TOWN OF BEDFORD
PLANNING BOARD MEETING

425 Cherry Street
Bedford Hills, New York 10507
Tuesday
July 28, 2015
8:00 PM

Public Hearing:

8:00 PM Special Use Permit – Cottage
Section 72.10 Block 1 Lot 11, R-4A Zone
44 West Patent Road, Bedford Hills
Owner: **Casa Zeta, LLC**
Applicant: **Phillip Ceradini, Architect**
(Consider Special Use Permit.)

Conferences:

1. Waiver of Site Plan Approval
Section 72.5 Block 1 Lots 9, 10, RB Zone
527 Bedford Road, Bedford Hills
Owner – **Shullman Family LP**
Applicant – **Russell Speeders of Bedford Hills, LLC**
(Consider report to Zoning Board of Appeals.)

2. Waiver of Site Plan Approval Section 71.12 Block 2 Lot 34, RB Zone
789 Bedford Road, Bedford Hills
Owner: **789 North Bedford Road Corp.**
Applicant: **Mavis Tire Supply, LLC**
(Consider report to Zoning Board of Appeals.)

Discussion:

Configuration of Bedford Road South of Katonah

Supporting documentation for all items on this agenda is available at the Town of Bedford website.
(www.bedfordny.gov)
Larger documents and plans are available at the office of the Planning Board.
Agenda items subject to change.

PLANNING BOARD
TOWN OF BEDFORD
WESTCHESTER COUNTY, NEW YORK

APPLICATION FOR A SPECIAL USE PERMIT

Submit to: Bedford Planning Board, Town House, Bedford Hills, N.Y. 10507

1. INDENTIFICATION OF OWNER
   Name of owner: CASA ZETA, LLC (CATHERINE ZETA JONES)
   Address: 44 WEST PATENT RD. Phone: 914-960-0145
2. INDENTIFICATION OF APPLICANT, IF OTHER THAN OWNER
   Name of applicant: PHILLIP CERADINI, ARCHITECT
   Address: 105 KISCO AVE, MT. KISCO, NY 10549 Phone: 914-666-0547
3. PROFESSIONAL PERSON PREPARING SUBDIVISION PLAT
   Name: PHILLIP CERADINI, ARCHITECT
   Address: SAME Phone: SAME
4. INDENTIFICATION OF PROPERTY
   a. Subdivision name or identifying title 44 WEST PATENT RD. ('LION WALK')
   b. Roads which property abuts WEST PATENT RD.
   c. Bedford tax map designation: Section 72.10 Block 10-1 Lot(s) 11
   d. Property lies in a (circle one) (4A) 2A 1A 1/2A 1/4 A TF VA NB CE PB-R PB-O LI Zoning District
   e. Total area of property in acres 13.329
5. REQUEST

The applicant requests that the Planning Board approve the issuance of a Special Use Permit under the following section of the Code of the Town of Bedford

Article: 125, Section: 79.1

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The applicant proposes the following Special Permit Use:

TO ALLOW THE CONVERSION OF 2 EXISTING GARAGE BAYS, OUT OF 6 EXISTING BAYS, IN A FREE STANDING ONE STORY GARAGE, INTO A CARETAKERS STUDIO APARTMENT WITH AN OPEN REAR DECK.

3/05

(over)

6. PUBLIC NOTICE

Notice of the public hearing shall be published at least 10 days prior to the hearing in the Town newspaper and shall be mailed by the applicant at least 10 days prior to the hearing to all owners of property within 500 feet of the perimeter of the subject lot. The expense of publishing and mailing any notice shall be paid by the applicant, who shall file an affidavit mailing with the Board Secretary prior to the hearing.

7. SITE PLAN

Attach a Preliminary Site Plan Application Form, fee and eleven (11) copies of a Preliminary Site Plan complying with all requirements of Article IX, Section 125-88 of the Bedford Town Code.

8. FEES (make checks payable to the Town of Bedford)

Special Use Permit Application: $ 200 $_____

Preliminary Site Plan:
$500 plus $25 per parking space required by the Bedford Town Code: $_____

Total: $_____

Permission is hereby given to the Town of Bedford, its agents, servants and employees to enter upon the above described property solely for the purposes incidental to the within application at reasonable times upon reasonable notice to the owner or tenant in possession.

All applications shall be signed by the owner of the property affected by this application and by the applicant, if other than the owner.

Signature of Owner _____ Date _____

Signature of Applicant _____ Date 10 Jul 15

CASA ZETA, LLC
Name of Owner (Please Print) Date

Phillip Ceradini 10 Jul 15
Name of Applicant (Please Print) Date

PLANNING BOARD
TOWN OF BEDFORD
WESTCHESTER COUNTY, NEW YORK

ENVIRONMENTAL CLEARANCE FORM

(This Side to be Completed by Applicant)

1. **INDENTIFICATION OF OWNER**

Name of owner: CASA ZETA, LLC (CATHERINE ZETA JONES)
Address: 451 WEST PATENT RD, BEDFORD, N.Y. Phone: 914-960-0145

2. **INDENTIFICATION OF APPLICANT, IF OTHER THAN OWNER**

Name of applicant: PHILIP CERADINI, ARCHITECT
Address: 105 KISCO AVE., MT. KISCO, NY 10549 Phone: 914-666-0547

3. **INDENTIFICATION OF SITE INVOLVED, if any**

a. Name or other identification of site Lion Walk
b. Roads which site abuts WEST PATENT ROAD
c. Bedford tax map designation: Section: 72.10 Block 10-1 Lot (s) 11
d. Total site area 13.339 ACRES
e. Does the applicant have a whole or partial interest in lands adjoining this site? NO

4. **INDENTIFICATION OF PROPOSED ACTION**

a. Description of Proposed Action Conversion of 2 of 6 existing garage bays into a caretakers studio apartment
b. Relationship to other actions:

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1. List any further actions which may be undertaken, of which this proposed action is part or first step, e. g. further subdivision of a large parcel of land: Special Use permit and variance, WCHD, Bldg. Permits
2. List any related actions which may be undertaken, of which this proposed action, e.g. highway reconstruction to serve increased traffic: None
3. List any actions which are dependent upon this proposed action, and therefore should be reviewed as part of this action, e.g. house construction in the case of a residential subdivision: None

All such actions must be reviewed in conjunction with the action proposed.

5. **CLASSIFICATION OF PROPOSED ACTION** (see lists of Type I, II, Exempt, Excluded Actions)

☐ **Type I.** An Environmental Impact Statement is required unless the applicant demonstrates conclusively that one is not needed. Proceed to Environmental Assessment Form.

☑ **Type II or Exempt Action.** No Environmental Impact Statement is needed. Submit this form only.

☐ **Unlisted Action.** Pending Analysis of further information, an Environmental Impact Statement may be required. Proceed to Environmental Assessment Form.

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Signature of Applicant

Date

TOWN OF BEDFORD
ENVIRONMENTAL CLEARANCE FORM
(This side only for Official Use Only)

1. **CLASSIFICATION APPROVED; FURTHER ACTION REQUIRED:**

☐ **Type I Action.** The proposed action will have a significant effect on the environment. An Environmental Impact Statement is required unless the applicant demonstrates conclusively that one is not needed. Proceed to Environmental Assessment Form.

☐ **Type II or Exempt or Excluded Action.** No Environmental Impact Statement is needed. No further action required.

☐ **Unlisted Action.** The proposed project may have a significant effect on the environment. Pending analysis of further information, an Environmental Impact Statement may be required. Proceed to Environmental Assessment Form.

2. **COMMENTS:**

Town Agency

Agency Signature

Date

Owner proposes to construct a 538 sq ft studio apartment (hereinafter referred to as the "Cottage") within the existing 6-bay detached one story garage/storage building that comprises 1,536 sq ft (hereinafter referred to as the "Garage Building") to be occupied by the caretaker of the Property.

Article 125-79.1 of the Town of Bedford Zoning Ordinance provides that the planning board may grant a Special Permit to create a cottage in an existing accessory building, providing that the following conditions are met:

1. The accessory building in which the cottage is to be located shall have been in existance ptior to the adoption of this chapter-based on Town records, the Garage Building was built in 1997 which is prior to the Towns adoption f section 125-79.1 of the Zonong Ordinance.

2.The total floor area to be occupied by the cottage within the accessory building must have been in existance prior to the adoption of this chapter-based on Town records, the Garage Building is the same as it was when originally constructed.

3. The owner of the lot on which the cottage is to be locatedshall occupy at least one of the dwelling units on the premises-the owners occupy the principal residence on the Property.

4. There will be no more than one cottage or accessory apartment per lot-there are presently two (2) residential structureson the Property... the principal residence occupied by the owners and a guest house which is sporadically occupied by guests to the owners.

5. The lot must meet the lot area, yard and coverage requirementsfor the zoning district in which it is located- The Property conforms in all respects to the area, yard and coverage requirements except with respect to Building Coverage. The permitted building/structure coverage is 3%. The existing building/structure coverage is 3.17%.

6. A minimum of two off street parking spaces suitable for year round use shall be providedon the lot- the number of off street parking spaces on the Property exceeds the two car minimum requirement.

7. The cottage shall contain at least 400 sq ft and not more than 800 sq ft but shall not exceed 25% of the total floor area of the principal residence- the proposed cottage is 538 sq ft and is far less that the 25% of the total floor area of the primcipal residence which is in excess of 14,000 sq ft.

8. Applicant to furnish suffcient data for Borads' review- see submitted survey and plans.

9.The approval of the Westchester County Department of Health must be obtained for water supply and sewage disposal systems prior to the approval of the special use permit- Bibbo Associates has been retained to review with the health dept.... there is an existing 2,600 gal septic tank on the Property... this might be utilised or a small new septic system might be designed for the caretaker apt.(Cottage) Review is under way.

10. The building inspector shall inspect the proposed cottage and report in writing any deficiencies to the planning board prior to granting of the special use permit- The applicant, Phillip Ceradini, Architect, will contact the building inspector to arrange for him to visit the Property to inspect the 6 bay garage building in question.

Sincerely,

Phillip Ceradini, Architect

10 July 2015

Zoning Board of Appeals

Town of Bedford NY

425 Cherry St.

Bedford Hills NY 10507

Dear Board members,

Casa Zeta, LLC is the owner of the 13.339 acre parcel located at 44 West Patent Road in the Town of Bedford (Tax map: section 72.10, Block 1, Lot 11 (the "Property").

The Property is improved with:

Principal residence footprint	9,668 sf
guest house with attached greenhouse	1,355 sf
6 bay garage	1,536 sf
dance studio	1,060 sf
tennis court	3,600 sf
swimming pool	1,000 sf
tool shed	236 sf

18,445 sf = 3.17 % existing bldg coverage (to rmain same)

PHILLIP CERADINI ARCHITECT AIA

105 KISCO AVE.
MT. KISCO NEW YORK 10549
914 - 666 - 0547 FAX: 914 - 666 - 2386
www.phillipceradini.com

LETTER OF PERMIT DENIAL

Town of Bedford
Building Dept.
425 Cherry St.
914-666-8040

Application #:

Date: 7/2/2015

Parcel ID: 72.10-1-11

Owner Information

Casa Zeta LLC

Applicant Information

Casa Zeta LLC
1990 Bundy Dr

Los Angeles NY 90025

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Location: 44 West Patent Rd
Parcel ID: 72.10-1-11
Permit Type: Cottage/Accessory Apartment
Work Description: Convert a portion of an existing garage/storage building into a caretaker's studio apt. Existing building is 1,536 sq. ft., of which 538 sq. ft. would be converted to the apt.

Dear Resident,
Regarding the application for a Building Permit on the property referenced above, the following facts are noted. This property is located in R-4A Zoning District. The requirements of the Zoning Ordinance of the Town of Bedford in comparison to your proposal are listed as follows:

Conversion of a portion of an existing garage/storage building into a caretaker's studio apartment would result in a second accessory cottage/apartment where there shall be no more than one cottage or accessory apartment per lot in accordance with Article VIII Section 125-79.1(4). A variance from the Board of Appeals and a Special Use Permit from the Planning Board is required.

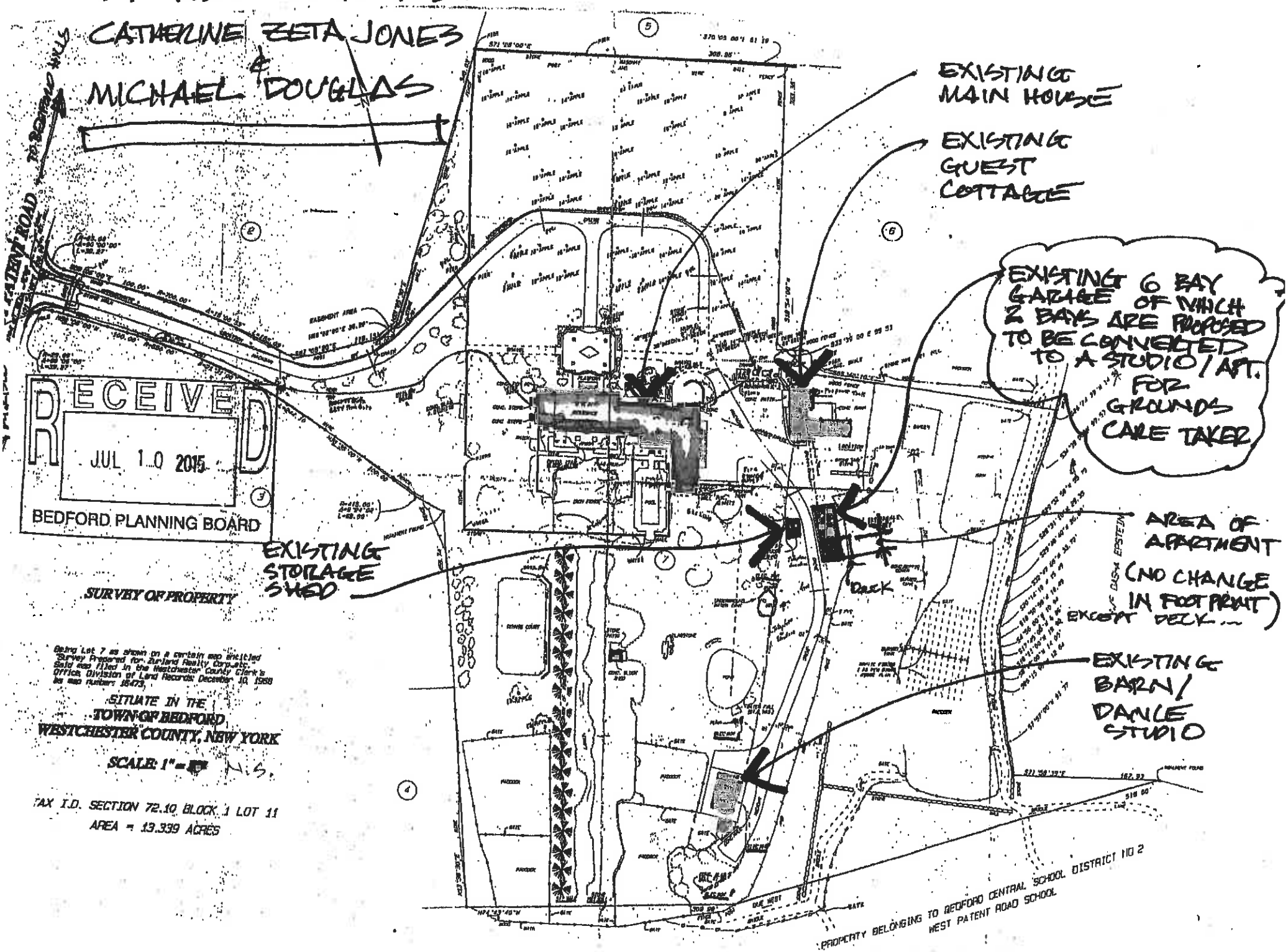
Because your project does not meet the requirements of the Town of Bedford Zoning Ordinance, your application for a building permit is DENIED. If you wish to proceed with your request, you may, within sixty days of this letter, apply to the of the above provisions

Very truly yours,

Steven Fraietta
Building Inspector

44 WEST PAT. RD.

CATHERINE ZETA JONES
&
MICHAEL DOUGLAS



WILSON ELSER

June 18, 2015

Robert A. Spolzino
914.872.7497 (direct)
914.924.2350 (mobile)
Robert.Spolzino@wilsonelser.com

Chairperson Deirdre Courtney-Batson and the
Members of the Planning Board of the Town of Bedford
425 Cherry Street
Bedford Hills, NY 10507

Re: ***Application of Shullman Family Limited Partnership***
Russell Speeder's Car Wash
527 North Bedford Road

Dear Chairperson Courtney-Batson and Members of the Planning Board:

On behalf of the Shullman Family Limited Partnership and the Russell Speeder's of Bedford Hills LLC, I am pleased to enclose herewith a supplemental report by our sound consultant, Maria L. Castellucci, with respect to most recent sound testing she has done.

Basically, in order to satisfy the Town's noise standards for nights and Sundays, Russell Speeder's has installed a variable frequency drive, or VFD, which can reduce the speed of the blower in order to reduce the noise it generates. Ms. Castellucci reports that she took sound readings at the property line at 7:30 p.m. on Thursday, May 28, 2015, with the blower on and the VFD set at 50 percent, and was unable to detect any sound from the blower due to the ambient noise.

We submit that Ms. Castellucci's report establishes that Russell Speeder's can satisfy the Town's lower noise standards for nights and Sundays by operating the blower with the VFD set at 50 percent. We respectfully request that our application be placed before the Planning Board at its next available meeting and that the Planning Board grant Russell Speeder's application for site plan approval. In the furtherance of that request, also enclosed are copies of the Environmental Clearance Form and the revised EAF.

Thank you for your continuing courtesy in this matter.

Respectfully yours,

Wilson Elser Moskowitz Edelman & Dicker LLP

Robert A. Spolzino

To: P.B. 6/24/15

Maria L. Castellucci, Consultant
PO Box 449
Pound Ridge, NY 10576
914-763-6852 (voice and fax)
MLCConsultant@yahoo.com

June 11, 2015

Mr. Michael Shullman
Russell Speeders Car Wash
527 Bedford Road
Bedford Hills, NY 10507

Re: Sound Measurements of Blower with VFD

Dear Michael,

As noted in our previous reports, the new blower system installed at the Russell Speeders Car Wash meets the Town of Bedford noise ordinance maximum daytime allowable sound level of 65 dBA at the north property line and is slightly over this maximum level at the east and south property lines, although drastically reduced from the sound level of the previous fan system. In order to further reduce the sound levels at the east and south property lines, a variable frequency drive was added to the car wash blower fan, so that the frequency can be adjusted to a lower level when there may be lower ambient sound after 6pm on weekdays and Sundays.

As requested, we took sound readings of the blower on May 28, 2015 and have the following findings. Readings were attempted around 7:30pm on Thursday, May 28, 2015. This is one of the timeframes where the noise code requires that the sound level be reduced to 45 dBA at all property lines. The goal was to measure sound at the east and south property lines at each of the VFD settings 50%, 45%, 40%, 35%, and 30% fan speed. We began at the 50% setting. The fan was not even audible at the east property line due to the ambient sound caused by traffic on Route 117. Measurements would have to be taken when there was absolutely no traffic on Route 117. However, since this does not occur, there was not a single moment in which the sound could be measured without interference from traffic noise. In fact, since the traffic was somewhat lighter at 7:30pm than it is during earlier hours in the day, the ambient noise level each vehicle produced was actually louder because they were moving faster than they could during the regular business hours.

We found that we could obtain no meaningful readings that were unaffected by the ambient traffic noise. There was simply never a time where there was no traffic interfering with the readings. Even when there were no vehicles directly passing by, traffic noise in the distance was still louder than the fan. It is our conclusion, therefore, that if sound from the blower is not audible at the property lines due to the ambient sound level from traffic noise even at this late hour, that the blower frequency can be reduced to 50% for the after 6pm and Sunday timeframes, and not cause any increase in the ambient sound level that already exists.

The above summarizes our conclusions regarding the blower and variable frequency drive provision. Please feel free to contact me if you have any questions or require further clarifications.

Very truly yours,

Maria L. Castellucci,
Consultant in AV and Acoustics

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TOWN OF BEDFORD
WESTCHESTER COUNTY, NEW YORK

ENVIRONMENTAL CLEARANCE FORM

(This Side to be Completed by Applicant)

1. INDENTIFICATION OF OWNER

Name of owner: SHULLMAN FAMILY LTD PARTNERSHIP
Address: C/O BOB SHULLMAN, 17 ALFRED LANE, GREENWICH CT Phone: 203 561 7604

2. INDENTIFICATION OF APPLICANT, IF OTHER THAN OWNER

Name of applicant: RUSSELL SPEEDWAY CAR WASH
Address: C/O BOB SHULLMAN, 527 NORTH BEDFORD RD Phone: 203 249 2694

3. INDENTIFICATION OF SITE INVOLVED, If any

a. Name or other identification of site 527 NORTH BEDFORD ROAD
b. Roads which site abuts
c. Bedford tax map designation: Section: 72.05 Block 1 Lot (s) 9 & 10
d. Total site area 0.51 ACRES
e. Does the applicant have a whole or partial interest in lands adjoining this site? NO

4. INDENTIFICATION OF PROPOSED ACTION

a. Description of Proposed Action RENOVATE EXISTING CAR WASH
b. Relationship to other actions:

1. List any further actions which may be undertaken, of which this proposed action is part or first step, e. g. further subdivision of a large parcel of land: NONE
2. List any related actions which may be undertaken, of which this proposed action , e.g. highway reconstruction to serve increased traffic: NONE
3. List any actions which are dependent upon this proposed action, and therefore should be reviewed as part of this action, e.g. house construction in the case of a residential subdivision: NONE

All such actions must be reviewed in conjunction with the action proposed.

5. CLASSIFICATION OF PROPOSED ACTION (see lists of Type I, II, Exempt, Excluded Actions)

☐ **Type I.** An Environmental Impact Statement is required unless the applicant demonstrates conclusively that one is not needed. Proceed to Environmental Assessment Form.

☐ **Type II or Exempt Action.** No Environmental Impact Statement is needed. Submit this form only.

☑ **Unlisted Action.** Pending Analysis of further information, an Environmental Impact Statement may be required. Proceed to Environmental Assessment Form.

04/05

Signature of Applicant — Date

ATTORNEY FOR APPLICANT

TO: J.D. & P.B. 7/10/15

TOWN OF BEDFORD
ENVIRONMENTAL CLEARANCE FORM
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1. CLASSIFICATION APPROVED; FURTHER ACTION REQUIRED:

☐ **Type I Action.** The proposed action will have a significant effect on the environment. An Environmental Impact Statement is required unless the applicant demonstrates conclusively that one is not needed. Proceed to Environmental Assessment Form.

☐ **Type II or Exempt or Excluded Action.** No Environmental Impact Statement is needed. No further action required.

☑ **Unlisted Action.** The proposed project may have a significant effect on the environment. Pending analysis of further information, an Environmental Impact Statement may be required. Proceed to Environmental Assessment Form.

2. COMMENTS:

Town Agency

Denise Courtney-Batson
Agency Signature

5/12/15
Date

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1 is accurate and complete.

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A. Project and Sponsor Information.

Name of Action or Project: Russell Speeder's Car Wash		
Project Location (describe, and attach a general location map): 527 North Bedford Road, Bedford Hills, NY 10507		
Brief Description of Proposed Action (include purpose or need): Renovation to the existing car wash building and site features to enhance both the visual character and functionality of the campus. Improvements include work to the exterior facade, infrastructure, site , and landscaping to transform the car wash into a first class retail experience for the customers and community.		
Name of Applicant/Sponsor: Russell Speeder's Car Wash	Telephone: E-Mail:	
Address: 527 North Bedford Road		
City/PO: Bedford Hills	State: NY	Zip Code: 10507
Project Contact (if not same as sponsor; give name and title/role): Mike Shullman	Telephone: 914-241-1402 E-Mail: mshullman@rscw.net	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Shullman Family Trust, LLP - same as above.	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)		
Government Entity	**If Yes: Identify Agency and Approval(s) Required**	**Application Date (Actual or projected)**
a. City Council, Town Board, ☐Yes ☑No or Village Board of Trustees		
b. City, Town or Village ☑Yes ☐No Planning Board or Commission	Town of Bedford - Planning Board - Site Plan Approval	04/2015
c. City Council, Town or ☑Yes ☐No Village Zoning Board of Appeals	Town of Bedford - Zoning Board of Appeals - Special Permit	04/2015
d. Other local agencies ☐Yes ☑No		
e. County agencies ☐Yes ☑No		
f. Regional agencies ☐Yes ☑No		
g. State agencies ☐Yes ☑No		
h. Federal agencies ☐Yes ☑No		
i. Coastal Resources.		
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No		
ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No		
iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No		

C. Planning and Zoning

C.1. Planning and zoning actions.
Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No • **If Yes,** complete sections C, F and G. • **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1
C.2. Adopted land use plans.
a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☑No
b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No **If Yes, identify the plan(s):**
c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No If Yes, identify the plan(s):

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Central Business- Light Industrial

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? Bedford Central School District

b. What police or other public protection forces serve the project site?
Town of Bedford Police Department

c. Which fire protection and emergency medical services serve the project site?
Bedford Fire Department

d. What parks serve the project site?
Bedford Hills Memorial Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Car Wash

b. a. Total acreage of the site of the proposed action? 1.01 acres
b. Total acreage to be physically disturbed? .55 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 1.01 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☑ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 4 months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☐Yes ☑No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☐Yes ☑No
If Yes,
i. Total number of structures _____
ii. Dimensions (in feet) of largest proposed structure: _____height; _____width; and _____ length
iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☑No
If Yes,
i. Purpose of the impoundment: _____
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify: _____
iii. If other than water, identify the type of impounded/contained liquids and their source. _____
iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres
v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): _____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No
If Yes:
i. What is the purpose of the excavation or dredging? _____
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. _____
iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☑No
If yes, describe. _____
v. What is the total area to be dredged or excavated? _____ acres
vi. What is the maximum area to be worked at any one time? _____ acres
vii. What would be the maximum depth of excavation or dredging? _____ feet
viii. Will the excavation require blasting? ☐Yes ☑No
ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☐Yes ☑No
If Yes:

i. Total anticipated water usage/demand per day: _____ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☐Yes ☐No
If Yes:

- Name of district or service area:
- Does the existing public water supply have capacity to serve the proposal? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No
- Do existing lines serve the project site? ☐Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☐No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 1200 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
The new car wash system reduces waste water significantly from approximately 3,600 gallons/day to 1,200 gallons/day.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☐Yes ☑No
If Yes:

- Name of wastewater treatment plant to be used:
- Name of district:
- Does the existing wastewater treatment plant have capacity to serve the project? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No

- Do existing sewer lines serve the project site? ☐Yes ☐No
- Will line extension within an existing district be necessary to serve the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

The renovated facility will continue to utilize the existing septic field. A future expansion field has been defined if necessary.

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☐Yes ☑No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☐No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7-5
- Saturday: 8-5
- Sunday: _____
- Holidays: _____

ii. During Operations:

- Monday - Friday: 8-8
- Saturday: 8-8
- Sunday: 9-5
- Holidays: _____

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

During construction, standard construction noise levels will occasionally be elevated above ambient noise levels. All noise will occur during Town construction times. Per separate report submitted by applicant, and concurred in by Town's consultant, there will be no significant impact from no

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Shielded cut off 12-15' pole fixtures are proposed. Light levels will be at 0.0 foot candles at property lines as required by Town ordinance.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally describe proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2-3 tons per month (unit of time)
- Operation : 2-3 tons per year (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Construction waste will be seperated by type of material for recycling.
- Operation: Paper, plastic and glass will be recycled

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: Private carting service
- Operation: Private carting service

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☐ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.51	0.51	
• Forested	0.35	0.35	
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0.15	0.15	
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____			

c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☑No
If Yes,
i. Identify Facilities:

_____
_____

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No

☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☐No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____
_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >10 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site: Not defined _____ %
_____ %
_____ %

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils:
☑ Well Drained: 90 % of site
☑ Moderately Well Drained: 10 % of site
☐ Poorly Drained _____ % of site

f. Approximate proportion of proposed action site with slopes:
☐ 0-10%: 80 % of site
☐ 10-15%: 18 % of site
☐ 15% or greater: 2 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name NYS Regulated Approximate Size > 25 acres
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☐ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100 year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500 year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site: _____ _____ _____ _____ _____ _____

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation): _____
ii. Source(s) of description or evaluation: _____
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site? _____
ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name: _____
ii. Basis for designation: _____
iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Erik A. Kaeyer, AIA LEED AP Date June 9, 2015

Signature _____ Title Principal, Vice President

PRINT FORM

Maria L. Castellucci, Consultant
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914-763-6852 (voice and fax)
MLCConsultant@yahoo.com

June 11, 2015

Mr. Michael Shullman
Russell Speeders Car Wash
527 Bedford Road
Bedford Hills, NY 10507

Re: Sound Measurements of Blower with VFD

Dear Michael,

As noted in our previous reports, the new blower system installed at the Russell Speeders Car Wash meets the Town of Bedford noise ordinance maximum daytime allowable sound level of 65 dBA at the north property line and is slightly over this maximum level at the east and south property lines, although drastically reduced from the sound level of the previous fan system. In order to further reduce the sound levels at the east and south property lines, a variable frequency drive was added to the car wash blower fan, so that the frequency can be adjusted to a lower level when there may be lower ambient sound after 6pm on weekdays and Sundays.

As requested, we took sound readings of the blower on May 28, 2015 and have the following findings. Readings were attempted around 7:30pm on Thursday, May 28, 2015. This is one of the timeframes where the noise code requires that the sound level be reduced to 45 dBA at all property lines. The goal was to measure sound at the east and south property lines at each of the VFD settings 50%, 45%, 40%, 35%, and 30% fan speed. We began at the 50% setting. The fan was not even audible at the east property line due to the ambient sound caused by traffic on Route 117. Measurements would have to be taken when there was absolutely no traffic on Route 117. However, since this does not occur, there was not a single moment in which the sound could be measured without interference from traffic noise. In fact, since the traffic was somewhat lighter at 7:30pm than it is during earlier hours in the day, the ambient noise level each vehicle produced was actually louder because they were moving faster than they could during the regular business hours.

We found that we could obtain no meaningful readings that were unaffected by the ambient traffic noise. There was simply never a time where there was no traffic interfering with the readings. Even when there were no vehicles directly passing by, traffic noise in the distance was still louder than the fan. It is our conclusion, therefore, that if sound from the blower is not audible at the property lines due to the ambient sound level from traffic noise even at this late hour, that the blower frequency can be reduced to 50% for the after 6pm and Sunday timeframes, and not cause any increase in the ambient sound level that already exists.

The above summarizes our conclusions regarding the blower and variable frequency drive provision. Please feel free to contact me if you have any questions or require further clarifications.

Very truly yours,

Maria L. Castellucci,
Consultant in AV and Acoustics

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October 17, 2014

Mr. Michael Shullman
Russell Speeders Car Wash
527 Bedford Road
Bedford Hills, NY 10507

Re: Hard Look Acoustical Report of Sound Levels
Russell Speeders Car Wash – 527 Bedford Road, Bedford Hills, NY

Dear Michael,

The following is a comprehensive acoustical report of findings and recommendations for the Russell Speeders Car Wash at 527 Bedford Road in Bedford Hills, NY. The purpose of this report is to present an analysis of the existing sound levels at the Russell Speeders lot line due to each individual sound source at Russell Speeders individually and combined as well as the ambient noise at this location due to sources beyond the control of Russell Speeders. Where there are sound sources that exceed the Town of Bedford noise ordinances, these are identified and recommendations are given to attenuate the sound sources at the property lines in order to meet the current noise ordinances. As indicated below, sound readings have been taken on various days and at various times to provide as complete a study as is practical.

As requested during the meeting of April 10, 2014, with Jeffery Osterman, Senior Planner for the Town of Bedford and Michael Bontje, President of B. Laing Associates, we have taken multiple sound readings and extended our acoustical analysis of the Russell Speeders Car Wash facility to ensure the "hard look" requirement for the acoustical review has been satisfied in every practical way. The main blowers and all of the known peripheral noise sources have been analyzed. All references have been footnoted and all formulae included in the Appendix for verification. All intended and recommended modifications to the existing conditions have been noted and analyzed in this process as relates to all known noise ordinances for this location. The following report summarizes our requested "hard look" at the acoustical impact of the Russell Speeders Car Wash at 527 North Bedford Road, Bedford Hills, NY.

Introduction

We begin with a brief summary of definitions and fundamental concepts required to be understood in order for laypersons to easily understand this report and to make it as transparent as possible.

Definitions:
The following are definitions taken from Noise Control by Charles E. Wilson, Harper & Row Publishers, New York, c. 1989 (unless otherwise noted) that will assist the reader in understanding the formulae, statements, and conclusions contained herein:

Acoustics – (1) The science of sound, including the generation, transmission, and effects of sound waves, both audible and inaudible. (2) The physical qualities of a room or other enclosure (such as size, shape, amount of noise) that determine the audibility and perception of speech and music.

Sound – In the case of this report, sound is defined as audible pressure fluctuations in air. When a body moves through a medium or vibrates, some energy is transferred to that surrounding medium in the form of sound waves. Sound is also produced by turbulence in air and other fluids,

and by fluids moving past stationary bodies. Intentionally generated acoustic signals including speech and music are usually referred to as sound.

Noise – A term used to identify unwanted sound, including random sound, and sound generated as a byproduct of other activities, including transportation and industrial operations. Intrusive sound, including speech and music unwelcome to the hearer, are also considered noise.

Frequency – The frequency of a periodic phenomenon such as a sound wave is the number of times in one second (i.e., the number of cycles per second) that this phenomenon repeats itself. Frequency usually is designated by a number, followed by the unit hertz (unit symbol: Hz). For example, in the case of a vibrating tuning fork, the tynes of the tuning fork undergo 440 complete oscillations in one second. Therefore its frequency of vibration is 440 Hz.[1] In layperson's terms, it is the pitch of a sound. For instance, using musical instruments as a reference, a sound high in frequency would be a piccolo, while a sound low in frequency would be the tuba. A normal young adult human can hear from 20 Hz to 20,000 Hz.

Hertz – Unit of measurement of frequency, numerically equal to cycles per second.

Decibel - The decibel (abbreviated "dB") is a measure, on a logarithmic scale, of the magnitude of a particular quantity (such as sound pressure level or sound power level) with respect to a standard reference value.

Sound Power – The total amount of energy radiated into the atmospheric air per unit time by a source of sound. The higher the sound power level, the louder the sound.

Sound Power Level - The level of sound power expressed in terms of dB re: 10^{-12} W. The way the human ear hears is a logarithmic function of sound power. If the power level increases by a factor of 10, the ear perceives it to be doubled in loudness, and if it decreases by a factor of 10, the ear perceives the loudness to be halved. In the logarithmic scale, the power level may have increased 10 times, but the human ear perceives it to only have doubled in loudness.

Sound Pressure – (1) The minute fluctuations in atmospheric pressure that accompany the passage of a sound wave; the pressure fluctuations on the tympanic membrane are transmitted to the inner ear and give rise to the sensation of audible sound. (2) For a steady sound, the value of the sound pressure averaged over a period of time. Sound pressure is usually measured in Newtons per square meter (N/m^2) where 1 N/m^2 = 1 Pa.

Sound Pressure Level –(SPL or L_p) The root-mean-square value of the pressure fluctuations above and below atmospheric pressure due to a sound wave; expressed in decibels re: a reference pressure ($2x10^{-5}$ Pa). The sound pressure level changes by approximately -6 dB per doubling of distance as long as the receiver is greater than one or two wavelengths away, is outside one characteristic source dimension, is away from reflective surfaces, and is not in a significantly high background noise environment.

Octave – An octave is the interval between two sounds having a basic frequency ratio of two. For example, 707 Hz to 1414 Hz is one octave.

Octave Band – All of the components, in a sound spectrum, whose frequencies are between two sine wave components separated by an octave.

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[1] Handbook of Acoustical Measurements and Noise Control, Third Edition. Cyril M. Harris, Ph.D, Editor in Chief, Acoustical Society of America, Woodbury, NY, c. 1998, p. 1.3.

Band Center Frequency – The designated (geometric) mean frequency of a band of noise or other signal. For example, 1000 Hz is the band center frequency for the octave band that extends from 707 Hz to 1414 Hz.

Octave Band Sound Pressure Level - The integrated sound pressure level of only those sine wave components in a specified octave band, for a noise or sound having a wide spectrum.

Directivity Index – In a given direction from a sound source, the difference in decibels between (a) the sound pressure level produced by the source in that direction, and (b) the space-average sound pressure level of that source, measured at the same distance.

A-weighted sound level – The human ear does not respond equally to all frequencies, but is less sensitive at low and high frequencies than it is at medium or speech range frequencies. Thus, to obtain a single number representing the sound level of a noise containing a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are dBA. The A-weighted sound level is also called the noise level.

Equivalent Sound Level (Leq) - The energy average sound level over a period of time.

Ambient Noise – The all-encompassing noise associated with a given environment at a specified time, being usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant. [2]

Room Constant – The room constant is equal to (a) the product of the average absorption coefficient of the room and the total internal area of the room, divided by (b) the quantity 1 minus the average absorption coefficient.[3]

Town of Bedford, NY Noise Code Requirements

The following summarizes the two noise codes in effect for the Town of Bedford, the town in which the Russell Speeders Car Wash facility is located and operating. It is our understanding that Russell Speeders Car Wash needs to be in compliance with both of these codes, although they are different and somewhat conflicting. The code requirements are as follows:

Chapter 83 of the Bedford Town Code Article I. *Noise Control section 83-5 Specific limits; responsibility of owner or lessee* Part A states that "Noise produced by any act or activities, including the use of off-road motor vehicles, on properties within any residential or nonresidential zoning district shall not exceed sixty-five (65) dB(A) during the hours of 8:00 a.m. to 6:00 p.m. or forty-five (45) dB(A) during the hours of 6:00 p.m. to 8:00 a.m. and all day Sunday on any such property within any zoning district." The adoption of this article took place by the Town Board of the Town of Bedford on June 5, 1990. This code requirement does not indicate octave band maximum sound levels, but only overall dBA level maximum requirements.

The earlier noise regulations documented in Chapter 125-32 Noise were adopted on January 18, 1983 and state maximum permitted sound pressure levels in octave bands as shown in Table 1. The levels shown in each separate octave band in the first row of Table 1 are dB levels as indicated in the noise code without the dBA weighting, and the bottom row of Table 1 shows the calculated A-weighted sound levels in each octave band as well as the overall dBA level for all

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[2] Handbook of Acoustical Measurements and Noise Control, Third Edition, Cyril M. Harris, Ph.D, Editor in Chief, Acoustical Society of America, Woodbury, NY, c. 1998, p. 2.2.

[3] Noise Control – Measurement, Analysis, and Control of Sound and Vibration, Charles E. Wilson, New Jersey Institute of Technology, Harper & Row, Publishers, New York, c.1989, p.546.

bands combined. Most of the car wash equipment manufacturers only supply data in overall dBA levels, so converting the noise code to an overall dBA number assists in the comparison of manufacturers' sound data to the noise ordinance requirements. The overall dBA level also allows the disparate code requirements to be compared using the same units of dBA. Using an overall dBA level substitution for the code octave band maximum levels does not, however, ensure compliance with the octave band portion of the code (Chapter 125-32).

Table 1 Bedford Town Code Chapter 83 Applicable Noise Limits			
	Daytime Limit (8:00am – 6:00pm)	**Nighttime Limit (6:00pm – 8:00am)**	**Sunday Limit (All Hours)**
Maximum permitted SPL (dBA) at the lot line for residential and commercial zones	65 dBA	45 dBA	45 dBA

Table 2 Chapter 125-32 Noise										
	31.5 Hz	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**	**8 kHz**	**dBA**
Maximum permitted SPL (dB re: 20µPa) at the lot line for lots within 200 feet of a Residential district and for sound emitted between 9:00pm and 7:00am and on Sundays	59	61	60	53	46	40	31	20	11	
A-weighting[4]	-39.4	-26.2	-16.1	-8.6	-3.2	-0.0	+1.2	+1.0	-1.1	
Sound Pressure Levels (dBA)	19.6	34.8	43.9	44.4	42.8	40.0	32.2	21.0	9.9	**49 dBA**
Maximum permitted SPL (dB re: 20µPa) at the lot line for Commercial Receptors	65	67	66	59	52	46	37	26	17	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	-0.0	+1.2	+1.0	-1.1	
Sound Pressure Levels (dBA)	25.6	40.8	49.9	50.4	48.8	46.0	38.2	27.0	15.9	**65 dBA**

[4] Many sources can verify the A-weighting frequency response calculation, one of which is the Handbook of Acoustical Measurements and Noise Control, Third Edition, Cyril M. Harris, Ph.D, Editor in Chief, Acoustical Society of America, Woodbury, NY, c. 1998, p. 1.17 Table 1.2.

Our understanding is that the Chapter 83 Code is a regulatory code which must be met and the Chapter 125-32 Noise section is a zoning law which is not regulatory and we could apply for a variance with respect to this law. However, during the meeting mentioned above with Jeffery Osterman and Michael Bontje, we were informed that both code requirements need to be met. All recommendations are given with the goal of satisfying both requirements at the Russell Speeders facility.

The hours of operation for Russell Speeders Car Wash are Monday through Saturday 8am – 8pm and Sunday 9am-5pm and the facility is located within 200 feet of a residential district. In order to meet both noise ordinances, it is necessary for the car wash to be at or below 45 dBA at the lot line for the 6:00pm – 8:00 pm timeframe Monday through Saturday and all day Sunday **and** be at or below the octave band maximum sound levels in Table 2 at all times. We say this, because it is theoretically possible to achieve the 45 dBA requirement and be above the Table 2 requirements in certain single frequency bands. Therefore, we have prepared our analysis for each noise source with respect to both code requirements and applicable time frames described therein.

New York State Department of Environmental Conservation (NYSDEC)

The NYSDEC has issued a document entitled "Assessing and Mitigating Noise Impacts" (DEP-00-1 Rev.2/2/01). Page 14 of this document establishes that "in non-industrial settings, the SPL" (sound pressure level) "should probably not exceed ambient noise by more than 6 dB(A) at the receptor." Also, "the addition of any noise source, in a non-industrial setting, should not raise the ambient noise level above a maximum of 65 dBA. This would be considered the 'upper end' limit since 65 dB(A) allows for undisturbed speech at a distance of approximately three feet." The next paragraph states that "Ambient noise SPLs in industrial or commercial areas may exceed 65 dB(A) with a high end of approximately 79 dB(A) (EPA 550/9-79-100, November 1979)." "The goal in an industrial/commercial area, where ambient SPLs are already at a high level, should be not to exceed the ambient SPL."

Russell Speeders is located in a commercial zone, but is within 200 feet of a residence only when one measures from the northernmost lot line. The building itself is greater than 200 feet from the nearest residential property line. The ambient noise is controlled by the traffic noise along Route 117 which is normally much higher than even the 65 dBA proposed by the NYSDEC. A discussion of the sound levels at the closest residential property line is given later on in this report as it relates to these NYSDEC recommendations. However, the most stringent noise restrictions placed upon Russell Speeders are the Town of Bedford noise ordinances. By implementing noise control measures to meet these codes, the NYSDEC maximum levels will automatically be met since they are much less stringent. We are therefore providing recommendations to achieve the goal of meeting code sound requirements which are so much lower than the ambient sound at the Russell Speeders site that they could not be measured apart from the ambient noise during the hours of operation.

Summary of Existing Conditions and Acoustical Measurements

The Russell Speeders Car Wash facility is located adjacent to Adzam Auto Sales, Inc. to the north and an empty lot to the immediate south which is the site of another commercial property to be constructed. The west property line borders on the Metro North train track right-of-way area and the east property line abuts Route 117, which is a heavily traveled two lane road with a center turning lane and is traversed by heavy commercial vehicles, trucks, and passenger cars. Attached to this report is Drawing D-1, a satellite view of the Russell Speeders Car Wash facility as well as the surrounding properties to show the measurement receptor locations and existing sound source locations.

An acoustical survey was conducted on Friday, January 17, 2014 from approximately 11:44am to 12:40pm and was confirmed and augmented during subsequent surveys on Thursday, March 20, 2014 from approximately 9:43 to 10:36am, Sunday, April 6, 2014 at various times from 8:14am to 7:31pm and Tuesday, April 8, 2014 from 11:16 to 12:57pm. The dryer noise, ambient noise, and peripheral equipment noise was measured to determine sound levels at each property line for the existing equipment and to provide analyses of sound attenuation measures where required.

Summary of Ambient Noise Levels

During all of the surveys, traffic was the major contributor to the ambient sound levels measured. During the January sound survey, there was constant vehicular traffic measuring an average L_{EQ} of 73 dBA at the east property line (receptor R-1) with no car wash equipment running. Ambient sound levels were also measured on Sunday morning April 6, 2014 to simulate the quietest time of operation. At each test location and time of day, the measured ambient sound levels without any equipment running at the car wash facility far exceeded the Town of Bedford Noise Code requirement of 45 dBA for properties within 200 feet of a residential district. The following table shows a summary of the ambient L_{EQ} sound levels measured at various receptor locations which are shown on Drawing D-1.

Table 3 – Ambient Sound Levels L_{eq} at Russell Speeders Lot Lines
No Equipment at Russell Speeders Running

Description of Measurement	L_{eq} Duration of Run	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Receptor R-1 Fri 1/17/14 12:35pm	30 sec	78.5	73	71.2	70.7	68.6	67	65.2	64.4	63.7	73
Receptor R-1 Fri 1/17/14 11:46 am	40 sec	75.2	77.9	72.4	73.2	68.4	68.3	65.1	64.1	60.9	73.4
Receptor R-7 Thur 3/20/14 10:36 am	17 sec	66.3	66.9	62.4	58.8	57	57.8	51.5	43	35	60.8
Receptor R-1 Sun 4/6/14 8:02 am	8min 15 sec	62	65	65	63	63	66	61	51	43	68
Receptor R-9 Sun 4/6/14 8:11am	2 min 34 sec	60	63	62	62	63	67	62	51	42	69
Receptor R-7 Sun 4/6/14 8:15am	2 min 33 sec	59	64	58	53	55	55	48	48	42	58
Receptor R-6 Sun 4/6/14 8:23am	3 min 44 sec	69	62	59	54	52	52	48	42	34	56
Receptor R-3 Sun 4/6/14 8:36am	1 min 51 sec	60	64	65	55	53	52	48	48	36	57

Receptor R-9 Sun 4/6/14 8:48am	2 min 33 sec	63	64	64	63	65	69	63	53	43	**71**
Receptor R-9 Sun 4/6/14 7:28pm	2 min 33 sec	64	65	63	64	64	67	62	51	42	**69**
Receptor R-1 Sun 4/6/14 7:31pm	2 min 33 sec	65	68	63	64	65	68	63	52	42	**70**
Receptor R-9 Tues 4/8/14 12:31pm	34 sec	68	67	66	65	64	67	62	52	43	**69**
Receptor R-10 Tues 4/8/14 12:49pm	14 sec	65	63	60	56	54	56	52	47	43	**59**
Receptor R-7 Tues 4/8/14 12:52pm	16 sec	79	72	67	64	65	62	57	51	43	**66**
Receptor R-10 Tues 4/8/14 12:54pm	25 sec	67	63	57	53	53	54	49	42	36	**57**
Receptor R-4 Tues 4/8/14 12:55pm	37 sec	65	61	55	51	50	53	50	52	52	**58**
Receptor R-5 Tues 4/8/14 12:57pm	29 sec	66	64	58	54	52	54	50	53	35	**59**

It is apparent from the above ambient readings, that even for those readings which were taken during the absolute quietest time on Sunday morning, the ambient sound levels are more than 10 dBA above the noise code of 45 dBA at the lot line without any Russell Speeders equipment running. We must make the observation that bringing the Russell Speeders equipment to a level of 45 dBA at each lot line is a bit of an overkill given the ambient noise levels experienced at this location. In order to meet the code maximum sound level requirements, all equipment sound levels must be calculated to the property lines, since sound levels cannot be measured for most of the equipment independent of the ambient noise if they are creating levels below or near ambient sound levels at the property lines. This report will discuss the analysis for the blowers, which are the highest sound level producer at Russell Speeders, and the rest of the peripheral equipment which has to be measured very close to the equipment to obtain the sound level reading and is then calculated over distance to obtain the sound levels this equipment theoretically produces at the lot lines.

Existing Dryer Measurements

Measurements of the existing dryers were taken at the property lines as well as at a distance of 5' from the tunnel exit where the dryers are most audible. This is at a location approximately 20' from the location of the dryers currently within the tunnel.

Several different dryer conditions were tested as listed below to determine the change in sound level with varying motor frequency. The intent is to replace the existing dryers with newer more efficient dryers that also comply with the applicable noise ordinances. There are three older dryers and two newer dryers for a total of five dryers currently at the facility. Of the two newer dryers, one had a sound attenuation duct applied to the intake side of the fan and the other did

not. The fan without the attenuator had its intake facing away from the street and the fan with the attenuator had its intake facing the street. Measurements were taken of the three existing dryers alone, of the newer dryer with the sound attenuation duct, and of the newer dryer without the duct measured with the variable speed fan running at various frequencies to document the resulting reduction in sound. Results are listed in Table 4 below:

Table 4 New Existing Blower Measured at Various Fan Speeds and Old Blowers Alone	
Description of Dryer	***A-weighted Leq measured 5' from dryer tunnel opening (approx. 20' from dryer)***
New Existing Blower at 60 Hz (100%)	78 dBA
New Existing Blower at 50 Hz (80%)	76 dBA
New Existing Blower at 40 Hz (50%)	76 dBA
New Existing Blower at 30 Hz (13%)	63 dBA
New Existing Blower with sound attenuating duct attached full speed 60 Hz	74 dBA
Three existing old Blowers alone	84 dBA
Ambient Sound – all blowers off	73 dBA

Appreciable reductions in sound were not observed until the fans were reduced in frequency to 30Hz, which would put them at only 13% operation.

Please note that due to the high level of traffic noise, the measurements do not effectively differentiate between the noise from the dryers and the noise from the traffic even when standing 5 feet from the tunnel opening since the traffic noise was constant. However, from the above readings, one can calculate the resulting sound levels that would occur using the levels measured if the three old blowers were replaced with six new blowers like the new type measured. These calculations are itemized below for the north, south and east property lines. Sound levels due to the blowers at the west Metro North property line are considered to be negligible. The property line to the east is the worst case scenario since it is in direct line of sight to the blower fan noise. However, the south property line is the closest to the dryer tunnel exit opening. Please see Appendix B and Appendix C for all calculation formulae.

Table 5 – Existing AVW Blowers at South Property Line at 90° from Tunnel Exit Opening

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
New Blower without attenuation duct Sound Pressure Level at 20' measured on-axis (0°) 1/17/14	72	78	75	75	77	73	70	67	66	78 dBA
Addition for 6 blowers[5]	+8	+8	+8	+8	+8	+8	+8	+8	+8	
Attenuation over 10' distance to property line on south side (20log20'/30')[6]	-4	-4	-4	-4	-4	-4	-4	-4	-4	
Off-axis 90 degree attenuation for 10' x 12' opening[7]	-6	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Calculated Due to new blowers at PL on south side 90° off-axis	70	72	65	64	65	60	56	52	51	
Measured Average Ambient Noise Level (Leq) at south property line at location R-1	65	68	63	64	65	68	63	52	42	
Overall Combined Level (dB)	71	74	67	67	68	69	64	55	52	
A-weighting[8]	-39	-26	-16	-9	-3	0	+1	+1	-1	
Combined Sound Pressure Level off-axis 90 degree from tunnel exit	32	48	51	58	65	69	65	56	51	72 dBA

Table 6 - Existing Blowers at South Property Line at 90° from Tunnel Exit Opening

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Existing 5 Blowers Sound Pressure Level Leq measured on 4/8/14 at 90° off-axis at south property line	74	78	73	69	69	65	60	53	47	
Addition of one more blower to make a total of 6.[9]	+1	+1	+1	+1	+1	+1	+1	+1	+1	
A-weighting	-39	-26	-16	-9	-3	0	+1	+1	-1	
Total A-weighted SPL measured due to existing blowers at south PL 90° off-axis	36	53	58	61	67	66	62	55	47	71[10] dBA

[5] See Appendix for formula for adding multiple source sound levels
[6] See Appendix for formula for attenuation of sound pressure level over distance
[7] Koppers Aircoustat Directivity Attenuation Table, 1975 interpolated for opening size at Russell Speeders.
[8] See Appendix for A-weighting calculation
[9] See Appendix for formula for adding multiple source sound levels
[10] Difference between measured and calculated levels is due to the effect of ambient noise on the sound measured on site as shown in table 5.

Table 7 - New Existing Blowers at South Property Line at 45° from Tunnel Exit Opening

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
New Existing Blower without attenuation duct Sound Pressure Level at 20' measured on-axis 1/17/14	72	78	75	75	77	73	70	67	66	78 dBA
Addition for 6 blowers[11]	+8	+8	+8	+8	+8	+8	+8	+8	+8	
Attenuation over 16' distance to property line on south side (20 log20'/36')[12]	-5	-5	-5	-5	-5	-5	-5	-5	-5	
Off-axis 45 degree attenuation for 10' x 12' opening[13]	-2	-3	-4	-3	-1	0	0	0	0	
Total Sound Pressure Level Calculated Due to new blowers at PL on south side	73	78	74	75	79	76	73	70	69	
Measured Average Ambient Noise Level (Leq) at south property line at location R-1	65	68	63	64	65	68	63	52	42	
Overall Combined Level (dB)	74	78	74	75	79	77	73	70	69	
A-weighting[14]	-39	-26	-16	-9	-3	0	+1	+1	-1	
Combined Sound Pressure Level Calculated off-axis 45 degree from tunnel exit due to new blowers at PL on south side	35	52	58	66	76	77	74	71	68	81[15] dBA

Table 8 - Existing Blowers at South Property Line at 45° from Tunnel Exit Opening

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Existing Blowers Leq measured on 4/8/14 at 45° off-axis at south property line	74	81	77	75	75	73	67	63	58	
Addition of one more blower to make a total of 6.[16]	+1	+1	+1	+1	+1	+1	+1	+1	+1	
A-weighting	-39	-26	-16	-9	-3	0	+1	+1	-1	
Total A-weighted Sound Pressure Level Due to existing blowers and traffic noise at PL on south side 45° off-axis	36	56	62	67	73	74	69	65	58	78 dBA

[11] See Appendix for formula for adding multiple source sound levels
[12] See Appendix for formula for attenuation of sound pressure level over distance
[13] Koppers Aircoustat Directivity Attenuation Table, 1975 interpolated for opening size at Russell Speeders.
[14] See Appendix for A-weighting calculation
[15] See Appendix for A-weighting calculation
[16] See Appendix for formula for adding multiple source sound levels

Table 9 - New Existing Blowers Calculated at North Property Line at 45° From Tunnel Opening

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
New Existing Blower without attenuation duct Sound Pressure Level measured at 20' on-axis 0°	72	78	75	75	77	73	70	67	66	78 dBA
6 blowers	+8	+8	+8	+8	+8	+8	+8	+8	+8	
Attenuation over 100 foot distance to property line on north side (20log20'/120')	-16	-16	-16	-16	-16	-16	-16	-16	-16	
Off-axis 45 degree attenuation for 10'x12' opening	-2	-3	-4	-4	-2	0	0	0	0	
Total Sound Pressure Level Due to new blowers at PL on north side	62	67	63	63	67	65	62	59	58	
Measured Average Ambient Noise Level (Leq) at north property line at location R-9	68	67	66	65	64	67	62	52	43	69
Overall Combined Level (dB)	69	70	68	67	69	69	65	60	58	
A-weighting	-39	-26	-16	-9	-3	0	+1	+1	-1	
Total A-weighted Sound Pressure Level Calculated Due to new blowers at PL on north side	30	44	52	58	66	69	66	61	57	72 dBA

Table 10 - Existing Blowers at North Property Line at 45° from Tunnel Exit Opening

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Existing Blowers Sound Pressure Level Leq measured on 4/8/14 at 45° off-axis at north property line with ambient traffic noise	72	77	71	69	69	70	65	56	48	
Addition of one more blower to make a total of 6.[17]	+1	+1	+1	+1	+1	+1	+1	+1	+1	
A-weighting	-39	-26	-16	-9	-3	0	+1	+1	-1	
Total A-weighted Sound Pressure Level Due to existing blowers and traffic noise at PL on north side 45° off-axis near road	64	52	56	61	67	71	67	58	48	74 dBA

[17] See Appendix for formula for adding multiple source sound levels

Table 11 – New Existing Blowers Calculated On-axis to East Property Line

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
New Existing Blower without attenuation duct Sound Pressure Level at 20' on axis (0°)	72	78	75	75	77	73	70	67	66	78 dBA
6 blowers	+8	+8	+8	+8	+8	+8	+8	+8	+8	
Attenuation over distance to property line at sidewalk lot line 34' from initial measurement location (20log20'/54')	-9	-9	-9	-9	-9	-9	-9	-9	-9	
On-axis attenuation	0	0	0	0	0	0	0	0	0	
Total Sound Pressure Level Due to new blowers at East sidewalk PL	71	77	74	74	76	72	69	66	65	
Measured Average Ambient Noise Level (Leq) at east property line at location R-1	65	68	63	64	65	68	63	52	42	
Overall Combined Level (dB)	72	78	74	74	76	74	70	66	65	
A-weighting	-39	-26	-16	-9	-3	0	+1	+1	-1	
Total A-weighted Sound Pressure Level Calculated Due to new blowers at east sidewalk PL	33	52	58	65	73	74	71	67	64	78 dBA

Table 12 New Existing Blowers at East Property Line with Only Inlet Attenuation Ducts	
Description	***A-weighted Sound Level Calculated at East Property Line***
New Existing Blower with inlet attenuation duct at 60 Hz (100%) 20 feet from blower and 5' from tunnel exit opening	74 dBA
Increase due to quantity of six blowers	+8 dBA
Reduction due to distance from measurement location to East sidewalk PL (20 log 20'/54')	-9 dBA
Total Sound Level due to 6 new blowers at East PL	73 dBA
Total Sound Level at East PL	73 dBA
Ambient sound Level at East PL location R-1	68 – 73.4 dBA

The above study indicates that the new blowers even with the inlet attenuation ducts, which were measured at Russell Speeders to test their suitability to replace the existing older blowers, will not meet the Town of Bedford Noise Code requirements as stated above (49 dBA during the hours of 8:00 a.m. to 6:00 p.m. or 45 dBA during the hours of 6:00 p.m. to 8:00 a.m. and all day Sunday).

We have therefore done extensive research to locate car wash blowers that are quieter and have performed an analysis of their expected sound levels at the property lines. It should be noted that there is no octave band test data from the manufacturer for the proposed blowers. The data provided is a single overall 71 dBA level at a distance of 20 feet. The 71 dBA level is projected

by the manufacturer if the blower is supplied with the manufacturer's sound attenuation package. Since the manufacturer does not have any spectral data for the blowers, an estimated octave band noise spectrum has been calculated to use in the following analysis. The following describes this analysis and shows calculations for the analysis.

Recommended New Blowers and Sound Attenuation Measures for Blowers

This section of our report shows estimated sound levels in octave bands to represent the Proto-Vest Windshear blower system with the attenuator package to allow a comparison of resulting octave bands levels to the older noise code from 1983 which is given in octave bands. The newer code can be easily compared using the overall dBA level which is shown at the far right side of the chart in all the calculation tables provided with this report.

Proto-Vest Inc. Model Windshear

Proto-Vest Inc. manufactures a complete dryer system, model Windshear, which can be obtained with a silencer package that further reduces the dryer sound level. The manufacturer has provided sound levels of 70.9 dBA at 20 feet for the dryer system when outfitted with the silencer package. This is the quietest system we found that meets with the drying capacity requirements for Russell Speeders Car Wash at Bedford Hills. Although this dryer system has a lower sound level output with the attenuation package, this unit will still not meet the noise ordinances without additional sound attenuation measures. It should be noted that this sound level given by the manufacturer is a calculated level based upon a measurement of 83 dBA at a distance of 5 feet from the blower with the sound attenuation package (91 dBA at a distance of 5 feet without the attenuation package.) Cut sheets are attached showing the blower configuration and sound data. We suggest locating the blower at least 20 feet inside the tunnel exit to give the exiting car space to wait for the overhead door to open after the blower is finished and this will also add to the sound attenuation capability of the tunnel itself.

The calculations shown in Appendix C include levels for the blowers projected to each of the affected property lines including varying conditions such as noise levels with the blower on and the bay door open with and without the recommended sound barrier walls, levels projected with the blowers off and the bay door open, and for the bay door closed when the blower is on. Since the older noise ordinance lists the maximum sound requirements in octave bands, we have created an estimated octave band sound spectrum for the fans based upon the readings measured for the existing fans and the expected attenuation using the Proto-Vest **Windshear** dryer system with the sound attenuator package. These calculations are shown in Appendix C for your reference.

Overhead Door Construction

We recommend all the bay doors including the detailing bays be constructed using the 6mm Macrolux C solid polycarbonate system having a minimum weight of 7.2 kg/m^2 and full perimeter seals as provided by Airlift Doors, Inc. This will be required to meet the strictest code requirements. Cut sheets are attached in Appendix A. The overhead doors will need to be used at the tunnel exit for Sundays and after 6pm on all other days whenever the blower is in operation. A bay door protocol will be implemented that includes automated bay doors which will be electronically signaled to lift when the blower is finished with the car and has shut down. The overhead door would then close before the blower dries the next car in the tunnel.

In addition, the bay doors will always be down when there is detailing work in the detail bays. If only the vacuums are being used, they can be left open, but whenever the louder equipment is being used, the doors will be closed.

All calculations have been based upon a maximum overhead door height of 84". This is recommended so that the sound barriers can provide essential line-of-sight blocking which will not happen if the bay and tunnel doors are too high. Refer to the barrier wall calculations for further reference.

Tunnel and Detail Bay Ceiling Treatment

We also recommend that the ceiling of the tunnel and the detailing bays be treated with acoustically absorptive material that can withstand water and humidity, such as a water resistant acoustical ceiling tile suspended from a grid such as MBI San Pan PVF Panels series 600P-2060-E in the 1" thickness having a 1.5 mil PVC encapsulated water resistant surface finish with a 1" thick 6-7# fiberglass core. This material has a manufacturer's acoustical performance rating of NRC 0.80. Cut sheets are included in Appendix A. The inside walls will have white vinyl ribbed exterior siding on furring strips to provide some diffusion of sound within the tunnel.

Sound Barrier Walls

The easiest way to reduce the sound level at the property lines is to construct solid barrier walls to block sound from getting to the property lines. We have calculated the barrier wall attenuation that would result from several barrier wall heights. Scale drawings are included in Appendix C including the calculations to achieve the sound attenuation values shown in the tables. The Town of Bedford requires that all barrier walls be 6 feet high or lower, so we first tried this height to see whether it satisfied the code requirements and found that it did not. Additional attenuation is necessary, and we have therefore performed calculations using higher barrier heights and have lowered the tunnel opening heights to the lowest possible opening of 84" which has been used for the opening height in the barrier calculations. In addition, the receptor is 5 feet tall and has been placed two feet on the other side of the barrier wall.

Sound barrier walls will be required in several locations as shown on the attached drawing D-2. The barriers need to be 8 feet in height with the exception of the north property line which needs to be 10 feet in height due to the raised elevation of the neighboring property which diminishes the barrier effect until it blocks the line of sight to the receptors. The barriers shall consist of a continuous double faced stockade fence construction that extends to the ground with no gaps or openings of any type that could allow sound to pass through. The barriers are required due to the fact that there is still noise emitting from the tunnel and detail bays when the doors are opened even if the blowers are turned off and this noise will exceed the code requirements if left unattenuated due to the close proximity of the property lines as shown in the attached calculations.

Summary of Blower Noise Attenuation

Our conclusion is that the current dryers need to be replaced with the Proto-Vest **Windshear** blower system with the silencer package and that the overhead door system should be provided for all bays as described above in conjunction with the ceiling acoustical treatment and barrier walls which will all work together so that the car wash facility is in compliance with the Town of Bedford Noise Ordinances at all times of use.

Peripheral Noise Sources

Measurements were taken of the vacuum systems, rooftop unit, and tunnel entrance at the north and south property lines. However, since the ambient noise level in the area was much higher than these sources, sound readings had to be taken quite near to the sources (3 to 5 feet) and the sound levels had to be calculated from these near-field readings to the property lines to get a true reading on their contribution to the sound level at the property lines. There were simply too many ambient noise sources to get an accurate reading on the contribution of the Russell Speeders equipment to the overall sound level at the property lines.

Please note that there is an existing building at the north property line with little potential for people to be directly impacted at the property line by the sound from Russell Speeders detailing area. In fact, this building has a very loud air release hose that cycles on every few minutes that makes conversation in the Russell Speeders property impossible while it is active. In addition, there is currently a deep hole in the ground at the south property line, so no one will be standing within earshot of the vacuums at that property line either. Additionally, the ambient sound level at both of these locations is affected by traffic noise on Route 117, the nearly constant equipment backup beepers from across the road at the equipment rental store, an air release valve from the building next door, sirens, trains and train horns, all of which are very frequent and subjectively more disturbing to the human ear than the noise coming from the vacuum system located at Russell Speeders. With all this in mind, we present the following findings and recommendations for the peripheral equipment at Russell Speeders.

Vacuum and Compressor at Rear of Property

Measurements were taken on April 8, 2014 of the vacuum noise from the rear property detailing area at the nearest north and south property lines. The existing temporary outdoor air compressor will be located inside the building when the approval is obtained to upgrade the property, and will therefore not be contributing to the noise level. In the updated facility, the vacuums will be used in the detailing bays and will not exceed the noise code at the nearest property lines. The overhead doors will be down to prevent noise from being excessive at the nearest north property line. In addition to the vacuums, there are air hoses and floor mat cleaning tools that make significant sound levels. These will also be located in the detail bays and will only be used when the bay doors are down.

Vacuum System at Free Vacuum Area on North Side of Building

The sound level was measured at the north property line directly in line with the vacuum unit at the north side of the Russell Speeders building and it was the same with and without the vacuum system running, 60.8 dBA, meaning that it does not increase the ambient level at all. In addition, readings were taken 3 feet from the vacuum unit at the north side of the building and it measured 64.9 dBA. When calculated to the property line the level would be 39 dBA if it were possible to hear it above the ambient sound level, which it was not at the time of our readings. Please note that the free vacuum area will not exist in the altered facility.

Rooftop Heating Unit

Measurements were taken at the north and south property lines with the rooftop heating unit on and off. There was no change in the ambient sound level at any property line when the unit was turned on and off, and it was completely inaudible. There are therefore no sound attenuation measures required for this unit. A calculation is shown in Appendix C for this unit to the closest property line.

Residential Properties

There are two residences within 200 feet of the Russell Speeders property. These are both to the north and are shown on the attached detail D-1. In both cases, there are building structures that block the direct line of sight to the residential buildings from the car wash exit tunnel. The only equipment that would be in direct line of sight to the residences would be the north detailing areas. Since these will be enclosed in the alterations, there will be no appreciable effect on these properties, since the sound level will be inaudible as shown in the calculations in Appendix C. Also shown are calculations to the residences of blower noise since it is not currently audible above the ambient noise of the traffic at these residences.

With the planned enclosures for the detail bays to be located at the north side of the building, there will be Big Ass Fans mounted in the ceilings to provide air circulation for workers inside these buildings. These fans do not have sound level data, but according to Travis Simpson, the Vertical Market Specialist for Big Ass Fans, there are several of these fans in all sizes in his office within 30 feet of his desk and they are "inaudible". They do not produce noise even loud enough to measure inside his office. We therefore, conclude that these will not produce measurable noise at the property line which will be 50' away from the one story high detailing bay ceiling, let alone a residence that is 245' away in the case of the closest residence on the north side of the Adzam property. There will be no other heating, ventilating or cooling mechanical equipment added to the site to our knowledge.

Amplified Music

At the existing facility, there are two exterior speakers mounted on the northeast corner of the building facing the car owner waiting area. Measurements were taken of these speakers at 3 feet and then calculated to the nearest north property line. They will not exceed code as currently adjusted.

In addition, on all four sound level measurement days, there were no instances of car speakers being played for the workers. There are no "boomboxes" or music players in the facility for the workers and this policy will continue in the altered facility.

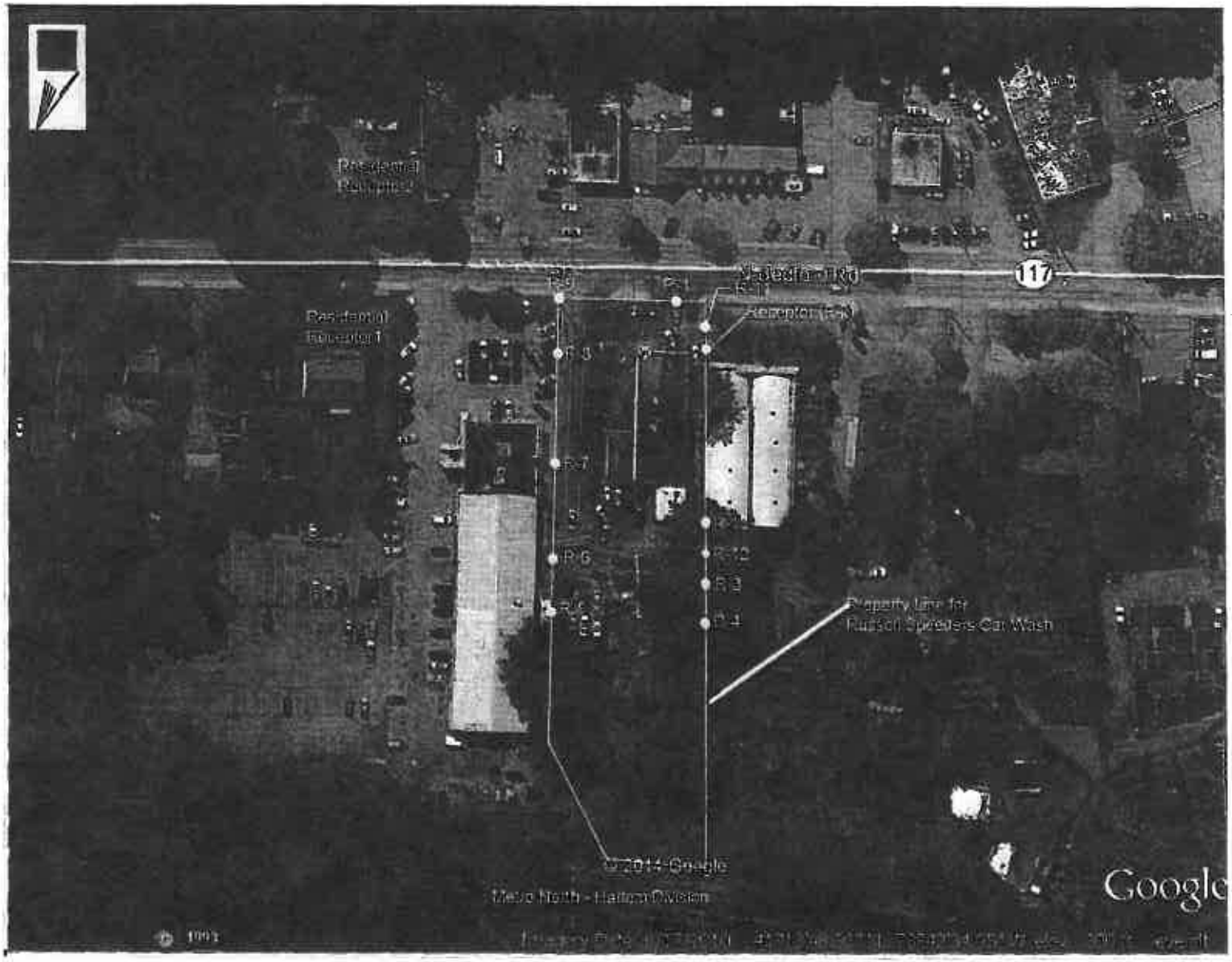
The above summarizes our findings and recommendations regarding the equipment at Russell Speeders. Please feel free to contact me if you have any questions or comments.

Very truly yours,

Maria L Castellucci

Maria L. Castellucci,
Consultant in AV and Acoustics

Appendix A



Russell Wash

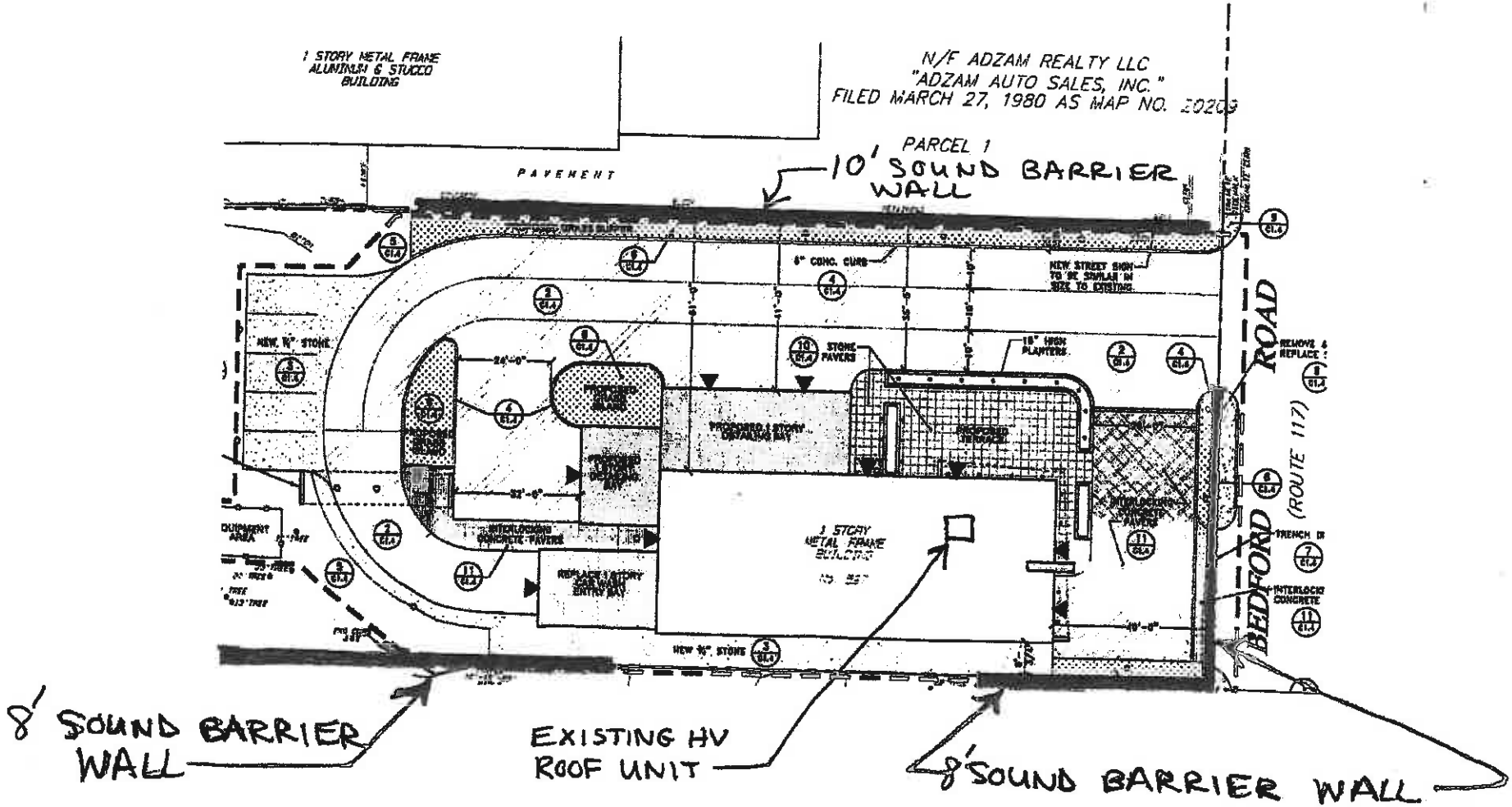
Russell Speedee Car Wash
Site Plan of Receptors and Measurement Locations

RSCW-1

10-14-14

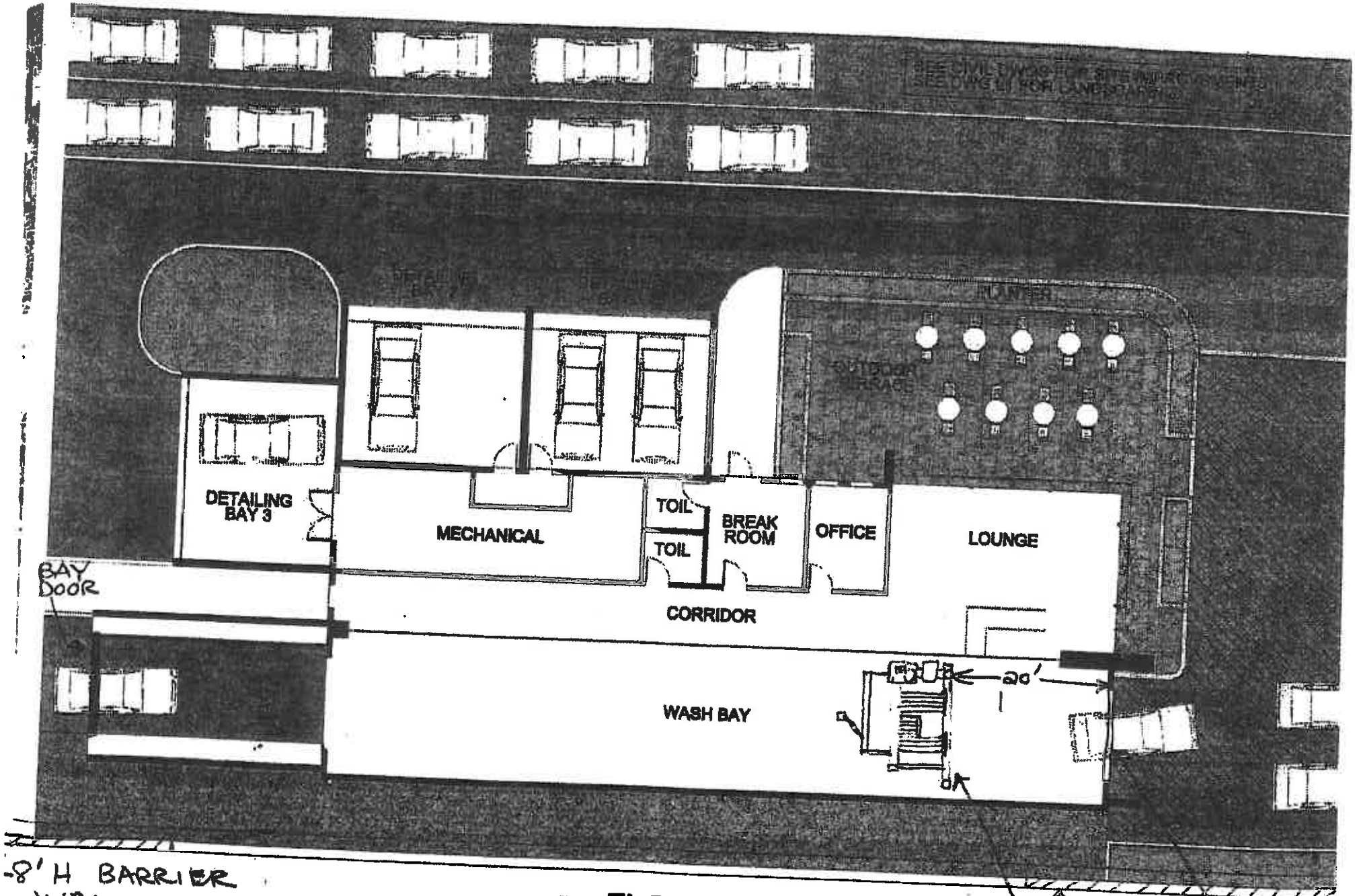
1:20

D-1



D-2

SOUND BARRIER WALL LOCATIONS

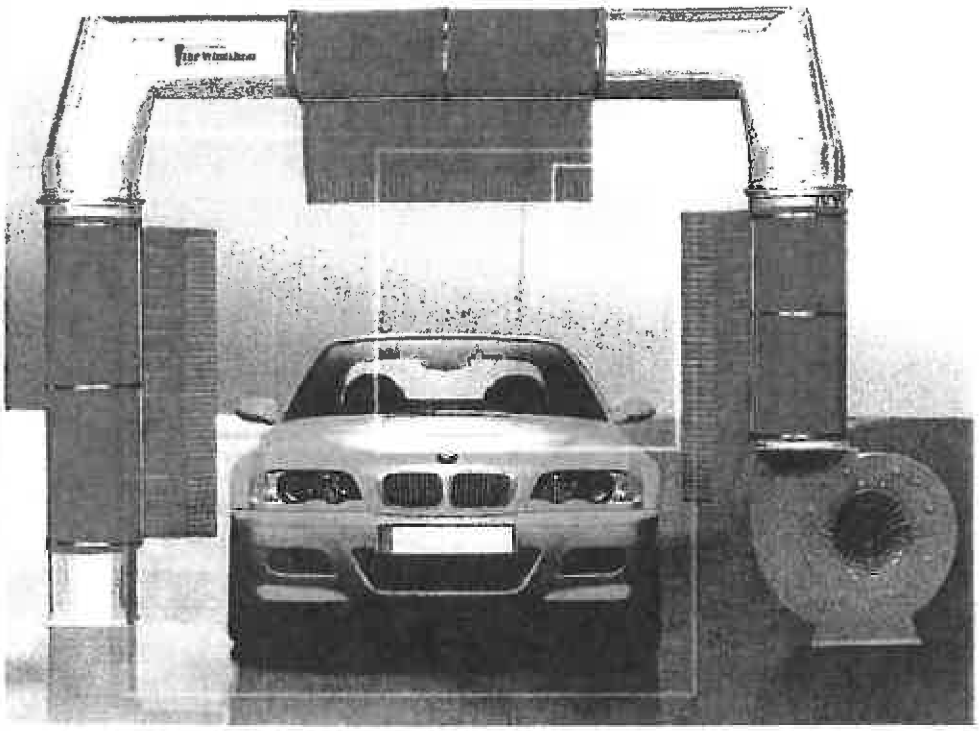


3 **FLOOR PLAN**

SCALE: 1/16" = 1'-0"

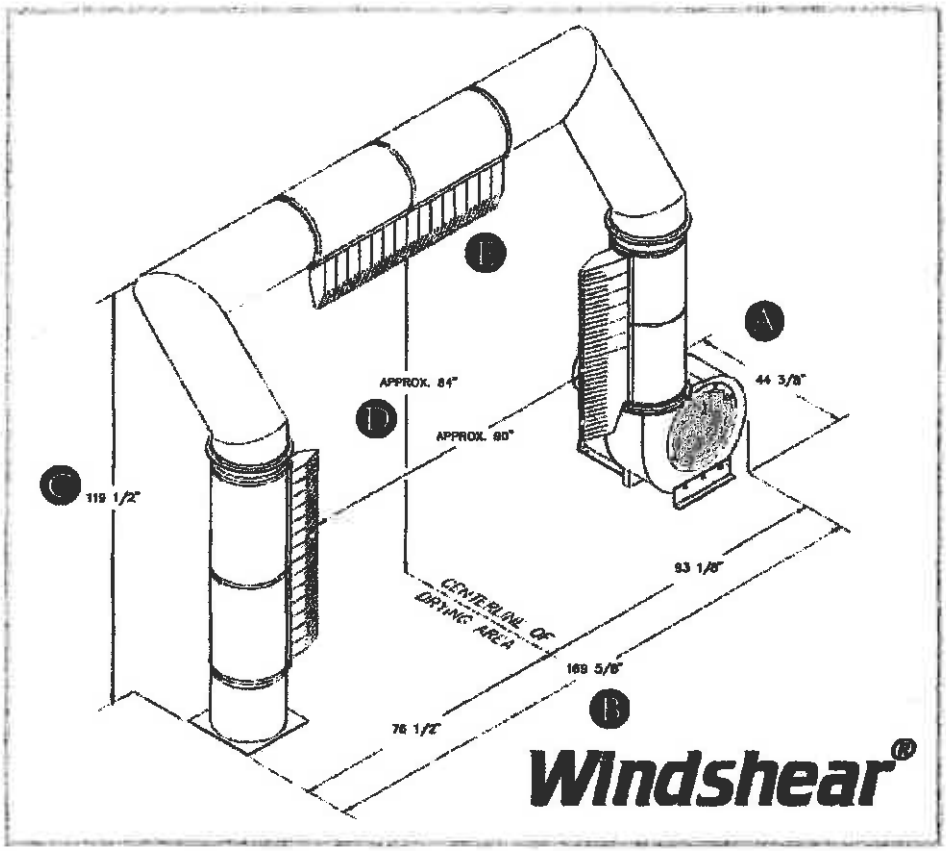
D-3 FLOOR PLAN

The Windshear



- Touch Free
- Low Maintenance
- Modular or Stand-Alone Design
- Compact Design
- 30hp Blower

Proto-Vest, Inc.



Dimensions

- A OVERALL LENGTH 44 3/8 in.
- B OVERALL WIDTH 169 5/8 in.
- C OVERALL HEIGHT 119 1/2 in.
- D BAG HEIGHT 84 in.
- E VERTICAL OPENING 60 in.

Machine Operating Requirements*

- 30 hp, 3600 RPM
- 208-230/460 volts
- 1.15 service factor
- Frame: 286TS
- 3 Phase
- Totally enclosed, fan cooled (TEFC)

NOTE: Wiring and controls to be provided by the purchaser. Additional motor specifications available upon request. Additional voltages available on special order.

Optional Features

- Green, Red, Blue, Black or Custom Bag Colors
- The Silencer Package
- Vehicle Recognition System (VRS)

Weight: 1250 lbs. (approximate)

General Description

The Proto-Vest "Windshear®" is designed as a stand alone drying system that is ideal for tunnels with a variety of line speeds. This patented system utilizes one (1) 30 hp Magnum blower, plenum and three (3) Proto-Duck™ air delivery bags designed to direct air around the vehicle as it passes under the equipment arch. Proto-Vest's blower/motor assemblies are engineered for both maximum efficiency and cost effectiveness allowing the system to operate with only one 30hp Magnum blower. With the improved performance of the Magnum blower assembly the Windshear® s drying quality far surpasses any comparable horsepower dryer in its class.

Proto-Vest's stringent standards in material selection for dryers result in extended equipment life and reduced maintenance. The blower assembly is manufactured from steel that is powder coated while the impeller is electroplated. The blower is AMCA Class IV certified. The plenum is made from 5052-H32 aluminum, while the bags are produced from Proto-Duck™ materials. These materials resist corrosion and tearing.

Key Benefits

Patented Touchless Design: Pressurized air flows through three (3) patented bags which direct the air to the vehicle's horizontal and vertical surfaces. It dries the hood, roof, deck, windows, and sides of the vehicle without touching.

Low Maintenance: Other than the blower / impeller assemblies, there are no moving parts to wear-out or break down. (Please note that Proto-Vest recommends routine maintenance in order to maximize product life.)

Line Speed Efficiency: As a stand alone unit the "Windshear" will provide an effectively dried car at a wide variety of line speeds.

Compact / Modular design: Designed to fit into limited space as a stand alone or supplemental dryer.

Decibel Readings

With Silencer / Without Silencer

	(WS)	(WOS)
Windshear® - (1) 30hp dryer:		
WS: 10 ft=76.9 dBa;		WOS: 10 ft=91 dBa
WS: 20 ft=70.9 dBa;		WOS: 20 ft=84.9 dBa
WS: 30 ft=67.4 dBa;		WOS: 30 ft=81.4 dBa
WS: 40 ft=64.9 dBa;		WOS: 40 ft=78.9 dBa
WS: 50 ft=63 dBa;		WOS: 50 ft=77 dBa

(The above decibel readings are interpolated.)

Service / Support

Proto-Vest recognizes that support after the sale of equipment is critical to the success of our customers. Our company offers its customers access to a wide range of services including: field service technicians, factory direct aftermarket parts, and an engineering staff for custom designed applications.

*Specifications subject to change without notice.
**If starting motor over 10-12 times an hour it may be more efficient to leave blower on.

Proto-Vest, Inc., • 7400 N. Glen Harbor Blvd., Glendale, AZ 85307 • 800-521-8218 • 623-872-8300 • Fax 623-872-6150
www.protovest.com

Silencer Package

GENERAL DESCRIPTION

The Proto-Vest "Silencer Package" was developed to enable our dryers to meet OSHA, federal, state and local noise reduction standards. The OSHA permissible noise exposure is 85 dB for an 8-hour shift. By reducing noise levels into the 70 dB to 80 dB range, you can be assured of a pleasant environment for both your employees and customers. The Silencing Package is a standard feature on all Untouchable dryers, while the Stripper and Windshear drying systems can be equipped with the Silencing Package as an option. Using state-of-the-art materials, which require virtually no maintenance, Proto-Vest has designed three components to comprise the Silencer Package.

- **Blower Inlet:** reduces the noise generated by rapidly moving air being drawn into the blower assembly.
- **Blower-motor Cover:** houses the blower and motor completely to absorb noise emitted from the motor and impeller while providing the assembly additional protection.
- **Riser Can:** absorbs the noise created by the blower, impeller and the movement of the air as it leaves the blower by advancing through the dryer's plenum.

The Silencer Package reduces decibel levels on Proto-Vest dryers on an average of 10 decibels making them approximately 10 times quieter than the un-silenced models!

DECIBEL LEVEL READINGS

With Silencer (WS)	Without Silencer (WOS)
Windshear InBay - (2) 25hp Dryer:	
WS: 10 ft=88 dBa;	WOS: 10 ft=94 dBa
WS: 20 ft=82 dBa;	WOS: 20 ft=88 dBa
WS: 30 ft=78.4 dBa;	WOS: 30 ft=84.5 dBa
WS: 40 ft=76 dBa;	WOS: 40 ft=82 dBa
WS: 50 ft=74 dBa;	WOS: 50 ft=80 dBa
WS: 60 ft=72.4 dBa;	WOS: 60 ft=78.4 dBa
Windshear - 30hp Dryer:	
WS: 10 ft=76.9 dBa;	WOS: 10 ft=91 dBa
WS: 20 ft=70.9 dBa;	WOS: 20 ft=84.9 dBa
WS: 30 ft=67.4 dBa;	WOS: 30 ft=81.4 dBa
WS: 40 ft=64.9 dBa;	WOS: 40 ft=78.9 dBa
WS: 50 ft=63 dBa;	WOS: 50 ft=77 dBa
Windshear II - (2) 30hp Dryer:	
WS: 10 ft=88 dBa;	WOS: 10 ft=99 dBa
WS: 20 ft=81.9 dBa;	WOS: 20 ft=92.9 dBa
WS: 30 ft=78.4 dBa;	WOS: 30 ft=89.4 dBa
WS: 40 ft=75.4 dBa;	WOS: 40 ft=86.9 dBa
WS: 50 ft=74 dBa;	WOS: 50 ft=85 dBa
TopShot - 30hp Dryer:	
WS: 10 ft=76.9 dBa;	WOS: 10 ft=91 dBa
WS: 20 ft=70.9 dBa;	WOS: 20 ft=84.9 dBa
WS: 30 ft=67.4 dBa;	WOS: 30 ft=81.4 dBa
WS: 40 ft=64.9 dBa;	WOS: 40 ft=78.9 dBa
WS: 50 ft=63 dBa;	WOS: 50 ft=77 dBa
TopShot II - (2) 30hp Dryer:	
WS: 10 ft=88 dBa;	WOS: 10 ft=99 dBa
WS: 20 ft=81.9 dBa;	WOS: 20 ft=92.9 dBa
WS: 30 ft=78.4 dBa;	WOS: 30 ft=89.4 dBa
WS: 40 ft=75.9 dBa;	WOS: 40 ft=86.9 dBa
WS: 50 ft=74 dBa;	WOS: 50 ft=85 dBa
TailWind - (1) 25hp Dryer:	
WS: 10 ft=85 dBa;	WOS: 10 ft=91 dBa
WS: 20 ft=79 dBa;	WOS: 20 ft=85 dBa
WS: 30 ft=75.5 dBa;	WOS: 30 ft=83.5 dBa
WS: 40 ft=73 dBa;	WOS: 40 ft=79 dBa
WS: 50 ft=71 dBa;	WOS: 50 ft=77 dBa
SideShot - 15hp Dryer:	
WS: 10 ft=74.5 dBa;	WOS: 10 ft=82.9 dBa
WS: 20 ft=68.5 dBa;	WOS: 20 ft=76.9 dBa
WS: 30 ft=64.9 dBa;	WOS: 30 ft=73.4 dBa
WS: 40 ft=62.4 dBa;	WOS: 40 ft=70.9 dBa
WS: 50 ft=60.5 dBa;	WOS: 50 ft=69 dBa
SideShot II - 30hp Dryer:	
WS: 10 ft=76.9 dBa;	WOS: 10 ft=91 dBa
WS: 20 ft=70.9 dBa;	WOS: 20 ft=84.9 dBa
WS: 30 ft=67.4 dBa;	WOS: 30 ft=81.4 dBa
WS: 40 ft=64.9 dBa;	WOS: 40 ft=78.9 dBa
WS: 50 ft=63 dBa;	WOS: 50 ft=77 dBa
90N/90XS - 15hp Dryers:	
WS: 10 ft=74.5 dBa;	WOS: 10 ft=82.9 dBa
WS: 20 ft=68.5 dBa;	WOS: 20 ft=76.9 dBa
WS: 30 ft=64.9 dBa;	WOS: 30 ft=73.4 dBa
WS: 40 ft=62.4 dBa;	WOS: 40 ft=70.9 dBa
WS: 50 ft=60.5 dBa;	WOS: 50 ft=69 dBa
IP330 - 30hp Dryers:	
WS: 10 ft=76.9 dBa;	WOS: 10 ft=91 dBa
WS: 20 ft=70.9 dBa;	WOS: 20 ft=84.9 dBa
WS: 30 ft=67.4 dBa;	WOS: 30 ft=81.4 dBa
WS: 40 ft=64.9 dBa;	WOS: 40 ft=78.9 dBa
WS: 50 ft=63 dBa;	WOS: 50 ft=77 dBa
IP345 - 45hp Dryers:	
WS: 10 ft=76.9 dBa;	WOS: 10 ft=91 dBa
WS: 20 ft=70.9 dBa;	WOS: 20 ft=84.9 dBa
WS: 30 ft=67.4 dBa;	WOS: 30 ft=81.4 dBa
WS: 40 ft=64.9 dBa;	WOS: 40 ft=78.9 dBa
WS: 50 ft=63 dBa;	WOS: 50 ft=77 dBa

(Proto-Vest's Silencing Package is standard on all of the Untouchable series.)

(Proto-Vest's Silencing Package is standard on all of the Untouchable series)

*Specifications subject to change without notice.
NOTE: Proto-Vest dryer's dimensions will vary with the Silencer Package.

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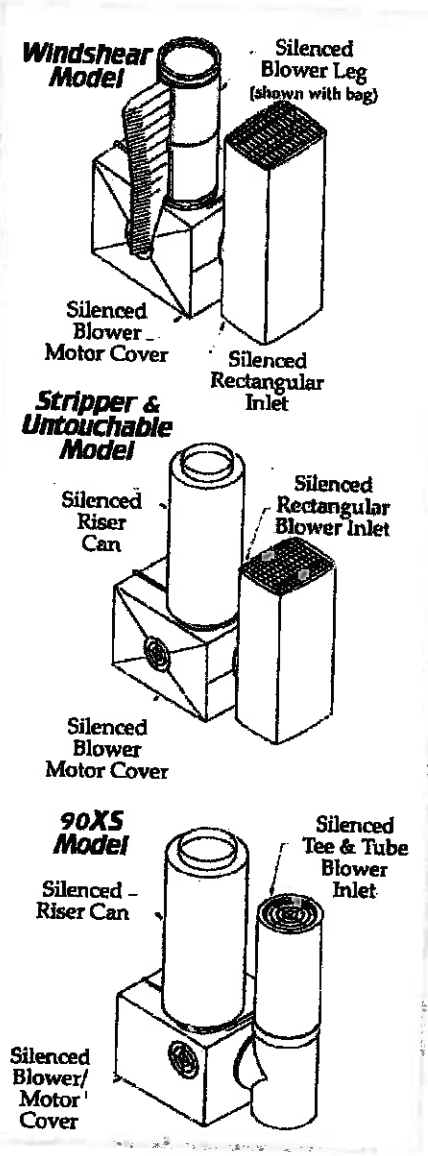
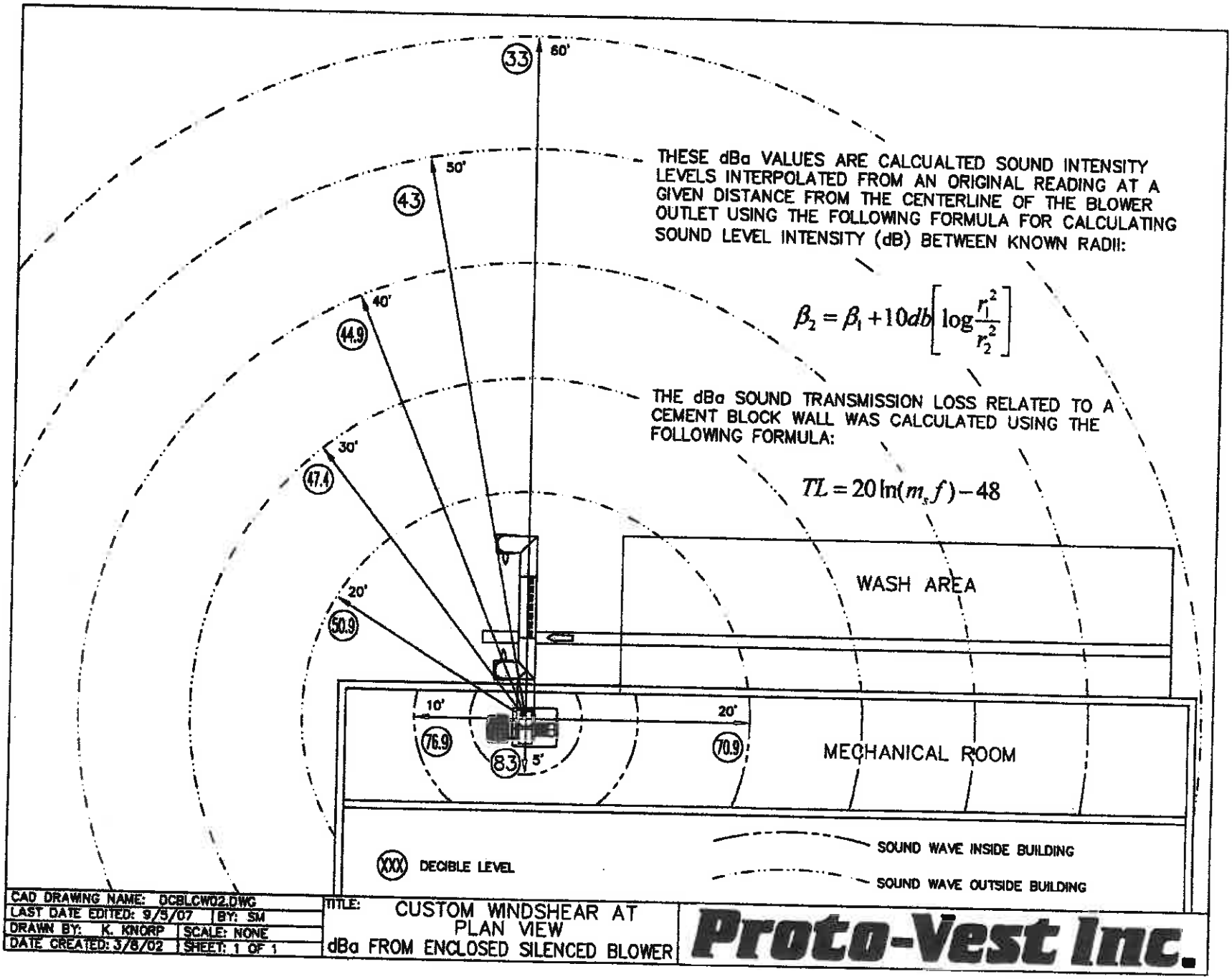




THESE dBa VALUES ARE CALCUALTED SOUND INTENSITY LEVELS INTERPOLATED FROM AN ORIGINAL READING AT A GIVEN DISTANCE FROM THE CENTERLINE OF THE BLOWER OUTLET USING THE FOLLOWING FORMULA FOR CALCULATING SOUND LEVEL INTENSITY (dB) BETWEEN KNOWN RADII:

$$\beta_2 = \beta_1 + 10db\left[\log\frac{r_1^2}{r_2^2}\right]$$

THE dBa SOUND TRANSMISSION LOSS RELATED TO A CEMENT BLOCK WALL WAS CALCULATED USING THE FOLLOWING FORMULA:

$$TL = 20\ln(m_s f) - 48$$

CAD DRAWING NAME:	DCBLCW02.DWG
LAST DATE EDITED: 9/5/07	BY: SM
DRAWN BY: K. KNORP	SCALE: NONE
DATE CREATED: 3/8/02	SHEET: 1 OF 1

TITLE: CUSTOM WINDSHEAR AT PLAN VIEW dBa FROM ENCLOSED SILENCED BLOWER

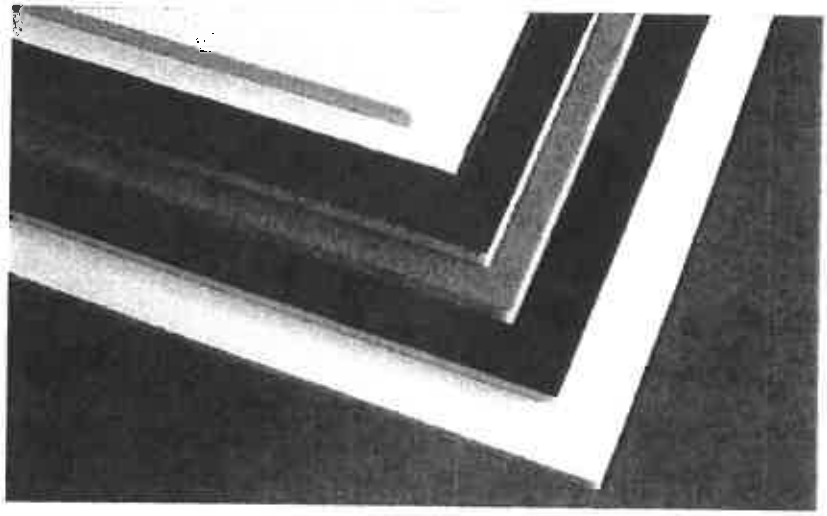
Proto-Vest Inc.

CEILING TILES

Custom High Performance Ceiling Tiles

The entire line of MBI ceiling tile products is dimensionally stable, market friendly, and designed to last a lifetime. They offer excellent acoustics at economical prices.

PRODUCT DESCRIPTION



MBI Blackout Tiles are ideal for any ceiling where you need maximum sound absorption at a cost-effective price. The matte black finish has very little sheen, making the ceiling disappear. Perfect for home theaters and cinemas.

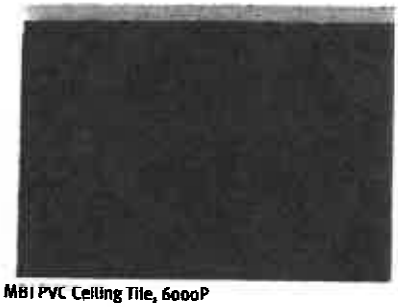
MBI Whiteout Tiles are an eco-friendly, pure white ceiling tile offering good acoustics with an environmentally sustainable design. Get your green points here.

MBI Fabric Ceiling Tiles offer a full palette of patterns and colors with an Ecose friendly core. The fabric finish is 100% recycled polyester, further enhancing its green qualities.

MBI Nubby Ceiling Tiles are a traditional classic, used for decades in the ceiling industry. Offered in small-run quantities and custom sizes.

MBI PVC Ceiling Tiles are a cost-effective solution when color is essential to your project. The PVC facing comes in 10 colors to suit your design needs.

MBI PVC Encapsulated Ceiling Tiles are ideal for all of your clean and high humidity environments. Also see our San Pan® line.



MBI PVC Ceiling Tile, 6000P

ACOUSTICAL PERFORMANCE

Product-Model	Absorption Coefficient						
	125	[illegible]	[illegible]	[illegible]	2000	4000	NRC
6000B-1060-N (1" x 6-7# Core, Blackout Faced)	0.78	1.07	0.87	1.04	1.12	1.15	1.05
6000G-1060-N (GreenLine) (1" x 6-7# Core, Whiteout Faced)	0.74	0.63	0.60	0.75	0.82	0.77	0.70
6000N-1060-N (1" x 6-7# Core, Nubby Faced)	0.75	0.91	0.70	0.93	0.98	1.03	0.90
6000P-1060-N (San-Pan) (1" x 6-7# Core, PVC Encapsulated)	0.75	0.76	0.72	1.03	0.76	0.38	0.80

CODES & CERTIFICATES

★ Class A per ASTM E84 25/0/50

FOR MORE INFORMATION ON THESE PRODUCTS GO TO WWW.MBIPRODUCTS.COM

MBI Ceiling Tiles

MBI Fabric Ceiling Tile, 6000F

MBI Blackout Ceiling Tile, 6000B

MBI Nubby Ceiling Tile, 6000N

TECHNICAL SUPPORT

- **Weight:** 0.7# - 1.5# per square foot
- **Density:** 6-7#
- **Shape:** Square, Rectangular
- **Fire Rating:** MBI Ceiling Tiles meet Class A per ASTM E84 25/0/50
- **Dimensional Stability:** Ceiling Tiles are dimensionally stable
- **Maintenance:** Materials selected to provide easy maintenance, durability and abuse resistance.

SIZES AVAILABLE

- Thickness of 1"-2"
- Custom Thicknesses available
- 16 square foot maximum
- Custom sizes available upon request

FINISHES AVAILABLE

- Black Matte Scrim
- Polyester Fabric. Other fabrics, subject to approval
- Sustainable Eco-Fabric
- Nubby Fabric
- 2.5 mil PVC Film

SUSPENSION PROVISIONS

- Grid by others
- Custom suspension available upon request

GENERAL NOTES

- Store products in a cool, dry, and temperature controlled interior location not less than 40°F prior to, during, and after installation.
- Store products out of direct UV sunlight.
- Store and protect products from the elements and from damage.
- Suspension hardware is not to be pre-installed.
- Do not subject acoustical products to critical edge lighting without first consulting manufacturer.
- MBI Ceiling Tiles are custom made. Sizes and quantities need to be determined by field verifying existing job-site conditions. Installer/Contractor is responsible for verifying and providing accurate field dimensions.
- MBI Ceiling Tiles must be kept in temperature-controlled environments.
- High humidity could cause panel fabric to wrinkle and/or de-laminate from fiberglass board.

MBI Penetration Panels are available to make field cuts around existing elements such as sprinkler heads, duct work, vents, lighting, etc.

Experience Matters:

Airlift Doors, Inc. has been a leader in the commercial door business for over 30 years.

We have been manufacturing air powered openers since 1979 and polycarbonate doors since 1991. We are proud to offer a wide variety of products to meet our customer's needs.

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Call one of our experienced sales staff today and see how Airlift Doors, Inc. can help you find the right products and services today!

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Our Mission:

We take pride in the quality of our products and guarantee that no other manufacturer stands behind their products and warranties like we do. With the most options available in the industry, we are sure to help you find the right door and opener for your wash or bay.

Our Promise:

All standard size doors and openers are guaranteed in stock with the shortest lead times in the industry.

Our customers are important to us and we are there to assist them in every way with technical support available 24 hours a day, 7 days a week.

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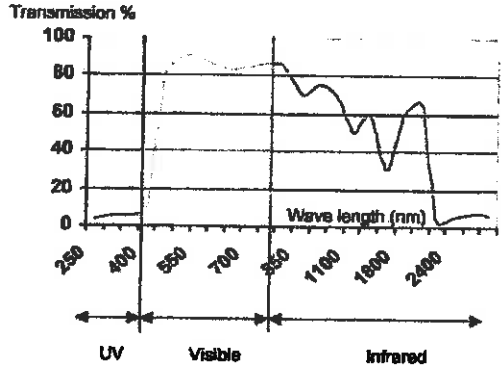
4.4 Sound insulation

MACROLUX® C and MACROLUX® C XL sheets sound-insulation values (reduction of noise) are the following:

Thickness	Weight (kg/m^2)	Reduction Rw
4	4.8	27 dB
5	6.0	28 dB
6	7.2	29 dB
8	9.6	31 dB
10	12.0	32 dB
12	14.4	34 dB

4.5 MACROLUX® C XL (EXTRA LIFE) U.V. protection

In order to prevent a premature aging due to the ultraviolet sun radiation, MACROLUX® C XL sheets are protected on both sides by means of a UV Absorber layer.
The co-extrusion method allows to realize an homogenous layer that strain and stop the ultraviolet component of sun beams.



The response to the solar radiation spectrum evidences how a UV-protected polycarbonate sheet can screen almost completely the ultraviolet component (on average only 4% of the radiation included in the range between 250-380 nanometres can pass through the sheet), while it remains totally transparent as regards to the visible component.
The outstanding characteristics of polycarbonate sheets remains unchanged in the time.
All MACROLUX® C XL sheets are constantly controlled with simulated aging tests (test made with QUV/SE Q-Panel) assuring the UV protection and granting MACROLUX® C XL sheets against loss of brightness, yellowing and breakage due to hail.
Verification test: ASTM D 1925
We ask you to contact our offices to have a copy of our warranty and of its extension.

Appendix B

Please note that all equations used in the calculations in Appendix C are in parentheses to reference the following equation numbers.

1. Attenuation of sound pressure level over distance in a free field[18]:

$$L_{p2} = L_{p1} + 20 \log_{10} (r_2/r_1)$$

L_{p1}= sound pressure level from source at location 1, dB
L_{p2}= sound pressure level from source at location 2, dB
r_1 = distance from source to location 1, ft or m
r_2= distance from source to location 2, ft or m

2. Calculation for adding multiple identical sound sources[19]:

$$L_p(\text{total}) = L_p(\text{single source}) + 10 \log_{10} N$$

L_p(single source) = the sound pressure level for one of the identical sound sources
L_p(total) = the total sum sound pressure level for all identical sources
N = the number of sources

3. Calculation for adding multiple sound sources which may not be identical[20]:

Addition of Sound Levels	
Difference between the two levels, dB	Add to the higher level, dB
0	3
1	2.5
2	2
3	2
4	1.5
5	1
6	1
7	1
8	0.5
9	0.5
10	0

[18] Handbook of HVAC Design, Editors Nils R. Grimm, PE and Robert C. Rosaler, PE, McGraw-Hill Publishing Company, c. 1990, p. 49.14.
[19] Ibid, p. 49.11.
[20] Ibid, p. 49.12, Table 49.5 *Addition of Sound Levels.*

4. A-weighting calculation for octave band spectrum[21]

Octave-Band Relative Frequency Response of a Sound Level Meter with A-Weighting to Sounds Arriving at Random Incidence

Octave Band Center Frequency, Hz	31.5	63	125	250	500	1000	2000	4000	8000
A-weighting, dB	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	+1.2	+1.0	-1.1

5. Estimating Sound Power Level from sound pressure level at given distance from source:

$L_w = L_p - 10 \log_{10} (D/ (4\pi r^2)) - 10.5$

Where:

D = Directivity of 2
R = distance from source
L_w = Sound Power Level
L_p = Sound Pressure Level

6. Room Constant: Assumes tunnel dimensions of 17'W x 99'L x 23'H for main tunnel and 17'W x 30'L x 13'H for entrance tunnel attached to main tunnel:

$RC = A/ (1-\alpha_{avg})$

Where:

A = Total Room Absorption in ft^2 Sabin = $\Sigma S_i \alpha_i$ where S_i is the individual surface area in the room (ft^2) and α_i is the absorption coefficient for the individual surface in the room (Sabin)

α_{avg} = Average Absorption Coefficient = A/S where A is the absorption of the room (ft^2 Sabin) and S is the total surface area in the room (ft^2)

7. Propagation of Sound Indoors in Reverberant Space (within tunnel)[22]

For a continuing sound source in a room, the sound level is the sum of the direct and reverberant sound. The sound pressure for a receiver at a specific distance from the source in a room is expressed as follows:

$L_p = L_w + 10 \log_{10} (D/ (4\pi r^2) + 4 / RC) + 10.5$

Where:

L_p = received sound pressure level at location specified distance from source
L_w = Sound power level from the source
D = directivity coefficient = 2

[21] Handbook of Acoustical Measurements and Noise Control, Third Edition, Cyril M. Harris, Ph.D, Editor in Chief, Acoustical Society of America, Woodbury, NY, c. 1998, p. 1.17 Table 1.2 and p. 1.22 Table 1.4 (derived from the American National Specification for Sound Level Meters, ANSI SI.4-1985, Acoustical Society of America, New York, NY 10017-3483, c.1985.)

[22] 2003 ASHRAE Applications Handbook, Chapter 47 *Sound and Vibration Control*, p. 47.26.

RC = room constant (ft^2 Sabin)
$\pi = 3.14$
r = distance from source

8. Transmission Loss Calculation

$L_{p2} = L_{p1} - TL$

Where:
TL = transmission loss of specific material
L_{p1} = sound pressure level on source side of material
L_{p2} = sound pressure level on receiver side of material through which sound is traveling

9. Sound Power Level Calculation for Radiating Surface

$L_w = L_{p2} + 10 \log_{10} (A_{wall}) - 10.5$

Where:
L_w = sound power level
L_{p2} = sound pressure level
A_{wall} = Radiating Surface Area

10. Sound Pressure Calculation Outside the Tunnel Door

$L_p = L_w + 10 \log_{10} (D/ (4\pi r^2)) + 10.5$

Where:
L_p = received sound pressure level at location specified distance from source
L_w = Sound power level
D = directivity coefficient = 2
$\pi = 3.14$
r = distance from source

11. Off-Axis Attenuation for a Long Tunnel or Duct with a 12'W x 7'H opening in free space were estimated as follows with 0° as the reference point directly on axis to the tunnel opening and 90° representing the angle perpendicular to the tunnel opening[23]:

Off-Axis Angle	Octave Band Center Frequency (Hz)								
	31.5	.63	125	250	500	1k	2k	4k	8k
0°	0	0	0	0	0	0	0	0	0
45°	3	3	4	3	1	0	0	0	0
60°	3	5	8	10	10	10	10	10	10
90°	7	10	14	15	16	17	18	19	19
135°-180°	7	10	15	18	20	22	24	25	25

[23] Koppers Aircoustat Directivity Attenuation Table, 1975 interpolated for opening size at Russell Speeders.

12. Sound Barrier Wall Calculation for Thin Barriers[24]

$IL_{barrier} = 10 \log [3 + 10/NK] - A_{ground}$ dB

Where:

K is a correction factor for atmospheric effects. For distances between the source and receiver less than 100m, K=1, signifying that atmospheric effects may be neglected.

Negative values of insertion loss from this equation are set to zero.

A_{ground} is the attenuation provided by the ground before the barrier is installed. The first term is the attenuation provided by the barrier plus any attenuation still effective in the propagation path resulting from the ground and atmospheric effects after the installation of the barrier.

$N = (2/\lambda) [d_1 + d_2 - d]$

λ = wavelength
N = the Fresnel number (dimensionless)
d_1, d_2, and d = the distances shown in the figure below.
When the tip of the barrier just touches the line of sight between the source and receiver, or is below it, the value of N is zero.

[24] Ibid, pp. 3.18-3.19

Appendix C

Table 1 - Estimated Octave Band Noise Levels with Blower On and Bay Door Open – No Barrier Walls

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Location R-1	62	64	60	59	60	55	51	44	37	60
Location R-2	61	60	52	50	50	44	39	31	24	50
Location R-6	49	46	36	34	34	27	23	18	11	34
Location R-8	50	49	41	39	39	33	28	20	13	39
Location R-9	53	53	46	43	44	39	35	28	21	44
Location R-10	65	62	52	50	50	43	39	34	27	50
Octave Band Noise Code Limit (Residential)	59	61	60	53	46	40	31	20	11	49 dBA
Octave Band Noise Code Limit (Commercial)	65	67	66	59	52	46	37	26	17	55 dBA

Table 2 - Estimated Octave Band Noise Levels with Blower On and Bay Door Open – With Barrier Walls

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Location R-1 (8' high barrier)	56.1	57.2	51.9	49.0	47.7	40.1	33.3	23.4	13.4	47
Location R-2 (6' high barrier)	56.1	55.1	46.9	44.6	44.0	37.1	30.6	20.7	11.3	43
Location R-10 (6' high barrier)	60	57	47	44	44	36	30	23	13	43
Location R-10 (8' high barrier)	59	55	44	40	38	28	21	14	4	38
Location R-11 (6' high barrier)	59.1	61	55.8	55.3	57.6	52.4	46.7	37.5	28	57
Location R-11 (8' high barrier)	58	59	53	51	52	46	36	23	10	51
Location R-12 (8' high barrier)	58	57	49	47	48	41	32	22	9	48
Octave Band Noise Code Limit (Residential)	59	61	60	53	46	40	31	20	11	49 dBA
Octave Band Noise Code Limit (Commercial)	65	67	66	59	52	46	37	26	17	55 dBA

Table 3 - Estimated Octave Band Noise Levels with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Location R-1	44	51	51	49	44	43	39	32	23	47
Location R-2	49	53	49	46	40	38	33	25	16	43
Location R-6	33	37	33	30	24	22	17	9	-	27
Location R-8	32	36	32	29	23	21	16	8	-	26
Location R-9	41	46	43	39	34	33	29	22	11	37
Location R-10	46	50	46	43	37	35	30	22	13	40
Location R-11 (6' high barrier)	41.1	48	46.8	45.3	41.6	40.4	34.7	25.5	14	44
Location R-12 (8' high barrier)	43	49	47	44	39	37	27	14	-	41
Octave Band Noise Code Limit (Residential)	59	61	60	53	46	40	31	20	11	49 dBA
Octave Band Noise Code Limit (Commercial)	65	67	66	59	52	46	37	26	17	55 dBA

Table 4 - Estimated Octave Band Noise Levels with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Location R-1	58	52	41	37	31	24	18	14	10	33
Location R-2	63	54	39	34	27	19	12	7	3	32
Location R-6	45	36	20	15	8	-	-	-	-	14
Location R-8	44	35	20	15	8	0	-	-	-	14
Location R-9	48	40	26	20	14	7	1	-	-	19
Location R-10	61	52	36	31	24	16	9	5	0	30
Location R-11 (6' barrier wall)	58.1	52	39.8	36.3	31.6	24.4	16.7	10.5	4	33
Location R-12 (6' barrier wall)	54	57	33	28	23	14	2	-	-	31
Octave Band Noise Code Limit (Residential)	59	61	60	53	46	40	31	20	11	49 dBA
Octave Band Noise Code Limit (Commercial)	65	67	66	59	52	46	37	26	17	55 dBA

Table 5 - New Proto-Vest Blower System at Location R-1 with Blower On and Bay Door Open – No Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-1 at 64 feet from source 20 log 20'/64'	-10	-10	-10	-10	-10	-10	-10	-10	-10	
On-axis attenuation (12' x 7' opening)	0	0	0	0	0	0	0	0	0	
Total Sound Pressure Level Due to new blower at R-1	62	64	60	59	60	55	51	44	37	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-1	22.6	37.8	43.9	50.4	57	55	52	45	36	60 dBA

Table 6 - New Proto-Vest Blower System at Location R-1 with Blower On and Bay Door Open – With 6' High Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-1 at 64 feet from source 20 log 20'/64'	-10	-10	-10	-10	-10	-10	-10	-10	-10	
On-axis attenuation (12' x 7' opening)	0	0	0	0	0	0	0	0	0	
Insertion Loss of 6' High Barrier Wall (12)	-4.9	-5.1	-5.4	-5.9	-6.8	-8.2	-10.1	-12.4	-15.0	
Total Sound Pressure Level Due to new blower at R-1	57.1	58.9	54.6	53.1	53.2	46.8	40.9	31.6	22	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL	17.7	32.7	38.5	44.5	50.0	46.8	39.7	32.6	20.9	53 dBA

Table 7 - New Proto-Vest Blower System at Location R-1 with Blower On and Bay Door Open – With 8' High Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-1 at 64 feet from source 20 log 20'/64'	-10	-10	-10	-10	-10	-10	-10	-10	-10	
On-axis attenuation (12' x 7' opening)	0	0	0	0	0	0	0	0	0	
Insertion Loss of 8' High Barrier Wall (12)	-5.9	-6.8	-8.1	-10.0	-12.3	-14.9	-17.7	-20.6	-23.6	
Total Sound Pressure Level Due to new blower at R-1	56.1	57.2	51.9	49.0	47.7	40.1	33.3	23.4	13.4	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-1	16.7	31.0	35.8	40.4	44.5	40.1	32.1	22.4	12.3	47 dBA

Table 8 - New Proto-Vest Blower System at Location R-1 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-1 at 64 feet from source 20 log 10'/64'	-16	-16	-16	-16	-16	-16	-16	-16	-16	
On-axis attenuation (12' x 7' opening)	0	0	0	0	0	0	0	0	0	
Total Sound Pressure Level with new blower off at R-1	44	51	51	49	44	43	39	32	23	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-1	5.6	24.8	34.9	40.4	40.8	43	40.2	33.0	21.9	47 dBA

Table 9 - New Proto-Vest Blower System at Location R-1 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 20' (7)	83	83	78	77	78	72	69	64	58	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	62	58	52	45	39	35	31	
PWL Radiated by Door (9)	88	82	71	67	61	54	48	44	40	
SPL at 40' from door to location R-1 (10)	58	52	41	37	31	24	18	14	10	
On-axis attenuation due to tunnel @ 0° (12' x 7' opening)(11)	0	0	0	0	0	0	0	0	0	
Total Sound Pressure Level Due to new blower at R-1	58	52	41	37	31	24	18	14	10	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-1	18.6	25.8	24.9	28.4	27.8	24	19.2	15	8.9	33 dBA

Table 10 - New Proto-Vest Blower System at Location R-2 with Blower On and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-2 at 31 feet from source 20 log 20'/31' (1)	-4	-4	-4	-4	-4	-4	-4	-4	-4	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-2	61	60	52	50	50	44	39	31	24	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-2	21.6	33.8	37.9	41.4	46.8	44	40.2	32	22.9	50 dBA

Table 11 - New Proto-Vest Blower System at Location R-2 with Blower On and Bay Door Open -- With 6' High Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-2 at 31 feet from source 20 log 20'/31' (1)	-4	-4	-4	-4	-4	-4	-4	-4	-4	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Insertion Loss of 6' High Barrier Wall (12)	-4.9	-4.9	-5.1	-5.4	-6.0	-6.9	-8.4	-10.3	-12.7	
Total Sound Pressure Level Due to new blower at R-2	56.1	55.1	46.9	44.6	44.0	37.1	30.6	20.7	11.3	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-1	16.7	28.9	30.8	36.0	40.8	37.1	31.8	21.7	10.2	43 dBA

Table 12 - New Proto-Vest Blower System at Location R-2 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-2 at 31 feet from source 20 log 10'/31'	-4	-4	-4	-4	-4	-4	-4	-4	-4	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level with new blower off at R-2	49	53	49	46	40	38	33	25	16	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-2	9.6	26.8	32.9	37.4	36.8	38	34.2	26	14.9	43 dBA

Table 13 - New Proto-Vest Blower System at Location R-2 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 20' (7)	83	83	78	77	78	72	69	64	58	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	62	58	52	45	39	35	31	
PWL Radiated by Door (9)	88	82	71	67	61	54	48	44	40	
SPL at 11' from door to location R-2 (10)	70	64	53	49	43	36	30	26	22	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-2	63	54	39	34	27	19	12	7	3	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-2	23.6	27.8	22.9	25.4	23.8	19	13.2	8	1.9	32 dBA

Table 14 - New Proto-Vest Blower System at Location R-6 with Blower On and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
SPL outside door (8)	83	83	77	76	77	71	68	64	57	
PWL Radiated by Opening (9)	92	92	86	85	86	80	77	73	66	
SPL at 89' from door to location R-6 (10)	56	56	50	49	50	44	41	37	30	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-6	49	46	36	34	34	27	23	18	11	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-6	9.6	19.8	19.9	25.4	30.8	27	24.2	19	9.9	34 dBA

Table 15 - New Proto-Vest Blower System at Location R-6 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-6 at feet from source 20 log 10'/99' (1)	-20	-20	-20	-20	-20	-20	-20	-20	-20	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level with new blower off at R-6	33	37	33	30	24	22	17	9	-	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-6	-	10.8	16.9	21.4	20.8	22	18.2	10	-	27 dBA

Table 16 - New Proto-Vest Blower System at Location R-6 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	61	57	51	44	38	35	30	
PWL Radiated by Door (9)	86	82	70	66	60	53	47	44	39	
SPL at 89' from door to location R-6 (10)	52	46	34	30	24	17	11	8	3	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-6	45	36	20	15	8	-	-	-	-	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	5.6	9.8	3.9	6.4	4.8	-	-	-	-	14 dBA

Table 17 - New Proto-Vest Blower System at Location R-8 with Blower On and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-8 at 110 feet from source 20 log 20'/110' (1)	-15	-15	-15	-15	-15	-15	-15	-15	-15	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-8	50	49	41	39	39	33	28	20	13	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	10.6	22.8	24.9	30.4	35.8	33	29.2	21.0	11.9	39 dBA

Table 18 - New Proto-Vest Blower System at Location R-8 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-8 at 110 feet from source 20 log 20'/110' (1)	-15	-15	-15	-15	-15	-15	-15	-15	-15	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level with new blower off at R-8	38	42	38	35	29	27	22	14	5	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-8	-	15.8	21.9	26.4	25.8	27	23.2	15.0	3.9	32 dBA

Table 19 - New Proto-Vest Blower System at Location R-8 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 20' (7)	83	83	78	77	78	72	69	64	58	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	62	58	52	45	39	35	31	
PWL Radiated by Door (9)	88	82	71	67	61	54	48	44	40	
SPL at 90' from door to location R-8 (10)	51	45	34	30	24	17	11	7	3	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-8	44	35	20	15	8	0	-	-	-	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	4.6	8.8	3.9	6.4	4.8	0	-	-	-	14 dBA

Table 20 - New Proto-Vest Blower System at Location R-9 with Blower On and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-9 at 120 feet from source 20 log 20'/120' (1)	-16	-16	-16	-16	-16	-16	-16	-16	-16	
Off-axis attenuation (12' x 7' opening) 60° from tunnel opening (11)	-3	-5	-8	-10	-10	-10	-10	-10	-10	
Total Sound Pressure Level Due to new blower at R-9	53	53	46	43	44	39	35	28	21	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-11	13.6	26.8	29.9	34.7	40.8	39	36.2	29	19.9	44 dBA

Table 21 - New Proto-Vest Blower System at Location R-9 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-9 at 120 feet from source 20 log 10'/120'	-16	-16	-16	-16	-16	-16	-16	-16	-16	
Off-axis attenuation (12' x 7' opening) 60° from tunnel opening (11)	-3	-5	-8	-10	-10	-10	-10	-10	-10	
Total Sound Pressure Level with new blower off at R-9	41	46	43	39	34	33	29	22	11	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-9	1.6	19.8	26.9	30.4	30.8	33	30.2	23	9.9	37 dBA

Table 22 - New Proto-Vest Blower System at Location R-9 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 20' (7)	83	83	78	77	78	72	69	64	58	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	62	58	52	45	39	35	31	
PWL Radiated by Door (9)	86	82	71	67	61	54	48	44	40	
SPL at 100' from door to location R-9 (10)	51	45	34	30	24	17	11	7	3	
Off-axis attenuation (12' x 7' opening) 60° from tunnel opening (11)	-3	-5	-8	-10	-10	-10	-10	-10	-10	
Total Sound Pressure Level Due to new blower at R-9	48	40	26	20	14	7	1	-	-	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-9	8.6	13.8	9.9	11.4	10.8	7	2.2	-	-	19 dBA

Table 23 - New Proto-Vest Blower System at Location R-10 with Blower On and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
SPL outside door (8)	83	83	77	76	77	71	68	64	57	
PWL Radiated by Opening (9)	92	92	86	85	86	80	77	73	66	
SPL at 13' from door to location R-10 (10)	72	72	66	65	66	60	57	53	46	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-10	65	62	52	50	50	43	39	34	27	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	25.6	35.8	35.9	41.4	46.8	43	40.2	35	25.9	50 dBA

Table 24 - New Proto-Vest Blower System at Location R-10 with Blower On and Bay Door Open with 6' Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
SPL outside door (8)	83	83	77	76	77	71	68	64	57	
PWL Radiated by Opening (9)	92	92	86	85	86	80	77	73	66	
SPL at 13' from door to location R-10 (10)	72	72	66	65	66	60	57	53	46	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Insertion Loss of 6' barrier	-5	-5	-5	-6	-6	-7	-9	-11	-14	
Total Sound Pressure Level Due to new blower at R-10	60	57	47	44	44	36	30	23	13	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	20.6	30.8	30.9	35.4	40.8	36	31.2	24	11.9	43 dBA

Table 25 - New Proto-Vest Blower System at Location R-10 with Blower On and Bay Door Open with 8' Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
SPL outside door (8)	83	83	77	76	77	71	68	64	57	
PWL Radiated by Opening (9)	92	92	86	85	86	80	77	73	66	
SPL at 13' from door to location R-10 (10)	72	72	66	65	66	60	57	53	46	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Insertion Loss of 8' barrier	-6	-7	-8	-10	-12	-15	-18	-20	-23	
Total Sound Pressure Level Due to new blower at R-10	59	55	44	40	38	28	21	14	4	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	19.6	28.8	27.9	31.4	34.8	28	22.2	15	2.9	38 dBA

Table 26 - New Proto-Vest Blower System at Location R-10 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-10 at 13 feet from source 20 log 10'/23' (1)	-7	-7	-7	-7	-7	-7	-7	-7	-7	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level with new blower off at R-10	46	50	46	43	37	35	30	22	13	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-8	6.6	23.8	29.9	34.4	33.8	35	31.2	23	11.9	40 dBA

Table 27 - New Proto-Vest Blower System at Location R-10 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1680	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	61	57	51	44	38	35	30	
PWL Radiated by Door (9)	88	82	70	66	60	53	47	44	39	
SPL at 13' from door to location R-10 (10)	68	62	50	46	40	33	27	24	19	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at R-8	61	52	36	31	24	16	9	5	0	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	21.6	25.8	19.9	22.4	20.8	16	7.8	6.0	-	30 dBA

Table 28 - New Proto-Vest Blower System at Location R-11 with Blower On and Bay Door Open -- With 6' High Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-11 at 36 feet from source 20 log 20'/36' (1)	-5	-5	-5	-5	-5	-5	-5	-5	-5	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss of 6' High Barrier Wall (12)	-4.9	-5.0	-5.2	-5.7	-6.4	-7.6	-9.3	-11.5	-14.0	
Total Sound Pressure Level Due to new blower at R-11	59.1	61	55.8	55.3	57.6	52.4	46.7	37.5	28	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-11	19.7	34.8	39.7	46.7	54.4	52.4	47.9	38.5	26.9	57 dBA

Table 29 - New Proto-Vest Blower System at Location R-11 with Blower On and Bay Door Open – With 8' High Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to R-11 at 36 feet from source 20 log 20'/36' (1)	-5	-5	-5	-5	-5	-5	-5	-5	-5	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss of 8' High Barrier Wall (12)	-6	-7	-8	-10	-12	-14	-20	-26	-32	
Total Sound Pressure Level Due to new blower at R-11	58	59	53	51	52	46	36	23	10	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-11	18.6	32.8	36.9	42.4	48.8	46	37.2	24	8.9	51 dBA

Table 30 - New Proto-Vest Blower System at Location R-11 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-11 at 36 feet from source 20 log 10'/36'	-11	-11	-11	-11	-11	-11	-11	-11	-11	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss for 6' barrier wall (12)	-4.9	-5.0	-5.2	-5.7	-6.4	-7.6	-9.3	-11.5	-14.0	
Total Sound Pressure Level with new blower off at R-11	41.1	48	46.8	45.3	41.6	40.4	34.7	25.5	14	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-2	1.7	21.8	30.7	36.7	38.4	40.4	35.9	26.5	12.9	44 dBA

Table 31 - New Proto-Vest Blower System at Location R-11 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 20' (7)	83	83	78	77	78	72	69	64	58	
Estimated Transmission Lose of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	62	58	52	45	39	35	31	
PWL Radiated by Door (9)	88	82	71	67	61	54	48	44	40	
SPL at 16' from door to location R-11 (10)	66	60	49	45	39	32	26	22	18	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss for 6' Barrier Wall	-4.9	-5.0	-5.2	-5.7	-6.4	-7.6	-9.3	-11.5	-14.0	
Total Sound Pressure Level Due to new blower at R-11	58.1	52	39.8	36.3	31.6	24.4	16.7	10.5	4	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-11	18.7	25.8	23.7	27.7	28.4	24.4	17.9	11.5	2.9	33 dBA

Table 32 - New Proto-Vest Blower System at Location R-12 with Blower On and Bay Door Open with 8' Barrier Wall

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
SPL outside door (8)	83	83	77	76	77	71	68	64	57	
PWL Radiated by Opening (9)	92	92	86	85	86	80	77	73	66	
SPL at 25' from door to location R-12 (10)	67	67	61	60	61	56	52	48	41	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss of 8' barrier	-6	-7	-8	-10	-12	-14	-20	-26	-32	
Total Sound Pressure Level Due to new blower at R-12	58	57	49	47	48	41	32	22	9	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-12	18.6	30.8	32.9	38.4	44.8	42	33.2	23.0	8.9	48 dBA

Table 33 - New Proto-Vest Blower System at Location R-12 with Blower Off and Bay Door Open

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound levels in tunnel with blower off	60	67	67	65	60	59	55	48	39	64 dBA
Attenuation over distance to R-3 at 25 feet from source 20 log 10'/25' (1)	-8	-8	-8	-8	-8	-8	-8	-8	-8	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss of 8' barrier	-6	-7	-8	-10	-12	-14	-20	-26	-32	
Total Sound Pressure Level with new blower off at R-12	43	49	47	44	39	37	27	14	-	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-12	3.6	22.8	30.9	35.4	35.8	37	28.2	15	-	41 dBA

Table 34 - New Proto-Vest Blower System at Location R-12 with Blower On and Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in tunnel with blower on (5)	96	98	94	93	94	89	85	78	71	
Room Constant (6)	986	1580	2187	2278	2153	3124	2302	1217	1028	
SPL inside door at 110' (7)	83	83	77	76	77	71	68	64	57	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	79	73	61	57	51	44	38	35	30	
PWL Radiated by Door (9)	88	82	70	66	60	53	47	44	39	
SPL at 25' from door to location R-12 (10)	63	67	45	41	35	28	22	19	14	
Off-axis attenuation (12' x 7' opening) 45° from tunnel opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss of 8' barrier	-6	-7	-8	-10	-12	-14	-20	-26	-32	
Total Sound Pressure Level Due to new blower at R-12	54	57	33	28	23	14	2	-	-	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-12	14.6	30.8	16.9	19.4	19.8	14	3.2	-	-	31 dBA

Peripheral Sound Sources Measured on Property:

Table 35 - Existing HV Rooftop Unit Calculated to Location R-8 with Other Equipment Off

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Sound level measured on roof at 3 feet from unit	62	66	63	55	56	55	52	47	40	60 dBA
Attenuation over distance to R-8 at 75 feet from source 20 log 3'/75' (1)	-28	-28	-28	-28	-28	-28	-28	-28	-28	
Parapet 3' high barrier effect	-4.9	-4.9	-5.1	-5.4	-6.0	-7.0	-8.5	-10.4	-12.8	
Total Sound Pressure Level for Rooftop HV unit at R-8 with new blower off	29.1	33.1	29.9	21.6	22	20	15.5	8.6	-	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-8	-	6.9	13.8	13	18.8	20	16.7	9.6	-	24 dBA

Table 36 - Existing Audio Speakers on Building Calculated to Location R-8 with Other Equipment Off

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Sound level measured near audio speakers mounted on building at 3 feet from unit	68	68	71	65	62	65	63	59	50	69 dBA
Attenuation over distance to R-8 at 62 feet from source 20 log 3'/62' (1)	-26	-26	-26	-26	-26	-26	-26	-26	-26	
Total Sound Pressure Level for audio speakers at R-8 with new blower off	42	42	45	39	36	39	37	33	24	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated with new blower off at R-8	2.6	15.8	28.9	30.4	32.8	39	38.2	34.0	22.9	43 dBA

Table 37 - Detailing Bay Calculated to Location R-7 with Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in detailing bay with air hose and floor mat cleaner on (5)	101	100	95	92	91	97	107	102	102	
Room Constant (6)	361	678	974	993	927	1499	1014	461	365	
SPL inside door at 10' (7)	92.5	89.2	83.5	80	79.2	73.3	94.9	92.6	93.5	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	88.5	79.2	67.5	61	53.2	46.3	64.9	63.6	66.5	
PWL Radiated by Door (9)	102.5	93.2	81.5	75	67.2	60.3	78.9	77.6	80.5	
SPL at 45' from door to location R-7 (10)	72	62.7	51	44.6	36.7	29.8	48.4	47.1	50	
Insertion Loss of 10' barrier	-6	-6	-7	-9	-11	-13	-16	-18	-21	
Total Sound Pressure Level Due to detail bay at R-7	66	56.7	44	35.5	25.7	16.8	32.4	29.1	29	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated	26.6	30.5	27.9	26.9	22.5	16.8	33.6	30.1	27.9	37 dBA

Table 38 - Detailing Bay Calculated to Residential Receptor R-1 with Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in detailing bay with air hose and floor mat cleaner on (5)	101	100	95	92	91	97	107	102	102	
Room Constant (6)	361	678	974	993	927	1499	1014	461	365	
SPL inside door at 10' (7)	92.5	89.2	83.5	80	79.2	73.3	94.9	92.6	93.5	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	88.5	79.2	67.5	61	53.2	46.3	64.9	63.6	66.5	
PWL Radiated by Door (9)	102.5	93.2	81.5	75	67.2	60.3	78.9	77.6	80.5	
SPL at 245' from door to Residential receptor 1 (10)	57.5	48.2	36.5	30	22.2	15.3	33.9	32.6	35.5	
Insertion Loss of 10' barrier	-6	-6	-7	-9	-11	-13	-16	-18	-21	
Total Sound Pressure Level Due to detail bay at Residential receptor 1	51.5	42.2	29.5	21	11.2	2.3	17.9	14.6	14.5	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL	12.1	16	13.4	12.4	8	2.3	19.1	15.6	13.4	23 dBA

Table 39 - Detailing Bay Calculated to Residential Receptor R-2 with Bay Door Closed

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Estimated sound power levels in detailing bay with air hose and floor mat cleaner on (5)	101	100	95	92	91	97	107	102	102	
Room Constant (6)	361	678	974	993	927	1499	1014	461	365	
SPL inside door at 10' (7)	92.5	89.2	83.5	80	79.2	73.3	94.9	92.6	93.5	
Estimated Transmission Loss of 6mm Macrolux C Polycarbonate Overhead Door	-4	-10	-16	-19	-26	-27	-30	-29	-27	
SPL outside door (8)	88.5	79.2	67.5	61	53.2	46.3	64.9	63.6	66.5	
PWL Radiated by Door (9)	102.5	93.2	81.5	75	67.2	60.3	78.9	77.6	80.5	
SPL at 245' from door to Residential receptor 2 (10)	57.5	48.2	36.5	30	22.2	15.3	33.9	32.6	35.5	
Off-axis attenuation (12' x 7' opening) 45° from detail bay opening (11)	-3	-3	-4	-3	-1	0	0	0	0	
Insertion Loss of 10' barrier	-6	-6	-7	-9	-11	-13	-16	-18	-21	
Total Sound Pressure Level Due to detail bay at Residential receptor 1	48.5	39.2	25.5	18	10.2	2.3	17.9	14.6	14.5	
A-weighting (4)	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL	9.1	13	9.4	9.4	7	2.3	19.1	15.6	13.4	23 dBA

Table 40 - New Proto-Vest Blower System Calculated to Residential Receptor 1 with Blower On and Bay Door Open (worst case)

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to Residential Receptor 1 at 245 feet from source 20 log 20'/265' (1)	-22	-22	-22	-22	-22	-22	-22	-22	-22	
Off-axis attenuation (12' x 7' opening) 90° from tunnel opening (11)	-7	-10	-14	-15	-16	-17	-18	-19	-19	
Total Sound Pressure Level Due to new blower at Residential receptor 1	43	42	34	32	32	26	21	13	6	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-8	3.6	15.8	17.9	23.4	28.8	26	22.2	14	4.9	32 dBA

Table 41 - New Proto-Vest Blower System Calculated to Residential Receptor 2 with Blower On and Bay Door Open (worst case)

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Windshear estimated sound levels with attenuator package - Sound Pressure Level at 20'	72	74	70	69	70	65	61	54	47	71 dBA
Attenuation over distance to Residential Receptor 2 at 245 feet from source 20 log 20'/265' (1)	-22	-22	-22	-22	-22	-22	-22	-22	-22	
Off-axis attenuation (12' x 7' opening) 60° from tunnel opening (11)	-3	-5	-8	-10	-10	-10	-10	-10	-10	
Total Sound Pressure Level Due to new blower at Residential Receptor 2	47	47	40	37	38	33	29	22	15	
A-weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1	
Total A-weighted SPL estimated Due to new blower system at R-11	7.6	20.8	23.9	28.4	34.8	33	30.2	23.0	13.9	38 dBA

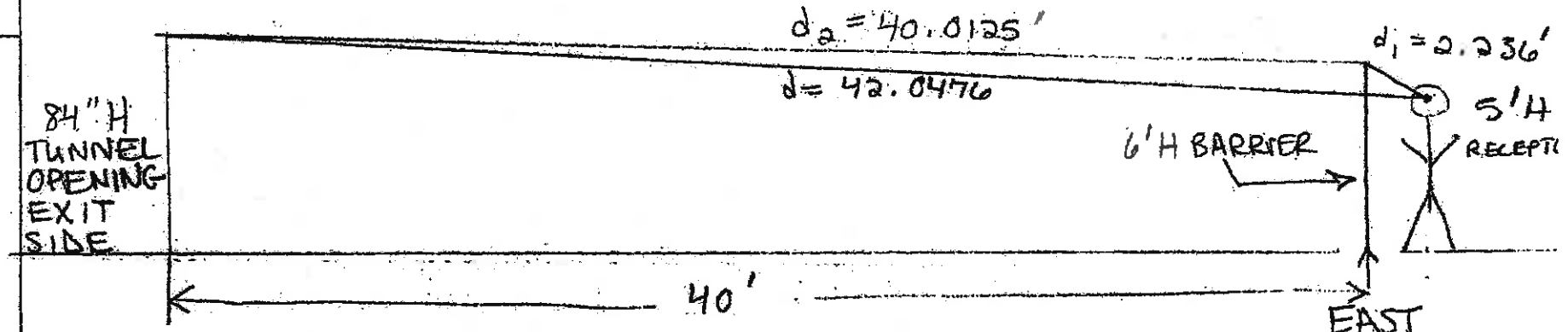
R-1

$IL_{Barrier} = 10 \text{ Log } [3 + 10 NK] - A_{Ground}$

$A_{Ground} = 0$

$K = 1$

$N = \left(\frac{2}{\lambda}\right)\delta$



ELEVATION FACING NORTH

$d_1 + d_2 - d = \delta$

$2.236' + 40.0125' - 42.0476' = 0.201'$

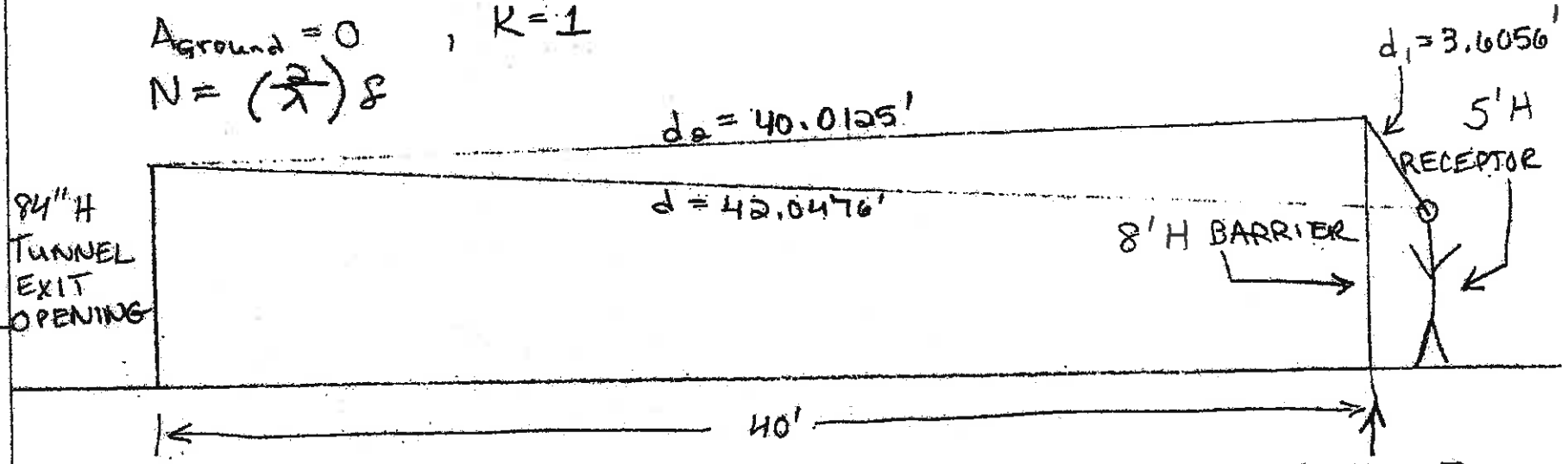
Hz	31.5	63	125	250	500	1K	2K	4K	8K
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.0112	0.0225	0.0445	0.0891	0.1787	0.3558	0.7179	1.4357	2.8714
$IL_{Barrier}$ (dB)	4.9	5.1	5.4	5.9	6.8	8.2	10.1	12.4	15.0

R-1

$IL_{Barrier} = 10 \text{ Log}[3 + 10 NK] - A_{Ground}$

$A_{Ground} = 0$, $K = 1$

$N = \left(\frac{2}{\lambda}\right)\delta$



ELEVATION FACING NORTH

R1

$d_1 + d_2 - d = \delta$

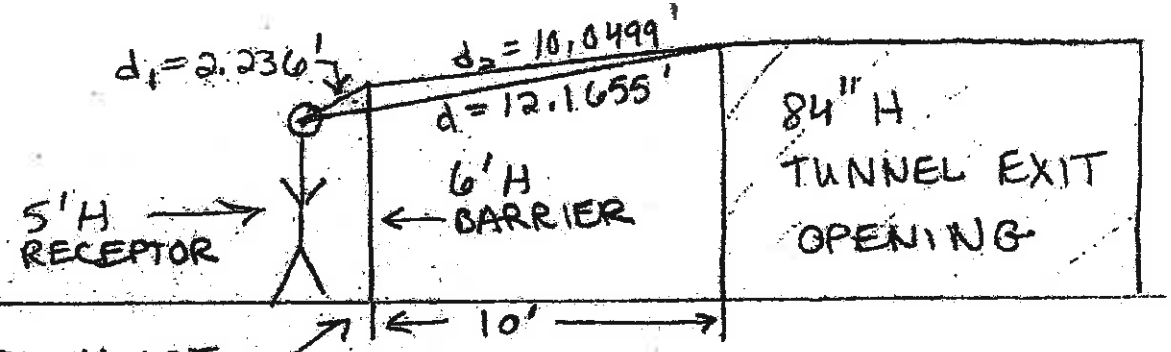
$3.6056' + 40.0125' - 42.0476' = 1.5705'$

Hz	31.5	63	125	250	500	1K	2K	4K	8K
λ	35.77'	17.89'	9.03'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.0878	0.1756	0.3482	0.6965	1.396	2.7796	5.6089	11.2179	22.4357
$IL_{Barrier}$ (dB)	5.9	6.8	8.1	10.0	12.3	14.9	17.7	20.6	23.6

R2

$IL_{Barrier} = 10 \log[3 + 10NK] - A_{Ground}$ $\quad A_{Ground} = 0$

$N = \left(\frac{2}{\lambda}\right)\delta$ $\quad K = 1$

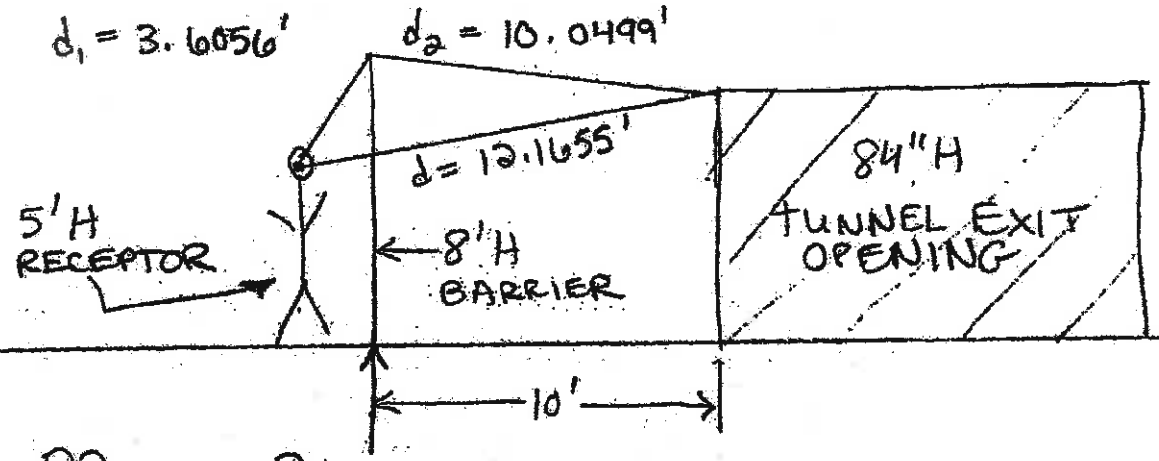


ELEVATION FACING WEST

$d_1 + d_2 - d = \delta$

$2.236' + 10.0499' - 12.1655' = 0.1204' = \delta$

Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	.00673	0.0135	0.0267	0.0534	0.1070	0.2131	0.4300	0.8600	1.72
$IL_{Barrier}$ (dB)	4.9	5.0	5.1	5.5	6.1	7.1	8.6	10.6	13.1



R2

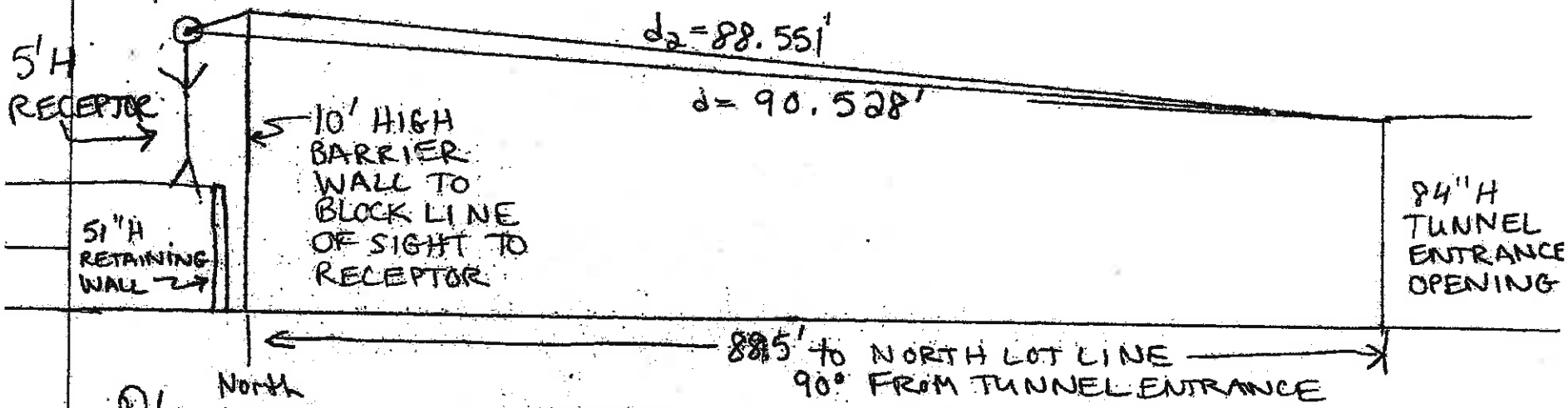
ELEVATION FACING WEST

$d_1 + d_2 - d = \delta = 3.6056' + 10.0499' - 12.1655' = 1.49' = \delta$

Hz	31.5	63	125	250	500	1K	2K	4K	8K
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.08331	0.1666	0.3304	0.6608	1.324	2.637	5.321	10.64	21.29
$IL_{Barrier}$ (dB)	5.8	6.7	8.0	9.8	12.1	14.7	17.5	20.39	23.3

$IL_{Barrier} = 10 \log [3 + 10NK] - A_{Ground}$ $\quad A_{Ground} = 0$

$N = \left(\frac{2}{\lambda}\right)\delta$ $\quad 0.318$ $\quad K = 1$

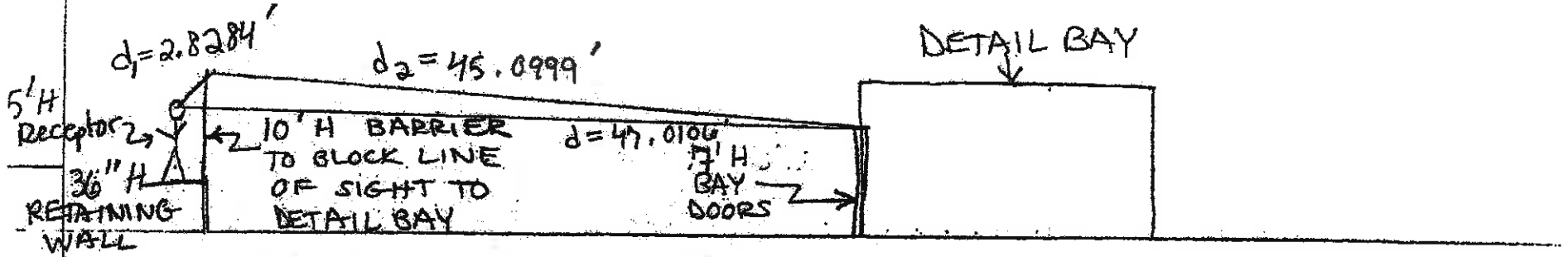


ELEVATION FACING EAST

$d_1 + d_2 - d = \delta = 2.136' + 88.551' - 90.528' = 0.159'$

Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.008881	0.017778	0.03525	0.07051	0.1413	0.2814	0.5679	1.136	2.271
$IL_{Barrier}$ (dB)	4.9	5.0	5.3	5.7	6.4	7.6	9.4	11.6	14.1

R7

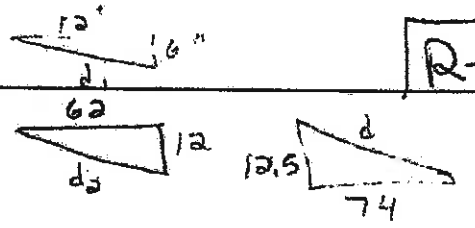


R-7 ELEVATION FACING EAST

$d_1 + d_2 - d = \delta = 2.8284' + 45.0999' - 47.0106' = 0.9177'$

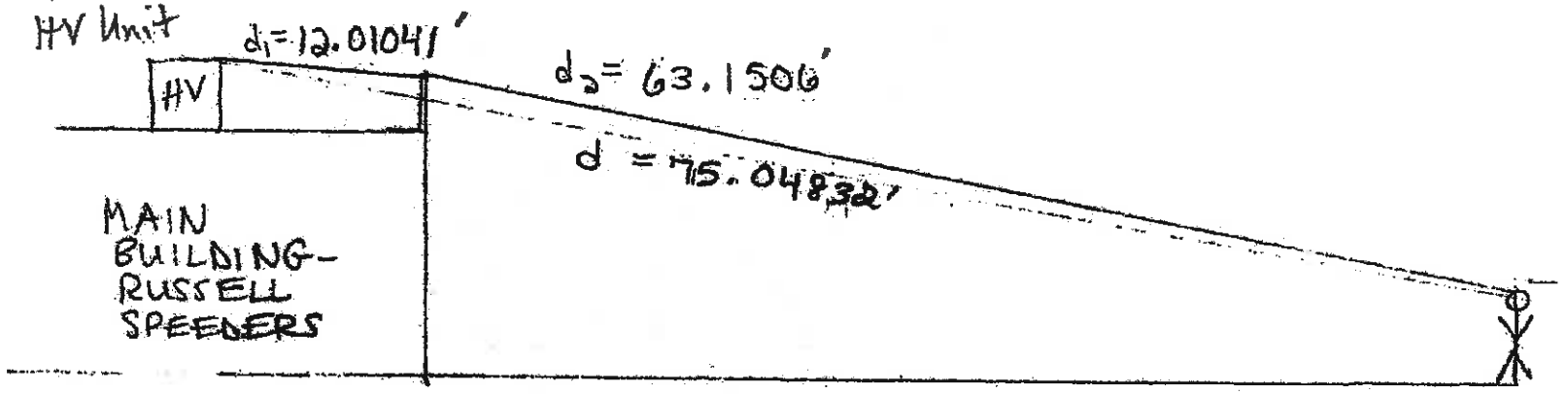
Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.05131	0.1026	0.2035	0.4070	0.8157	1.6242	3.278	6.555	13.11
$IL_{Barrier}$ (dB)	-5.5	-6.0	-7.0	-8.5	-10.5	-12.8	-15.5	-18.4	-21.3

R-8



36" H PARAPET

42" H
HV Unit



12.01041' + 63.1506' - 75.04832' = 0.11269'

Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35.77'	17.89'	9.00'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	.006301	0.01260	.02499	.04997	0.1002	0.1995	0.4025	0.8049	1.6099
IL Barrier (dB)	-4.9	-4.9	-5.1	-5.4	-6.0	-7.0	-8.5	-10.4	-12.8

EXISTING ROOFTOP HV UNIT

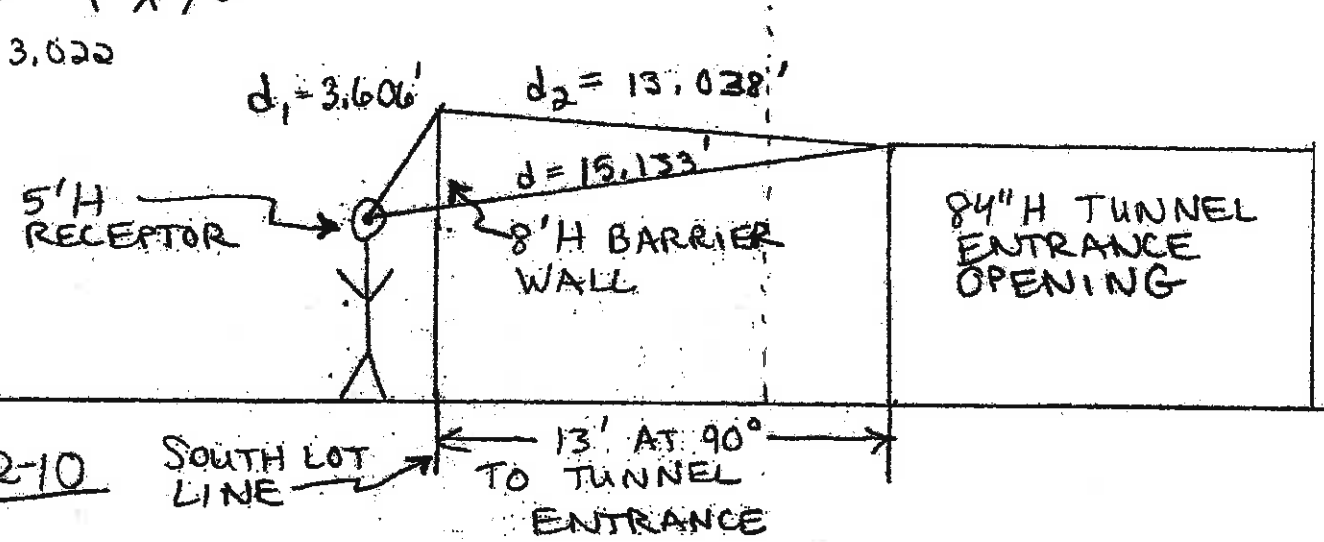
R-10

$IL_{Barrier} = 10 \text{ Log } [3 + 10\,NK] - A_{Ground}$ $\quad A_{Ground} = 0$

$K = 1$

$N = \left(\frac{2}{\lambda}\right)\delta$

3.022



SECTION FACING WEST

$d_1 + d_2 - d = \delta = 3.606' + 13.038' - 15.133' = \delta = 1.511'$

Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.08448	0.1689	0.3350	0.6701	1.343	2.674	5.396	10.79	21.59
$IL_{Barrier}$ (dB)	5.8	6.7	8.0	9.9	12.2	14.7	17.6	20.4	23.4

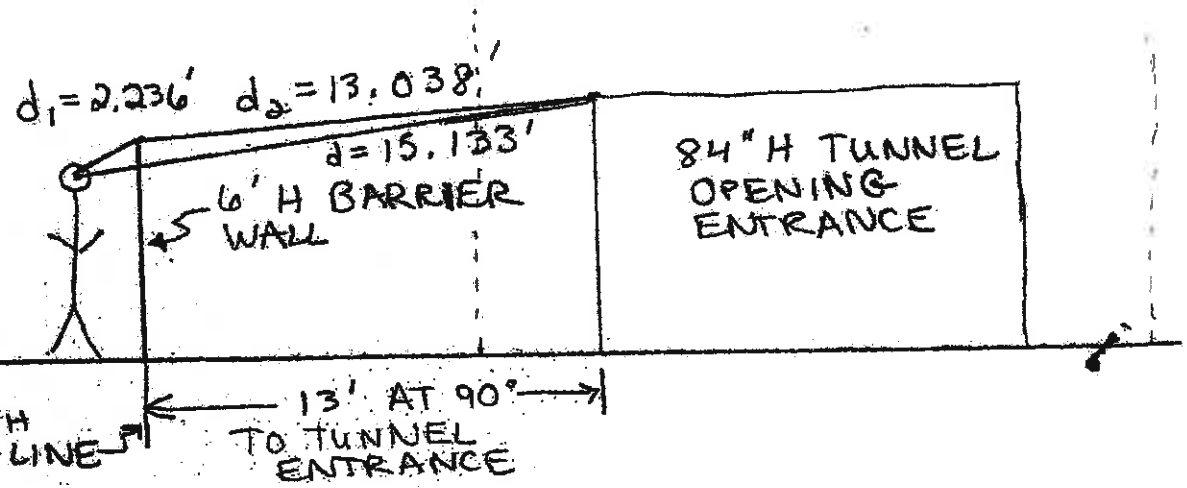
$IL_{BARRIER} = 10 \log [3 + 10NK] - A_{Ground}$

$A_{Ground} = 0$

$K = 1$

$N = \left(\frac{2}{\lambda}\right)\delta$

0.282



SECTION FACING WEST

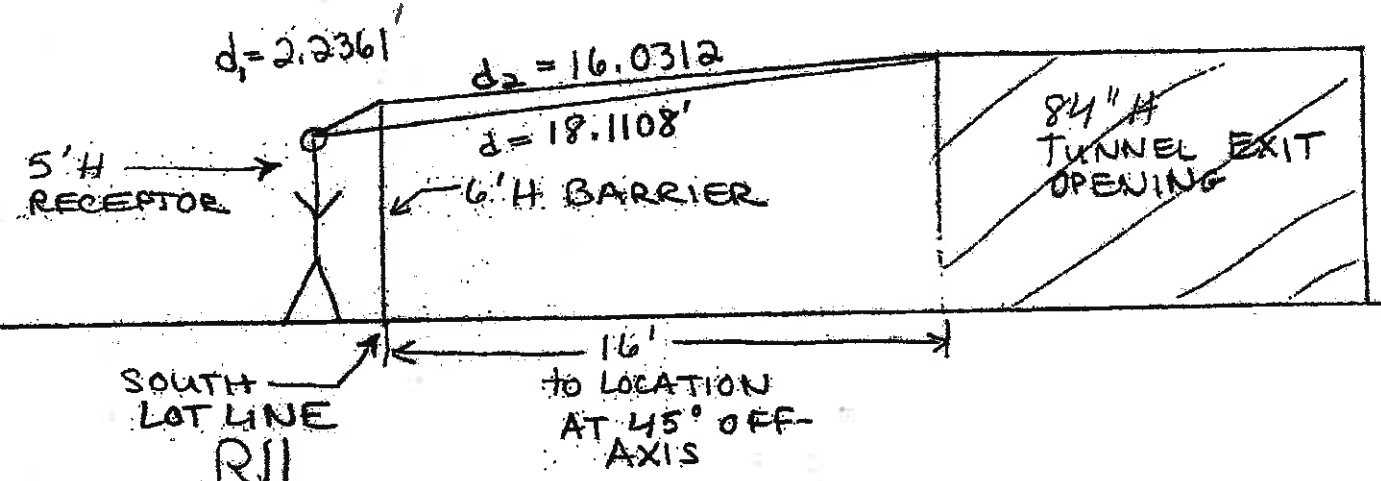
$d_1 + d_2 - d = \delta = 2.236' + 13.038' - 15.133' = 0.141' = \delta$

Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	0.007884	0.01576	0.03126	0.06253	0.1253	0.2496	0.5036	1.007	2.014
$IL_{Barrier}$ (dB)	4.9	5.0	5.2	5.6	6.3	7.4	9.1	11.2	13.6

R11

$IL_{Barrier} = 10 \log[3 + 10NK] - A_{Ground}$ $\quad A_{Ground} = 0$, $K = 1$

$N = \left(\frac{2}{\lambda}\right)\delta$



R11

7/13

$d_1 + d_2 - d = \delta = 2.2361' + 16.0312' - 18.1108' = 0.1565'$

Hz	31.5	63	125	250	500	1K	2K	4K	8K
λ	35.77'	17.89'	9.02'	4.51'	2.25'	1.13'	0.56'	0.28'	0.14'
N	.008750	0.01750	0.03470	0.06940	0.1391	0.2770	0.5589	1.118	2.236
$IL_{Barrier}$ (dB)	4.9	5.0	5.2	5.7	6.4	7.6	9.3	11.5	14.0

R11

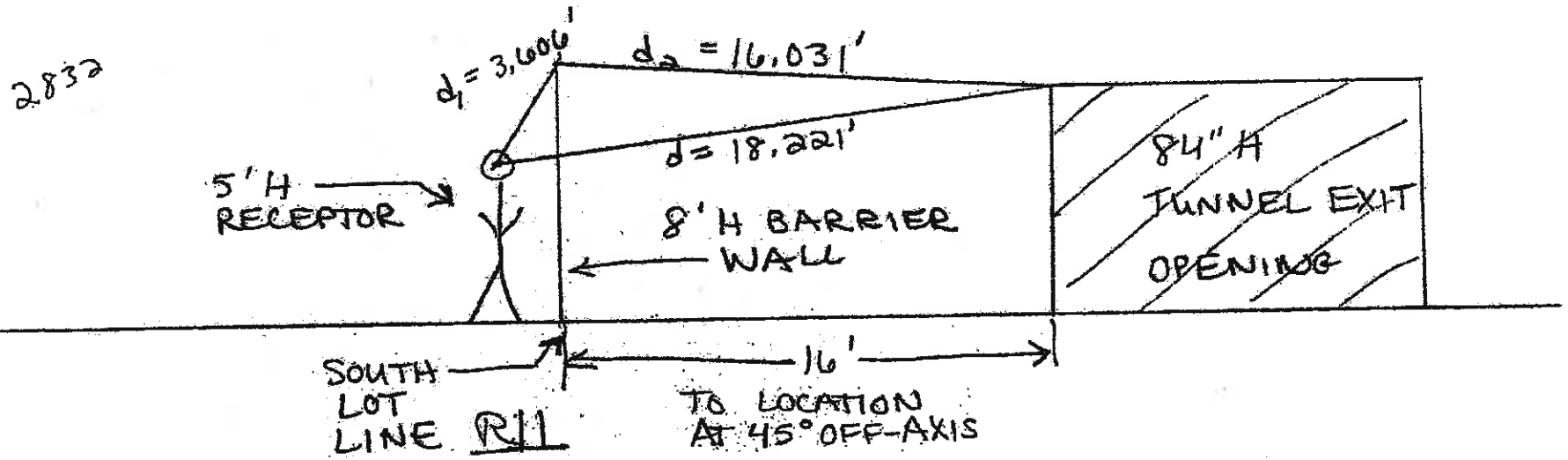
$IL_{Barrier} = 10 \log [3 + 16\,NK] - A_{Ground}$

$A_{Ground} = 0$

$K = 1$

$N = \left(\frac{2}{\lambda}\right)\delta$

2832



$d_1 + d_2 - d = \delta = 3,606' + 16,031' - 18,221' = 1,416' = \delta$

Hz	31.5	63	125	250	500	1k	2k	4k	8k
λ	35,77'	17,89'	9,00'	4,51'	2,25'	1,13'	0,56'	0,28'	0,14'
N	0,07917	0,1583	0,3140	0,6279	1,259	2,506	9,031	36,12	144,5
$IL_{Barrier}$ (dB)	6	7	8	10	12	14	20	26	32

Strategic Partnership Questions and Answers

The Northern Westchester Hospital Board of Trustees has unanimously approved our joining the North Shore-LIJ Health System. We are extremely pleased to report that this agreement meets all of the objectives set out by our Board, acting on behalf of our community.

North Shore-LIJ is taking a patient-centered approach to expanding its health system to this region so that our patients can continue to receive the same high-quality healthcare that they have grown to expect from Northern Westchester Hospital. This focus on local care will be supported by a commitment to maintain and enhance the key services that serve our community today

As a member of the NS-LIJ Health System, Northern Westchester Hospital and its leadership team will have an important role in developing expansion plans for the North Shore-LIJ Health System in the greater Hudson Valley.

About Joining the North Shore-LIJ Health System

Q: What does joining the North Shore-LIJ Health System mean?
A: By joining the North Shore-LIJ Health System (North Shore-LIJ), we are becoming an important part of one of the most successful hospital systems in the U.S. North Shore-LIJ has 17 hospitals in their system, employs 48,000 people, and in 2013 saw revenues of $7 billion and a net income of $285 million. The system also includes a rapidly emerging medical school and the Feinstein Institute for Medical Research.

North Shore-LIJ is well ahead of other area health systems in Population Health Management, which will benefit our community by coordinating care across providers and reducing healthcare costs. They have launched a care management company and a health insurance product called CareConnect that are the foundations of a regional health plan. North Shore-LIJ already has agreements with Montefiore, Yale-New Haven, Saint Barnabas (NJ) and Maimonides to be included in the CareConnect network. Area medical groups also have agreements with CareConnect, guaranteeing that our patients can continue seeing their current physicians and receiving high-quality care at NWH.

Q: Who will be in charge of NWH when we become part of the NS-LIJ system?
A: One of the key partnership criteria used by the NWH Board of Trustees was a commitment to our leadership team and local oversight. This will enable our staff to continue providing our community with high-quality medical care at a local level. The North Shore-LIJ team recognizes that NWH is a high quality and financially strong hospital .

An important part of this agreement enables the NWH Board of Trustees to continue having a crucial role in the governance of NWH. The NWH Board will eventually include members appointed by North Shore-LIJ, who will be knowledgeable about the healthcare needs of our community.

Members of the NWH Board will join the North Shore-LIJ Board and its committees, which will enable us to provide a Westchester voice on all health system initiatives. In addition, one member of the NWH Board will be appointed to the North Shore-LIJ Executive Committee.

Q: Is this a permanent decision?
A: The selection of North Shore-LIJ is the result of a comprehensive evaluation that included all of the major health systems in our region, as well as some located outside of the area. This decision truly represents a commitment by both parties, and while there are details in our agreement that make it possible to change, the NWH Board of Trustees and Senior Management team are confident that North Shore-LIJ is the right long-term partner for our community.

Q: How will NWH maintain its identity as part of a larger system?
A: North Shore-LIJ recognizes the successes achieved by the staff of Northern Westchester Hospital and plans to build upon these, including our culture of patient safety, our Magnet and Planetree Designations, and our numerous processes for providing high-quality care. As with other North Shore-LIJ hospitals, we will also maintain our name.

Q: What are the benefits to joining a larger system?
A: Joining a well-developed regional system will provide us with greater access to highly-specialized clinical expertise, and additional resources to advance our sophisticated clinical programs and technologies. Importantly, joining this system will also enable us to achieve the scale necessary to participate in population health management on a regional basis.

North Shore-LIJ will also be making a financial investment in NWH, and in health care services for our community. This investment will help to accelerate our facility modernization plans, while supporting greater ambulatory care (out-of-hospital) capabilities, and advancing our surgical and technological sophistication.

Q: Will the NWH name change?
A: The Northern Westchester Hospital name will remain with an added reference to North Shore-LIJ. In addition, North Shore-LIJ is currently investigating a new "brand identity" to better represent its role as a leading national healthcare system.

Q: Will NWH remain as a Planetree hospital as part of a new system? Will NWH still be a Magnet Designated hospital?
A: Yes. There is a strong commitment from the NWH Board and from North Shore-LIJ to maintaining our Planetree and Magnet designations.

Q: Phelps has also joined North Shore-LIJ—Will there be consolidation?
A: Phelps serves a large community and North Shore-LIJ will support their efforts to meet the healthcare needs of that community. However, over time, we would expect to create efficiencies across our two hospitals, and with the larger system as well. Interestingly, the two hospitals have many strengths that are complementary. For instance, Phelps has strong programs in behavioral health services and inpatient rehabilitation, while NWH has strengths in robot-assisted surgery, stereotactic radiosurgery, and advanced breast cancer care. We expect the two hospitals will work closely together to find efficiencies and improve access to care.

Q: How will fundraising work? Will my donations go directly to NWH?
A: The financial investment from North Shore-LIJ will be extremely helpful, but insufficient to carry out the modernization of NWH without the ongoing support of our community. The NWH Foundation will continue overseeing all fundraising activities at NWH, and all funds raised through the NWH Foundation will remain in our community and continue to support NWH.

Q: When will NWH officially become part of North Shore-LIJ?
A: Our agreement with North Shore-LIJ must be reviewed and approved by State and Federal agencies. We expect to receive their final approval and be able to finalize our agreement during the first quarter of 2015.

Access to my physician

Q: How does this impact our relationship with area medical groups?
A: NWH employs very few physicians and instead partners with our area physicians and medical groups. We will always have strong relationships with area physicians to ensure our patients have access to high-quality medical care.

As necessary, agreements will be established across healthcare networks to enable patients to access seamless care among their providers. We see this already happening. By remaining a high-quality, lower-cost provider, NWH will continue to be sought out as a facility of choice by our medical groups and by all health plans.

f/qa-joining

Waiver of Site Plan Approval

358 SAW MILL RIVER RD.
Applicant's Home Address

Date:

MILLWOOD, NY 10546
City, Town, Village

Town of Bedford Planning Board
Town House
Bedford Hills, New York 10507

RECEIVED
JUL 7 2015

Sir or Madam:

I/We am/are the owner (s) of property located on 789 NORTH BEDFORD RD
shown and designated on the Town Tax Maps as:
Section 71.12 Block 12 Lot(s) 34.

It is my/our intention to OPEN WELDON TIRE
(Describe proposal)

Because of the limited nature of the proposed development or change of use, or to special conditions peculiar to this site, I/we am/are requesting a waiver of the requirement of site plan approval pursuant to Article IX Section 125-93 of the Code of the Town of Bedford.

Very truly yours,

Signature of Owner and/or Applicant

3/05

Signature of Owner and/or Applicant

PLANNING BOARD
TOWN OF BEDFORD
WESTCHESTER COUNTY, NEW YORK

ENVIRONMENTAL CLEARANCE FORM

(This Side to be Completed by Applicant)

1. **INDENTIFICATION OF OWNER**

   Name of owner: ROBERT CAUTISANI
   Address: 27 McCARTHY RD. HAMES, NY 12531 Phone: (914) 666-3028

2. **INDENTIFICATION OF APPLICANT, IF OTHER THAN OWNER**

   Name of applicant: MICHAEL MANES OF WALDON TIRE
   Address: 358 SAW MILL RIVER RD. MILLWOOD, NY Phone: 914 215 6714

3. **INDENTIFICATION OF SITE INVOLVED, if any**

   a. Name or other identification of site 789 N. BEDFORD RD., BEDFORD, NY
   b. Roads which site abuts RT 117
   c. Bedford tax map designation: Section:_____Block_____Lot (s)_____
   d. Total site area .10 AC
   e. Does the applicant have a whole or partial interest in lands adjoining this site?_____

4. **INDENTIFICATION OF PROPOSED ACTION**

   a. Description of Proposed Action CHANGE OF BUSINESS FROM MEINEKE AUTO SERVICE TO WALDON TIRE AUTO SERVICE
   b. Relationship to other actions:

      1. List any further actions which may be undertaken, of which this proposed action is part or first step, e. g. further subdivision of a large parcel of land: NA.
      2. List any related actions which may be undertaken, of which this proposed action, e.g. highway reconstruction to serve increased traffic: NA
      3. List any actions which are dependent upon this proposed action, and therefore should be reviewed as part of this action, e.g. house construction in the case of a residential subdivision: N.A.

      All such actions must be reviewed in conjunction with the action proposed.

5. **CLASSIFICATION OF PROPOSED ACTION** (see lists of Type I, II, Exempt, Excluded Actions)

   ☐ **Type I.** An Environmental Impact Statement is required unless the applicant demonstrates conclusively that one is not needed. Proceed to Environmental Assessment Form.

   ☑ **Type II** or **Exempt Action.** No Environmental Impact Statement is needed. Submit this form only.

   ☐ **Unlisted Action.** Pending Analysis of further information, an Environmental Impact Statement may be required. Proceed to Environmental Assessment Form.

04/05

Signature of Applicant

7/7/15
Date

TOWN OF BEDFORD
ENVIRONMENTAL CLEARANCE FORM
(This side only for Official Use Only)

1. **CLASSIFICATION APPROVED; FURTHER ACTION REQUIRED:**

☐ **Type I Action.** The proposed action will have a significant effect on the environment. An Environmental Impact Statement is required unless the applicant demonstrates conclusively that one is not needed. Proceed to Environmental Assessment Form.

☐ **Type II or Exempt or Excluded Action.** No Environmental Impact Statement is needed. No further action required.

☐ **Unlisted Action.** The proposed project may have a significant effect on the environment. Pending analysis of further information, an Environmental Impact Statement may be required. Proceed to Environmental Assessment Form.

2. **COMMENTS:**

_____

_____

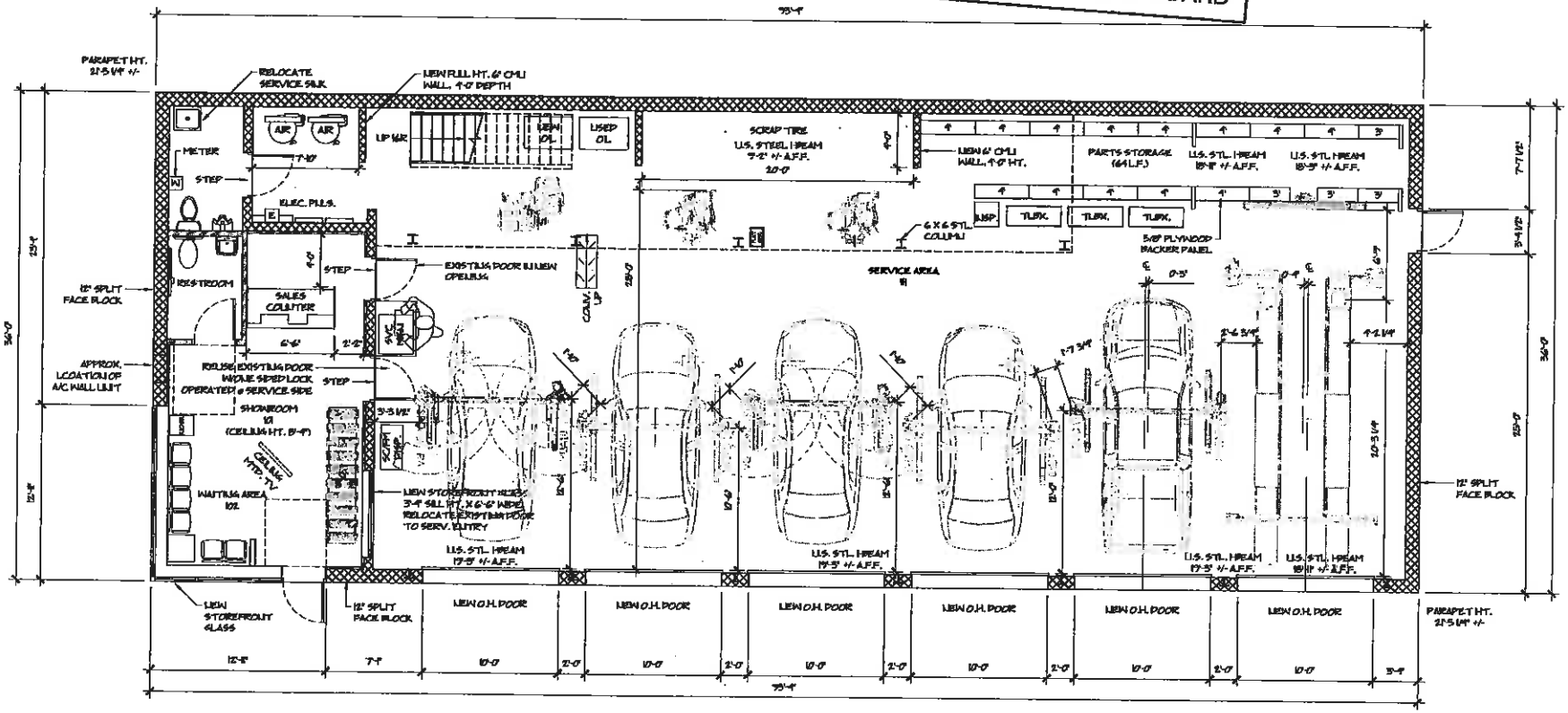
_____

_____

_____

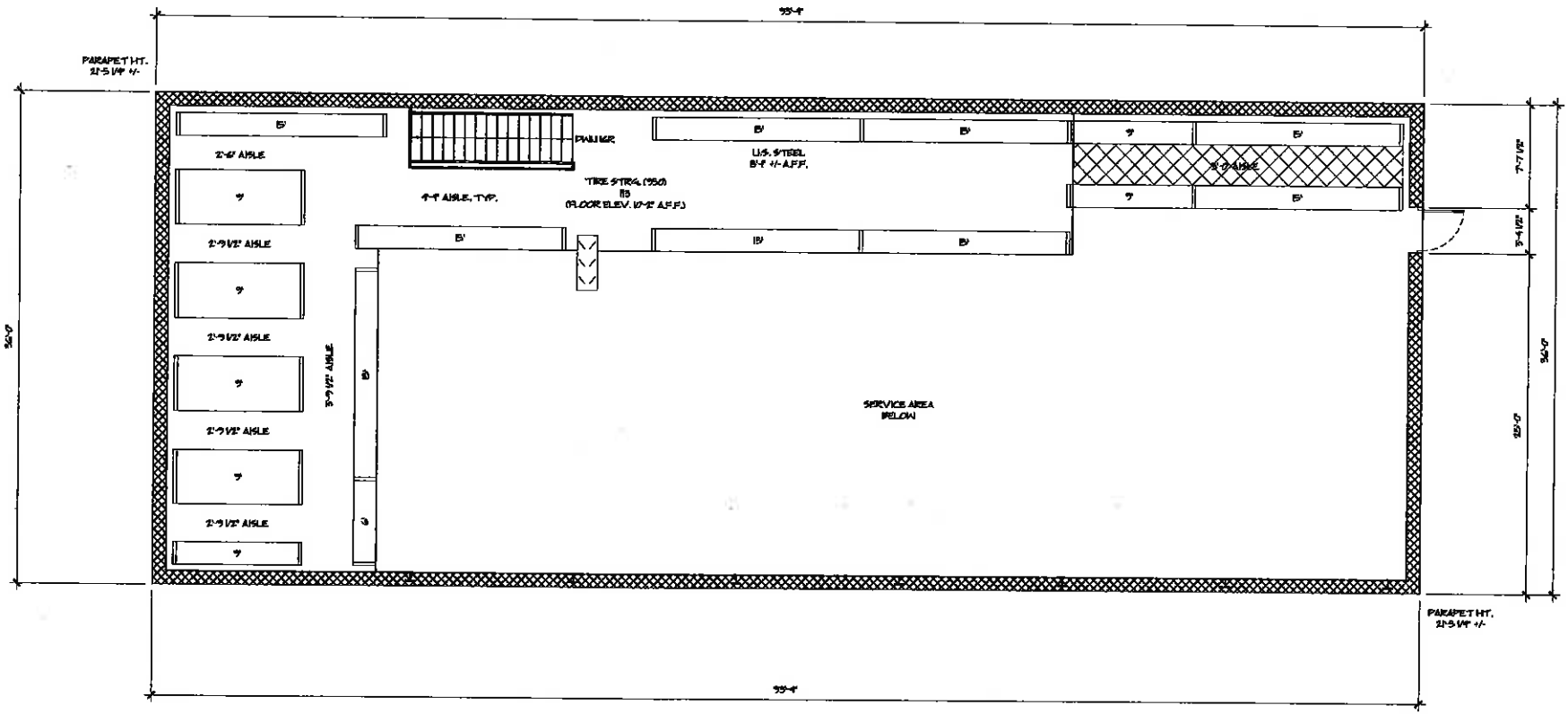
_____ _____ _____

Town Agency | Agency Signature | Date



1 / A601 EQUIPMENT PLAN
SCALE: 1/8" = 1'-0"

MAVIS DISCOUNT TIRE STORE: BEDFORD DRAWING: EQUIPMENT PLAN NORTH BEDFORD RD. BEDFORD, NH DATE: 6.15.15 DRAWN BY: JDN SCALE: AS NOTED	A601 SHEET



1 / A603 RACKING PLAN
SCALE: 1/8" = 1'-0"

MAVIS DISCOUNT TIRE
STORE: BEDFORD
DRAWING: RACKING PLAN
LOCATION: BEDFORD RD.
BEDFORD, I.N.
DATE: 6.15.15
DRAWN BY: JON
SCALE: AS NOTED

A603
SHEET

+21'-5 1/4" +/-
T.O. PARAPET

+12'-0" +/-
T.O. STOREFRONT

+0'-0"
T.O. SLAB

ALUI

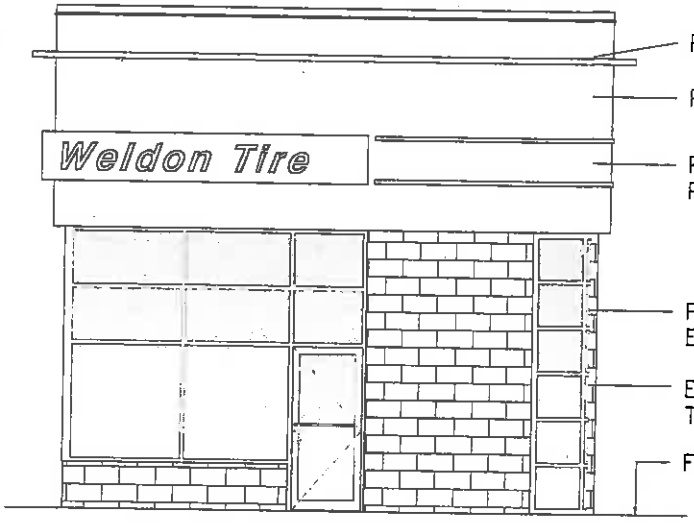
P/
FIXTIXT.

PAIN

N 2' HIGH X
IDE; 13.67 SF.
LETTERS.

PAINISH
MASONRY

FINIRADE



WELDON TIRE
789 NORTH BEDFORD RD.
BEDFORD, NY 10549

DATE: 6.2.15
DRAWN BY: JCW

A200
SCALE: AS NOTE
SHEET

NYWEST015021NeighOrtho6067_070104.pmi

Creation Date: Jan 04, 2007 12:40
Modification Date: Jun 07. 2007 01:36

Scale: 1 inch = 30.0 feet

Weldon Tire

2 July 2015

Michael Manes
Director Real Estate Development
Weldon Tire
358 Saw Mill River Rd.
Millwood, NY 10546
(914) 215-6714

RECEIVED
JUL 21 2015
BEDFORD ZONING
BOARD OF APPEALS

Mr. Jeffrey Osterman
Director of Planning
Town of Bedford
425 Cherry St.
Bedford Hills, NY 10507

RECEIVED
JUL 21 2015
BEDFORD PLANNING BOARD

Re: 789 North Bedford Road, Bedford, NY 10549

Dear Mr. Osterman:

Weldon Tire, in connection with its' new lease at the above referenced location, and in conformance to Town requirements for a Special Permit Application, hereby submits this narrative.

Weldon Tire hopes to open as soon as possible In preparation we would like to clean, paint, and install furniture and equipment and signs.

This store will employ 6 to 8 people and will operate in strict accordance with Mavis guidelines for professionalism, the safety of our employees and convenience of our customers. Hours of operation will be M-F 8 AM to 6PM, Thurs until 8:30 PM, Saturday 8-5 PM and Sunday 9 to 5 PM. The store will be stocked daily using a 26 ft. box truck or smaller. Scrap tires will be stored inside and will be removed once a week. Cars will not be stored or left outside overnight No work will be done outside the building. Mavis uses double-walled, 275 gallon tanks for new oil and waste oil. These will be filled and emptied approximately once a month Noise generated by the use of power tools and any other operations will be at levels below the current ambient noise level of Route 117.

Activity at this store will include tire sales and installation, oil changes, state inspections, alignments, shocks, brakes and possible exhaust systems. There will be no major engine work. In this respect it is a much cleaner operation than a typical automotive repair shop.

I hope this answers your questions. If you have any additional comments or questions, please do not hesitate to contact me.

Many thanks.
Michael

PLANNING BOARD
Town of Bedford
Westchester County, New York

RESOLUTION NO. 92/48

MEINEKE DISCOUNT MUFFLER FACILITY

PRELIMINARY SITE PLAN

WHEREAS, an application, dated October 11, 1991, from David and Ann Zasso, 55 Cliffield Road, Bedford, New York, for approval of a preliminary site plan for the construction of a building for a Meineke Discount Muffler Facility on property located on Bedford Road (Route #117), shown and designated on Town Tax Maps as Section 10C Lot 39A, in the Central Business (CB) District, was received by the Planning Board on November 1, 1991, and

WHEREAS, by resolution entitled, "Resolution #12-91 Two", dated December 4, 1991, the Bedford Board of Appeals granted a variance for the decrease in lot size, side yard setbacks and minimum side lot distance from the driveway, and

WHEREAS, the Planning Board has determined that the proposal will not have a significant effect on the environment as defined in the New York State Environmental Quality Review Act (SEQR), and

WHEREAS, the preliminary site plan meets all requirements of the Code of the Town of Bedford, and all requirements of the Bedford Planning Board, except as noted below.

NOW, THEREFORE, BE IT RESOLVED, that said preliminary site plan entitled, "Proposed Meineke Service Building for D & A Zasso", dated August 6, 1991, last revised July 20, 1992, prepared by The Helmes Group, Architects/Engineers, is approved subject to the following conditions:

1. A final site plan conforming to the requirements of Section 125-89 of the Code of the Town of Bedford shall be submitted.

2. Compliance with the comments of a memorandum, dated July 24, 1992, from James J. Hahn, Town Engineering Consultant.

3. The final site plan shall show the floor drain containment system and grit/grease/oil separator shall be installed as stated in Part III of the Environmental Assessment Form.

4. The final site plan shall show new street trees to be planted along the frontage of the property and along the northerly property line.

5. Fill to be brought to the property shall be certified as clean by a New York State licensed Professional Engineer.

BE IT FURTHER RESOLVED, that no application for final site plan approval shall be submitted until the requirements of Items 1 through 5 above have been satisfied.

DATED: August 11, 1992

PLANNING BOARD
Town of Bedford
Westchester County, New York

RESOLUTION NO. 92/59

MEINEKE DISCOUNT MUFFLER FACILITY

FINAL SITE PLAN

WHEREAS, an application, dated September 14, 1992, from David and Ann Zasso, 55 Cliffield Road, Bedford, New York, for approval of a final site plan for the construction of a building for a Meineke Discount Muffler Facility on property located on Bedford Road (Route #117), shown and designated on Town Tax Maps as Section 10C Lot 39A, in the Central Business (CB) District, was received by the Planning Board on September 22, 1992, and

WHEREAS, included in the application is a final site plan entitled, "Proposed Meineke Service Building for D & A Zasso", consisting of eight sheets, last revised September 14, 1992, prepared by The Helmes Group, Architects/Engineers, as follows: Dwg. SD-1 entitled, "Site Plan", dated August 6, 1991; Dwg. SD-2 entitled, "Septic System Layout and Drainage Plan", dated March 4, 1992; Dwg. SD-3 entitled, "Drainage Details", dated March 4, 1992; Dwg. SD-4 entitled, "Site Drainage Calculations", dated July 20, 1992; Dwg. 5 entitled, "Floor Plans", dated July 20, 1992; Dwg. 6 entitled, "Elevations", dated July 20, 1992; Dwg. 7 entitled, "Wall Section Details", dated July 20, 1992; and Dwg. 8 entitled, "Structural Plans and Details", dated July 20, 1992, and

WHEREAS, by resolution entitled, "Resolution #12-91 Two", dated December 4, 1991, the Bedford Board of Appeals granted a variance for the decrease in lot size, side yard setbacks and minimum side lot distance from the driveway, and

WHEREAS, by resolution entitled, "Amendment No. 1 to Resolution #12-91 TWO", the Bedford Board of Appeals included approval of a Special Permit under Section 125-68 as applied for by the applicant, and

WHEREAS, the applicant has disclosed that 1200 cubic yards of fill will be imported to the site, and

WHEREAS, the Planning Board has determined that the proposal will not have a significant effect on the environment as defined in the New York State Environmental Quality Review Act (SEQR).

WHEREAS, the above described final site plan meets all requirements of the Bedford Planning Board, except as noted below.

NOW, THEREFORE, BE IT RESOLVED, that the above described final site plan is approved subject to the following conditions:

1. An estimate of the site construction costs shall be submitted to the Planning Board by the applicant. A site plan compliance fee shall be paid based on the Town of Bedford Fee Schedule. The amount of the fee shall be determined by the Town Engineering Consultant based on the cost estimate.

2. All of the comments of the Town Engineering Consultant in his memorandum, dated September 25, 1992, shall be satisfied.

3. The following note on the site plan: "Planting area not to exceed 4' in height per deed restriction", shall be deleted.

4. A note regarding the importation of 1200 cubic yards of fill shall be added to the final site plan.

5. The proposed signs shall be deleted from the site plan.

6. Approval from the New York State Department of Transportation for the new driveway entrance shall be received prior to issuance of a building permit.

and that the Chairman of the Planning Board, or, in his absence, the Vice Chairman, is hereby authorized to endorse said approval on said final site plan upon compliance with the foregoing conditions.

BE IT FURTHER RESOLVED, that since there has been explicit disclosure that 1200 cubic yards of fill are estimated to be imported to this site, the Planning Board hereby authorizes such importation.

BE IT FURTHER RESOLVED, that pursuant to Section 125-98 of the Code of the Town of Bedford, the approval shall expire unless a building permit is applied for within a period of eighteen (18) months from the date of the signing of the final site plan by the Planning Board.

DATED: September 29, 1992

TOWN OF BEDFORD
PLANNING BOARD

RESOLUTION NO. 01/49

STORAGE SHED
MEINEKE DISCOUNT MUFFLER – WAIVER OF SITE PLAN APPROVAL

WHEREAS, a formal application, dated July 16, 2001, was received from Robert Cantisani, Meineke Discount Muffler, 789 Bedford Road, Mount Kisco (Town of Bedford), New York 10549, for a waiver of the requirement of site plan approval to construct a storage shed, on property located at 789 Bedford Road, Mount Kisco, New York, shown and designated on Town Tax Maps as Section 71.12 Block 2 Lot 34, in the Commercial Business (CB) District, was received by the Planning Board on July 17, 2001, and

WHEREAS, accompanying the application was a site plan entitled "Proposed Meineke Service Building for D & A Zasso, North Bedford Road, Town of Bedford," prepared by The Helmes Group, last revised January 21, 1993, received by the Planning Board on July 17, 2001, and

WHEREAS, on July 17, 2001, the Planning Board also received a single sheet entitled "Construction Details,", undated, and

WHEREAS, the Bedford Zoning Board of Appeals by Resolution No. 10-01 Six granted a variance to permit the construction of a storage shed resulting in a building coverage of 22.5% where 20% is required, and

WHEREAS, the Planning Board has determined that the proposed use will not have a significant effect on the environment as defined in the New York State Environmental Quality Review act (SEQRA),

NOW THEREFORE BE IT RESOLVED, that due to the limited nature of the proposal to construct a storage shed, the requirement of preliminary and final site plan approval is hereby waived pursuant to Article IX section 125-93 of the Code of the Town of Bedford with the following conditions:

1. The applicant shall comply with the July 30, 2001 letter from the Tree Advisory Board with specific consideration given to the following conditions:
   a. The two missing trees shall be replaced.
   b. Topping of the tress is to be discontinued and only corrective pruning shall be done for five (5) seasons.
   c. A re-inspection of the site shall take place after three (3) years and a pruning schedule shall be developed at that time.

2. The building to be erected is "Kris" as shown on the plan received by the Planning Board on July 17, 2001.
3. The new shed shall be painted to match the existing building.

APPROVED: October 9, 2001

DATED: October 22 2001

The foregoing resolution is certified to be a true copy of the resolution, which was approved on October 9, 2001 by the Planning Board of the Town of Bedford.

Alexandra J. Costello, Sr. Office Assistant
Town of Bedford Planning Board