The Wall Journal™

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The International Journal of Transportation-Related Environmental Noise Issues

Volume One, No.3 • October, 1992

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The Wall Journal is published ten times a year. Issues are distributed monthly, with combined issues for July/August and December/January.

The Wall journal is a publication of AcoustiCom Publishing Corporation. Editorial, subscription and advertising offices are located at 3011 Voyage Drive, Stafford, Virginia 22554. Telephone (703) 720-0282, FAX (703) 720-0598. Publication offices are located at 617 Frederick Street S.W., Vienna, Virginia 22180. Telephone (703)938-6745, FAX (703) 938-5621.

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Submissions of papers, articles, letters, and photographs for publication, as well as requests for our advertising rate schedule should be addressed to The Wall Journal, P.O. Box 1286, Stafford, VA 22555-1286.

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The Product Approval Process (First in a Series)

by Soren Pedersen

Over the next few issues, I would like to discuss how new noise barrier designs are evaluated by most government agencies, and some of the common pitfalls and obstructions which both the manufacturers and the approving agencies face during this process. The need for such a discussion was amply demonstrated by the reader response to my article in the July/August issue of this publication. The number of requests for the copies of the draft Canadian Standard Association's *Standard for Noise Barriers* was overwhelming, and your copy should be in the mail shortly if you have not already received it.

As a Design Development Analyst with the Ontario Provincial government for the past 10 years, my main function has been to evaluate new product submissions, particularly highway traffic noise barriers. Each year, I receive hundreds of requests from manufacturers, inquiring how to prepare a noise barrier design submission for pre-approval. For the most part, this has been a very gratifying experience, watching new ideas blossom into truly unique and valuable products. But, on some occasions it has also proved to be frustrating for both myself and the manufacturer.

In these articles, it is my intention to try to provide a better understanding of what both our roles should be in an effort to protect the taxpayers' money and ensuring that they get the best and most cost effective product for their money. I will also examine some of the seemingly insurmountable problems that manufacturers face when dealing with a large bureaucratic government agency and what can be done to improve this situation.

The first government contact with any manufacturer can often be quite a learning experience for both parties. For the manufacturer, simply finding the right person in a bureaucracy to speak with is occasionally time-consuming and exasperating. By the time the manufacturer reaches someone in my same position, he or she may have talked with dozens of people within the agency who have listened politely but have no idea of what the manufacturer is talking about or how to help them. This first contact with a government agency may leave the manufacturer in a state of frustration and dampen their enthusiasm for entering this market.

Many government agencies and approving bodies have a well-structured product evaluation and approval process with a specific office or person assigned as the coordinator. The key is in knowing which office has this function as a mandate. The best way to finding the right person is to obtain a copy of the agency's telephone directory. If these are not available to the public, or if the agency is reluctant to hand these out, then contact their head office and ask to speak with someone in any of the following offices: Procurement, Purchasing, Contracts Administration or even something as clear and simple as Product Evaluation and Approvals.

Perhaps a better approach would be to send a letter to the head administrator of the agency, briefly outlining your proposal and requesting assistance. You should get an answer back within a short time from the office which acts as a clearing house for all products, or from the approvals coordinator for that specific product, advising you how to proceed.

And, please don't waste your time and ours by opening with, "My company has recently developed a new noise barrier design and we would like to have it approved within the next few days in order for us to bid on the contract which closes next Wednesday". I will explain to you why that approach has not the slightest chance for success.

What many manufacturers do not realize is that a noise barrier is probably one of the most complex products that an agency deals with. There are at least eight different offices or fields of interest which are involved in the evaluation and approval of a noise barrier design: acoustical, structural, foundations, aesthetics, material composition, safety, field construction and maintenance.

Persons in each of these fields will want to review the manufacturer's submission and provide their own comments. These comments are then returned to the approvals coordinator who summarizes these and informs the manufacturer of the agency's initial evaluation of the product. This cycle could be repeated several times until the agency is satisfied that the product meets the current requirements. This process may take weeks, months or even years, depending upon the complexity of the product and the materials used.

The most common mistake made by many manufacturers is in delaying initial contact with the approving agency until the noise barrier product has been fully developed. One apparent reason for this is the completely understandable effort of the manufacturer to protect and maintain proprietorship of the design concept and/or the material composition. This could be a costly mistake. I often receive submissions where the manufacturer has spent enormous amounts of time and money in developing his design concept to the extent of preparing detailed drawings, full production molds and in some cases to the magnitude of modifying their plant to accommodate the new production line, all without knowing what our specific requirements are.

There is nothing more difficult for an approvals coordinator than to tell a manufacturer that "Yes, your product is certainly a unique design concept and it appears to have great potential, but it simply does not meet our established standards". The reactions of the manufacturer vary, but most are of disappointment, frustration and anger.

It is extremely important at the outset for the manufacturer to inform the coordinator that the product is of a proprietary nature and should be held in the strictest of confidence. Some manufacturers may have a form of confidential disclosure, or the government agency may have other means of protecting proprietary technology during the evaluation process. The coordinator is then obliged to inform all parties reviewing the submission that the information contained in the submission is confidential and must not be discussed with others who are not involved in the approvals process.

It is also important to appreciate that the agency should be there to help the manufacturer right from the conceptual stage, in gaining a better understanding of the agency's needs and requirements. Even though the agency may have published well-developed standards for noise barriers, these requirements are usually not all inclusive and do not cover every conceivable material or design. Spend a few extra hours tracking down the right person and get a proper interpretation as to how the standards relate specifically to the product and design being contemplated. The time spent initially, could mean the difference between success and failure.

In the next issue of The Wall Journal, I will discuss "Preparing the Submission".

Soren Pedersen is a Design Development Analyst for the Ministry of Transportation of Ontario, head office located in Toronto, Ontario, Canada. He may be contacted by telephone at 416 235-3509, or by fax at 416 235-5314.

FHWA Update

by Bob Armstrong

"Simple Version" of FHWA Model: There is continued interest in a quick and easy method for calculating highway traffic noise levels. This method, called the "Simple Version" of the FHWA Highway Traffic Noise Prediction Model (FHWA Model), is a microcomputer version of what was originally developed for a programmable calculator. It is an excellent screening tool and allows fast calculation of traffic noise levels for simple situations. It requires making approximations to fit more complex sites. Its use with laptop or notebook computers is helpful in making field noise measurements to validate the FHWA model for a receptor location. Copies of the "Simple Version", with instructions for use, can be obtained by sending a formatted floppy diskette (3 1/2" or 5 1/4"— high or low density) to: FHWA, 400 7th Street, S.W. (HEP-41), Washington, D.C. 20590, Attn: Bob Armstrong.

"Living Barriers": What is meant by "living barriers"? The phrase is intended to be distinct from earth berms and applies to freestanding noise barriers composed of an internal framework that has been filled with organic material and planted with vegetation. Several different designs for the framework of the barriers have been developed which include the use of woven willow vegetation, concrete modules, stainless steel mesh, and galvanized chainlink fencing. "Living barriers" are visually appealing and blend well with the natural environment. However, they may require irrigation in dry climates as well as more right-of-way than conventional barriers.

Did you know that... *An article in the August issue of Public Innovation Abroad* describes the experimental use in France of a series of perforated, non-corroding metal columns filled with used tires cut in half (semi-circular) to act as traffic noise barriers. The new noise barrier received the "Gold Decibel" award from the French Noise Protection Council.

What measurement equipment do you use? The FHWA frequently gets requests for the names of vendors of highway traffic noise measurement equipment. We have information on the following manufacturers: Bruel & Kjaer Instruments, Inc.; CTECH-Ivie, Inc.; Larson-Davis Laboratories: Metrosonics, Inc.; Quest Electronics; and Rion Company, Ltd. We would be pleased to learn of additional manufacturers of equipment being used to measure traffic noise.

Questions and comments concerning this column should be directed to Bob Armstrong at (202) 366-2073 or Steve Ronning at (202) 366-2078.

Editor's Corner

by El Angove

As our Publication Philosophy and Policy (printed elsewhere in this issue) states, The Wall Journal is distributed free of charge to federal, state and local government officials. This issue is being distributed to 704 readers in that category, and the number is climbing rapidly as we add to our database.

These officials are our prime readership, for which The Wall Journal was established, and we hope that their number increases to 2,000 globally.

Our total mailing of this issue is 2,027 copies. Readership breakdown is as follows:

Consulting Engineers (U.S.)	813
Federal Officials (U.S.)	155
State Officials (U.S.)	308
Local Officials (U.S.)	177
Canadian and Abroad	253
Vendors	124
Authorities & Gov't. Ass'ns.	64
Others (unsorted)	133
Total	2,027

Our bare costs for this issue, including imagesetting, printing, sorting and postage (not including overhead or salaries) total $1.50 per copy. As you can see, this is not an inexpensive enterprise. Obviously, we must obtain revenues in the form of subscriptions and advertising from the private sector. To date, the response has been a bit disappointing, but we realize that The Wall Journal is quite new and that it will take some time to get the ball rolling. We do hope that you may decide soon whether or not you wish to continue to receive The Journal.

On page 8 are some forms for registering as a reader. We ask you to register even though you may be a government official entitled to a free subscription; we wish to ascertain that our mailing information is correct and that you are interested in receiving this publication. If you belong to the private sector (consultant, vendor, contractor or other), we ask that you subscribe in order to provide the revenues to help cover the cost of publishing. If you also advertise, your contribution to operating costs is significant.

Reader registration is important. We will soon not be able to mail copies of The Wall Journal to unregistered readers. When that occurs, all readers who have already paid their subscriptions will automatically have the anniversary date of their one-year (10 issue) subscription made effective as of the date of the next issue.

As the saying goes, "Thank you for your support".

Publication Policy and Philosophy

The Wall Journal was established as a communications and re-cording medium for the affairs, technical information and activities of all those persons who are involved with transportation-related environmental noise issues. The Journal will be an impartial observer and reporter of the timely intellectual and practical con-tributions to the state-of-the-art made by these persons. The Journal will also preside as a bulletin board for the free interchange and distribution of ideas, concepts, test reports, field experience and technical devel-opment.

The Wall Journal cannot exist without input from our readers. We cannot be at all places and times where intellectual achievement is being accomplished, nor will we publish fiction or contrived editorial fill. You, our readers, will be the sole source of all editorial material we publish. Therefore, if you wish The Journal to continue, it is imperative that you all make a contribution. You deserve to have a forum for your technical achievements, and your fellow readers deserve to share that information. You are our authors; The Wall Journal is presently being mailed to more than 2,000 readers with interests similar to yours. We are confident our worldwide readership will perhaps double, with your help.

The Wall Journal is being distributed free-of-charge to federal, state and municipal engineers, designers, planners and administrative personnel. This is the only 'payment' we can make for your contributions. Since The Wall Journal is not an eleemosynary institution, we must look elsewhere to recover the cost of publishing and distributing The Journal. We must look to consulting engineers, contractors and material suppliers to provide operating funds from the sale of subscriptions and advertisements. Thus, we have a synergistic relationship between our readers who provide the editorial material at no charge, and the private sector which pays the bills, but is the recipient of business generated by the work of the readers.

Stated simply, the more editorial and news material we receive from readers, the greater the circulation we can develop, which makes The Journal more attractive as an advertising medium to the private sector, which in turn provides more funds and allows more improvement in the depth and quality of the publication, which in turn builds greater readership... the spiral continues.

Contributing Editors

Cary Adkins (1, 2)
Bob Armstrong (1, 2,3)
Domenick Billera (1,3)
Bill Bowlby (1, 2)
Louis Cohn (2)
Harvey Knauer (2)
Win Lindeman (2)
Soren Pedersen (1,3)

Note: numbers in ( ) are the issue numbers in which articles of the Contributing Editor have appeared.

POSITION AVAILABLE

Sr. Noise Barrier Design Specialist

Leading highway design and environmental planning firm is seeking a noise barrier designer with at least five years experience designing barriers and using the STAMINA/OPTIMA models.

McCormick, Taylor & Associates, Inc. offers a competitive salary, benefits program and advancement opportunities.
Please send resume to:

Bert Cossaboon
McCormick, Taylor & Associates, Inc.
Mellon Independence Center, Suite 6000
701 Market Street
Philadelphia, PA 19106

Qualified Minority and/or Female Applicants are encouraged to apply. EOE/M/F/V/H.

Sound Bites

Overheard in the audience at the A1F04 Committee meeting in Colorado Springs after TX DOT's Cynthia Wilson finished her interesting presentation on the unique concept of constructing noise barriers by stacking used tires: "Well, I've heard of a car leaving tire marks on highway barriers, but this is the first time I've heard of a barrier which could leave tire marks on the **car**".

At the same meeting:

El Angove (center) says to Bill Pickett (left) about Soren Pedersen (right): "No, Bill. Soren's not crying because of what you said to him last night at the bar. His open can of soda just turned over in his apron". (Aprons stuffed with lunch goodies for a bus tour, courtesy of The Reinforced Earth Company).

"They'll n-n-never b-b-believe that w-w-we c-c-c-climbed all the w-w-way to the t-t-top." (Temperature: 34 degrees in the clouds and light snow). Hans Rerup, Chris Blaney, Soren Pedersen, El Angove)

Ed. Note: As you can see, we are in dire need of some light-hearted anecdotes and photos. All suitable material will be published.

Conference Calendar (Recent and Future)

October 6-9, 1992

Acoustics Week in Canada
At: Sheraton Plaza 500 Hotel, Vancouver, B.C., Canada
Sponsored by: Canadian Acoustic Association
P.O. Box 1351, Station "F"
Toronto, Ontario, Canada M4Y 2V9
Tel: (416) 823-3200

October 12-14, 1992

VDE - Kongress '92
At: Köln, Germany
Contact: VDE - Zentralstelle
Tagungen und Seminare
Stresemannallee 15
D-6000 Frankfurt, 70, Germany

October 19-23, 1992

Acoustical Society of America - Conference
At: Memphis, Tennessee
Contact: Acoustical Society of America
500 Sunnyside Boulevard
Woodbury, New York 11797, USA
Tel: (516) 349-7800, Ext. 481

October 25-28, 1992

ASCE International Conference on High Speed Ground Transportation (HSGT) Systems
At: Disney's Contemporary Resort Hotel, Lake Buena Vista, Orlando, Florida, USA
Sponsored by: Urban Transportation Division Committee on HSGT, Florida Sec., ASCE
Contact: Dr. Murthy V.A. Bondada, P.E.
Gannett Fleming, Inc.
Harrisburg, Pennsylvania 17105, USA
Tel: (717) 763-7211 Fax: (717) 763-8150

November 4-6, 1992

TMA Summit - for Transportation Management Assns.
At: Williamsburg Hilton & National Conference Center, Williamsburg, Virginia
Sponsorships: Federal Transit Admin., Department of Energy, Federal Highway Admin.
Contact: Ms. Diane Davidson
Executive Director, Brentwood Area TMA
Brentwood, Tennessee, USA
Tel: (615) 370-4293

November 18-21, 1992

Tonmeistertagung 1992
At: Bergheim, Germany
Contact: Bildungswerk des Verbandes Deutscher Tonmeister
Honiggasse 16
D-5010, Bergheim 12, Germany

April 28-30, 1993

Second Conference on Recent Advances in Active Control of Sound and Vibration
At: Virginia Polytechnic Institute and State University, Blacksburg, Virginia
Contact: Ms. Dawn Williams, Conference Coordinator
Virginia Polytechnic Institute and State University
Mechanical Engineering Department
203 Randolph Hall
Blacksburg, Virginia 24061-0238, USA
Tel: (703) 231-4162 Fax: (703) 231-9100

May 10-13, 1993

SAE Noise and Vibration Conference and Exposition
At: Grand Traverse Resort, Traverse City, Michigan
Contact: Ms. Patricia Gouhig
SAE Specialty Conference Administrator
400 Commonwealth Drive
Warrendale, Pennsylvania 15096, USA
Fax: (412) 776-0002
Deadlines: Abstract - October 1, 1992
Draft MS - January 4, 1993
Final MS - March 15, 1993

July 6-9, 1993

The 6th International Congress on Noise as a Public Health Problem
At: The French Riviera, Nice, France
Organizers: The French National Institute for Transport and Safety Research (INRETS, Lyon-Bron)
Contact: Noise and Man '93
INRETS-LEN
Case 24
F-69675 BRON CEDEX, France

August 24-26, 1993

Inter-Noise '93
At: Leuven, Belgium
Contact: Ms. Christine Mortelmans
Technological Institute
K VIV
Desguinlei 214
B-2018, Antwerpen, Belgium
Tel: (03) 216 09 96 Fax (03) 216 06 89
Deadlines: Abstract - December 15, 1992
Draft MS - February 15, 1993
Final MS - April 15, 1993

April, 1944

3rd French Conference on Acoustics
At: Toulouse, France
Contact: 3 ème Congres Francais D'Acoustique
Université Toulouse-le-Mirail
Centre de Promotion de la Recherche Scientifique
5 Allées Antonio Machado
31058 Toulouse Cedex France
Tel: (33) 61-50-44-68 Fax: (33) 61-50-42-09

August 29-31, 1994

Inter-Noise '94
At: Pacific Convention Plaza, Yokohama, Japan
Contact: Inter-Noise '94 - Congress Secretariat
Sone Lab, R.I.E.C., Tohuku University
2-1-1 Katahira, Aoba-Ku, Sendai, 980 Japan
Fax: +81-22-263-9848

Correction

In the lead article on PennDOT's I-95 Intermodal Mobility Project in our September issue, we listed an incorrect phone number for Harvey Knauer.

Mr. Knauer may be contacted by telephone at 215-964-6537, or by fax at 215-964-2603.

TRB A1F04 Committee

by Domenick Billera, Chairman

It seems to me that we are at a critical juncture in this whole thing we call highway traffic noise abatement. Homeowners along highways are increasing their demands for noise abatement, and noise barriers seem to be going up everywhere. But at $2 million per mile (New Jersey costs), this is becoming a serious drain on beleaguered state economies.

Remember when we started these programs and had a viable economy with reasonable government funding levels? Those days are gone. With our infrastructure coming apart at the seams, DOT's are hard pressed to find the funds for things like Type II noise barriers. Also, as more extensive wall systems are constructed, I'm seeing (and hearing) a backlash from highway users who feel walled-in and resent their loss of view from the highway.

We have to adopt the battle cry of the '90s... do more with less... and deal convincingly with these issues. Barrier costs must be brought down; perhaps alternative materials are the answer. I hope that settling for shorter, lower walls with less barrier insertion loss is not the answer. Also, the views lost by residents and the highway users must be replaced! One texture, one color fits all does not cut it! The landscape adjacent to the highway changes along the journey; so too should the 'barrierscape.'

The world of highway noise abatement has a great many dedicated and far-sighted people. I hope that through their efforts we will develop solutions to these problems, so that public opposition and a lack of funds are not convenient reasons to downplay governmental efforts to mitigate highway traffic noise.

Domenick Billera is Manager, Air and Noise Section, New Jersey DOT, phone 609-530-2834.

The Bulletin Board

Ed. Note: We hope that our readers will make use of this new column as a means of reaching an audience of more than 2,000 people with similar interests. You may use The Bulletin Board to exchange technical information, to announce research projects, to seek input on specific subjects, or even to advertise your used spectrum analyzer for sale.

Our first participant is Professor James D. Chalupnik of the University of Washington, who is seeking funding for a research project. His précis of the project follows:

Title: **Free-Field Performance of Absorptive Materials Used in Noise Barriers**
By James D. Chalupnik

Problem: Many of the absorptive materials used in highway applications operate in the *free field* of sound, but the performance of these materials are evaluated in laboratories under *diffuse field* conditions. Obviously, the data is not completely reliable. This was particularly noticeable in a recent study performed by (SVRL)* and WSDOT in which several vendors supplied data that was questionable. Improved data is needed so that the effectiveness of highway systems using these absorptive materials can be more accurately predicted.

Research Approach: The standard test to determine acoustical absorption is to place a specimen of the material in a calibrated reverberant room and measure the change in reverberation time in the room. Since the room is reverberant, the sound field is diffuse. It is possible to test these characteristics under free-field conditions, but the techniques are not so well-known, and few laboratories are set up to perform these tests. A simplified technique for performing these tests has been developed at SVRL, which will allow us to determine absorptive characteristics of typical materials used in highway absorptive noise barriers. Furthermore, it is proposed that these tests measure the reflection coefficient at a number of frequencies and reflection angles.

The approach is to use impulsive sounds generated by a starter's pistol or similar small explosive charge. The acoustical spectrum of the sound striking the test panel is recorded and transformed using the Fast Fourier Transform (FFT) method. Reflected sound at a prescribed angular offset is similarly measured and a ratio of the two is formed. After allowance is made for the increased distance that the reflected sound travels, the frequency and angular dependent absorption coefficient is calculated.

Sample panels of approximately six of the more frequently used absorptive materials will be tested. It is assumed that these specimens can be obtained from the vendors, gratis.

*Sound and Vibration Research Laboratory, Department of Mechanical Engineering, University of Washington.

Professor Chalupnik may be reached by telephone at 206 543-5397, or by fax at 203 685-8047.

Summary of Professional Papers

(part 2 of 2)

Presented at the TRB A1F04 Summer Meeting at Colorado Springs: July 13-15, 1992

The following, printed in order of presentation, are summaries of the papers presented on the final day of the Colorado Springs meeting. The summaries of the first 12 papers were printed in the September issue of The Wall Journal.

These papers are the first in a continuing series which will provide a chronicle of all the professional papers presented at A1F04 winter and summer meetings beginning in 1978. When the series is complete, we will publish an indexed, categorized compilation of all the papers that will provide a handy reference to the technical presentations of the meetings. We welcome and would appreciate any assistance in accumulating this historical data. -ed.

Reference Energy Mean Emission Levels: The Florida Experience

The University of Central Florida, in conjunction with the Florida Department of Transportation has conducted research to establish updated, highway noise reference energy mean emission levels specific for Florida. This was accomplished through a measurement and modeling program and a review of past data collection efforts. The results of the measurements and modeling were then used to modify the computer model, STAMINA 2.0. Not only were the reference levels reevaluated, but the applicable speed range was extended.

Other important findings also came out of this research. It would deem that the three basic vehicle types should be expanded to at least four types. This is necessary because while automobiles and heavy trucks tend to validate past studies, the medium truck category has a large variance due to the definition of the vehicle type. Also, the vehicle frequency spectra observed at higher speeds did not compare well to the basic frequency of 500 Hertz used in STAMINA 2.0 during barrier analysis. Since the frequency is a primary consideration of wall height, perhaps additional considerations would seem to be warranted such as multiple frequency analysis during barrier design.

This report documents the steps used in this research, presents the data analysis, and documents the steps necessary for computer implementation.

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Active Noise and Vibration Technologies Research and Development Programme

Active noise and vibration reduction is an emerging technology which has advantages over passive control in many circumstances. Active reduction is the use of additional active sources to cancel the effect of unwanted sound or vibration and is most effective at the lower frequencies that are difficult or expensive to control by passive means. Active control is best applied to the source of the unwanted sound to suppress any radiation to the environment. An example of source control is the ANVT Electronic Muffler System (EMS), in which a canceling actuator is connected to the end of an engine exhaust. The EMS uses a microphone to sense the exhaust noise and feedback through a digital signal processor to produce an anti-noise that cancels the exhaust noise. The EMS replaces a conventional muffler and since it is attached to a straight pipe exhaust reduces engine back pressure and improves both engine performance and fuel efficiency.

In situations where direct control of the sound source is not possible an alternative is to protect the receiver. Lightweight active headsets perform better than bulkier passive headsets and have the advantage of selective attenuation, reducing the noise from unwanted sources while transmitting speech, communication and warning signals. The active control of the sound transmission path is also possible in some circumstances, for example in HVAC ducts or within vehicle cabins. Active acoustic barriers have been proposed and may be an important application in the future.

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In Situ Evaluation of Parallel Barrier Effectiveness

The U.S. Department of Transportation, Research and Special Programs Administration, Volpe National Transportation Systems Center (U.S.DOT/RSPA/VNTSC), in support of the Federal Highway Administration (FHWA) and seventeen sponsoring state transportation agencies, conducted a highway noise measurement program at a barrier site along Interstate 495 in Montgomery County, Maryland. The objective of the study was to measure the degradation in acoustic performance of a highway noise barrier due to the close proximity of a parallel barrier on the opposite side of the roadway. The test site selected for this study consisted of a contiguous arrangement of a parallel reflective noise barrier followed by a single noise barrier. Five-minute energy averaged, A-weighted noise levels were calculated from data measured simultaneously at identical heights and offset positions behind the single and parallel barrier arrangement. In addition to noise measurements, meteorological data, vehicle speed data and traffic count data were obtained. Results show barrier insertion loss degradations of 0.6 to 2.8 dBA, dependent on microphone height and offset distance behind the barrier.

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Determination of Traffic Noise Barrier Effectiveness An Evaluation of Noise Abatement Measures Used on I-440

The noise abatement efforts used on I-440 were studied to evaluate their effectiveness. The results of tests confirmed that the FHWA abatement criterion for land use Category B receivers had not been exceeded at any of forty representative sites. The TDOT criterion for substantial increase in levels at receivers due to new highway sources, was exceeded at only two of forty sites.

Noise level reductions as much as 9.5 dB at the receiver locations were attributed to depressing the roadways (cut) with the average being 2.8 dB. Of the forty sites tested, 75 percent realized at least a 5 dB reduction due to barriers alone (in addition to effect of cut, if any). The results of 24-hour measurement periods show that insertion losses vary throughout the day. Comparison tests of absorptive and reflective barriers at two sites indicated that benefits were realized by the use of absorptive barriers on fill sections where barriers were installed close to shoulders. An evaluation of the FHWA STAMINA 2.0 model for highway traffic noise concluded that the model tended to predict levels higher than those actually measured. Insertion loss results were obtained utilizing the ANSI S12.8 Indirect Predicted Method of insertion loss determination . This method's dependence on the accuracy of the prediction model was seen as a limitation to its usefulness.

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Effectiveness of Sound Barriers Along I-270 in Montgomery County, Maryland

Consideration of sound barriers has become an integral part of the highway development process, and their effectiveness in reducing noise levels should be documented whenever possible. Such documentation should demonstrate that monies are indeed being well spent, and that the tools and procedures used in barrier design are l) accurately illustrating the noise impacts associated with the highway, and 2) generating appropriate and adequate design solutions to identified noise problems.

This paper presents the results of the first in a planned series of evaluations of sound barriers constructed as part of improvements to the Interstate Route 270 corridor in the northwest suburbs of Washington, D.C. Two of six completed barriers were studied. Two representative locations along each barrier were chosen for a total of four test sites. Measurement equipment and computer hardware and software housed and maintained as part of the Federal Highway Administration (FHWA) Traffic Noise Research Mobile Laboratory was used to gather noise data. In each test 7-8 separate noise analyzers were used following established procedures for determination of insertion loss of highway noise barriers. Comparison of measured noise levels was made with the noise prediction computer program STAMINA/OPTIMA and barrier insertion loss was calculated for each of the four test sites.

The calculated insertion losses were found to equal or exceed those projected during barrier design. Actual insertion losses ranged from 10-15 decibels (dBA). STAMINA/OPTIMA predictions agreed well with measured values, except for receivers high above the ground behind the barrier. In this instance, STAMINA consistently over-predicted the level by approximately 3-4.5 dBA. Further analysis of the phenomena is also presented.

Additional noise data was collected at multiple reference microphone heights. Significance of the results is also briefly discussed.

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Noise Barriers for the New Jersey Turnpike

Steady traffic growth necessitated a capacity increase for the New Jersey Turnpike. The addition of extra traffic lanes was selected as the best solution for accommodating traffic growth and two new lanes were added outside the existing three lanes in each direction of travel between Interchanges 8A and 9. Extra lanes are now being added to sections between Interchanges 11 and 15E. The new traffic lanes brought traffic closer to existing residences, raising noise levels and concerns about quality of life and property values.

A total of 14 miles of noise barriers have been designed so far to reduce the impact of traffic noise. A 6.5 mile long section was constructed in 1990, and its acoustical performance verified by audited field measurements in 1991. Part of this section consisted of parallel barriers and had noise absorptive facings. Measured noise levels indicated an over-prediction by the computer model used for acoustical design. Other design factors were aesthetic considerations, public involvement in selection of color and surface textures and the views of structural designers.

The successful outcome of this project was the result of cooperation between designers and the public's representatives. The presentation will be illustrated with color slides.

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For further information on any of these papers, please contact the author directly.

Letters to the Editor

The following is our very first Letter to the Editor, and we thank Mr. Purvis for his kind comments and good suggestions. We hope that others will take the time to send us your comments (good and not-so-good). This is the best way we can format the Journal to be of the greatest interest to all our readers. (Ed.)

Dear Editor:

We appreciate the fine effort of the inaugural version of The Wall Journal. The columns by Mr. Armstrong of FHWA, Mr. Billera of A1F04 and Dr. Bowlby were quite informative and interesting. The idea of this journal as a sounding board for environmental noise/transportation professionals is an excellent contribution.

I would like to offer some suggestions for what we would find interesting or useful:

- Column from the Environmental Protection Agency Office of Noise Abatement on current activities and future plans (do they still exist?);
- From FHWA: 1) information on the availability of computerized versions of OPTIMA and STAMINA 2.0 procedures; 2) information on NHI courses on noise monitoring and noise modeling;
- From contributors: interesting issues and findings from transportation projects and transportation program Environmental Impact Statements (EISs) or Environmental Impact Reports (EIRs) related to transportation noise and mitigation efforts;
- From the A1F04 TRB Committee: description of sessions sponsored at the TRB annual meeting, abstracts of papers accepted for presentation at TRB, new Research Records of interest to the community, conferences of interest to the community.

Again, thanks for your very fine effort.

Charles L. Purvis, AICP
Senior Transportation Planner/Analyst
Metropolitan Transportation Commission
Oakland, CA

Dear El:

Congratulations. This is a terrific publication. I'm looking forward to future issues.

Pat Hironaga
Hawaii Department of Transportation
Honolulu

Thank you, Pat. We'll be summarizing the papers presented at your hosting of the 1990 Summer Meeting of A1F04 in an upcoming issue. Aloha. (Ed.)

Dear Editor:

We would like to subscribe to The Wall Journal. We are a provincial government library in British Columbia. Would we be entitled to a free subscription?

Enza Pattison
Ministry of Transportation and Highways
Library Resource Centre
Victoria, B.C.

Absolutely. Thanks for your reader registration. (Ed.)

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Press Release

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PLAINVIEW, NEW YORK.....The Preco Precast Division of Fosroc Inc., a leader in the manufacture of construction chemicals, is offering a series of free seminars on the advantages of environmentally safe stains to improve the appearance and durability of concrete soundwalls.

These seminars are designed for specifiers and are held on-site. All attendees will receive a technical binder with valuable information concerning concrete soundwalls, stains and coatings.

Interested parties should contact Ms. Teri Devine as indicated below, and reference **The Wall Journal** when doing so.

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