiver. This is comparable to the noise reduction of various walls and fences which are used as barriers. However, earth berms possess an added advantage: instead of reflecting noise from one side of the highway to another, as walls do,[1] and thus increasing the noise heard on the opposite side, they deflect sound upwards. Figure 4.18 illustrates this phenomenon.

The cost of building a berm varies with the area of the country and the nature of the project. In California, the state-wide average for building a berm is about $1 per cubic yard when the earth is at the site.[2]

In planning a berm, one must include seeding and planting in figuring cost. Also to be included are land costs and maintenance in relation to erosion, drainage, snowplowing, mowing, and perhaps future seeding. It costs approximately $1,000 per acre per year to maintain a berm which is accessible to maintenance equipment.[3]

B) **Walls and Fences as Barriers** In addition to the more usual function of keeping people, animals and vehicles from entering the highway right of way at undesired locations, a properly designed fence or wall can also provide visual and acoustical separation between highway noise sources and adjacent land areas. This method can reduce noise as much as 15 dBA.[4]

The vertical construction and minimal width of walls and fences makes installation possible when space is severely limited. This is especially important when land costs are high, and where buildings are already adjacent to the highway. The advantages and disadvantages of wall and fence barriers are summarized in Figure 4.19.

The number of design variations for fence and wall barriers is virtually unlimited.

Acoustically, any solid continuous structure will suffice, provided that it is high enough, and provided that the barrier is of adequate mass and density.

The cost of a fence or wall type barrier can vary considerably according to the type of construction, the material used, local availability of materials and skills, and the barrier's dimensions. Not all

[1] Reflection of noise from one side of the highway to another can increase sound levels by 3 dBA. Scholes, Salvidge, and Sargent, "Barriers and Traffic Noise Peaks," *Applied Acoustics*, 5:3 (july 1972) p. 217.

[2] This estimate was provided by the California Highway Department.

[3] *Ibid.*

[4] California Division of Highways, *Highway Noise Control, A Value Engineering Study*, (October 1972).

types of barriers are suited for all climates, and local conditions may cause significant differences in the maintenance cost of the various barrier types. The cost questions must be evaluated on a local basis.

Some of the frequently used materials for fence and wall construction are masonry, precast concrete, and wood.

Masonry noise barriers can be made of concrete blocks, brick or stone. A concrete block barrier might range in cost from $10 a linear foot for a 6-ft. high wall, to $75 a linear foot for a 12-ft. high wall. This latter figure includes a safety railing. In general, a concrete block wall would cost $50 to $60 a linear foot.[1] To alleviate the monotony of a long run of wall, pilasters can be used: a 20 ft. high concrete wall with pilasters might cost $300 per linear foot.[2] Brick and stone are extremely expensive and should only be used for special aesthetic considerations.[3]

Precast concrete panels offer opportunities for cost reduction. A 13' 4" high wall in Fairfield, California constructed of pre-cast concrete panels cost only $29.50 per linear foot.

Wood noise barriers are another possibility. They tend to be less expensive than other methods but are not as durable. An estimated cost for a 6' high 5/8" plywood fence is $5.00 per linear foot.[4]

C) **Plantings** Plants absorb and scatter sound waves. However, the effectiveness of trees, shrubs, and other plantings as noise reducers is the subject of some debate. Some conclusions can, however, be drawn:

- Plantings in a buffer strip, high, dense, and thick enough to be visually opaque, will provide more attenuation than that provided by the mere distance which the buffer strip represents. A reduction of 3-5 dBA per 100 feet can be expected. Shubs or other ground cover are necessary in this respect to provide the required density near the ground.
- The principal effect of plantings is psychological. By removing the noise source from view, plantings can reduce human annoyance to noise. The fact that people cannot see the highway can reduce their awareness of it, even though the noise remains.
- Time must be allowed for trees and shrubs to attain their desired height.
- Because they lose their leaves, deciduous trees do not provide year-round noise protection.

In general, plantings by themselves do not provide much sound attenuation. It is more effective, therefore, to use plantings in conjunction with other noise reduction techniques and for aesthetic enhancement.

The cost of plantings varies with the species selected, the section of the country, the climate, and the width of the buffer strip. For deciduous trees and evergreens, costs range from $10 to $50 a linear foot. The width of such a strip would be approximately 40 feet for deciduous trees and 20 feet for evergreens. Planting shrubs between the trees so as to form a dense ground cover would double the price.

D) **Combinations of Various Barrier Designs** Often, the most economical, acoustically acceptable, and aesthetically pleasing barrier is some combination of the barrier types previously discussed.

For example, the Milwaukee County Expressway and Transportation Commission feels that barriers constructed of pre-cast concrete on top of an earth berm provide maximum benefit for the cost.[5] They estimate that such a combination costs $51 per linear foot.

In addition to cost advantages, an earth berm with a barrier wall on top of it possesses several other advantages over both a wall or a berm alone: 1) it is more visually pleasing than a wall of equivalent height; 2) the berm portion of this combination is less dangerous for a motorist leaving the roadway; 3) the non-vertical construction of the berm does not reflect noise back to the opposite side of the highway the way a wall does; 4) the combination requires less land than would be required for a berm of equivalent height and slope; and 5) the wall provides a fencing function not provided by a berm.

Another combination to be considered is that of plantings in combination with a barrier. Not only do plantings and ground cover provide some additional noise attenuation, but they also increase visual appeal.

4.5 Conclusion

Figure 4.19 provides a summary of the physical techniques which can be used by designers, builders, and developers to reduce highway noise impacts. Some

[1] Figure provided by an official of the California Highway Department.

[2] Representative cost estimates of materials and labor of construction but excluding real estate acquisition; private

[3] California Division of Highways, *Highway Noise Control, Value Engineering Study,* (October 1972), p. 33.

[4] California Division of Highways, *Highway Noise Control, Value Engineering Study,* (October 1972) p. 46.

[5] Milwaukee County Expressway and Transportation Commission, *Noise Impact Study of the Airport Spur,* V. II: *Technical Report,* (March 1973), pp. 7-21.

Assessing and Mitigating Noise Impacts

New York State
Department of Environmental Conservation

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Abstract: Facility operations regulated by the Department of Environmental Conservation located in close proximity to other land uses can produce sound that creates significant noise impacts for proximal sound receptors. This policy and guidance presents noise impact assessment methods, examines the circumstances under which sound creates significant noise impacts, and identifies avoidance and mitigative measures to reduce or eliminate noise impacts.

Related References: See references pages 27 and 28.

I. PURPOSE[1]

This policy is intended to provide direction to the staff of the Department of Environmental Conservation for the evaluation of sound levels and characteristics (such as pitch and duration) generated from proposed or existing facilities. This guidance also serves to identify when noise levels may cause a significant environmental impact and gives methods for noise impact assessment, avoidance, and reduction measures. These methods can serve as a reference to applicants preparing environmental assessments in support of an application for a permit. Additionally, this guidance explains the Department's regulatory authority for undertaking noise evaluations and for imposing conditions for noise mitigation measures in the agency's approval

[1] A Program Policy Memorandum is designed to provide guidance and clarify program issues for Division staff to ensure compliance with statutory and regulatory requirements. It provides assistance to New York State Department of Environmental Conservation (DEC) staff and the regulated community in interpreting and applying regulations and statutes to assure that program uniformity is attained throughout the State. Nothing set forth in a Program Policy Memorandum prevents DEC staff from varying from that guidance as specific circumstances may dictate, provided the staff's actions comply with applicable statutory and regulatory requirements. As this guidance document is not a fixed rule, it does not create any enforceable right by any party using the Program Policy Memorandum.

operates at the same noise level as the ambient, then 3 dB(A) must be added to the existing ambient noise level to obtain the future noise level. If the goal is not to raise the future noise levels the new facility would have to operate at 10 dB(A) or more lower than the ambient.(see Table A)

Table B

HUMAN REACTION TO INCREASES IN SOUND PRESSURE LEVEL

Increase in Sound Pressure (dB)	**Human Reaction**
Under 5	Unnoticed to tolerable
5 - 10	Intrusive
10 - 15	Very noticeable
15 - 20	Objectionable
Over 20	Very objectionable to intolerable

(Down and Stocks - 1978)

Impact assessment will vary for specific project reviews, but must consist of certain basic components for all assessments. Additional examination of sound generation and noise reception are necessary, where circumstances warrant. Sound impact evaluation is an incremental process, with four potential outcomes:

- exemption criteria are met and no noise evaluation is required;
- noise impacts are determined to be non-significant (after first-level evaluation);
- noise impacts are identified as a potential issue but can be readily mitigated (after second level evaluation); or
- noise impacts are identified as a significant issue requiring analysis of alternatives as well as mitigation (third level evaluation).

All levels of evaluation may require preparation of a noise analysis. The required scope of noise impact analysis can be rudimentary to rather sophisticated, depending on circumstances and the results obtained from initial levels of evaluation. Recommendations for each level of evaluation are presented below.

Table C

PROJECTED NOISE LEVELS

Noise Source	Measurements	1,000 feet	2,000 feet	3,000 feet
Primary and secondary crusher	89 dB(A) at 100 ft	69.0 dB(A)	63.0 dB(A)	59.5 dB(A)
Hitachi 501 shovel loading	92 dB(A) at 50 ft	66.0 dB(A)	60.0 dB(A)	56.5 dB(A)
Euclid R-50 pit truck loaded	90 dB(A) at 50 ft	64.0 dB(A)	58.0 dB(A)	54.4 dB(A)
Caterpillar 988 loader	80 dB(A) at 300 ft	69.5 dB(A)	63.5 dB(A)	60.0 dB(A)

(The Aggregate Handbook, 1991)

Table D
Common Equipment Sound Levels

EQUIPMENT	**DECIBEL LEVEL**	**DISTANCE** in feet
Augered earth drill	80	50
Backhoe	83-86	50
Cement mixer	63-71	50
Chain saw cutting trees	75-81	50
Compressor	67	50
Garbage Truck	71-83	50
Jackhammer	82	50
Paving breaker	82	50
Wood Chipper	89	50
Bulldozer	80	50
Grader	85	50
Truck	91	50
Generator	78	50
Rock drill	98	50

(excerpt and derived from Cowan, 1994)