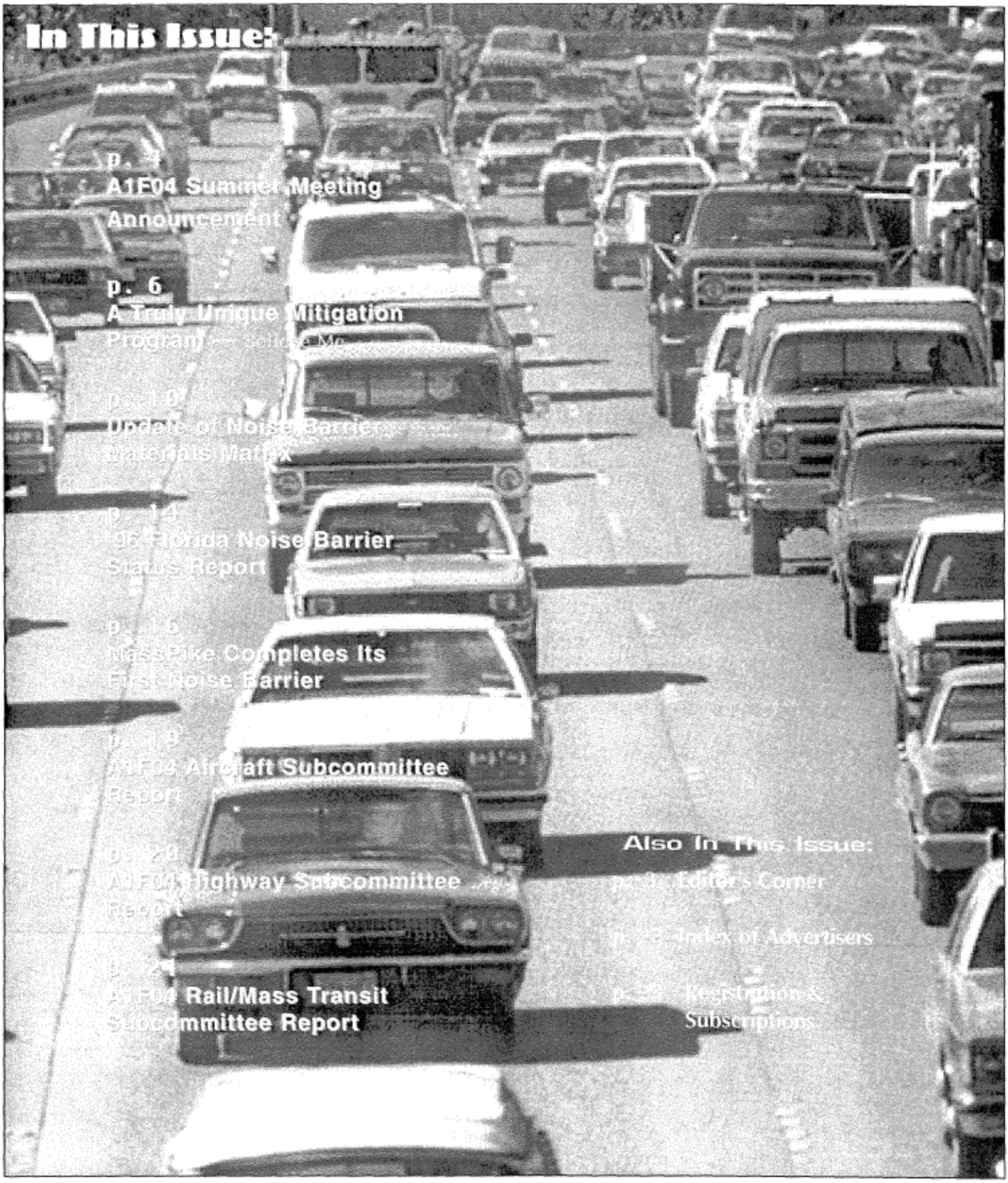
The Wall Journal™

Issue No. 23

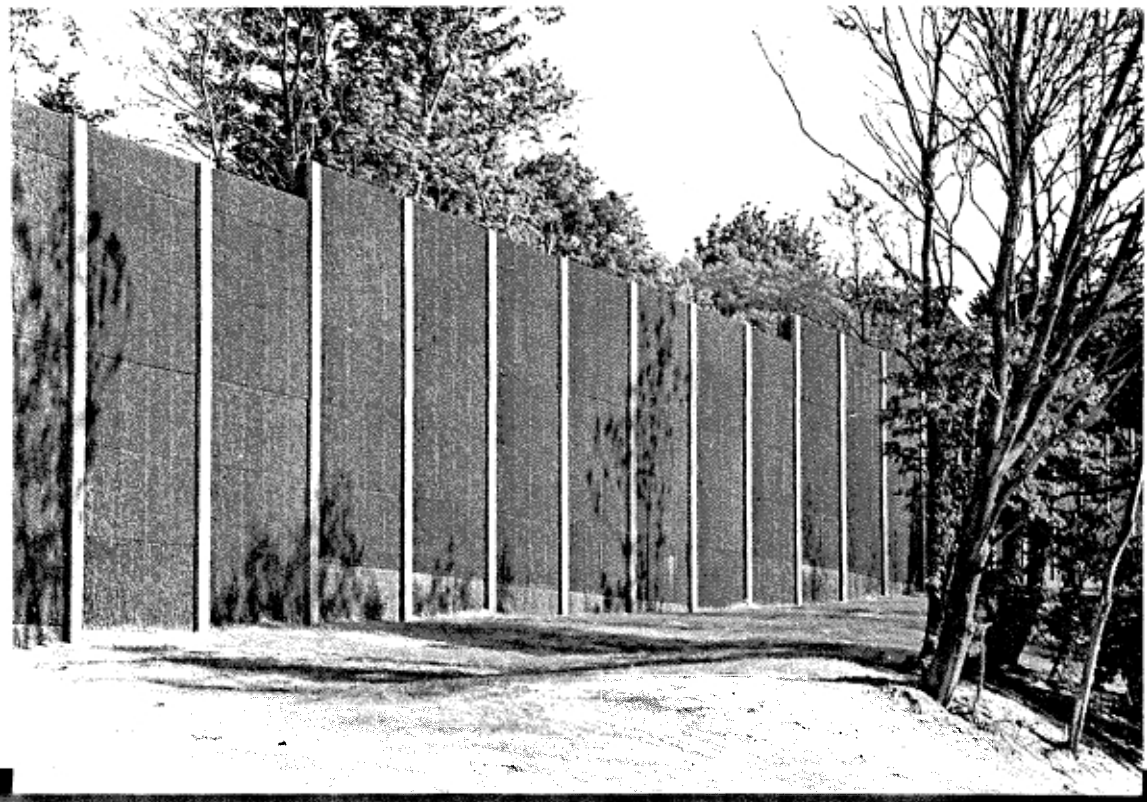
THE INTERNATIONAL JOURNAL OF TRANSPORTATION-RELATED ENVIRONMENTAL ISSUES

May/Jun 1996



In This Issue:

When beautifying and protecting soundwall...



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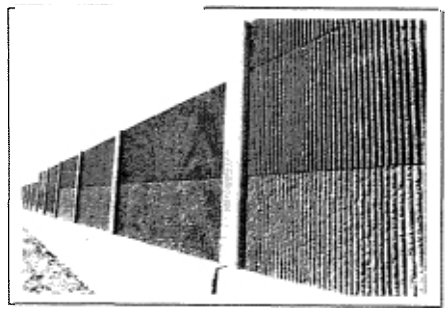
Sound absorptive highway noise barriers are becoming specified more and more. To significantly improve the appearance and durability of these structures, more specifiers are relying on **Fosroc** *for:*



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The Wall Journal

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Subscription and advertising information are shown on page 23.

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EDITOR'S CORNER by El Angove

Romancing the Internet

As usual, being the only guy around here to answer the phone, I get a lot of weird calls. For a while, the phone rang every morning at six. I would grope for the phone and mumble something. A voice from hell would scream back, "Raoul! Get up! It's time to go to work!" I would tell Mrs. Satan that she had the wrong number, and she would hang up, muttering obscenities in Spanish.

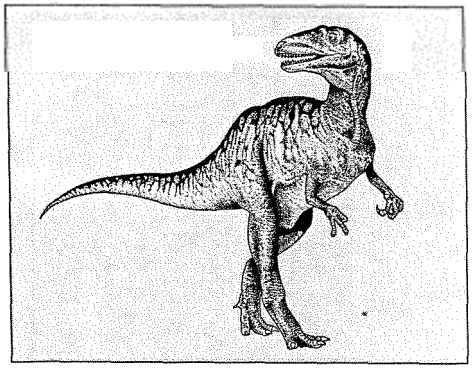
After about a week, I had enough of it. When the phone rang and the hell's angel screeched, I politely answered, "Madam, Raoul doesn't live here any more. He went out in the back yard last night and the alligators dragged him away to the Everglades. I could hear him screaming for an hour."

If things like that weren't bad enough, there's telemarketing. A pox on them and their progeny. Nobody calls during the day. They always call between seven and eight at night (when the breadwinner is home). Usually, it is the sweet voice of a young lady who says: "Mr. Angove? This is Jennifer Sue Goodheart. I'm with Amazing Wonder Products. How are you this evening?"

You notice that they now have to identify themselves and their company before they talk to you, thanks to the Feds. What I really want to tell her is that I just sat down to a hot dinner, I am tired and hungry, I haven't slept for three nights worrying about losing my job, and I just found out that my girl friend is getting a sex change.

But I chicken out and simply tell her that I never, **NEVER**, buy anything from telemarketers. Then she says something nasty and slams down the phone in my ear. Good grief, Charlie Brown.

Well, what with all the wrong numbers dialed by the idiots who have fat fingers or no brains, and by the insidious harassment of the telemarketers, you would think that would be intrusion of privacy enough for a lifetime. **NOT!** We still have the door-to-door people; some carrying bibles, some selling candy, some carrying magazine subscriptions, some wanting to mow your lawn, some selling vinyl siding and some who are lost and looking for directions.



What? Me worry?

Finally, there are the "friendly" and "fraternal" organizations, such as your local fire department, local police department, state police, veterans of foreign wars, purple heart associations, daughters and brothers of veterans, and numerous others, most of whom want donations to their "lodges", whatever in blazes those are.

Last, but not least, are the national charities. I'm not demeaning them, but how in the world can I fit them into all the other activities I am expected to support? It boggles the mind.

Do you see what I am getting at? We are all **TOO ACCESSIBLE!** I'll get back to that in a minute.

A few months ago, one of our readers wrote me to let me know that he was tired of seeing my same old picture in this column. I made a few changes (what do you think of the one above?).

Also, a few readers have asked me, "When **are** you going to get on the Web?" Why don't you take The Wall Journal into the **NOW**, if not the next century? What are you? Some kind of **DINOSAUR**? Yep. Just call me Rex.

I once bought a 2400 baud modem in 1992 and joined Compuserve. I found the software to access Compuserve to be unwieldy, and put the modem on the shelf. After that, I forgot about it and paid $7.50 a month for a year before I realized I hadn't used it and cancelled.

Looking back, I'm glad I did it. I would have become much **TOO ACCESSIBLE.** I like my privacy. I am well on the way to becoming a troglodyte (if only I can find the right cave). I love jazz and classy ladies and publishing The Wall Journal. Don't call me — Here's looking at you, kid. ■

TRB Committee A1F04 on Transportation Related Noise and Vibration

By Michael T. Bruns, Illinois Department of Transportation

ANNOUNCEMENT: The National Research Council, Transportation Research Board, Committee A1F04 on Transportation Related Noise and Vibration will hold its annual Summer Meeting at the Lisle/Naperville Hilton in the Chicagoland area on July 21 - 24, 1996. The meeting is being hosted by the Illinois Department of Transportation, the Illinois State Toll Highway Authority and H.W. Lochner, Inc.

The agenda includes a number of professional presentations, including a demonstration of the capabilities of FHWA's new Traffic Noise Model (TNM), and four technical tours; after-session activities include dinner and sightseeing at Chicago's famous Navy Pier on Monday evening and a visit to new Comiskey Park on Tuesday evening, (sorry, the Cubs are out of town during this week). Day trips for spouses and other friends and/or participants will be available to the quaint shopping area in historic Long Grove on Monday and the Magnificent Mile or Chicago's lakefront Museums on Tuesday.

This announcement is intended as general information, and will probably reach you in this publication too late to arrange your attendance if you have not already done so, but you may contact Michael Bruns at (217) 782-4770 for further information.

At the time of printing of this issue of The Wall Journal, all of the abstracts of the professional papers to be presented at the meeting had not been received. To give you some idea of the scope and tenor of the meeting, we list below some of the papers which have been received at this early date:

Interactive Demonstration ot the FHWA Traffic Noise Model
Author: Grant S. Anderson
Harris Miller Miller & Hanson Inc.

Aircraft Community Noise Impact Model (ACNIM)
Authors: Eric Stusnick and Xin Zhuang
Wyle Laboratories, Inc.

Validation of Aircraft Noise Models at Lower Levels of Exposure
Authors: Juliet A. Page and Kenneth J. Plotkin (presented by Eric Stusnick)
Wyle Laboratories, Inc.

A HITEC Evaluation of the USG Sight and Sound Screen
Authors: Louis F. Cohn and Roswell A. Harris (University of Louisville) and Richard T. Kaczkowski (US Gypsum Research Center, Libertyville, IL)

Public Opinion of I-71 Noise Barrier Effectiveness
Author: Lloyd A. Herman, Ph.D.
Russ College of Engineering and Technology, Ohio University

Offering Testimony In Court from the Noise Expert's Point of View
Author: James P. Cowan, INCE.Bd.Cert.
McCormick, Taylor & Associates, Inc.

The Carsonite Sound Barrier System
Author: Paul R. Schubring
Carsonite International

Pensacola Weigh-in-Motion Site Noise Study: A Case History
Author: Win Lindeman
Florida Department of Transportation

We hope to publish all of the paper abstracts in The Wall Journal, in the July/August issue if possible, but more likely in the September/October issue due to the conflict with the July/August printing deadline. Also included will be photos and general information on the meeting. ■

When we started this publication in 1992, we had the foresight to order copious press over-runs in the hope that The Wall Journal would become a document that people would wish to save for future reference. That has turned out to be true.

Many new subscribers are ordering full sets of all back issues for their libraries. We still have quite an inventory, but they are going fast. If you wish to complete your set, ordering details may be found on page 22.

Engineer Crafts Innovative Mitigation Program

New Procedures Re-Define Noise Mitigation Criteria

By Remelus Maximus, P.E.
Noise and Air Quality Engineer

In response to concerns expressed by citizens of the State of Remel and recent memos written by several agencies, the Remel Department of Transportation (RemDOT) established a state-wide noise mitigation policy.

In an effort to avoid duplication of effort, RemDOT contacted all other state highway agencies which have an existing noise mitigation policy. RemDOT was unable to find another State with a mitigation policy worth copying, so a committee was formed to draft a policy for legislative review.

Because policies in other states appeared to be too draconian for RemDOT's tastes, it was decided that our policy would have to be innovative. Once again, in an effort to avoid duplication, RemDOT decided to look at policies drafted by other agencies to see what was working. The answer we were looking for became clear; RemDOT decided to craft its noise mitigation policy after the Clean Air Act Amendments of 1990.

RemDOT is comprised of eight separate District offices located throughout the State of Remel. District Offices 11, 22 and 33 oversee highly urbanized areas while District Offices 44, 55, 66, 77 and 88 control mostly rural counties.

New regulations called for each district office to put together a Decibel Improvement Program (DIP). The DIP lists all roadway improvement projects for that district and the corresponding decibel levels occurring in a given time frame (construction year + 20). In an effort to prevent the districts from using "State Funds Only" for projects with potentially high decibel levels, it was determined that all projects must be included in the DIP, not just projects receiving federal funding. Projects in the district's DIP which have noise levels exceeding the Federal Highway Administration (FHWA) - Noise Abatement Criteria (NAC) must show that noise mitigation measures have been analyzed for feasibility and reasonableness .

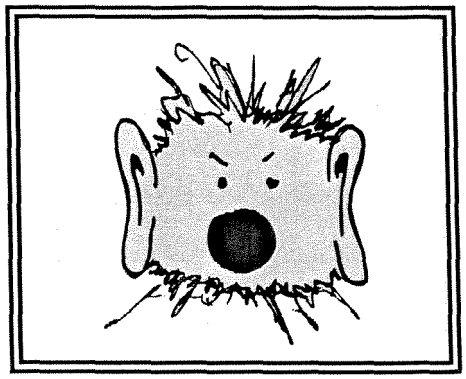


Figure 1. Typical RemDOT Engineer

RemDOT's Central Office also

assembled a Mitigation Implementation Plan (MIP). The MIP gives guidance for reducing traffic generated decibel levels at least 15% by the year 1997 and then showing a further reduction of 3 % per year.

Each district's DIP must be found to conform with the MIP or the district will lose all funding for its transportation program. If Central Office finds the submitted DIP to be incomplete, the existing DIP will lapse after one year and only "no decibel increase" projects for the district may be built.

If the district does not submit a DIP to Central Office or does not submit a revised DIP for DIPs found to be incomplete, a sanction is leveled on the district. That sanction states, "Noise Abatement Criteria, for districts not meeting MIP guidelines, shall become 3 dB less than the original Noise Abatement Criteria."

In an effort to alleviate some of the strain the MIP places on the highly urbanized districts, Central Office developed a Decibel Credit Offset Program (DCOP) to the MIP. Under this program, a district which has a roadway planned with high noise level predictions can trade with another district developing a project with low predicted noise levels.

For example; District 22's DIP indicates that a capacity expansion project on I-999 will have a future noise level of 73 dB. The DIP for District 77 shows that a project in which the alignment of STH 666 is shifted will only raise future decibel levels to 59 dB. District 22 trades 10,000 ADT to District 77 and gets 7 dB credits in return. The new noise level for each project is now 66 dB and both projects fall within the mandated NAC.

Another program RemDOT chose to implement through the MIP is the Muffler Abatement Inspection Maintenance (MAIM) program. All passenger vehicles in the State of Remel must pass a yearly inspection to ensure decibel emissions from exhaust systems do not exceed 75 dB at 17 meters.

Because of strong lobbying by the trucking industry, trucks exceeding a gross-vehicle weight of 2,500 kg are exempt from this program. People who own cars failing the inspection can take part in a "Clunker for Credit" program which allows the owner to trade-in their old muffler for a new muffler "at cost".

Several exhaust system suppliers in the State of Remel have joined in RemDOT's effort to become the "Noise Abatement State of the Country". Using a newly formed Cooperative Applied Research Yield (CARY) Grant, twelve tailpipe manufacturers will compete to be the first to supply RemDOT with a Zero Decibel Emission tailpipe.

Several companies are currently analyzing solar-powered tailpipes, and initial tests appear to be encouraging.

One manufacturer tested a nuclear powered tailpipe, but problems quickly arose. Anti-nuke demonstrations slowed product testing significantly. The final nail in the coffin came when no junkyard could be found that would

(continued next page)

(Continued from previous page)

accept an old car with a half-life of 30,000 years, and the manufacturer was forced to abandon the concept.

In an effort to meet the initial 15% reduction by 1997, RemDOT will begin an Alternative REMEL Theory Decibel Eliminating Commute Option (ART DECO) program. This concept was crafted to closely follow the Decibel Alternative Digression Analysis (DADA) rating system.

Under this program, employers with 100 workers or more are required to determine which employees have "noisier" autos. Those employees will be allowed to use their auto, but will be forced to use alternative routes to work which have fewer noise sensitive receptors located along the roadway. If an employer fails to comply with this program, RemDOT will expand the access road serving the employer's property into a 6-lane expressway and re-route all area traffic onto this new facility.

Final approval of this innovative mitigation program brings RemDOT one step closer to completing its mandated written noise policy. There is no patent pending on this program, so feel free to incorporate all or part in your written policy. All we ask is that you send us a large monetary gift to show your appreciation for our hard work.

I hope this article has been informative and brightened your day. If you have not figured out the purpose of my article yet, please call the Humor Impaired Hotline at (555) THE-JOKE: Have I got some excellent oceanside property in Arizona to sell you!

(Writer's Note: Any similarities between the previously discussed noise mitigation program and another State Highway Agency's noise mitigation program, living or dead, is purely coincidental. Names were changed to protect the career of the innocent. The writer also refuses to observe or acknowledge any copyright applicable to the Figure used in the article. However, the writer is willing to buy the originator of Remelis Decibelis a drink at the A1F04 committee meeting in Chicago this summer). ■

(Editor's Note: I want it clearly understood that this was none of my doing. I did not, repeat did not, write this piece. I am aware of the identity of the author, but was threatened with bodily harm if I revealed it. If any of you take umbrage with this piece, I suggest that you track him down at the A1F04 meeting (where he has already disclosed he will be in attendance) and have your way with him. I wash my hands).

Larson•Davis Announces New Internet Home Page

Provo,UTAH - Larson•Davis Incorporated (Nasdaq Symbol "LDII") today announced the release of their "Superior Sound and Vibration Instrumentation" home page at http://www.lardav.com.

Larson•Davis' initial entry to the Internet includes full text and graphics for its product specification sheets; a calendar of upcoming shows featuring Larson•Davis booths; an overview to the Larson•Davis service and support policy; an e-mail link to the Larson•Davis Marketing Department for additional product and pricing information; and a comprehensive international directory of Larson•Davis sales representatives including phone and fax numbers, e-mail addresses and related links.

"While the current information establishes a strong presence on the Internet," stated the Larson•Davis Web designer Bruce Kolste, "in the near future we will be stretching the tremendous potential of the Internet to improve access to vital information, provide interactive product introductions, and give answers to frequently asked questions (FAQs) for enhanced customer support." In keeping with the Larson•Davis policy to remain at the industry forefront in terms of client satisfaction, Kolste continued, "We encourage all our clients - including both current and potential customers - to visit our Web site. Let us know the features you'd like to see to help you make more informed decisions."

For more information contact RON GUYMON at (801) 375-0177 ext. 168.

Quiet Components Vendors on WWW

Over the last 20 years RH Lyon Corp has helped appliance manufacturers define, design and build quiet appliances. During this period, we have not found a central resource to help manufacturers select quiet or low-vibration components such as motors, fans, compressors and actuators.

Therefore we are implementing a Quiet Components Resource program that will receive and categorize, but not rate, component information from suppliers. The names of suppliers and their components will be listed on a World Wide Web home page for all to access.

Suppliers should send their product information along with the appropriate sound and/or vibration ratings to:

Quiet Components Resource
RH Lyon Corp
691 Concord Ave
Cambridge MA 02138

For further information contact
Richard Cann at 617-864-7260.

Noise Wall Materials Comparison Matrix — Updated

By David R. Freudenrich
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Maguire Group Inc.
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Pittsburgh, PA 15219-2903

I have updated the original matrix included in an earlier issue of The Wall Journal comparing various noise wall materials to include new noise products which have come on the market as well as include some of those that I had missed earlier. Since the formulations for the noise wall materials change constantly, I have also included those materials which I had previously included in my analyses. The composition of some noise wall materials have been recently modified resulting in differences in stated NRC values.

Due to the complexity of selecting a suitable noise wall material for a specific project, additional information has been

Manufacturer	Contact Person	Phone No	Trade Name	Material Type	Wall Type
CARSONITE INTL	Paul Schubring	916 725-1373	SBS Sound Barrier System	Composite Shell, Recycled Tires Inside	Reflective
Concrete Placement Systems	Dan McGhee	703 222-7054	DuBrook Sound Wall	Recycled Rubber, Lightweight Stone Insulation Bonded with Cement	Absorptive
COR TEC COMPANY	Pat Lanigan	708 596-5200	SOUND OFF	Fiberglass Reinforced Panel Laminate, Polyester Inside	Reflective
CSI	Wendi Bucher	512 327-8481	SOUNDTRAP	Open Cellular, Free-Draining Cementitious Material	Absorptive
CYRO INDUSTRIES	Cathy Shashock	203 795-6081	ACRYLITE 237	Acrylic Sheet	Reflective
DURISOL International	Hans Rerup	905 521-0999	DURISOL	Concrete Composite Panels Wood Fibers and Portland Cement	Absorptive
Empire Acoustical	Ron Moulder	419 522-0800	Silent Screen	24-ga. Painted Galvanized Steel or Alum. Mineral Wool Inside	Absorptive
Empire Acoustical	Ron Moulder	419 522-0800	Angle Lock	24-ga. Painted Galv. Steel or Alum. Skin	Reflective
Faddis Concrete Products	John Morris Scott Diehm	800 777-7973	FENCE-CRETE	Reinforced Concrete	Reflective
W. R. Grace	John Sorenson	617 498-4316	Sonotex 35	Portland Cement/Polystyrene Matrix Sprayed onto Structural Wall Material	Absorptive
Hoover Treated Wood Products	Glenn Wilson	800 832-9663	PLYWALL	Wood Exterior, Insulation Inside	Reflective
Industrial Acoustics Company	Gary Figallo Richard Roth	718 931-8000	NOISHIELD	Steel or Aluminum Skin Insulation Inside	Absorptive
Industrial Acoustics Company	Gary Figallo Richard Roth	718 931-8000	SOUNDCORE	Wood Fiber Concrete	Absorptive
Pickett Wall Systems Inc	William Pickett	305 927-1529	MonoWall	Precast Concrete Panels with Integral Precast Concrete Posts	Reflective
PPA Industries	George Kruse	800 366-6700	Landscaper	Acoustic Monocote Z-146, Structural Steel Reinforced, Foam-Filled Wire Panels	Absorptive
Proudfoot Company, Inc.	Jim Loseth	800 445-0034	Sound Blox	Concrete Block with Tuned Internal Baffle Chamber	Absorptive
Quilite International	Rod Kotter	310 641-7701	Quilite	Polycarbonate with PVC or Polycarbonate Bezel and Steel Frame	Absorptive Reflective
Sound Fighter Systems	Guy Legendre	318 861-664(	LSE 1000/2000	Slotted Polyethylene Element Mineral Wool, Gypsum Board	Absorptive
SOUNDZERO	Mark Murphy	800 321-6275	SOUNDZERO	Concrete Shell, Insulation Inside	Reflective
SOUNDZERO	Mark Murphy	800 321-6275	SOUNDZERO NR	Recycled Tires with Polymer Binder Affixed to Precast Panel or Cemented to Steel Core	Absorptive
The Reinforced Earth Company	Pete Anderson	617 938-8774	FANWALL	Free-Standing Precast Concrete	Reflective
Timber Holdings Ltd	Brian Lotz	414 445-8989	Timbatech Noise Barrier	Wood Exterior with Mineral Wool Absorber Inside	Absorptive Reflective

added indicating specific ASTM tests which were used to evaluate each material. The ASTM testing data was provided by the noise wall manufacturers in their product literature and indicates which tests were passed by each material to date.

I have added information pertaining to what ASTM tests each material has passed because I believe my analysis points out a glaring concern — *that a specific set of tests should be developed by ASTM and the Industry to evaluate noise wall material properties and that such testing procedures should be standardized in the United States so that all materials are subject to the same series of tests. These tests would have to be modified to account for the physical properties of the material being analyzed, i.e. the criteria developed for testing absorptive materials should differ from those criteria developed for reflective materials.*

For example, absorptive noise wall materials have different characteristics than reflective materials, i.e. a wood/concrete matrix vs. concrete. Therefore, it is critical that the specific tests that are used to quantify a material's physical properties should address certain issues: freeze-thaw cycling, noise reduction, compressive strength, hardness, absorptivity, fire

(continued next page)

Freeze/Thaw Cycle Resistant	PennDOT Approved	NRC Value	STC Rating	Approx SF Wt	SF Cost Range ($)	Fire Resistance	Graffiti Resistance
Yes	Pending	0.15 - 0.85 Varies w/facing	36	7.5 lbs	15.00 - 17.00	Yes	?
Yes	Not Yet	0.80	42 - 45	75 lbs	6.50 - 7.50	Yes	Yes - Ribbed
Yes	No	—	32 - 34 1/2" - 3/4" thick	4.5 - 5.0 lbs	4.00 - 4.15	Class B	Yes
Yes	Yes	0.80 - 1.0	51/40	8.0 lbs - 3" thick	8.50 - 18.00	Yes	Some - Using Fosroc Sacrificial Coating
Yes	Not Yet	—	32 - 34 1/2" - 3/4" thick	3.0 - 4.6 lbs 1/2" - 3/4" thick	8.10 - 11.00	Some	Yes
Yes	Yes	0.75 - 0.85	32	47 lbs	6.00 - 8.00	Yes	Can be removed with sacrificial coating
Yes	Not Yet	1.05	35	6.3 lbs	8.00 - 9.75	Yes	Yes
Yes	Not Yet	—	23	2.2 - 2.6 lbs	5.00 - 6.00	Yes	Yes
Yes	Not Yet	0.50	31	46.25 lbs	3.25	Yes	When Coated
?	No	0.75 - 0.95	36 - 40	11.0 lbs	?	Yes	Rough Surface
Yes	Not Yet	—	38	5.5 lbs	5.50 - 6.50	Somewhat	?
Yes	Not Yet	1.0	31 - 38	5.4-9.8 lbs	8.00 - 10.00	Yes	Yes - Easily removed
Yes	Not Yet	0.75 - 0.85	51	62 lbs	7.50-8.50 Sgl Sided 9.00-10.00 Dbl Sided	Yes	Can be removed with sacrificial coating
Yes	Not Yet	—	40	100 lbs	6.00 - 8.00	Yes	When Coated
Yes	?	0.95	36	25.0 lbs	?	Yes	Yes
Yes	Not Yet	0.65 8" block	53 8" block	4.97 - 10.65 lbs	8.00 - 9.00	Yes	Yes - Ribbed Surface with Coatings
Yes Yes	No	0.64	25	6.0 lbs	?	Yes	Yes
Yes	No	1.0	31	9.9 lbs	6.50 - 8.50	Somewhat	Yes
Yes	Yes	—	33	8-14 lbs	17.00 - 30.00	Yes	When Coated
Yes	Yes	0.80	—	5.25 lbs	14.00 - 15.00 21.00 - 27.00	Class 1 Will not burn	Somewhat
Yes	Yes	—	30	125 lbs	8.00 - 10.00	Yes	When Coated
Yes	Pending	0.85 - 0.95	32 - 42	10-15 lbs	10.00	Class A	Somewhat

Noise Wall Materials Comparison Matrix — Updated

ASTM Materials Test Methods and Manufacturers' Submitted Test Results

(**Matrix**, *continued from page 11)*

resistance, reflectivity, etc. All of these physical properties are inter-related and therefore affect the overall characteristics of the material. These characteristics in turn affect the material selection process, since selection is usually based on environmental considerations and proposed use. Therefore, the new testing procedures I am recommending should be standardized so that it is easier to make a comparison between "apples and apples." Currently, it is particularly difficult from a design standpoint when choices have to be made between different noise wall materials, especially when different ASTM tests have been performed for each material and in some cases for the same material.

Standardizing on a series of tests would make it easier for

Manufacturer	Trade Name	Wall Type	NRC Test	STC Test	Freeze/Thaw	Weatherability	Compression	IZOD Impact	Modulus of Elasticity
Carsonite Intl.	SBS System	Reflect	Yes				ASTM D 695 60,000 psi		ASTM D 638 1,800,000 psi
Concrete Placemt	DuBrook Wall	Absorp							
COR TEC	SOUND OFF	Reflect		ASTM E 90-87 ASTM 413-87 31			ASTM D 695 500 psi		ASTM D 638-89 108,000 psi
CSI	SOUNDTRAP SOUNDLOCK	Absorp	ASTM C 423-90A 1.0 for 3.5 "	ASTM E 90-90 51	ASTM 666 B/C 300/250 cycles	No change		350 psi	
CYRO Industries	ACRYLITE 237	Reflect		ASTM E 90-70 32 - 34			ASTM D 695 12,900 psi	ASTM D 256 0.4	ASTM D 638 430,000 psi
DURISOL INTL	DURISOL	Absorp	ASTM C 423-84 A 0.95 for 3" 0.75 for 2"	ASTM E 90-75 32	ASTM C 672-84 ASTM C 666-84 300 cycles A or B	ASTM G 23-81 2500 hours			
Empire Acoustical Empire Acoustical	Silent Screen Angle Lock	Absorp Reflect							
Faddis Concrete	FENCE-CRETE	Reflect							
W. R. Grace	Sonotex 36	Absorp							
Hoover Wood	PLYWALL	Reflect							Some
Indust'l Acoustics Indust'l Acoustics	NOISHIELD SOUNDCORE	Absorp Absorp	ASTM C 423-84 A 0.80	ASTM E 90-80 ASTM 413-87 51		ASTM C 666-84 250 cycles			R Value 4 to 8
Pickett Wall	MonoWall	Reflect							
PPA Industries	Landscaper	Absorp							
Proudfoot Co.	Sound Blox	Absorp Reflect	ASTM C 423-90A 0.65 - 0.80 Varies w/Blk width	49 - 60 Varies w/Blk width					
Quilite Intl	QUILITE	Absorp/ Reflect	ASTM C 423 500 MHz = 0.64					ASTM D 638 12-16 ft lb/in	ASTM D 638 345,000 lbs/sq
Sound Fighter	LSE 1000/2000	Absorp							
SOUNDZERO SOUNDZERO	SOUNDZERO SOUNDZERO	Reflect Absorp	ASTM C 423-90A 0.80 min.	ASTM 413-73 33	40 cycles No change	2500 hours No change	10,000 cycles, 10 ton load, no change		
Reinforced Earth	FANWALL	Reflect							
Timber Holdings	Timbatech	Absorp Reflect	ASTM C 423-90A 0.85 - 0.95						Varies with wood used

the designer to select materials suitable for varying environmental conditions, ensuring that the materials tested have met or exceed a given set of requirements imposed by and accepted by the industry. If current tests are adapted, they should be refined so that the one sample blank is subject to a series of standardized tests. This change in testing procedure would replace the current procedure where individual blanks are submitted for each test. This modification to current procedures would ensure that the physical properties of materials are not being modified to just to pass a particular test, whereas the material in its standard physical state and/or configuration would not be able to pass all of the tests nor do as well if that sample were subject to a battery of testing procedures. This recommended change in current testing procedures would also serve to more closely approximate normal environmental conditions.

This analysis represents a continuing project which I will update as new information becomes available and as new materials are developed and existing ones are further enhanced. If you are aware of a material which is not included in this survey, the availability of recent testing data or if the information included herein is inaccurate, please notify me at 412 281-6393 or E-mail at 72411.2673@Compuserve.com. ■

Elongation	Smoke Density	Flame/Smoke	Horizontal Burn Rate	Flash Point	Self Ignition	Density	Specific Gravity	Light Transmission	Chemical Resistance
							ASTM D 638 1.8		
		ASTM E 84-94A Flame = 0 Smoke = 0							
	ASTM D 2843 75		ASTM D 635 0.45				ASTM D 792 1.19		
		ASTM E 84-95 Flame = 4 Smoke = 0							
ASTM D 638 110%	ASTM D 2843 > 75				ASTM D 1925 > 1000° F		ASTM D 672 1.2	ASTM D 1003 89% - 1/8"	ANSI Z 26.1 Passes
	Type II, Class I Passes			650 - 800° F		ASTM C 518 49.84 lbs/cu ft			

The 1996 Florida Noise Barrier Status Report

By Win Lindeman
Environmental Scientist
Florida Department of Transportation, Tallahassee

The purpose of this report is to document the noise abatement efforts that are complete at this time. A special thanks goes to the FDOT District Noise Specialists for keeping me abreast of the many projects going on throughout the state. While additional barriers are planned or about to start construction, the final dimensions and/or costs are unknown and therefore not included in this report

The report contains information on physical dimensions of each barrier; the cost of each barrier and the percentage of the total construction project cost; job number and location; the contractor, existing background levels without the wall and predictions related to future noise levels with and without the wall; construction dates; measured effectiveness (where known); and any general information of value.

To date we have built 63 noise barriers with a total length of approximately 40,790 m (133,849 ft.), or 40.8 km (25.4 miles), at a total cost of approximately $28,546,106. A "typical" FDOT noise barrier is a precast concrete structure about 4 m (13.2 ft.) high, 648 m (2,123 ft.) long, costs $190.26/m^2 ($17.65/ft^2) and averages $4,535,113. The cost per square meter of installed barrier has ranged from $19.68 to $1129.98 ($1.83 to $105.08/ft^2). This and other information can be found in Tables 1-4, the noise barriers statistics, and the text of the full report, which is available upon written request to my office.

For cost projection purposes over the past two years, FDOT has been using a figure of $177.60/m^2 ($16.50/ft^2) installed price, regardless of the material type.

Based on the most recent data, this number appears to be low.

Beginning July 1, 1996, the cost figures to use will be $190.26/m^2 ($17.6S/ft^2).

As additional data becomes available, this number may change. If you find any errors in this material or have any questions related to the interpretation of this report, please contact me at (904)488-2914 or SC 278- 2914. ■

Recap of Data in Table by Material Type

	No. of Barriers	Length(m)	Length(ft)	Total Cost ($)
Precast Concrete	42	33,856	111,016	25,272,419
Cast-in-Place Concrete	11	3,221	10,561	1,977,683
Combination	4	1,839	6,030	608,294
Concrete Block	4	1,374	4,502	587,643
Earthen Berm	1	410	1,345	52,867
Steel	1	90	295	47,200
Totals	63	40,790	133,749	28,546,106

NOTE: The costs shown in the table at right reflect actual costs (or estimates thereof) for most noise barriers. Costs may include all construction costs associated with barrier construction or they may reflect actual bid tabulations for the associated pay items for each project. These costs do not include the actual engineering (design, planning, etc.), right-of-way, or other non-construction costs associated with noise barriers.

Contractor	Year Built	Barrier Materi
State Paving	1991	Precast Concre
State Paving	1991	Precast Concre
State Paving	1991	Precast Concre
State Paving	1991	Precast Concre
State Paving	1991	Precast Concre
State Paving	1994	Precast Concre
State Paving	1994	Precast Concre
State Paving	1994	Precast/Andres V
State Paving	1994	Precast Concre
State Paving	1994	Precast Concre
State Paving	1994	Precast Concre
State Paving	1994	Precast/Andres V
State Paving	1994	Precast Concre
State Paving	1994	Precast/Andres V
State Paving	1994	Precast Concre
Recchi	1995	Precast Concre
Recchi	1995	Precast Concre
Recchi	1995	Combination
Odebrecht	1997	Concrete Bloc
Ranger Co.	1993	Concrete Bloc
Webb	1982	Concrete Bloc
Murphy	1996	Precast Concre
Murphy	1996	Precast Concre
Murphy	1996	Precast Concre
Murphy	1996	Precast Concre
Murphy	1996	Precast Concre
Bergeron	1992	Precast Concre
Bergeron	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Recchi	1992	Precast Concre
Haynes	1995	Cast-in-place Cc
Redland	1994	Cast-in-place Cc
Redland	1994	Cast-in-place Cc
Redland	199S	Cast-in-place Cc
State Paving	1988	Precast FANWA
State Paving	1988	Precast FANWA
State Paving	1989	Precast FANWA
Triple R	1991	Precast FANWA
Capeletti	1989	Precast FANWA
Capeletti	1989	Precast FANWA
Capeletti	1989	Precast FANWA
Capeletti	1989	Precast FANWA
Capeletti	1989	Precast FANWA
Hubbard	1983	Earth Berm
Leware Hill	1979	Cast-in-place Cc
Leware Hill	1979	Cast-in-place Cc
Cone Bros.	1990	Cast-in-place Cc
Cone Bros.	1980	Concrete Bloc
Overstreet	1995	Cast-in-place Cc
Cone Bros.	1980	Cast-in-place Cc
Couch Co.	1984	Precast FANWA
Leware Hill	1977	Cast-in-place Cc
Cone Bros.	1978	Cast-in-place Cc
L & A Cont.	1987	ARMCO Steel
63 NOISE BARRIERS		TOTALS
		AVERAGES

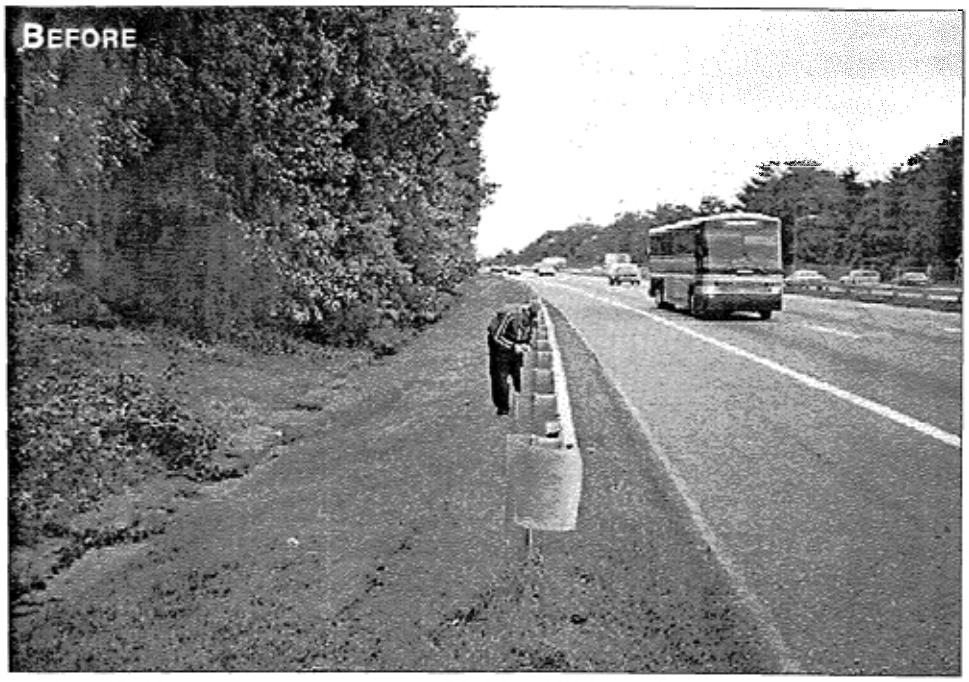
District	Length (m)	Length (ft)	Height (m)	Height (ft)	Area (m^2)	Area (ft^2)	Total Cost ($)	Cost ($) ($m^2$)	Cost ($) ($ft^2$)	Insertion Loss Predicted	Insertion Loss Measured
Four	1049	3440	4.73	15.5	4945	53173	1,035,273	209.34	19.47	7	10
Four	1472	4825	4.73	15.5	7009	75365	1,467,357	209.34	19.47	9	11
Four	644	2110	4.88	16	3184	34236	666,575	209.34	19.47	6	7
Four	641	2103	3.97	13	2616	28126	547,613	209.34	19.47	9	9
Four	165	540	3.97	13	514	5531	107,689	209.34	19.47	9	10
Four	162	530	5.34	17.5	839	9020	133,500	159.14	14.80	8	8
Four	1525	5000	5.49	18	8480	91180	1,349,500	159.14	14.80	9	8
Four	999	3274	2.44	8	2494	26810	333,912	133.87	12.45	7	7
Four	125	410	6.41	21	820	8820	109.814	133.87	12.45	7	7
Four	1017	3335	5.49	18	5555	59735	884,000	159.14	14.80	8	7
Four	491	1610	5.19	17	2643	28420	420,600	159.14	14.80	7	7
Four	199	653	2.44	8	362	3889	51,900	143.49	14.11	7	7
Four	1292	4235	5.03	16.5	6468	69545	1,029,000	159.14	14.80	7	6
Four	163	533	2.44	8	397	4264	47,970	120.95	11.25	7	6
Four	345	1130	6.10	20	2078	22340	330,632	159.14	14.80	8	7
Four	639	2095	5.19	17	2992	32176	618,423	206.88	19.22	9	10
Four	2641	8660	3.66	12	6384	68644	1,353,144	206.88	19.22	8	8
Four	479	1570	2.44	8	2754	12560	174,512	149.51	13 89	6	6
Four	273	893	3.66	12	999	10716	175,874	167.10	15.54	7	NA
Four	336	1102	3.05	10	1025	11020	135,421	132.40	12.30	7	4
Four	490	1606	3.66	12	1793	19272	263,148	146.93	13.65	9	8
Four	1113	3650	6.70	22	7454	80300	1,059,157	142.00	13.19	6	7
Four	625	2050	5.50	18	3436	36900	486,711	142.00	13.19	6	7
Four	671	2200	6.10	20	4091	44000	580,360	142.00	13.19	8	9
Four	756	2480	6.10	20	4611	49600	654,224	142.00	13.19	9	9
Four	731	2398	6.10	20	4459	47960	632,592	142.00	13.19	5	6
Four	220	720	4.27	14	938	10080	232,949	248.76	23.11	9	NA
Four	572	1875	3.36	11	1922	20625	374,174	248.76	23.11	7	NA
Four	839	2750	4.42	14.5	3704	39831	581,533	157.15	14.60	6	11
Four	333	1090	4.58	15	1563	16804	245,338	157.15	14.60	5	6
Four	1588	5205	4.73	15.5	7507	80720	1,178,512	157.15	14.60	6	8
Four	1342	4400	4.88	16	6618	71164	1,038,994	157.15	14.60	7	11
Four	589	1930	4.27	14	2477	26632	388,827	157.15	14.60	9	9
Four	785	2575	4.88	16	3849	41384	604,206	157.15	14.60	6	7
Four	351	1150	4.88	16	1649	17726	258,800	157.15	14.60	8	10
Four	1261	4133	4.88	16	6167	66314	968,184	157.15	14.60	8	10
Four	863	2830	5.49	18	4579	49236	718,846	157.15	14.60	6	6
Four	464	1520	3.97	13	1797	19319	282,057	157.15	14.60	8	5
Four	1132	3710	5.03	16.5	5857	62981	919,523	157.15	14.60	9	8
Five	66	216	2.75	9	175	1944	170,642	975.65	87.88	6	NA
Six	70	230	2.59	8.5	182	1955	49,462	272.43	25.30	9	NA
Six	116	380	2.59	8.5	300	3230	81,720	272.43	25.30	9	NA
Six	196	643	2.59	8.5	508	5466	574,368	1129.98	105.08	9	NA
Six	1727	5661	4.58	15	7907	84912	1,177,663	134.55	12.50	9	8.9
Six	1220	4000	5.03	16.5	6137	66000	912,450	134.55	12.50	6	6
Six	585	1917	4.06	13.3	2374	25496	327,600	134.55	12.50	7	12.6
Six	1197	3925	3.66	12	4381	47100	485,130	110.87	10.30	8.4	NA
Six	875	2870	3.66	12	3201	34440	354,732	110.87	10.30	8.4	NA
Six	868	2849	3.66	12	3178	34188	352,136	110.87	10.30	8.4	NA
Six	153	502	3.66	12	560	6024	62,047	110.87	10.30	8.4	NA
Six	184	602	3.66	12	672	7224	74,407	110.87	10.30	8.4	NA
Six	205	671	3.66	12	749	8052	82,936	110.87	10.30	8.4	NA
Seven	410	1345	2.44	8	0	0	52,867	0.00	0.00	8	NA
Seven	269	882	1.83	6	492	5292	14,116	28.71	2.67	11.2	NA
Seven	163	535	2.30	7.5	374	4013	57,750	154.73	14.39	7.3	NA
Seven	455	1492	2.44	8	1110	11936	163,018	146.89	13.66	6	NA
Seven	275	901	2.44	8	671	7208	13,2Q0	19.68	1.83	6	NA
Seven	381	1250	2.44	8	930	10000	291,603	313.67	29.16	6.1	NA
Seven	589	1930	2.44	8	1436	15440	223,878	161.94	15.08	5	NA
Seven	406	1331	2.44	8	990	10644	185,206	187.10	17.40	6.1	7.5
Seven	373	1223	2.44	8	910	9784	146,842	215.16	20.01	6	NA
Seven	543	1780	3.05	10	1656	17800	204,284	154.30	14.35	5.3	11
Seven	90	235	2.44	8	220	2360	47,200	215.05	20.00	4.2	7.2
	40,790	**133,749**	**253.3**	**830.3**	**176,139**	**1,876,926**	**28,546,106**	**11,796.17**	**1,094.39**	**463.6**	
	647.5	**2,123**	**4.02**	**13.2**	**2,841**	**30,273**	**453,113**	**130.26**	**17.65**	**7.4**	**8**

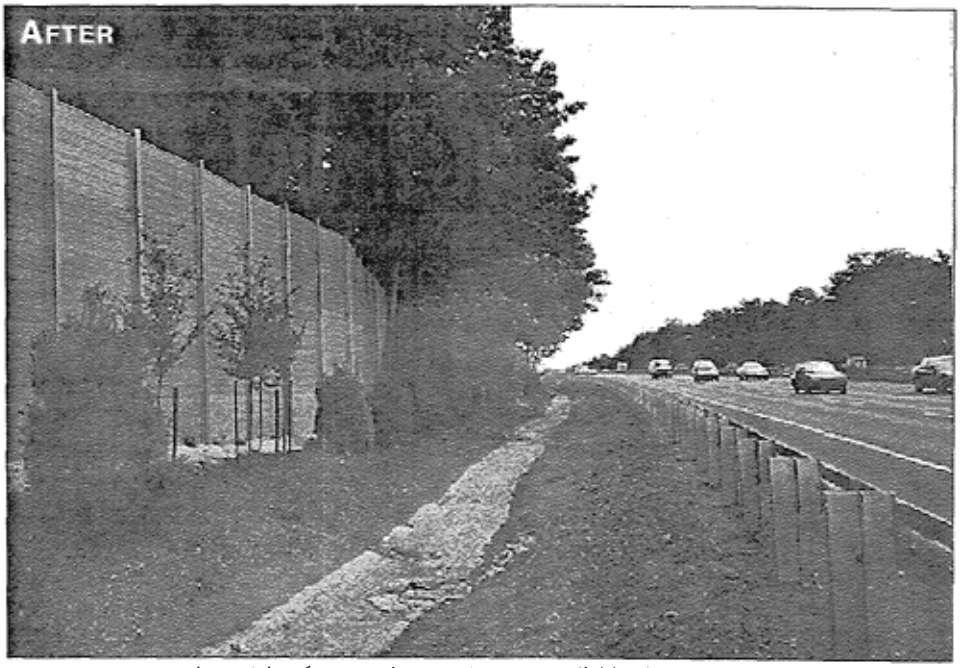
Massachusetts Turnpike Authority Completes First Noise Barrier Installation

By John K. Hendrickson, P.E.

On a recent drive by the Massachusetts Turnpike Authority's (MassPike's) recently completed noise barrier in Natick, Mass. with my family, I thought this would be a great opportunity to show them a project that I had worked on. As we approached the site, I explained the benefits of a noise barrier and what to look for. Traveling along the project, I first asked my four year old what she thought of the project: "You mean that big fence?" Next I asked my two year old: "Huh?" He was drifting off to a mid-day snooze. I had one more chance. I looked at my wife for her opinion. She just rolled her eyes to the sky with that all too familiar, why-the-heck-did-I-marry-this-guy? look. Oh, well.

The positive side of this story as well as reactions received by both the Natick residents and MassPike patrons is that we accomplished what is the goal of every highway noise barrier project: to mitigate the impacts of the construction of a highway adjacent to a residential neighborhood while avoiding the "Great Wall of China" look to the traveling public. (How many times have you heard that phrase at a public meeting?) This is the first project in New England where existing right-of-way was available and the majority of the noise barrier could meander through the existing topography and vegetation to minimize the visual impacts to both abutters and MassPike patrons. (See before and after photo.)





Where right-of-way and vegetation was available, the noise barrier meandered through the existing landscape.

To avoid a "clear cut" construction area along the barrier, various construction methods, foundation types, equipment for both the construction and subsurface exploration program, and alignments were studied. It was determined that a ten foot wide corridor would be needed for the construction equipment but, with the watchful eye of a full time resident engineer, trees would be maintained within two feet of the noise barrier (see photo). Trees to remain were flagged while trees to be removed were marked. Limbs that crossed the plane of the noise barrier were removed but those above the barrier were maintained.

At one location where there was an open field, an earth berm with landscaping was provided to reduce the height of the barrier. Also, at the beginning of the project, a retaining wall was constructed to provide a landscaping

area and minimize the visual impact of the barrier.

The HOOVER Plywall Post and Panel system with Parallam Posts was selected for this site. The length of the project was about 2,000 feet with an average height of 16 feet. The total construction cost was about $700,000.

Another major environmental mitigation measure on this project that is most likely not noticeable to both the abuttors and traveling public is the replacement of a bituminous ditch with a grass swale to improve the water quality at the channel outlet. The majority of this project is in a highway cut section which necessitates a drainage channel to carry stormwater away from the highway. Based on a hydraulic analysis of the highway drainage system, it was determined that the bituminous concrete channel could be replaced with a grass swale. This improvement both filters out possible pollutants from the highway and reduces the velocity of stormwater runoff thereby reducing the possible erosion at the channel outlet. With the constant infringement on our waterways and watersheds, a relatively small addition to this project will hopefully go a long way in improving the water quality in this area.

With the watchful eye of a full-time resident engineer, trees adjacent to the noise barrier were saved as well as the overhead canopy

The detail to aesthetics and environment on this project was a major reason

(continued on page 18)

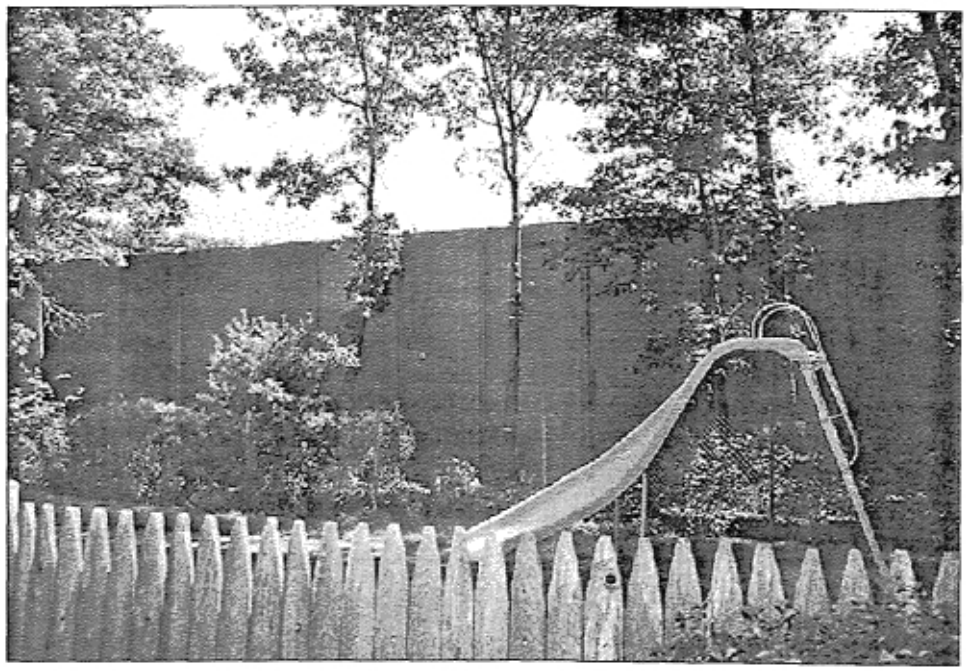
*(**MassPike**, continued from page 17)*

why the project received an honorable mention award at the American Consulting Engineers Council of New England's 1996 Engineering Excellence Awards Competition.

Okay, one more noise barrier story. Chris Baydek and his HMMH co-workers were out taking noise measurement readings to determine the acoustical effectiveness of the noise barrier. Several residents stopped by and were asked their opinion of the project. One gentlemen was asked what he thought of the barrier and the conversation went something like this:

Question: "What do you think of the noise barrier?"
Answer: What?
Question: What do you think of the noise barrier (a little louder)?
Answer: What?
Question: What do you think of the noise barrier (at about a 70 db level)?
Answer: What?
Finally the question was written on a piece of paper and handed to the gentlemen.

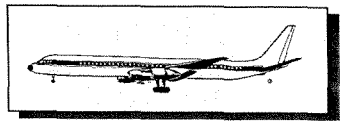
Response: "Doesn't do a thing for me." ■



"I don't have words to describe just how great it is. You can hear the birds sing again," this resident reports.

(For further information, contact the author:
John K. Hendrickson, P.E.
Fay, Spofford & Thorndike, Inc.
5 Burlington Woods
Burlington, MA 01803
Tel. 617 221-1000, Fax 617 229-1115)

Subcommittee Report, Spring 1996
By Eric Stusnick, Chairman, Aircraft Noise Subcommittee
TRB Committee A1F04, Transportation Related Noise and Vibration



In 1995 the subcommittee membership grew to 83. New members and their affiliations are:

David Coate, Acentech, Inc., Cambridge, MA
David Dubbink, David Dubbink Associates, Los Osos, CA
Lewis Goodfriend, Lewis S. Goodfriend & Associates, Morristown, NJ
Ron Moulder, Empire Acoustical Systems, Mansfield, OH
Robert Schmitt, Industrial Acoustics Corp., Bronx, NY
Eric Wood, Acentech, Inc., Cambridge, MA

Eight members of the subcommittee attended the summer A1F04 meeting in Boston, MA in July. At that meeting, three papers on aircraft noise were presented:

- Applications of Boston-Logan's Noise Monitoring System by Nancy S. Timmerman, Massport
- Controlling Heliport Noise in Suburban Environments by James P. Cowan and David W. Fischer, McCormick, Taylor & Associates, Inc.
- The Effect on Human Annoyance of Military Flight Training Operations by Eric Stusnick, Wyle Laboratories

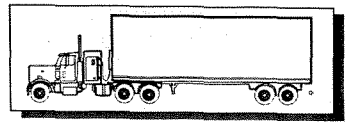
Nancy Timmerman also hosted a tour of Massport's Noise Monitoring System at Logan Airport.

At this year's Annual Meeting, the Blizzard of '96 pretty much closed down the Aircraft Noise Subcommittee meeting on January 8, which was to have featured a demonstration of the FAA's Integrated Noise Model, Version 5.0 by Dr. Jake A. Plante and Mr. John M. Gulding and a discussion and presentation of the FAA's new video entitled "Aircraft Noise: How We Measure It and Assess Its Impact" by Mr. William W. Albee and Mr. Robert B. Hixson.

Unfortunately, the subcommittee chairman and all the speakers were snowed in by the storm. My hat is off to the half dozen or so folks who made the meeting and my thanks to Domenick Billera for chairing it. One paper on aircraft noise, entitled Resident's Perceptions and Field Measurements of Helicopter Noise, was presented at the Paper Session on January 10 by Panos D. Prevedourous and B. Prasad.

I would like to thank all the members and friends of the subcommittee who contributed to this year's endeavors and ask for your continued support in the year ahead. ■

Subcommittee Report, Spring 1996
By Ken Polcak, Chairman, Highway Noise Subcommittee
TRB Committee A1F04, Transportation Related Noise and Vibration



As most of the members are aware, the Annual Meeting of TRB, held back in January, fell victim to mother nature's wrath, the likes of which have not been seen in this area in 50 years. The effects of the blizzard of 1996 covered the eastern seaboard, and kept all but the most adventurous travelers out of Washington D.C. until at least Wednesday of the week (this member included). Those not arriving in Washington by Saturday, (with one notable exception) were simply "frozen out". The notable exception was our intrepid A1F0404 Chairman, Domenick Billera of New Jersey DOT, who would not be denied, and who found himself filling many shoes and wearing many hats.

This past January was the last annual meeting under the able leadership of Domenick Billera, who has served as chairman for the last 6 years. During his tenure, the Committee has continued to grow and maintain its standing as one of the most active and effective in TRB. We all owe a grateful thank you to Domenick for his enthusiasm, leadership, and guidance. We look forward also to his continued participation and support as a distinguished Chairman Emeritus. His successor is Gregg Fleming of the US DOT Volpe Center, who brings a broad range of knowledge and experience in all the modal fields of transportation noise.

Unfortunately, the 1996 Annual meeting agendas for both the Committees and Subcommittees of A1F04 were perhaps the most ambitious and important in a decade. The Highway Noise Subcommittee was to feature a total of four presentations: one on a Wisconsin DOT tire/pavement noise study, and was to host the public unveiling and demonstration of the new highway traffic noise prediction model TNM (Traffic Noise Model), being developed under the direction of the Volpe Center Acoustics Facility of the US DOT in Cambridge, Massachusetts. This program, which will ultimately replace STAMINA/OPTIMA, features a new national database of vehicle emission levels, expanded graphic capabilities, CADD compatibility, and expanded acoustical calculations. As of this writing the public release of TNM is slated for early June, and will be featured prominently at the upcoming Summer Meeting of A1F0404 to be held in Chicago in July.

Other research activities related to highway noise that are ongoing are as follows:

The Civil Engineering Research Foundation research affiliate of ASCE is sponsoring an evaluation of a new highway noise barrier product through its Highway Innovative
Technology Evaluation Center (HITEC) with the aid of a panel of technical experts, many of which are members or friends of A1F04. The goal of the HITEC program is to expedite the introduction of technological advances and new products to the highway
community. Through an impartial process, an evaluation plan and criteria are established, appropriate and relevant testing are performed, and a final report issued. The project is approaching the stage involving actual field installation and testing of the new noise barrier material.

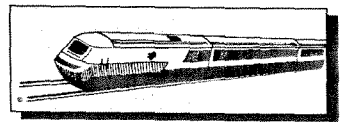
Under the guidance of FHWA in Washington, work is nearing completion by a Technical Working Group (TWG) on Portland Cement Concrete Pavement Surface Texturing and Noise. The focus was to establish the effects of various surface texturing techniques on tire noise generation, skid resistance/friction and durability/wear. Several possible research needs have been identified as part of the TWG findings. A draft report has been prepared and is under review.

ASTM Committee E-90 has established a task force to evaluate the need for a national standard for tire/pavement noise measurement (similar to the nearly completed European effort under ISO).

NCHRP is conducting a synthesis on the "Relationship Between Pavement Surface Texture and Highway Traffic Noise". The synthesis should be completed later this year.

The Highway Noise Subcommittee is still soliciting research needs for the upcoming environmental research needs conference to be held in Washington, D.C. Anyone with an identified research need is encouraged to submit it to the subcommittee chairman as soon as possible. ■

Subcommittee Report, Spring 1996
By James Nelson, Chairman, Rail/MassTransit Noise Subcommittee
TRB Committee A1F04, Transportation Related Noise and Vibration



The 1996 Rail/Mass Transit Subcommittee Meeting was attended by 4 people, the low turnout due to the record blizzard of 1996. The meeting was chaired by Domenick Billera. Items that were to be covered in the meeting included research statements for 1996, papers for 1997 annual meeting, and the current state of TRB research in rail noise and vibration.

Research currently underway: TCRP Project C3 is almost complete. The project involves preparing a manual for selecting wheel/rail noise control treatments, supported by a software package running under Windows 3.1. Performance and cost data are included, as well as a summary of wheel/rail noise theory and methods of control. The software package includes digitized audio samples of wheel squeal and rolling noise, and calculation procedures for estimating sound barrier performance, wayside noise levels, and economic analyses. The project includes field evaluations of dry-stick lubrication and a test of rail vibration dampers for wheel squeal control.

TCRP Project D 1, Rail Corrugation: The AAR is conducting a study of rail corrugation and methods for control as part of this project. The work includes theoretical and experimental evaluation of wheel and rail interaction leading to corrugation.

TCRP Project D6, Trackwork Design: A manual for designing trackwork is being prepared. Of significance to noise and vibration is the design of resilient direct fixation track, floating slab track, ballast mat track, rail straightness, and corrugation control.

Research statements: Research statements are being solicited. Those research statements that have not received funding can be re-submitted. Areas of particular interest include smart damping treatments for wheels, dry-stick lubricants, rail inlays, rail vibration absorbers, resilient wheel treads, vibration propagation from subways, and other issues that may affect noise and vibration.

Preparers of research statements may wish to make themselves aware of past relevant research by contacting Dr. James T. Nelson at Wilson, Ihrig & Associates, Inc. (Tel. 510-658-6719/Fax. 510-652-4441).

Papers: As always, papers are needed for the annual meeting. A particularly interesting theme is the application of noise and vibration control design criteria. Case studies of environmental noise and vibration analyses of rail transit system alignments appear to be particularly interesting in light of the recently published FTA guidance manual. Discussion of noise and vibration mitigation strategies that are actually adopted versus those proposed as part of environmental analyses would be welcome.

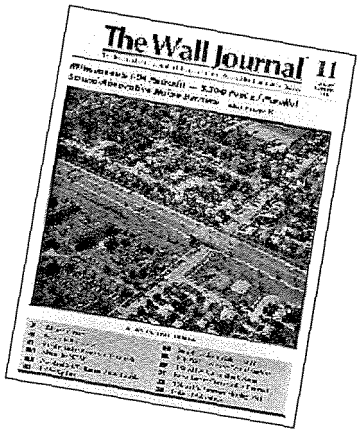
Other matters: The FTA is planning a course concerning application of the FTA guidance manual to rail transit noise and vibration impact assessment, to be administered by Rutgers University.

APTA is holding a meeting in Portland in mid April, 1996. ■

The Walrus says: *"You may think I'm asleep. I'm not. I'm simply resting my brain from absorbing (no pun intended) all that information in the pages of The Wall Journal. And, I've only read two issues so far".*

Some of the good stuff you might want to read again, now and then:

- Noise Barrier Construction Forecast
- Summaries of Professional Papers
- Noise Barrier Project Reports
- Fundamentals of Sound
- New Product Press Releases
- TRB A1F04 Committee Meetings
- State DOT Noise Barrier Programs
- FHWA Noise Model Updates
- Noise Abatement in Other Countries
- Airport Noise Control
- Construction Trends in Noise Barriers
- Product Approval Process
- FHWA History of Barrier Construction
- Materials Test Standards
- Rail Transit Noise Control
- And a Bunch More



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