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22 May 2023

Penns Neck Plaza LLC
c/o Mr. Caleb Feiring
463 Jefferson Road
Princeton, New Jersey 08540
caleb@princevest.com

Re: Acoustical Evaluation of Proposed Commercial Site
Penns Neck Plaza, West Windsor, New Jersey
LSG&A File 2023002

Dear Mr. Feiring:

Lewis S. Goodfriend & Associates (LSG&A) has completed an evaluation of the expected outdoor sound pressure levels due to the mechanical equipment and drive-thru intercoms for the proposed Penns Neck Plaza commercial development located in West Windsor, New Jersey. This letter summarizes the results of our evaluation, including a summary of the applicable noise regulations and expected sound levels at the nearest property lines due to the anticipated equipment on site. The sound levels due to the anticipated equipment are expected to meet the applicable limits of the state and local noise regulations at the adjacent property lines. In addition, the proposed berm and sound barrier combination is expected to reduce the noise impact from Route 1 traffic on the adjacent residential properties, compared to the existing conditions.

1.0 SITE LAYOUT

The proposed Penns Neck Plaza is to be located along Route 1 in West Windsor, New Jersey, between Mather Avenue and Washington Road. The nearest residential properties are located to the southeast of the site along Mather Avenue, Varsity Avenue, and Washington Road. Figure 1, at the end of this letter, shows an aerial view of the site and surrounding areas. The proposed site is anticipated to include a convenience store and gas station, two drive-thru food establishments, and an urgent care facility. As part of the application, a berm and sound barrier combination is proposed between the site and the adjacent residential area at a total height of 20 feet. This will consist of an 8 foot tall berm and a 12 foot tall barrier for the majority of the berm/barrier length, with a 20 foot tall barrier-only section with a service gate in the middle section across Varsity Avenue.

2.0 AMBIENT SOUND PRESSURE LEVEL MEASUREMENTS

2.1 Measurements

On Thursday, 16 March 2023, LSG&A visited the proposed site to set up two continuous monitors to measure the ambient sound pressure levels in 30-minute intervals beginning at 11:00 A.M. Figure 1, at the end of this letter, shows an aerial view of the site with the acoustical measurement locations identified. The results of these measurements indicated average sound levels ranging from 66 dB(A)[1] to 74 dB(A) near Route 1, and 55 dB(A) to 62 dB(A) at a location near the existing residential properties. Figures 2 and 3, at the end of this letter, show the L_{eq}[2], L_{10}[3], and L_{90}[4] sound levels, summarized in 30-minute increments across the measurement period. Sound sources that contributed to the ambient sound pressure levels at the proposed site during the measurement included traffic, wildlife, and aircraft.

2.2 Data Acquisition and Analysis

The measurements at the proposed site were performed using two Rion Type NL-52 precision sound level meters, each equipped with a Rion Type UC-59 microphone. Each analyzer automatically recorded statistical A-weighted and one-third octave band sound pressure levels and stored the results in memory for later retrieval. Each analyzer was mounted on a tripod at a height of approximately 5 feet above grade, and a windscreen was placed over each microphone for all measurements. Each system's calibration was verified in the field before and after the measurements using a Brüel & Kjær Type 4231 acoustical calibrator. The stored data was later downloaded and transferred to a spreadsheet for evaluation. Copies of the NIST traceable calibration certificates for the sound level measurement equipment are available upon request.

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[1] A-Weighting, noted as dB(A), is a standardized sound level meter setting having a frequency characteristic similar to the human ear/brain frequency sensitivity.

[2] The L_{eq} is the steady state sound pressure level, and represents the average sound pressure levels during the measurement period.

[3] The L_{10} is the sound pressure level exceeded 10 percent of the time, and represents the transient sound pressure levels during the measurement period.

[4] The L_{90} is the sound pressure level exceeded 90 percent of the time, and represents the continuous background sound pressure levels during the measurement period.

3.0 REQUIREMENTS OF THE APPLICABLE NOISE REGULATIONS

The New Jersey Department of Environmental Protection (NJDEP) maintains a statewide noise regulation, and the Township of West Windsor code also includes regulations regarding sound.

3.1 NJDEP Noise Regulation

The NJDEP noise regulation is set forth in N.J.A.C. 7:29 and limits the A-weighted sound levels produced by a commercial facility, when measured at a residential property line, to the following sound levels.

Daytime	(7:00 A.M. -to- 10:00 P.M.)	–	65 dB(A)
Nighttime	(10:00 P.M. -to- 7:00 A.M.)	–	50 dB(A)

When the sound from the source is constant in level and in character, the NJDEP regulation also provides limits for sound pressure levels in the preferred octave bands with center frequencies between 31.5 and 8000 Hz, as summarized in Table 1.

Table 1 – Daytime and Nighttime Sound Pressure Level Limits [dB re: 20μPa] of the NJDEP Noise Regulation for Residential Property Receivers (N.J.A.C. 7:29)

	Octave Band Center Frequency, Hz								
	31.5	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Daytime Limits	96	82	74	67	63	60	57	55	53
Nighttime Limits	86	71	61	53	48	45	42	40	38

The NJDEP regulation also limits sound pressure levels produced by noise sources with an impulsive character to not more than 80 dB(A) as measured by a sound level meter set to fast response. The limit for impulsive noise applies at all times. Impulsive sound that repeats more than four times in a nighttime hour is limited to 50 dB(A) when measured at a residential receiver.

3.2 West Windsor Noise Regulation

The Code of the Township of West Windsor, Section 113-6 *(Maximum Permissible Sound Levels),* provides the same A-weighted and octave band sound pressure level limits as the NJDEP code. However, the NJDEP noise regulation states that the measured sound pressure levels may not exceed the given decibel levels, whereas the Township's noise ordinance states that the measured sound pressure levels may not equal or exceed the decibel limits.

In addition, Section 200-25 (*Technical performance standards applicable to all uses*) provides the following overall dB(A) limits:

Residential District Daytime	(7:00 A.M. -to- 9:00 P.M.)	– 55 dB(A)
Residential District Nighttime	(9:00 P.M. -to- 7:00 A.M.)	– 50 dB(A)
All Other Districts		– 65 dB(A)

4.0 ACOUSTICAL EVALUATION

4.1 Evaluation of Berm/Barrier Combination

Chapter 200, Part 7, of the Code of the Township of West Windsor sets specific requirements for the Route 1 Penns Neck Business Commercial Redevelopment Zone. Section 200-289.E.(3) requires a landscape buffer to adjacent residential properties, which is to include "a berm of no less than 12 feet in height, topped by an eight-foot-high fence constructed of highly effective sound-deadening material or an *equivalent combination of berm, wall, and/or fence* [emphasis added]." The sound isolation properties of materials are typically described by their Sound Transmission Class (STC) rating. Higher STC ratings indicate better sound isolation. To serve as an effective sound barrier, LSG&A recommends the use of materials with a minimum rating of STC 30 for the fence/wall portion of the landscape buffer, such as the Plywall sound barrier system by Hoover Treated Wood Products. Product information on the Plywall system is provided at the end of this letter.

LSG&A understands that an 8 foot tall berm with 12 foot tall topping barrier is preferred as a more practical option from a landscaping and ongoing maintenance standpoint. An evaluation was performed to determine the expected difference in attenuation between this preferred 8 foot tall berm/12 foot tall barrier combination and a 12 foot tall berm/8 foot tall barrier combination. The results indicated that the difference in attenuation between the two combinations was within 0.5 dB(A), which is not acoustically significant. Therefore, the preferred 8 foot tall berm/12 foot tall barrier combination is considered to be acoustically equivalent and therefore consistent with the ordinance.

4.2 Evaluation of Site Equipment

The evaluation of the sound pressure levels due to the anticipated sound generating equipment for the proposed buildings was based on manufacturers' sound pressure level data for typical air handing units and drive-thru intercom systems. LSG&A calculated the expected sound pressure levels utilizing SoundPLAN 3D acoustical modeling software, using ISO Standard 9613-2 methodology. The acoustical model considered the propagation of sound over distance, the shielding and reflection of sound due to buildings and the proposed berm/barrier, the effect of topography, and the effect of air absorption.

LSG&A recommends selecting drive-thru intercom systems that include automatic volume control (AVC) which restricts the output to 15 dB above the ambient sound level, such as those by HME. In addition, the following rooftop mechanical equipment and associated manufacturers' sound data was included for each building in the acoustical model:

Table 2 – Equipment Considered in the Acoustical Evaluation, Penns Neck Plaza, West Windsor, New Jersey.

Equipment Type	Sound Power Level, dB(A)	Equipment Quantity			
		Convenience Store	Drive-Thru #1	Drive-Thru #2	Urgent Care
Rooftop Air Handling Units	84	3	2	2	4
Kitchen Exhaust Fans	76	2	2	2	-
Bathroom Exhaust Fans	65	1	1	1	2
Intercoms	82*	-	2	2	-

*Maximum sound power level output of 82 dBA, or lower output if ambient sound is lower.

The specific make and model of equipment used for this evaluation are provided below. Alternative equipment may be considered as long as it meets the limits of the applicable noise regulations:

- Rooftop Air Handling Units: Carrier Model 48LCTA14B2M5-1E4C0
- Kitchen Exhaust Fans: LDI Model DU85H
- Bathroom Exhaust Fans: LDI Model DR10H
- Intercoms: HME Model SPP2

Table 3, below, shows the expected A-weighted sound levels due to the simultaneous operation of the mechanical equipment and the drive-thru intercoms. The results are compared to the applicable limits of the State and local noise regulations. Figure 1, at the end of this letter, shows the acoustical evaluation locations.

Table 3 – Expected A-weighted Sound Levels due to Mechanical Equipment and Drive-Thru Intercoms, Penns Neck Plaza, West Windsor, New Jersey.

Location	Sound Level, dB(A)	
	Expected	Limit
1 (261 Mather Avenue)	38	50
2 (262 Varsity Avenue)	39	50
3 (261 Varsity Avenue)	40	50
4 (254 Washington Road)	40	50

Figure 4, at the end of this letter, shows the expected octave band sound pressure levels at each location due to the mechanical equipment and intercoms. Figure 5, at the end of this letter, shows the expected overall A-weighted sound level contours due to the mechanical equipment and intercoms. The results of this evaluation indicate that the sound levels due to the mechanical equipment and intercoms are expected to meet the applicable limits of the noise regulations at the adjacent residential property lines. LSG&A also reviewed the locations of the proposed trash areas on site, and the sound levels due to trash pickups are also expected to comply with the applicable daytime and nighttime limits of the noise regulations.

4.3 Evaluation of Roadway

Although public roadway noise is not subject to the limits of the NJDEP or local noise regulations, LSG&A evaluated the effect of the berm/barrier on the Route 1 traffic noise at the request of the applicant. Based on the results of the evaluation, the proposed 20 foot tall berm/barrier is expected to reduce the sound levels due to vehicular traffic on Route 1 by approximately 7 to 9 dB(A) at the adjacent residential properties along Varsity Avenue. Lesser reductions are expected for the adjacent residential properties along Mather Avenue and Washington Road, due to sound from Route 1 propagating around the ends of the berm/barrier. Figure 6, at the end of this letter, shows the expected overall A-weighted sound level reduction from Route 1 provided by the proposed berm/barrier.

Please note that all recommendations included in this letter are acoustical in nature and should be reviewed by the appropriate licensed design professionals. Alternative products should be submitted for review. I trust that this information is sufficient for your present needs. Please call if you have any questions regarding this letter.

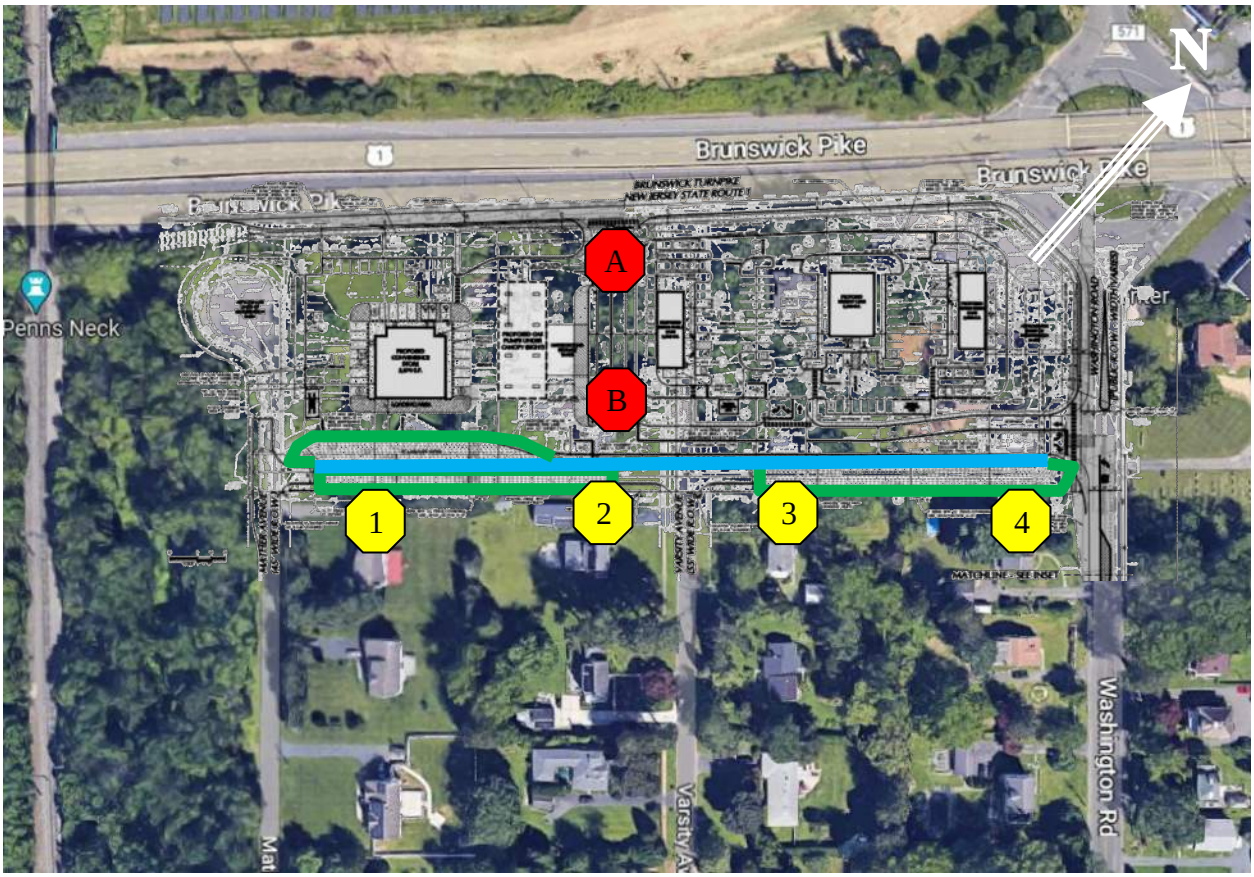
Very truly yours,

LEWIS S. GOODFRIEND & ASSOCIATES

Jack A. Zybura, P.E., INCE Bd. Cert.
Associate Principal

JAZ:jaz
Enclosures F:\JOB_DIR\2023\2023002\Documents\L2023002D.docx

Figure 1 – Aerial View Showing the Proposed Site, Ambient Measurement Locations, Berm/Barrier Location, and Acoustical Evaluation Locations, Penns Neck Plaza, West Windsor, New Jersey.



NOTES: All Locations Approximate
Not to Scale
Not for Construction

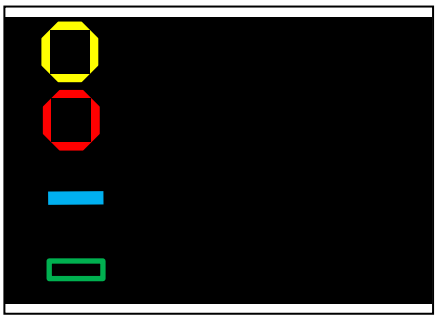


Figure 2 – Measured Ambient Sound Levels at Location A, Penns Neck Plaza, West Windsor, New Jersey, 16-17 March 2023.

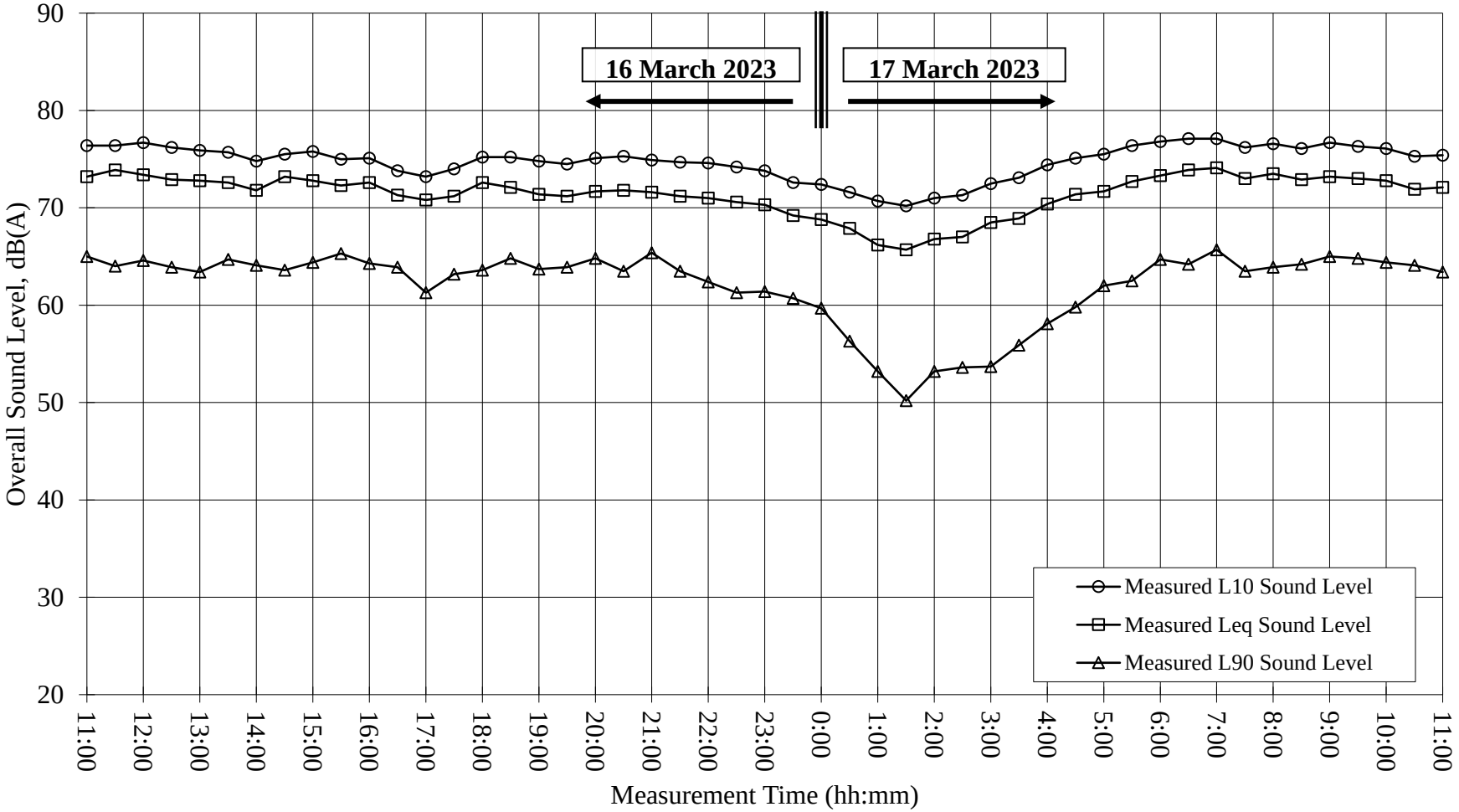


Figure 3 – Measured Ambient Sound Levels at Location B, Penns Neck Plaza, West Windsor, New Jersey, 16-17 March 2023.

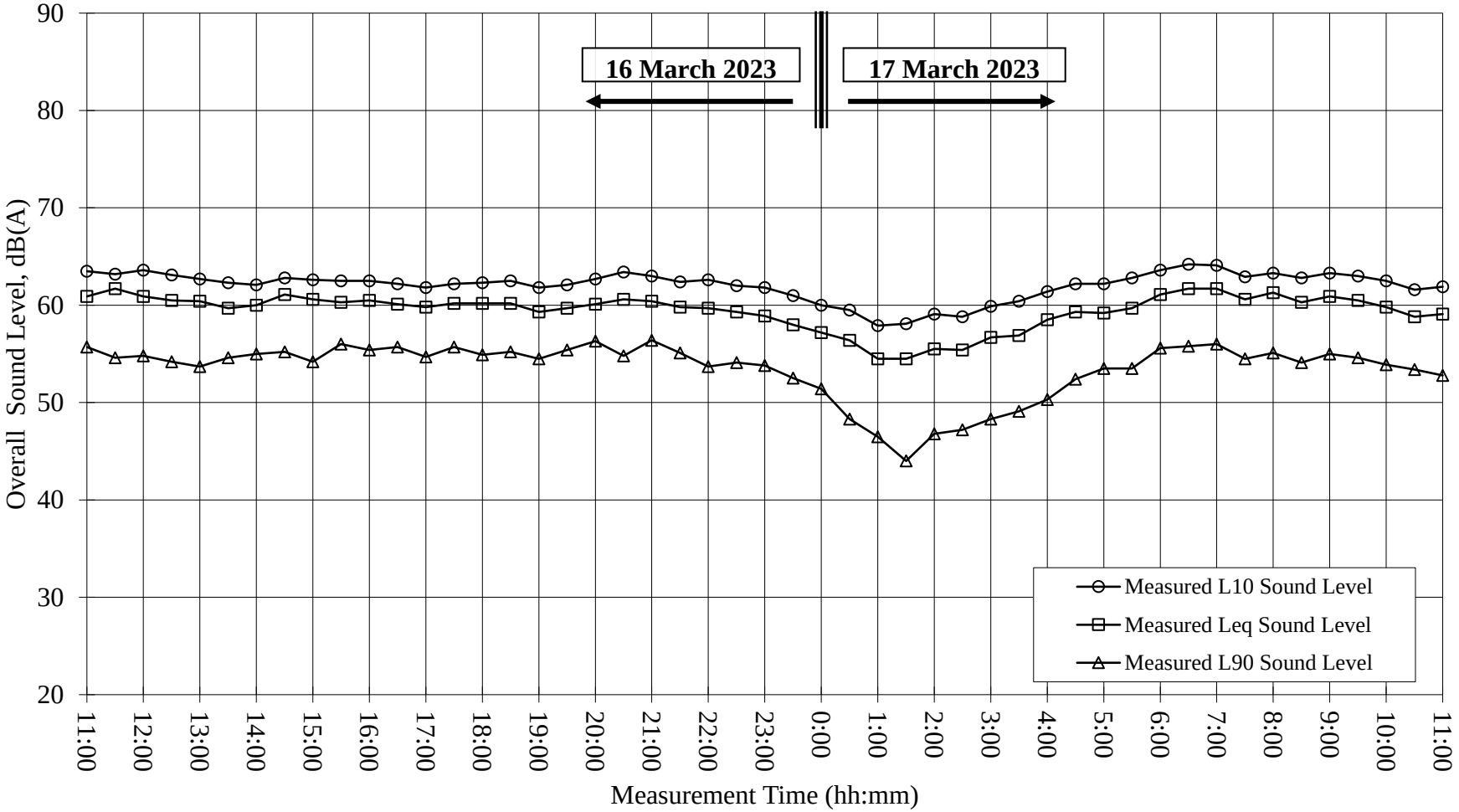


Figure 4 – Expected Sound Pressure Levels (Lp) due to Rooftop Mechanical Equipment and Drive-Thru Intercoms, Compared to the Nighttime Residential Limits of the Noise Regulations, Penns Neck Plaza, West Windsor, New Jersey.

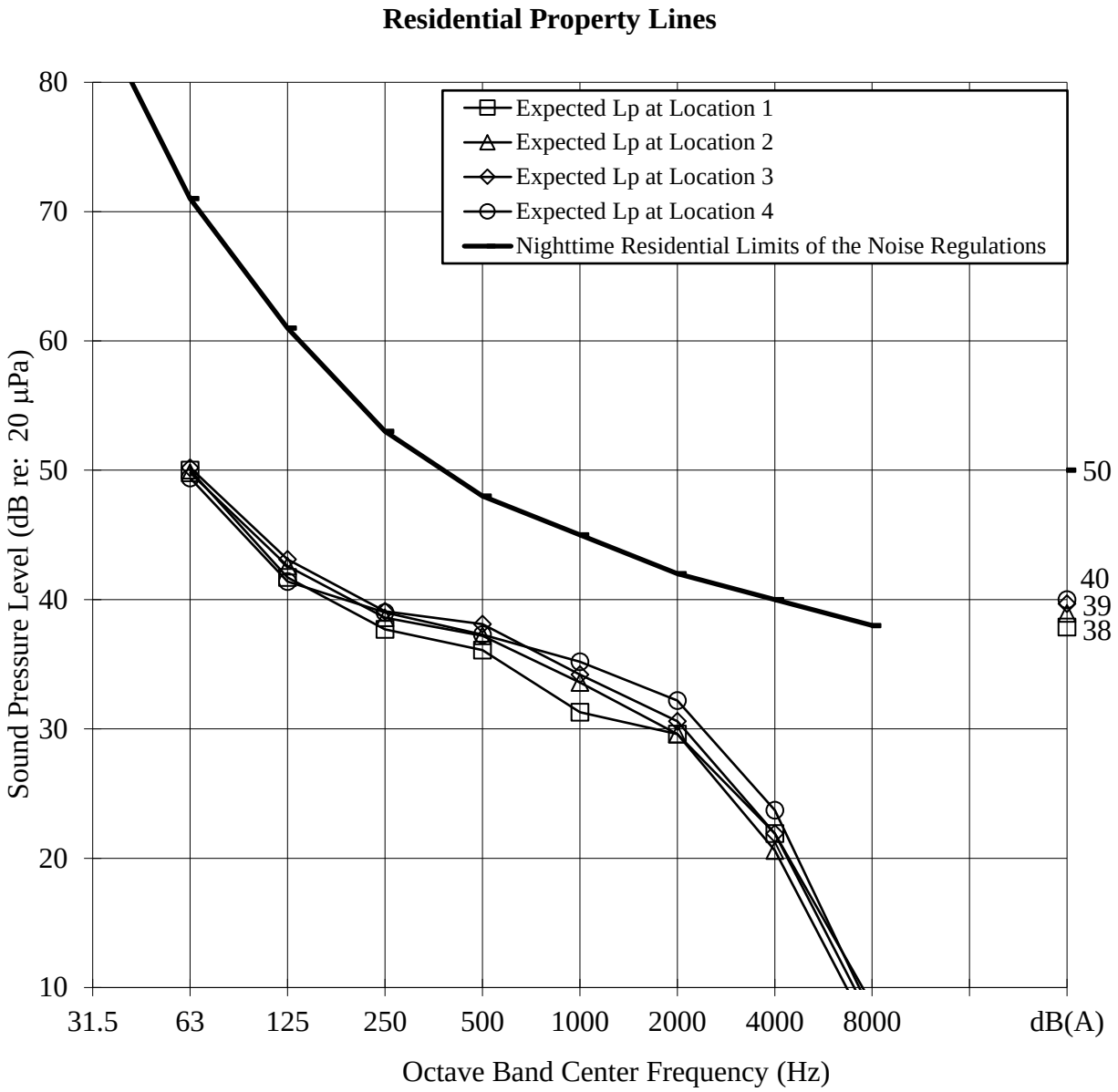


Figure 5 – Expected Overall A-weighted Sound Levels due to Rooftop Mechanical Equipment and Drive-Thru Intercoms, Penns Neck Plaza, West Windsor, New Jersey.

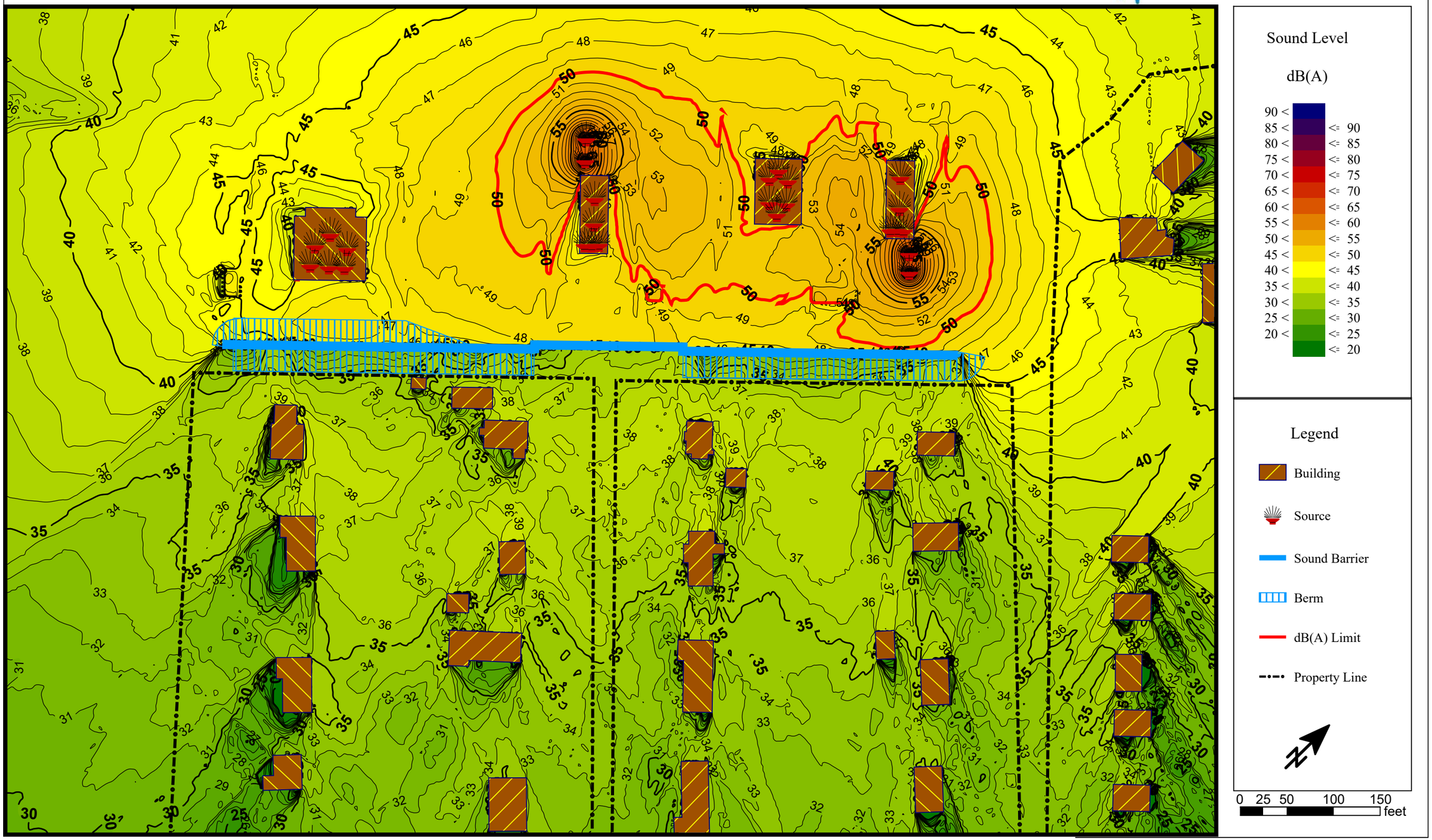


Figure 6 – Expected Change in Overall A-weighted Sound Level from Route 1 due to Proposed Berm/Barrier, Penns Neck Plaza, West Windsor, New Jersey.

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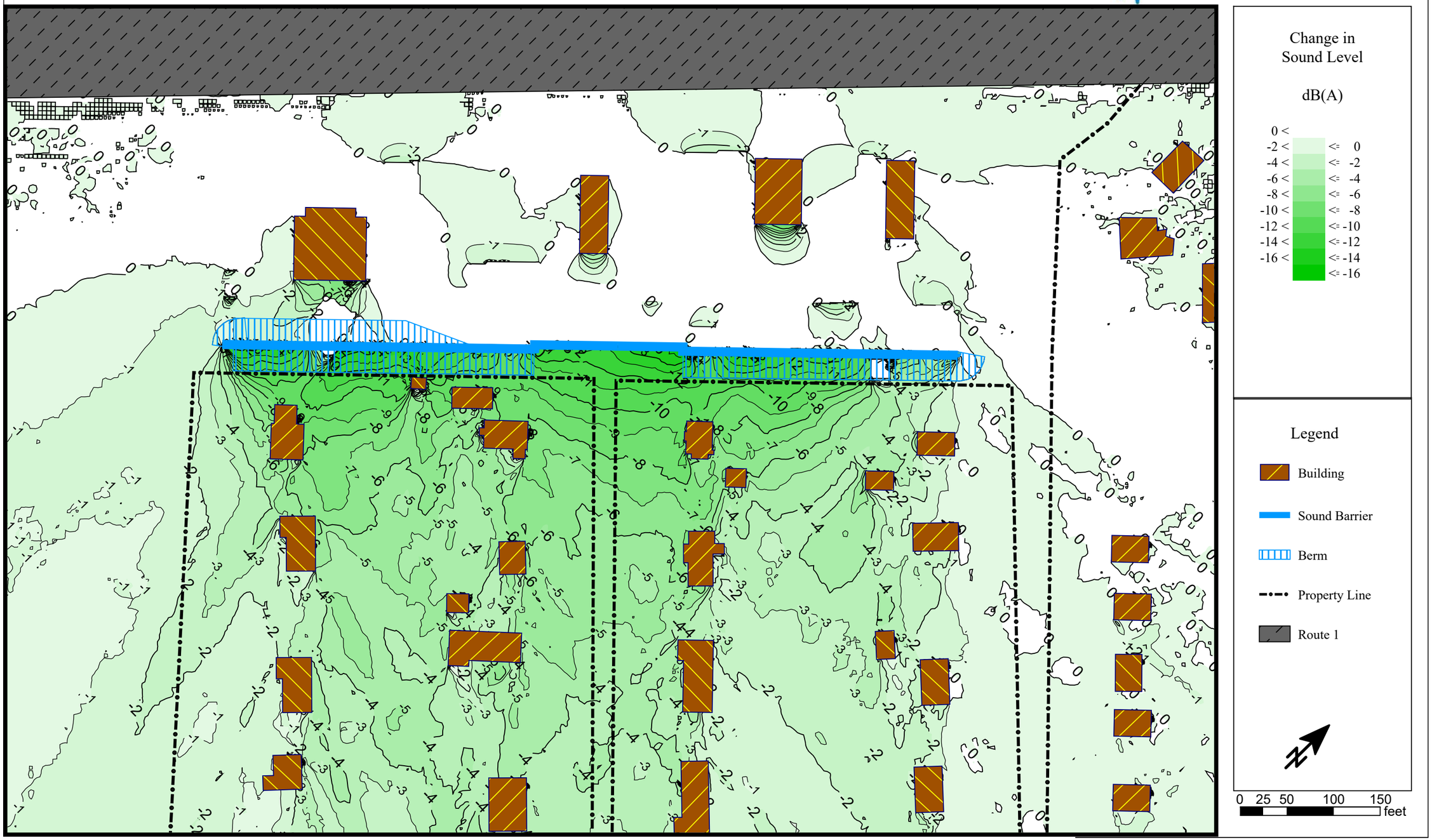
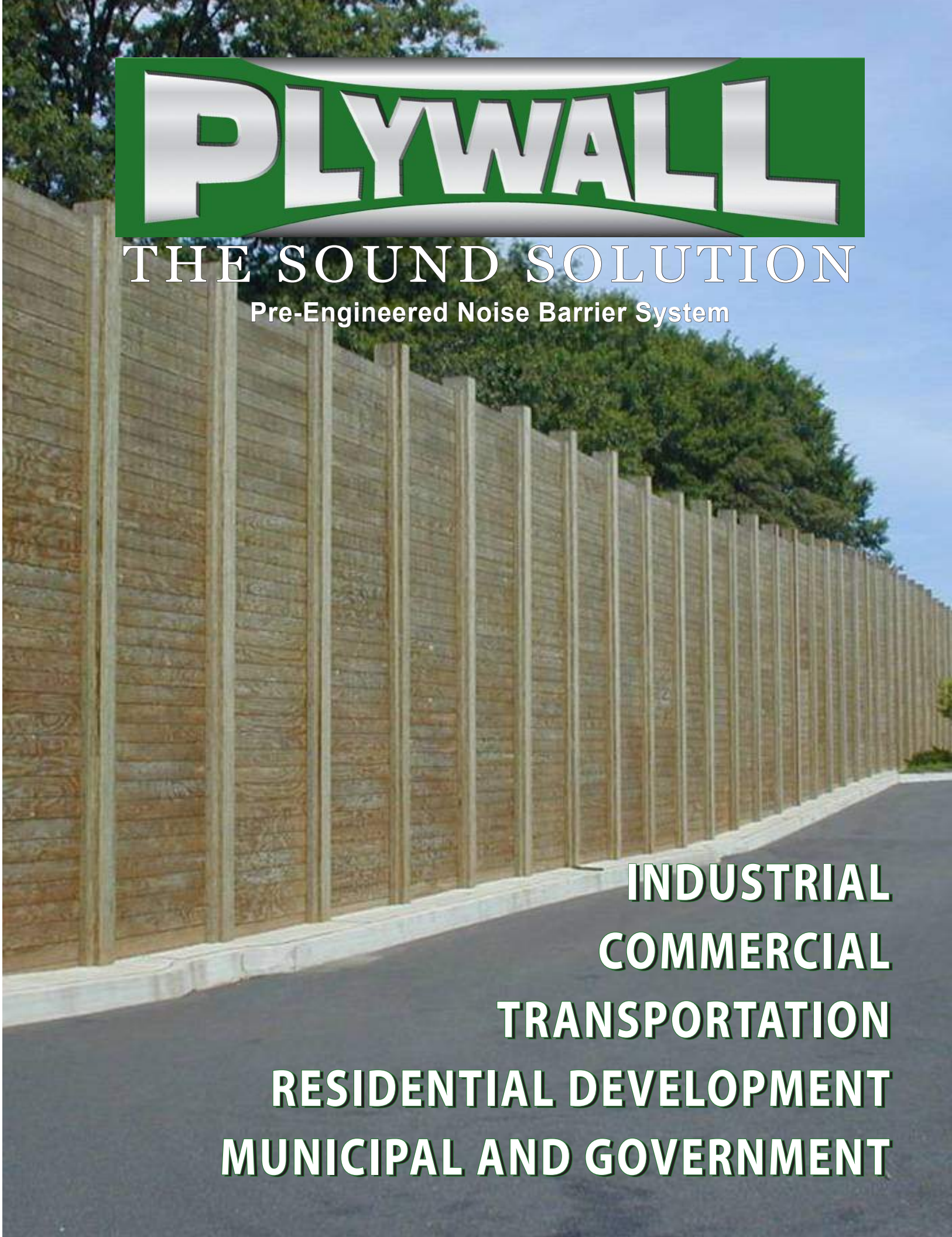



PLYWALL
THE SOUND SOLUTION
Pre-Engineered Noise Barrier System
INDUSTRIAL
COMMERCIAL
TRANSPORTATION
RESIDENTIAL DEVELOPMENT
MUNICIPAL AND GOVERNMENT

INDUSTRIAL AND COMMERCIAL

PLYWALL® barriers are utilized across the U.S. in a variety of applications to mitigate noise, protect property, and enhance appearances with no routine maintenance.

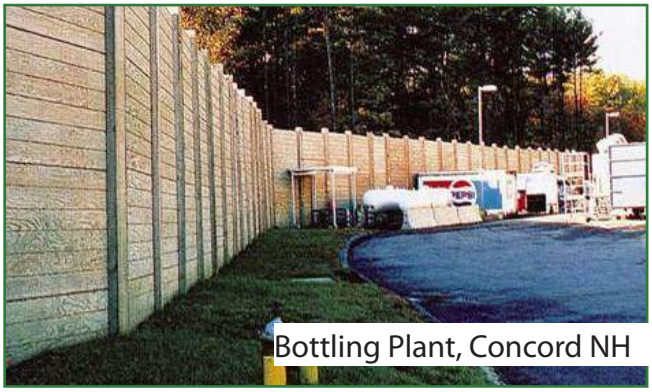
- Manufacturing Plants
- Generators
- Trucking Facilities
- Big Box Retail
- Strip Malls
- Hospitals
- Recycling Centers

Each wall system is custom built to meet your specifications.


Refrigerated Warehouse, Chesapeake VA


Gas Station, Brick NJ


Utility, Concord NH


Bottling Plant, Concord NH


Mall, Emerson NJ


Mall, Richmond VA

Grocery Store, Alpharetta GA

Phone Number: 1-800-531-5558 | Website: www.plywall.com | E-mail: plywall@frtw.com

RESIDENTIAL DEVELOPMENT

With noise issues more prevalent in communities and budgets tighter, PLYWALL® offers an acoustically rated noise barrier system at a competitive price.

- Lower material costs
- Friendlier fence appearance
- Ease of installation
- No routine maintenance


Apartments, Atlanta GA

Gaithersburg, MD


Hwy. 17, Campbell CA


Sprain Brook Pkwy., NY

MUNICIPAL AND GOVERNMENT

The industrial durability and lifespan of PLYWALL® makes it an excellent choice for noise mitigation, screening, and privacy fences with no routine maintenance.

- Schools
- Waste Water
- Parking Lots
- Parks
- Transportation and Utility Garages
- Zoos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Town Yard, Weston MA


Public Schools Bus Parking, Concord NH


Waste Water Treatment Plant, Bedford MA

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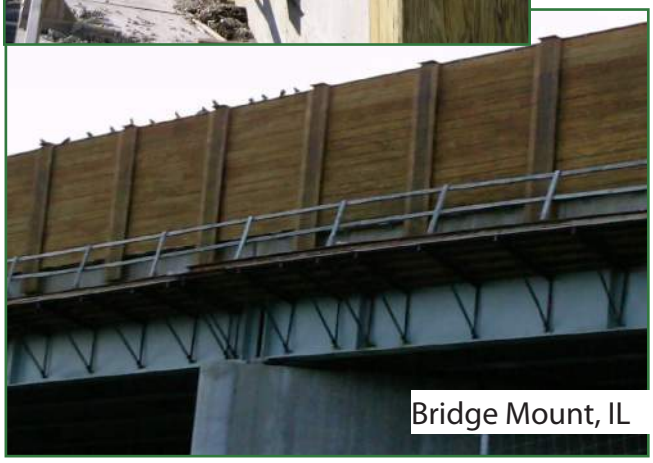
TRANSPORTATION

An effective and low cost alternative to other barrier types:

- No routine maintenance
- Pre-engineered for wind loads up to 60 PSF
- Standard heights up to 30 feet (certain wind load limitations apply)
- Minimum 20dB transmission loss when tested in accordance with ASTM E-90 (STC = 31)
- 25 year limited warranty against fungal decay and termite damage
- Renewable resource

Route 618, Fredericksburg VA



Bridge Mount, IL

Airport, Rockford IL

Townhouses, Gaithersburg MD

North Capitol Street, San Jose CA

Phone Number: 1-800-531-5558 | Website: www.plywall.com | E-mail: plywall@frtw.com

PLYWALL® is a post and panel system consisting of prefabricated pressure treated wood "sandwich" panels supported between pressure treated Parallam PSL engineered timber posts. The panels are typically 2-3/4 inches thick and secured to the posts within channels created by pressure treated 4" x 4" cleats that are spiked or lagged parallel to the posts. Panel caps are provided to secure the top of the panels.

The PLYWALL® panels have been tested in accordance with ASTM E-90 and our performance is comparable to concrete and masonry. PLYWALL® is engineered for your specified wind loading requirements up to 60 PSF.

Prefabricated panels are available in 8, 12, and 16 foot widths and standard heights up to 24 feet. Specialty designed sizes are available in various widths and additional heights.

The panels are supported by pressure treated Parallam PSL engineered timber posts which are embedded in the ground and can be backfilled with gravel or concrete.

If a special finish is desired, the T1-11 plywood's textured surface enhances adhesion. Neither staining nor painting are required due to the permanent protection and coloration provided by the preservative treatment.

Please visit our website (www.plywall.com) for detailed specifications and installation instructions.

Phone Number: 1-800-531-5558 | Website: www.plywall.com | E-mail: plywall@frtw.com

TECHNICAL NOTE

PLYWALL®

THE SOUND SOLUTION

A Division of Hoover Treated Wood Products, Inc.

PLYWALL® SOUND BARRIER SPECIFICATION GUIDE

1. **DESCRIPTION** – This work shall consist of the construction of sound barrier consisting of PLYWALL® panels as manufactured by Hoover Treated Wood Products, Inc., supported by Power Preserved Glulam® as manufactured by Anthony Forest Products Company.

2. **MATERIALS** – Materials shall conform to the following:

   2.1 SOUND BARRIER PANELS – Panels shall be fabricated as "PLYWALL®" panels as manufactured by Hoover Treated Wood Products, Inc. Panel design shall have been tested in accordance with ASTM E-90 and ASTM E-413 and shall result in a Sound Transmission Class (STC) of 31 or better. Panels shall consist of a structurally sound frame of 2" by 4" (51mm by 102mm) or 2" by 6" (51mm by 153mm) (nominal) or 4" by 4" (102mm by 102mm) Southern Yellow Pine lumber No. 1, surfaced four sides, covered on both panel faces by shiplap-jointed, APA-303 specialty siding, Exterior Grade, Premium (6-SW), Southern Pine, exposure durability classification Exterior, Texture 1-11, 5-ply, 19/32" (15mm) thick, grooves 8" (200mm) o.c. All wood used in panel construction shall be pressure preservative treated with MCA preservative to a minimum net retention of 0.15pcf (2.40kg/m^3) or CCA preservative to a minimum net retention of 0.40pcf (6.41kg/m^3) in accordance with American Wood Protection Association (AWPA) standards U1 and T1. All plywood siding and 2" (50mm) (nominal) lumber shall be kiln dried after treatment to a moisture content of 19% or less. All panel sections shall be fabricated prior to shipment. All panels shall have two nylon lifting webs, securely attached along the top.

   2.2 SUPPORT POSTS – Posts shall be Power Preserved Glulam® Fb 1.8E 2400-V5-M1 Balanced-No-Camber as manufactured by Anthony Forest Products Company. Minimum net retention of preservative shall be 0.31pcf (4.97kg/m^3) of MCA or 0.60pcf (9.61kg/m^3) of CCA in accordance with AWPA standards U1 and T1. Posts shall be bundled so that each layer is separated by wood spacers to allow air drying after treatment. The length of the post may vary from Hoover's standard chart due to foundation and wind load requirements. Posts will be supplied with one extra foot in length to compensate for depth variances.

   2.3 CLEATS – Vertical cleats for attaching panels to posts shall be Southern Yellow Pine lumber No. 1, pre-drilled every 12" (304.8mm) for attaching. Minimum net retention of preservative shall be 0.15pcf (2.40kg/m^3) of MCA or 0.40pcf (6.41kg/m^3) of CCA in accordance with AWPA standards U1 and T1.

   2.4 FASTENERS – All nails, spikes (or lag bolts, if applicable) shall be hot dip galvanized zinc coated per ASTM A153 or stainless steel.

2.5 **SEALANT** – A clear sealant or solid color stain to be factory applied to the wall to include posts, cleats, and panels.

2.6 **SOURCING** – All Wood Sound Barrier System Materials, including posts, panels, and cleats, shall be treated and fabricated at Hoover-owned locations.

3. CONSTRUCTION

3.1 **MATERIAL UNLOADING AND STORAGE** – Contractor shall provide suitable unloading equipment and storage space for Sound Barrier Materials. Sound Barrier Materials shall be kept off the ground and shall be protected from mud, splattering, staining, vandalism, or physical damage.

3.2 **POST HOLES** – Post holes shall be augered to the required diameter and depth, which shall be determined by the owner's engineer (Hoover provides standard recommendations based on assumed soil properties). Spacing shall allow the post to be centered within the hole and allow the post to be installed to the center-to-center-required measurement which is dependent on the post size and panel width. Posts may shrink slightly after erection. The contractor shall take all measures and precautions necessary to prevent collapse of the hole sides prior to backfilling and compaction. Since post sizes may vary within a single project, actual post width shall be checked at delivery. Actual panel width shall also be verified at delivery.

3.3 **POST SETTING** – Posts shall be plumb and in precise position to accept panels and shall be braced in such a manner as to remain plumb and in the required lateral position during backfilling. Post spacing shall allow clear spans between posts equal to the panel width plus a maximum 1.25" (32mm) tolerance overall. In no case shall the erection tolerance between posts exceed 1.25" (32mm).

3.4 **BACKFILLING** – (Crushed stone) Backfill consisting of washed and well graded 1/2" (13mm) gravel shall be placed around the posts in 6" (153mm) maximum lifts and shall be compacted between lifts. Compaction shall be achieved by making a minimum of three passes per lift with a flat faced mechanical tamper. After backfilling is complete, the gravel must be covered with an earthen berm at least 3" (76.2mm) in height. This berm should extend slightly past the gravel and should slope away from the post. This berm is intended to help slow down rain intrusion of water to the soil surrounding the gravel.

3.5 **BACKFILLING** – (Concrete) (per customer's engineer)

3.6 **BACKFILLING** – (Reinforced concrete) (per customer's engineer)

3.7 **ATTACHMENT OF REAR CLEATS** – Prior to setting panels, the rear cleats shall be fully attached to each post to support the Sound Barrier panels during placement. Cleats shall be placed at an elevation that will insure support of the panel over the entire height. The rear edge of the cleat shall be placed such that the panel end's center-line is aligned with the presented post face's center-line. The cleats shall be attached with properly sized hot dip galvanized zinc coated (or stainless steel) spikes or lag bolts as shown. Note: Contractor may attach rear cleats prior to setting posts, but post embedment depth tolerances become critical since the cleats cannot be adjusted.

3.8 **SETTING PANELS** – Sound Barrier panels shall be lifted by the provided lift straps and seated firmly against the prefixed rear cleats in a manner which maintains panel plumb and level and equally divides the construction gap to each side (center panel between post – do not place panel all the way to one side against the post). The panel will then be secured by attaching the front cleats to the posts along the unsecured panel face. Cleat nails shall never be driven into the panel. Note: Front cleats shall be firmly and securely fixed to the post at both ends before releasing lifting straps.

3.9 **PANEL BOTTOM EMBENDMENT** – Bottom of panels shall be (embedded in the earth per _____ to prevent the passage of sound) (backfilled with crushed stone per _____ to prevent the passage of sound and to provide drainage).

3.10 FIELD TRIMMING OF POST TOPS – After panels have been set and caps attached, the post tops may be trimmed for aesthetics.

3.11 PANEL CAPS – After removal of the nylon lifting straps, the panel caps shall be trimmed in the field and attached with provided stainless steel timber tamers placed every 12” (305mm).

3.12 DISPOSAL OF TREATED WOOD SCRAPS – Do not burn scraps. Dispose of scraps as ordinary trash. Land-filling is acceptable for MCA-treated and CCA-treated wood.

Riverbank Acoustical Laboratories (RAL)™
Laboratory Measurement of Airborne Sound Transmission Loss
of Building Partitions ASTM E 90-02/NVLAP 08/P06

TEST NUMBER: TL05-042 TEST DATE: MARCH 15, 2005

CLIENT: PLYWALL Noise Barrier Division
DESIGNATION: 8' x 8' Panel with Posts

DIMENSIONS: 96" wide x 96" high x 12" thick
AREA: 64.0 ft² (Filler: 62.0 ft² Comp: 126.0 ft²)
WEIGHT: 868 lbs AREA WEIGHT: 13.56 lbs/ft²
SPECIMEN DETAILS:

SOURCE ROOM: Room 2 Volume = 6297.6 ft³ Area = 2066.2 ft²
RECEIVE ROOM: Room 1 Volume = 6254.5 ft³ Area = 2042 ft²
FILE NAME: TL05_042_050315_A.doc

FREQ. (Hz)	T.L. (dB)	UNC. (dB) 95%CL	DEF. (dB) <CONT	FREQ. (Hz)	T.L. (dB)	UNC. (dB) 95%CL	DEF. (dB) <CONT
100	**24**	0.72		800	**38**	0.14	
125	**23**	0.39		1k	**39**	0.11	
160	**22**	0.63		1.25k	**40**	0.11	
200	**22**	0.52	3	1.6k	**39**	0.10	
250	**20**	0.42	8	2k	**41**	0.07	
315	**23**	0.39	8	2.5k	**44**	0.09	
400	**29**	0.47	5	3.15k	**45**	0.09	
500	**36**	0.30		4k	**48**	0.07	
630	**35**	0.17	1	5k	**51**	0.06	

Sound Transmission Class (STC) = 35

Total Deficiencies = 25

Extended Frequency Data

FREQ.	T.L.	UNC.	DEF.	FREQ.	T.L.	UNC.	DEF.
80	**27**	0.61					

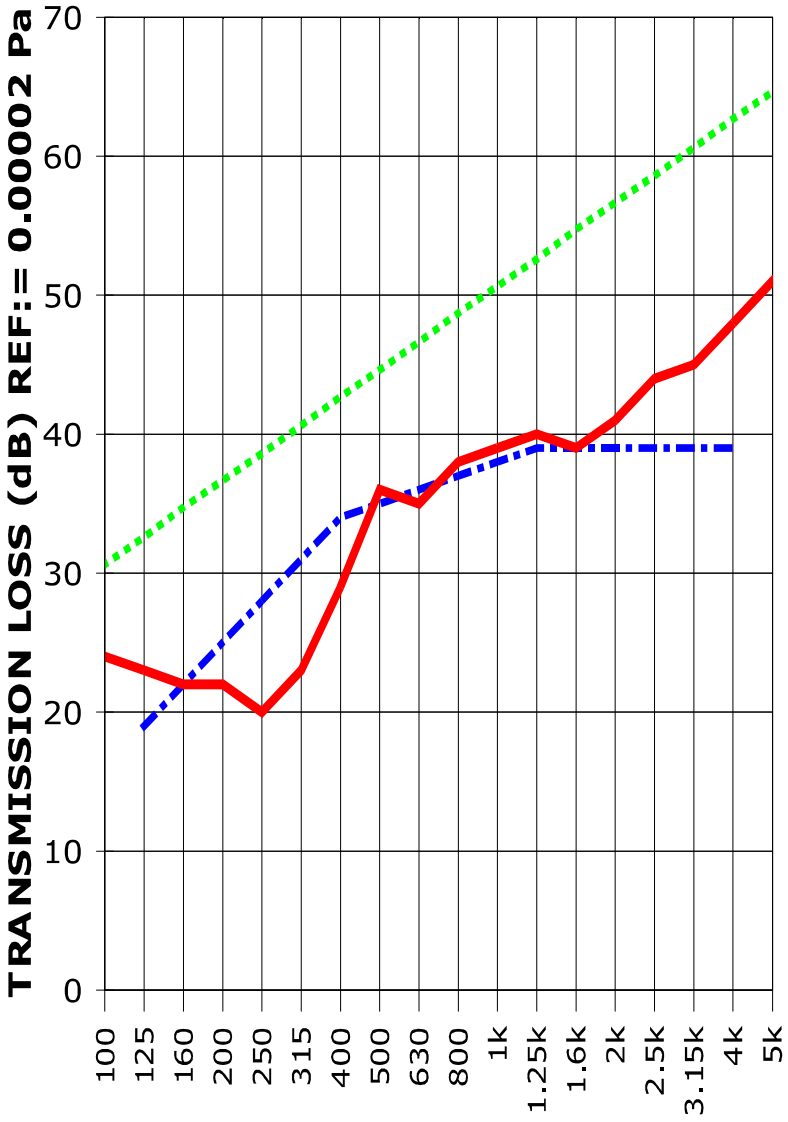
R: 36
OITC: 28

Test Conducted by: Marc Sciaky

This single report page and accompanying graph contain the instantaneous raw data as provided to the client after testing of the specimen. This data, although accurate, is incomplete without the full specimen description, mounting details and signature pages. The full report referenced by the RAL test number above should be consulted for further information regarding these results.

RIVERBANK ACOUSTICAL LABORATORIES

SOUND TRANSMISSION REPORT
RAL - TL05-042



STC = 35

TRANSMISSION LOSS
SOUND TRANSMISSION LOSS CONTOUR
MASS LAW