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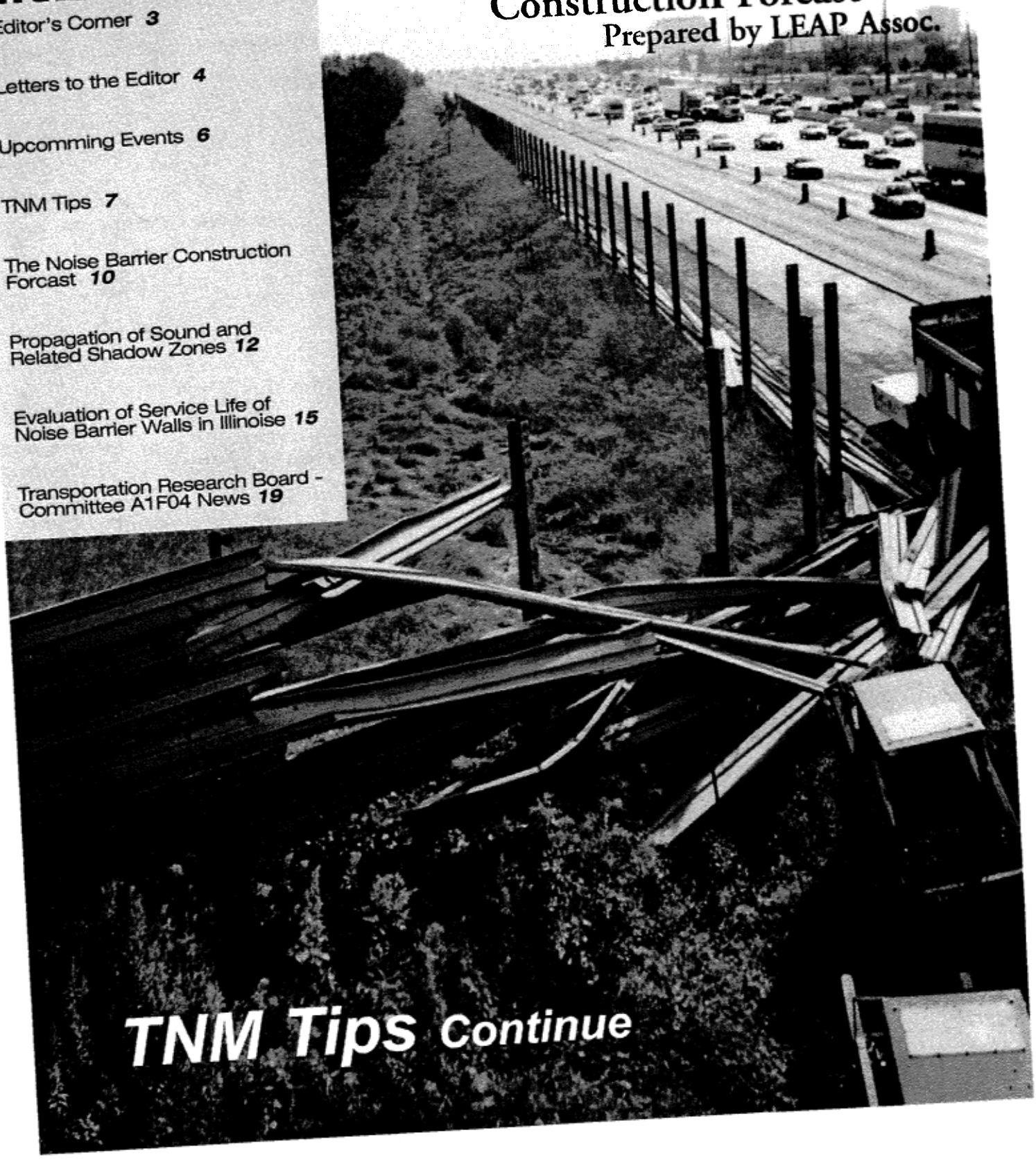
41
Nov/Dec 2000

The Wall Journal™

THE INTERNATIONAL JOURNAL OF TRANSPORTATION RELATED ENVIRONMENTAL ISSUES

Special section on Noise Barrier Construction Forcast Prepared by LEAP Assoc.

in this issue:



TNM Tips Continue

The Wall Journal
Publication Philosophy and Policy

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

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 Wall Journal to continue, it is imperative that you 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 Nov/Dec 2000 issue is being mailed to more than 1900 readers, and we are confident our readership will expand to 5,000 worldwide, with your help.

The Wall Journal is being distributed free-of-charge to federal, state/provincial 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 supported by charity or government agencies, 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 □

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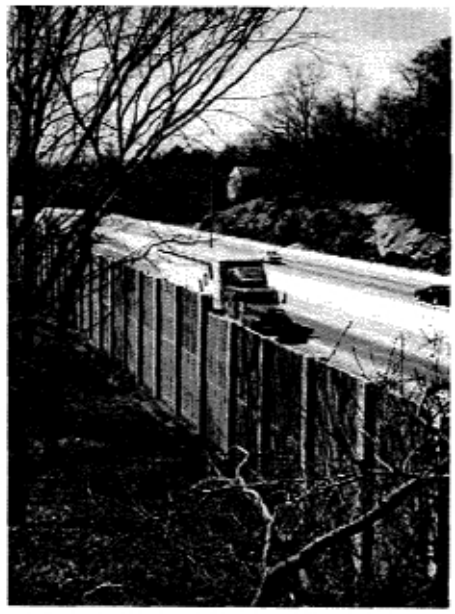

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Circulation is made to government agencies, institutions, consultants, contractors vendors and others with an interest in transporation-related environmental issues. Readership is primarily in the United States and Canada, with growing interest in Europe, Asia and the Pacific Rim.

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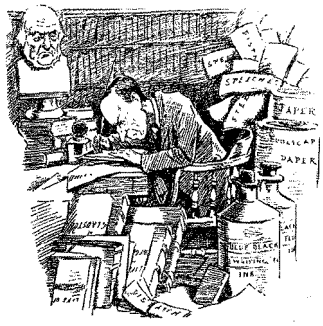
Subscription and advertising inforamtion are shown on Page 18.

The Editor's Corner by Soren Pedersen



A terrible thing happened on the way to the printers. In the rush to get my first issue out (issue 40), the files were accidently switched to the non proof-read version. The switch wasn't noticed until all the copies had been mailed.

I'm thinking of running a contest to see who can find the most spelling and gramatical errors.

My deepest apologies to all for the mix-up.

Thank you all for the wonderful letters of support, encouragements and suggestions. I would like to share one of these suggestions, which was to encourage the advertising of noise barrier contracts in

Noise Barrier Contracts Advertised in The Wall Journal ?

The Wall Journal as well as on the website. Is it a good idea? Is it something worth pursuing? Please let me know what you think. Send your thoughts to me at soren@thewalljournal.com.

The website is gradually coming along. I've been able to get rid of most of the "UNDER CONSTRUCTION" signs and should have all pages up-to-date by the time you get this issue. Make sure you visit the site on a regular basis to catch all the new developments. Also, to participate in the Transportation Noise Forum which can be accessed through the "link" page. Make sure you bookmark this page, this is your main source for all web based information on transportation noise, including the link to the FHWA Traffic Noise Barrier Design Handbook.

I always need articles highlighting projects with interesting features, or unusual problems, unique solutions to these or any other current projects. These articles can be submitted by anyone; either government agencies (DOT's, etc.), researchers, consultants, contractors, manufacturers or anyone else who may have a particular interest in a project.

Items for submission should be submitted in MS Word® or WordPerfect® format, include photos or graphics when possible (author photos welcomed and encouraged). Any graphics should be in separate files.

For further information, please contact us at *articles@thewalljournal.com* □

Due to unexpected delays, we were unable to get this issue in the mail on time. We expect to get the publishing schedule back on track over the next 2 issues.

Cover Photograph

(taken Summer, 2000)

Site: Highway 401 and Kipling Avenue., South West quadrant. Toronto, Ontario, Canada.

The removal of this steel noise barrier marks the beginning of a new era for Ontario. It is one of the first to be replaced to make room for the widening of the highway.

Since it's construction 25 years ago, it has been plagued with problems. The panels and steel posts are still in reasonable condition, however the designers of the system did not consider the forces of expansion and contraction of metal during temperature changes. Maintenance crews were constantly on the lookout for loose and/or buckled panels. This design was abandoned by the province after the first year of service.

Thanks El

Dear El,

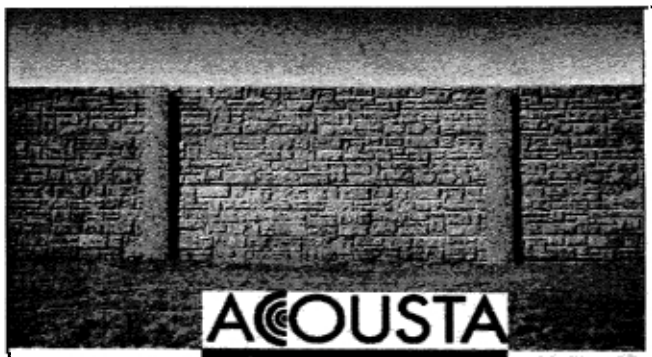
Many times when I read your editorials my mind goes back to the late 1940's and early 1950's when I was a young boy. At that time my father subscribed to a quirky newspaper. At least, it claimed to be a newspaper. I can no longer remember its name, but it was something like The Desert Rat News or the Death Valley Times. The paper was written and published single handed by a retired newspaperman in Twentynine Palms, California. Sound familiar? He was a kindred soul to you.

As I recall, it was a quarterly publication. Obviously, the paper contained no news that would be in a normal paper. Instead, it was composed of silver and gold prospector yarns, ghost town history, philosophical observations, and dozens of jokes, all related in the venue of the desert Southwest. There also were clippings from small town newspapers in this same area that demonstrated the frailties of human nature, usually with editorial comment appended. To a pre-teen lad, the paper was sidesplitting hilarious.

A typical clipping might be headlined " Nude hitch hiker arrested by ranger in Organ Pipe Cactus National Monument Park." (There is such a place.) The story would be told in a few lines. It might even be rational. She was hiking. It was hot. The vernal pool was inviting. A bear ate her clothes. It was the melted brie in tier shorts. The aroma pervaded everything.

The mix of a naked woman, a bear, and prickly cactus offered a veritable feast of material for potential pithy edito-

Continued on page 5



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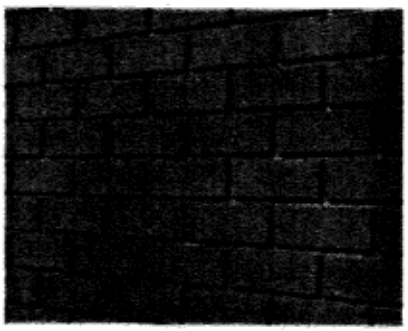

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rial comment, which a poor soul editor running a pub about concrete walls and DB's could only drool over with envy.

What made the publication a bit unusual was that it was printed on a single broad sheet of heavy tan-colored stock, perhaps four feet square. It was delivered folded like a road map with the creases falling between print columns. Text was on both sides but the reverse side was upside down in relation to the front, meaning that you rolled it over from bottom to top rather than left to right. Why? Well, read on, but you'll have to think about it.

while I have forgotten the name of the editor, too, after half a century, I can still distinctly remember the title banner which ran across a few folds at the top of the page. The name of the paper appeared centered, print boxes to either side. In the one on the lef t was written: " The only newspaper in the world you can open and read in the wind." And in the one on the right: " Subscription rates: 50 cents per copy, $1,00 per year, lifetime - $20.00 (sic). No refunds. This offer expires when I do." (Didn't think of that source of revenue, did you?)

Which brings me around to the fact that I owe you some money. My subscription fee for the wall Journal to be precise. I thought you would simply cut me off when my subscription ran out, that you indeed had when I didn't receive anything for months. But Issue 39 served as news that you were still alive, and as a reminder to look at my checkbook. A glance shows I last paid in January 1998.

So the proper remittance is enclosed. Thank you for the interim issues.

Thank you, also, for your efforts in keeping us informed of the latest in the transportation noise field. It has been of great value to me. You have also done wonders for the psyches of transportation noise analysts, who usually work in relative isolation from others in the discipline. Even the other environmental analysts at the workplace don't understand noise. Thus, reading between the lines of the Journal, its good to realize that there are others out there in the world saying X, *%$**&#@! !" TNM program" . It's a little less lonely.

Best wishes in your retirement.

Fred Heider

Dear Mr. Pedersen:

I received your faxed memo July 10 regarding the retirement of El Angrove from the business. I am late in responding, but I did want to express my appreciation for TWJ and the work of Mr. Angrove in putting it out.

I am not an engineer or noise expert, but my work in transportation planning intersects with noise issues frequently. I look for materials which can clearly and simply explain the relationship between traffic (speed, volume, mix), facility design (grades, accel/decel points, elevations), and land use. I also search for good information on the effectiveness and cost of mitigation measures. Residents are demanding sound walls, and we need the right information to help them understand what works, when, and for what price. Often I have used information gleaned from TWJ.

Note: I am still looking for a really good brochure written for citizens. Washington State DOT does have a nice site at http://www.wsdot.wa.gov/regions/northwest/noise/1.html which covers the basics.

While I would have liked to respond to Mr. Angrove's request for articles, I only know enough to read them.

Keep up the good work. I want to remain on your subscription list. My agency is a local government and is the metropolitan planning organization for the Boise, Idaho urbanized area. I would not see a problem in paying a subscription to keep TWJ going, however. It's more than worth the price of $20.

Charles Trainor
Project Manager
Community Planning Association (new agency name)

El Angove

Let me give you my personal thanks for the great service you provided to those of us working in highway noise analysis. The journal has been a great professional forum. Just today I was going through some old issues to pull out some information that isn't available anywhere else. But you took the publication beyond that dry, academic flavor prevalent in many other organizations I am associated with, and gave it a personal flavor. Although I did not have the pleasure of working with you in your earlier positions, I felt like I came to know you through your "editor's columns", and I always looked forward to the next episode of your personal journal.

I hope that as you move into your "real" retirement (without the headaches of computers and deadlines, that you continue to share your wonderful sense of humor and observations on our earthly travels with Soren, and that he shares these tidbits with the reading community you created.

Paul Heishman

Continued on page 6

Letters to the Editor

Soren

Thank you for the update on the Wall Journal. I have one suggestion for discussion in future issues of the Wall Journal: In 1996 all State Highway Agencies were required by FHWA to submit noise policies for the analysis and abatement of highway noise. I am in the process of re-writing our department's noise policy and would like to know how other states' policies are working. There has been trouble with ours when it comes to right-of-way negotiations. Are other states having trouble implementing their policies?

In the future I hope I can submit an article to the Wall Journal on this topic, but I'm am nowhere near ready to do so now.

Good luck with the Journal.

Cora G. Helm
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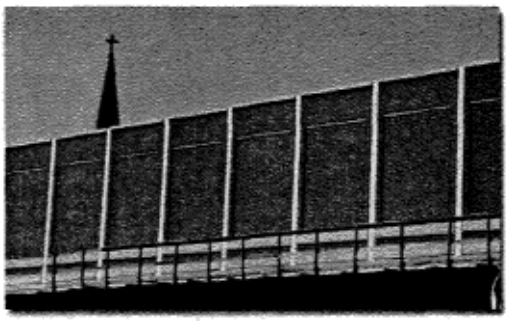

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December 3-5, 2000
NOISE-CON 2000,
Newport Beach, CA, USA. Contact 914 462-4006 or Fax: 914 463-0201. e-mail: hq@ince.org

December 4-8, 2000
140th Meeting of the Acoustical Society of America,
Newport Beach, CA, USA. Contact: 516 576-2360 or Fax: 516 576-2377. e-mail: asa@aip.org

December 12-14, 2000
IUTAM International Symposium on Designing for Quietness,
Bangalore, India. Contact: 91 80 3600411 X 2303 or Fax: 91 80 3600648 e-mail: munjal@mecheng.iisc.ernet.in

January 7-11, 2000
80th Transportation Research Board Annual Meeting,
Washington, D.C. USA. Contact: (202) 334-2934 or Fax: (202) 334-2003

February 4-9, 2001
FHWA TNM 1.1 Training Course
Franklin, Tennessee, USA. Course conducted by Bowlby & Associates, Inc. Contact: 615.771.3006 or Fax: 603.676.2219: e-mail: pbowlby@bowlbyassociates.com

August 28-30, 2001
INTER-NOISE 2001,
The Hague, The Netherlands.
Contact e-mail:
secretary@internoise2001.tudelft.nl

September 2-7, 2001
17th International Congress on Acoustics,
Rome, Italy. Contact: Fax: +39 06 4424 0183;

October 1-3, 2001
Canadian Acoustical Assoc. Meeting
Alliston, Ontario, Canada. Contact (905) 660-2444

October 29-31, 2001
NOISE-CON 01,
Portland, Maine, USA. Contact:Contact: 914 462-4006 or Fax: 914 462-4006.

If you have an event you would like to have listed here, please contact us for details.

by Bill Bowlby, President, Bowlby & Associates, Inc.

First of all, my thanks to Soren Pedersen for continuing the fine tradition and service provided by the Wall Journal. Secondly, my very best wishes to one of the best friends we have all had in this business, El Angove, founder of the Wall Journal.

Heads up! We're importing DXF files.

In part articles, we've tried to give a mix of introductory material for new TNM users and items of interest to more experienced users. By the way, we got a big laugh when, during a TNM short course outing to a ball game, Roger Wayson had the scoreboard display "Welcome TNM Users." People throughout the crowd scratched their heads wondering what new drug rehab program we were in. Maybe it was DXF, the subject of today's article.

Kidding aside, DXF is a CAD file format allowing CAD files to be interchanged from one program to another.

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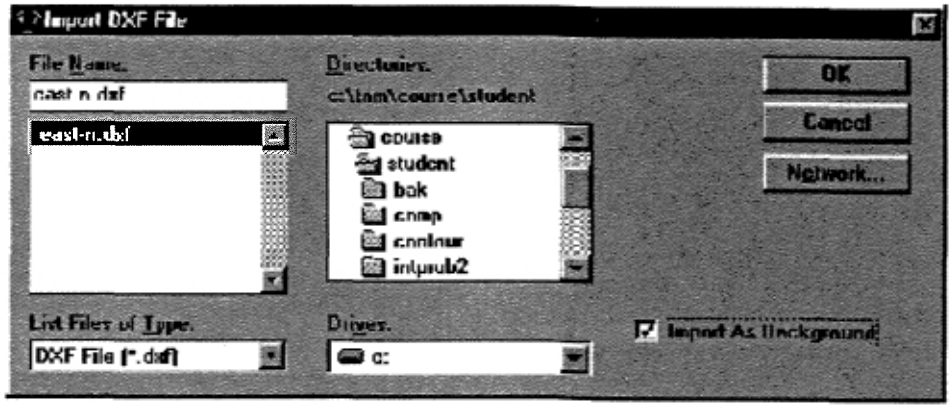

DXF files are created within a CAD program, such as the commonly used AutoCAD and MicroStation, by using that CAD program's DXF-Export function. Internally, TNM has DXF-capable software called TGCAD, Version 5.0, based on the AutoCAD Release 10/11 DXF format.

Through one of the more greatly anticipated features of TNM, you may import a DXF file into TNM and then use it to create your TNM run's objects such as roadways, barriers, and terrain lines. You create this objects by "heads-up digitizing," a fancy way of saying you look at the monitor's screen rather than down at paper plans taped to a digitizing table.

Those of you familiar with CAD should have perked up on the mention of AutoCAD 10/11, as in "Wasn't that used in the last millennium or two?" Indeed, we are well past AutoCAD 10/11 (TNM took a while to be developed), which has caused some problems in recognizing all of the currently available CAD drawing elements. However, the soon-to-be-released version of TNM 1.1 promises to improve things greatly with an upgrade to the internal CAD package.

There are two ways to import a DXF file into TNM. The first way is as a 'Background' display on the screen. In this case, the imported lines have no identity (for example you cannot click on a line to "select" it). The second way is with the DXF drawing elements imported as 'Objects' that you can convert into TNM objects.

TNM imports the coordinate system from the DXF file for both methods. Importing as Objects also allows z-coordinates to be brought into TNM if the DXF file is 3-D. However, the current version of TNM (1.0b) assumes the DXF file is in English units even it is in metric. Thus, DXF metric files will be brought in incorrectly, scaled down by 3.281 (thus,1000 meters becomes 1000 feet or approximately 305 meters).

If your DXF file is in metric, you may have your CAD people to convert it to English before you import it. As an alternative, you could import it as DXF Background, and then correct the problem. First, set your TNM units to Metric (in the Setup, General dialog box). Then register the display on the monitor screen using the Register DXF Background by Typed Coordinates method. Do not try this alternative method with the Import as Objects command; it will lock up your PC.

These problems will be fixed in TNM 1.1, allowing the importing of

Continued on page 8

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metric DXF files and eliminating the need to use the Register function.

To import a DXF file, first create a new run with the File/New menu item. Then, as with any run, use the Setup, Run Identification dialog box. Also, if the DXF file is in English units, set the TNM units to English through the Setup/General dialog box. (At the risk of total confusion, you may import an English DXF file and convert the units to metric in TNM; however, setting the TNM units to metric before importing a metric DXF file will not correct the metric import problem.) Next, choose the File, Import, Import DXF File choice, which opens the Import dialog box (see figure)

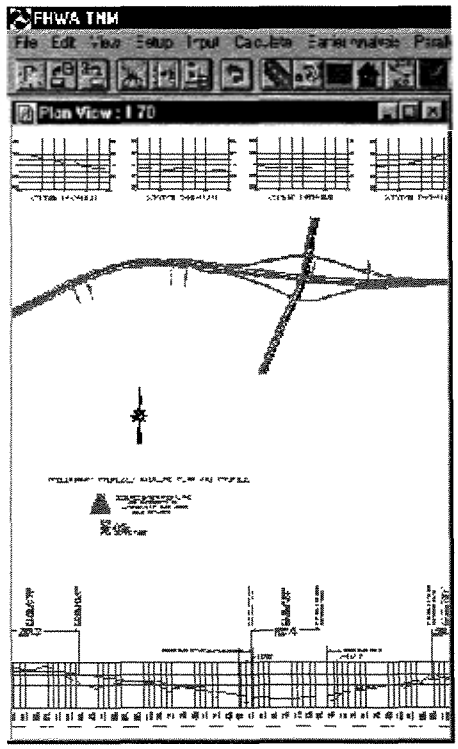
If you want to import as Background, click the check box labeled "Import as Background." Double-click on the choices for Directories until you reach the subdirectory that contains the DXF file, click on the file's name, and click on the OK button, which begins the importing process.

After the importing is complete, the results are displayed in the TNM Plan View. You may use all of the TNM View commands such as zooming and panning.

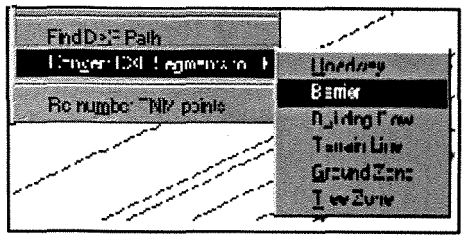
If the DXF file was actually in metric units, set the TNM units to Metric and use the Register DXF Background by Typed Coordinates method to re-establish the units in the correct metric scale. I won't cover the registration process here other than to note that the Snap function does not work on the Background display. You'll have to "eyeball" the registration cross-hairs over the registration points. Also, you can only use the zoom and pan functions via the keyboard shortcuts while registering.

You may now proceed with digitizing of TNM objects using the mouse and the input tools on the Tool Bar. Note that when you "save" your TNM run, you do not save the DXF display as part of the run. When you close and then re-open the run, only the TNM objects that you created will be present. However, if working with an English DXF file, you may re-import it if you need to use it again.

If you wish to import the DXF Files as Objects (currently, for English unit DXF files only), leave the "Import as Background" box unchecked in the Import DXF File dialog box. TNM only imports as objects those drawing elements that have the potential to become TNM objects. In the figure, the text, cross sections (at the top) and profile (at the bottom) would not imported as objects, but as background elements. To turn on or off the display of the background elements, you would use the "Show Objects" check boxes in the View, Show/Hide dialog box.



Once the file is imported, you may proceed with digitizing your TNM objects. However, there are also two commands that you can use with a DXF file imported as Objects, both under the Input menu item. The first,



Find DXF Path, has TNM locate and "select" all segments on a string between two designated segments. The goal is to then use the second command, Convert DXF Objects To, to convert that string into a TNM object, such as a roadway. The Find function can be slow and, on curves, create an extremely large number of very small TNM segments, much more than needed. You will probably find it faster to digitize in your points free-hand using the mouse.

However, several users have found a creative way to use the Convert DXF Objects To command. They initially do work in the original CAD file (such as the AutoCAD DWG or MicroStation DGN file) and create a new layer (or "level") just for TNM. Or, they start a new CAD file and display the actual roadway design CAD file in background (in MicroStation parlance they "reference" the roadway design file). They then free-hand digitize line segments into this new layer or file, or copy and paste lines such as ground contours into this layer or file. They then export their work as a DXF file, import it into TNM and convert the lines into TNM objects (double-click on a line to select it and then use the

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TNM Tips

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Convert command). They do not see the entire roadway design file displayed in TNM, only the lines they digitized.

Importing DXF files is a very popular feature of TNM, given that all DOT design work is now done, I assume, in CAD. The fixes in TNM 1.1 will make importing even more useful. However, don't throw out your digitizing table. We have had jobs, especially related to prioritizing existing highways for noise abatement, where all we have to work with are paper plans, aerial photos or worse. And, even when we use the CAD files, we still recommend doing your initial site modeling with your old colored pencils on the paper plans before you sit down at the computer. It's like painting a house. All the work that you put in on preparation is needed for a good final product.

Keep those tips up!

Do you have a unique way of working with CAD files and TNM? Or other tips you want to share? Send them to me for a future article. For any of you users of the Bowlby & Associates' TrafficNoiseCAD software, we still use it all the time with TNM. We create dummy STAMINA files directly inside MicroStation and then import the STAMINA files into TNM. Contact us for details.

Send your tips (and questions!) to Bill Bowlby, Bowlby & Associates, Inc. Two Maryland Farms, Suite 130, Brentwood, TN 37027, wbowlby@bowlbyassociates.com.

Bill Bowlby co-teaches TNM training courses with Dr. Roger Wayson of UCF. When not TNM-ing this past year, Bill made some noise at the AFC champion Tennessee Titans' Adelphia Coliseum in Nashville and at the Super Bowl in Atlanta. Oh, for just a few more seconds and another yard and a half!

U.S. Department of Transportation
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Test drive the
FHWA Highway Noise Barrier Design Handbook
(CD version) on the web at :
www.thewalljournal.com

Specifications and Bureaucracies Live Forever

Have you ever wondered why the distance of 4 feet, 8.5 inches was chosen as the standard railroad gauge (distance between the rails) for North American?

There is a very simple explanation - that was the way they were built in England, and the North American railroads were built by English expatriates.

Why did the British build them like that? The first rail lines were built by the same people who built the pre-railroad tramways, and that's the gauge they used.

Why did "they" use that gauge then? The people who built the tramways used the same jigs and tools used for building wagons, which used that wheel spacing.

Why did the wagons use that odd wheel spacing? If they tried to use any other spacing the wagons would break on some of the old, long distance roads, since that was the spacing of the old wheel ruts.

So who built these old rutted roads? The first long distance roads in Europe were built by Imperial Rome for the benefit of their legions. Those roads have been used ever since.

The initial ruts, which everyone else had to match for fear of destroying their wagons, were first made by Roman war chariots. Since the chariots were made for or by Imperial Rome they were all built with the same wheel spacing.

Thus, we have the answer to the original question. The North American standard railroad gauge of 4 feet, 8.5 inches derives from the original specification for an Imperial Roman army war chariot. These chariots were made to be just wide enough to accommodate the back ends of two war horses.

So, the next time you are puzzled by a specification and wonder what horse's butt came up with it, you may be exactly right.

Now the twist to the story....

There's an interesting extension of the story about railroad gauge and horses' behinds. When we see a Space Shuttle sitting on the launch pad, there are two big booster rockets attached to the sides of the main fuel tank. These are the solid rocket boosters, or SRBs. The SRBs are made by a factory in Utah. The engineers who designed the SRBs might have preferred to make them a bit fatter, but the SRBs had to be shipped by train from the factory to the launch site. The railroad line to the factory runs through a tunnel in the mountains. The SRBs had to fit through that tunnel. The tunnel is slightly wider than a railroad track, and the railroad track is about as wide as two horses' behinds. So a major design feature of what is arguably the world's most advanced transportation system was determined by the width of a horse's butt!

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The Noise Barrier Construction Forcast

An updated look at potential noise barrier projects in the making. This survey was provided by LEAP Assoc. International of Florida, consultants to the precast concrete industry for projects in the transportation construction field.

For further infomation, contact Cindy Thomas, LEAP Associates International 11602 N 51st St., Suite 100, Temple Terrance, FL 33617, Tel. 813 988-6870

** Parts 2 will be published in the Jan/Feb 2001 and Part 3 in the March/April 2001 issues. The entire survey is available on The Wall Journal website at www.thewalljournal.com*

2000 Soundwall Activity Survey (PART 1 of 3*)

State	District/ Region	Location	Bid Date	Cycle	Materils	H X L	Project Contact Info
AL		No projects to bid, in Des. or PD&E					
AK	Roadway	C St. Omalley Rd. to International Airport Rd.	2001	Des.	Precast	8'-14' x 1,840m	Jerry Ruehle, PO Box 196900, Anchorage, AK 99519-6900 P: 269-0534, F: 243-6927
AR	Roadway Des.	Hwy 60 Conway AR	Unknown	Des.	Unknown	7' x 900'	Phillip L. McConnell, PO Box 2261, Little Rock, AR 72203 P: 501-569-2338 F: 501-569-2057
CO		Loveland-South US287	8-00	Des	Concrete Block & Slab Forms	10' - 12' x 3-4,000 '	Jeff Manuel, 1420 2nd St., Greeley, CO 80631 P: 970-686-7897, F: 970-350-2179
		US 287 - North Ft. Collins	2004	PD&E	Unknown	10' x 1,500'	Jeff Manuel, 1420 2nd St., Greeley, CO 80631 P: 970-686-7897, F: 970-350-2179
		SH402 - US 287 to I-25	2002	PD&E	Unknown	Unknown	Jeff Manuel, 1420 2nd St., Greeley, CO 80631 P: 970-686-7897, F: 970-350-2179
CT	Env. Plan.	Casey Lane., Wethersfield I-91 SB	9/00	Des.	Wood	4.6m x 780m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	Gilbert Ave., Rocky Hill I-91	9/00	Des	Wood	4.6m x 275m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	Orchard St., Rocky Hill I-91 NB	9/00	Des.	Wood	4.6m x 200m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	Phesant Dr. Rocky Hill I-91 SB	9/00	Des.	Wood	5m - 6m x 1,179m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	Raymond Rd. Rocky Hill I-91 SB	9/00	Des.	Wood	4.8m - 8m x 720m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	Christiana Lane Rocky Hill I-91 NB	9/00	Des.	Wood	6m - 12m x 820m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	Elm Commons Rocky Hill I-91 NB	9/00	Des	Wood	7,5m - 10m x 205m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-84/Rte. 72 Plainville Crooked St.	Unknown	PD&E	Recycled Materials	4.6m x 427m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-84/Rte 72. Plainville Relocated Ramps @ Rte. 372	Unknown	PD&E	Recycled Materials	4.6m x 701m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-84/Rte 72. Plainville Ledge Rd.	Unknown	PD&E	Recycled Materials	4.6m - 5.5m x 305m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 SB O'Brian Rd. East Haven	Unknown	PD&E	Wood	3m x 214m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 SB Greenfield Ave. East Haven	Unknown	PD&E	Wood	4.3m - 5.5m x 307m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 SB Ramona Way East Haven	Unknown	PD&E	Wood	6.1m x 284m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 Gould Lane Branford	Wtr/00 Spr/01	Des/ Build	Wood	4.6m - 6m x 251m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 SB Allen Place New Haven	Unknown	PD&E	Wood	3m x 122m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 NB Elbon St. Milford	Unknown	Study	Unknown	Unknown	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-95 NB Exit 54 Branford	Unknown	Study	Unknown	Unknown	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-84 Busway Hartford to New Britain	Unknown	Study	Unknown	Unknown	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
	Env. Plan.	I-84 Atwater St. Southington	Unknown	PD&E	Wood	4.6m x 720m	Desmond Dickey, PO Box 317546, Newington, CT 06131-7546 P: 860-594-2945
DE		Rte 1 & Rte 7	Unknown	PD&E	Unknown	Unknown x 1 mile	Rich Vetter, PO Box 778, Dover, DE 19903 P: 302-760-2134, F: 302-739-2251

State	District/ Region	Location	Bid Date	Cycle	Materils	H X L	Project Contact Info
FL	2	No projects to bid, in Des. or PD&E					
	3	I-10/I-110 Pensacola	8-04	PD&E	Unknown	Unknown	Natalie Kent, PO Box 607, Chipley, FL 32428, P: 850-638-0250, F: 850-638-6368
	4	I-95 Palm Beach County 3 walls, 2 filling gaps in previously constructed walls in Boyton Beach area	2002	Des.	Concrete	2000 lf	Ken Campbell
	4	I-95 3 wall segments in Lake Worth area	2003	Des	Concrete	7500 lf.	Ken Campbell
	4	Griffin wall in Cooper City	2001-02	Des	Concrete	Unknown	Ken Campbell
	4	I-95 from PGA Blvd to Indiantown Rd.	Unknown	PD&E	Concrete	Up to 3-4 miles	Ken Campbell
	5	Rails End MHP SR 44	Unknown	Des	Precast or Block	12' x 1,408	Bill Walsh, 719 S. Woodland Blvd., Deland, FL 32724
	5	Ocala Heights SR 35	Unknown	Des	Precast or Block	8' x 1,010'	Bill Walsh, 719 S. Woodland Blvd., Deland, FL 32724
	5	Hi-Cliff Heights SR 35	Unknown	Des	Precast or Block	10' x 1,198'	Bill Walsh, 719 S. Woodland Blvd., Deland, FL 32724
	6	I-95 Noise walls SR112 to Miami-Dade/Broward County line	03/03	Des.	Precast concrete post & panels, cast-in-place, Carsonite	9'-12' x 16,495'	Marjorie Bixby, Env. Mgr., 1000 NW 111th Ave., Miami, FL 33172 P: 305-470-5229
	6	SR934/Hialeah Xway. SR 826 to SR 823	06/03	Des.	Unknown	12' x 453'	Jason Chang P: 305-470-5331
	6	SR 826/Palmetto Xway. SR874 & Bird Rd. Interchanges	FY-2004	Des.	Cast-In-Place	Unknown	Jason Chang P: 305-470-5331
	6	SR 826/Palmetto Xway. SW 24th St. Interchange	2002-03	Des.	Cast-In-Place	6'-18' x 9,424'	Jason Chang P: 305-470-5331
	6	NW 137th Ave. SR90 to NW 12th St.	10/00	Des.	Unknown	11' x 4,320'	Javier Rodriguez P: 305-349-1210
	6	SR 836 Extension NW 137th Ave. to SR 821	01/03	Des.	Unknown	18'-20' x 6,035'	Javier Rodriguez P: 305-349-1210
	7	I-4: E of 50th St. to Polk Co. Line	Fall-00	Bid	Unknown	4 walls, 142,960 sf	WPI# 2586651, Lynda Crescentini P: 813-975-6000
	7	I4 3A/3B	Unknown	Des.		Unknown	WPI# 2584011, Irwin Prescott P: 813-975-6000
	7	I-275/I-4 Downtown Interchange	Unknown	Des.	Unknown	6 walls, 160,027 sf	WPI# 2584011, Irwin Prescott P: 813-975-6000
	7	SR60 (Memorial Hwy) Stage 1 Links Design	Unknown	Des.	Unknown	1 wall	WPI# 2584011, Irwin Prescott P: 813-975-6000
	Tpk	Sawgrass Xway	Jul-02	Des.	Unknown walls under advise-ment and may not be built	10' - 16' x 13,200'	Becky Bolar, 1560 Orange Ave., Winter Park, FL 32789
GA		Bibb County-I475	Dec-99	Final Des.	Steel or Carsonite	8' - 16' x 6000'	Mario Evans P: 404-699-4407
		Dekalb County - I285	Dec-99	Final Des.	Steel	10' - 20' x 4000'	Mario Evans P: 404-699-4407
		Bryan County - I-95	Dec-99	Final Des.	Steel	8' - 16' x 2000'	Mario Evans P: 404-699-4407
		Clayton County-I75	2000	PD&E	Steel	Unknown	Mario Evans P: 404-699-4407
		Fulton County-GA400	2000	PD&E	Steel	Unknown	Mario Evans P: 404-699-4407
		Fulton County/Dekalb County I-20	2001	PD&E	Steel	Unknown	Mario Evans P: 404-699-4407
		Muscogee County - I475	Dec-99	Final Des.	Steel or Carsonite	8' - 16' x 6000'	Mario Evans P: 404-699-4407
HI		No projects to bid, in Des. or PDE					
ID		No projects to bid, in Des. or PDE					
IL	Tollway Auth.	Devon Ave @ I294 Interchange	2001	PD&E	Unknown	Unknown	Vance Hultgren, 2700 Ogden Ave., Downers Grove, IL 60515 P: 630-241-6800 x3993
	Tollway Auth.	I57 @I294 Interchange	2005	PD&E	Unknown	Unknown	Vance Hultgren, 2700 Ogden Ave., Downers Grove, IL 60515 P: 630-241-6800 x3993
	Tollway Auth.	I294/Balmoral to Dempster	2006	PD&E	Unknown	Unknown	Vance Hultgren, 2700 Ogden Ave., Downers Grove, IL 60515 P: 630-241-6800 x3993
	Tollway Auth.	Lake County	Unknown	PD&E	Unknown	Unknown	Vance Hultgren, 2700 Ogden Ave., Downers Grove, IL 60515 P: 630-241-6800 x3993
IN	Prel. Eng. & Env. Assess.	Several studies underway involving the Borman Xway.	None yet	PD &E	Unknown	Unknown	Jim Juricic, 100 N. Senate Ave., IGCN 848, INpolis, IN 46204

PROPAGATION OF SOUND AND RELATED SHADOW ZONES:

The reality of field measurements versus modeled projections

by: *Ken Campbell, Ph.D.*
Florida Dept of Transportation
Fort Lauderdale, Florida, USA

This article sets the stage for future presentations of research data which will change how professionals involved in noise attenuation view their task. Empirical data will be presented later this year which establishes actual physical distances for sound reduction given specific wall heights and field conditions. The data to be analyzed in these future presentations has been collected over an eight-year period along limited access facilities in South Florida. After a thorough review, the expectation is that the data will be used to affect change in the formulas and associated algorithms within current computer models which determine the distribution pattern of noise emanating from highways as well as the level of protection that may be provided by sound barriers. In order to implement any change, it is important to understand "why." The following effort establishes why such a change is necessary and, to alert those who may be interested, that the process has begun.

As the nation becomes more environmentally aware, citizens have become more interested in voicing their opinion about a variety of concerns. For better or worse, one of the most contentious of these concerns deals with traffic-generated noise. The intrusion of unwanted sound can generate severe emotional response in the most agreeable people. I have come to this conclusion, not through careful scientific study, but by dealing with annoyed, agitated, and aggravated taxpayers for the past twelve years. This shared, common relationship has been made quite clear through the many letters and telephone calls received over that period. It seemed that, with each communication or conversation that took place, the discussion would inevitability move toward the perceived need of the individuals to identify themselves in this manner.

> Noise is an unfortunate by-product of our uban lifestyle.

Noise is an unfortunate by-product of our urban lifestyle; each of us wants the convenience to go where we want and when we want according to our own schedule. The only way to accomplish this is by utilizing a personal mode of transport and in most cases, this is an automobile. Combine this urge with the need to move vast amounts of goods to market in order to support an urban population and the result is an ever-increasing number of vehicles on the roadways surrounding us. With the higher volumes of traffic, sounds emanating from ground-based transportation networks grows proportionately. Homeowners and residents who live next to limited access facilities and major arterials begin to look toward government to do something about the noise.

Governments have, in their best efforts, attempted to establish criterions for action to deal with these requests. Equipment, with various levels of sophistication, has been produced that enables us to measure sound energy, pitch and intensity. This equipment allows field studies to be conducted that establish current sound levels. Computer software has been developed to model future project impacts

Continued on page 13

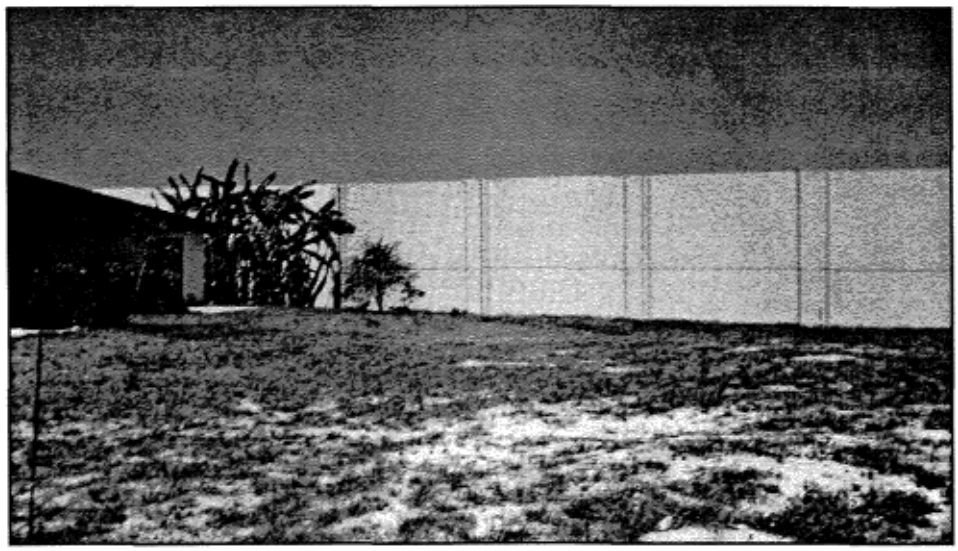
Typical noise barrier installation selected for measurement varification

Continued from page 12

based on a number of conditions. Theories have been produced on how best to attenuate these future impacts. Contractors have designed innovative approaches using a variety of materials to operationalize the theories. In the final step, governments commit important resources to constructing the many variations of barrier schemes which have been developed as a result of these approaches.

At this point, the direction of this discussion could take a number of different paths and while each deserves exploration, it is important to focus on an overriding fact which occasionally gets lost in the process; sound is governed by physical laws. It is essential to ensure that when government spends tax revenues on the construction of sound barriers, they actually work. Over the past eight years, I have had the opportunity to physically measure sound levels before, during, and after the construction of noise walls at fixed sites. The data gathered from these efforts have provided valuable information. Determinations are now made, based on field measured shadow zones, as to how high walls must be constructed in order to protect those receptors closest to the roadway. More importantly, the data demonstrates that both the Stamina and TNM computer models fail to accurately represent the true shadow zone produced by sound barriers.

Unfortunately, many governmental agencies are unaware of this discrepancy between modeled results and real-time measurements of shadow zones. Why is this important? The answer exists in the decision to build or not to build barriers to attenuate traffic-generated noise. Research conducted to date suggests that concrete noise walls cast finite areas of reduced sound intensity. The reduction in this area is not constant. Those receptor points closer to the wall have a higher level of reduction than those further away. Given a consistent source of sound intensity which is produced by limited-access facilities that have vehicles



Typical noise barrier shadow zone

operating at fairly constant speeds, field measurements produced some very interesting results. At receptors with sound levels of over 72 decibels, 22-foot high noise walls produce sound reductions of 9 to 11 decibels at distances of 10 feet behind the barrier. When measurements are taken at 160 feet from the back of the barrier, the level of reduction is reduced to under 2 decibels.

Other heights were measured and analyzed as well; different configurations and elevations were used to determine how the position of the roadway in relation to the receptor impacted sound propagation. Once those parameters were understood, sound barriers were added to the equation and elevation changes involving all three features were studied. Fortunately, I had a rather extensive barrier program to monitor. The Florida Department of Transportation, District 4, over an eight-year period, has built over twenty-five miles of noise walls. While I was unable to take the range of multiple readings that would have created a more statistically secure sample, the sheer number of readings taken during the construction phase more than made up for any data collection errors which may have occurred. Currently, over 10,000 actual recorded field samples are included in the data base.

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> There should be no excuse for building a barrier that does not work

Since those samples were collected, each site has been revisited with multiple meter setups to verify the earlier results. Each field sample contained measurements taken before a wall was constructed, during the placement of pre-cast panels between previously erected posts, and after the wall was completed. The middle step allowed easy side by side insertion loss comparisons between the newly walled areas and those receptor locations yet to receive panels. The readings taken at the uncovered locations acted as a control measure to accurately judge the effect of the wall in reducing noise.

Measurements taken before and after construction are used to supplement data collected during the actual

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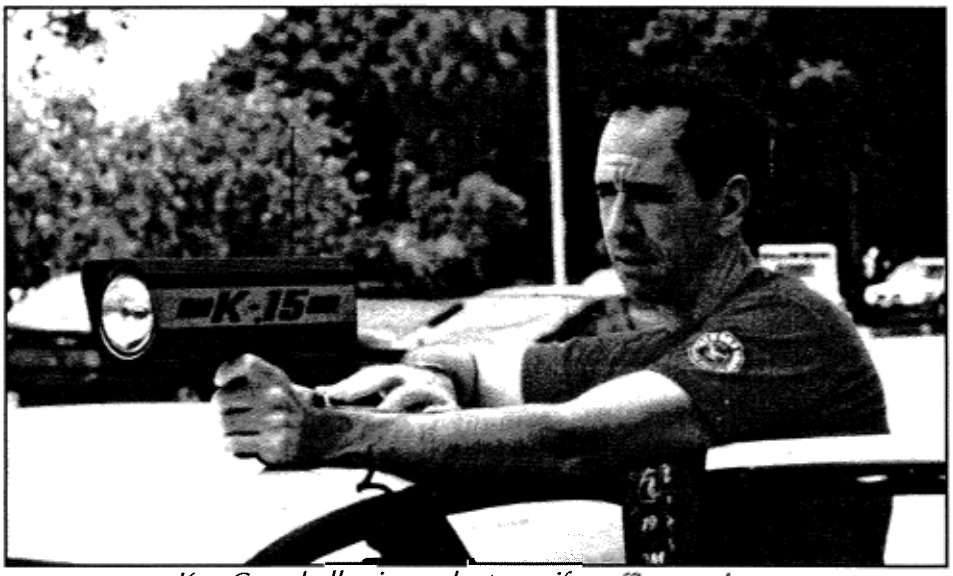


Ken Campbell using radar to verify traffic speeds

Continued from page 13

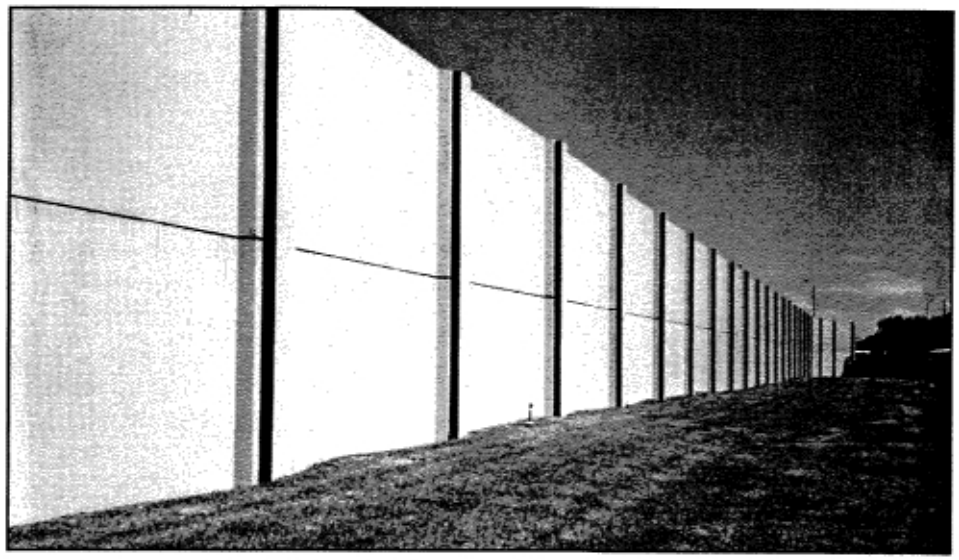
construction process. The current ongoing evaluation technique now involves multiple simultaneous readings at various distance and height relationships. As a result, current data not only establishes the depth of the shadow zone behind the wall, but also the deterioration pattern of its height over distance. The pattern of the shadow zone appears to be fairly constant over each sample. The configuration of the pattern is independent of the zone's depth; this verifies that the propagation of sound is consistent and occurs in non-random patterning.

Given this non-random nature, shadow zone pattern adjustments within the TNM formulation should be possible. By changing the model's formula for sound propagation and the casting of shadow zones behind barriers, the TNM computer model would become a much better tool for professional use. When making decisions on whether to build barriers, sound level accuracy and attenuation factors are critical. Field measurements should always be used to verify the need for noise wall construction and barrier effectiveness. There should be no excuse for building a barrier that does not work; government revenues need to be spent wisely and in a manner which allows for the greatest benefit possible for the expenditure.

Exclusively using modeled results for decisionmaking on noise wall placement is simply a mistake. Using unverified modeled results will only assure the construction of a nice privacy wall; any resulting noise attenuation would be accidental. Those individuals who have taken field readings are able to recognize when a model gives them a bogus projection. It may result from operator error or it may be a function of an inadequate formulation within the program. In either case, the result must be re-examined and verified. However, those individuals who have limited field experience and rely totally on computer data have no point of reference to judge the validity of the results.

In order to facilitate a better understanding of reality, a technically-refereed paper based on the data collected will be presented to either the Transportation Research Board or the Institute for Noise Control Engineering for their consideration and publication. The empirical data found in the paper will then be open to others for their review, verification and analysis. As a result, new formulas or algorithms based on this information can be crafted to improve the TNM computer program to better reflect true sound propagation and shadow zone limitations. By accurately reflecting intensity levels and the ability to attenuate them, better decisions can be made on when to build and not build barriers.

For over twelve years, Dr. Campbell has been an Environmental Specialist for the Florida Department of Transportation; he is currently the District 4 Noise Specialist and has been involved in the development and construction of over twenty-five miles of noise wall barriers in the District. He is an associate member of the Institute for Noise Control Engineering and has done extensive research on the subject of traffic-related noise impacts as it effects people and their environment.



Shadow zone behind a highway noise barrier

Evaluation of Service Life of Noise Barrier Walls in Illinois

by: Dianne H. Kay, P.E., CPC
Susan M. Morgan, Ph.D, P.E.
S. N. Bodapati, Ph.D., P.E.

In Illinois, the Illinois Department of Transportation (IDOT) and the Illinois State Toll Highway Authority (ISTHA) have constructed over 96 km (60 miles) of highway noise barriers since 1978. The total cost of Illinois noise barriers is over $61.5 million in 1995 dollars (FHWA 1996), or slightly more than $1 million per mile. Thirteen materials or products have been used for highway noise barriers in Illinois (Table 1). Most Illinois highway noise barriers have performed their intended function with minimal maintenance. However, some materials or products have exhibited significant deterioration soon after installation. Recent IDOT construction of new noise barriers has averaged over $1.3 million annually, and four new noise barrier projects are being studied currently. In addition, replacement of aged or deteriorated barriers will become an increasingly important issue in Illinois and across the nation within the next decade.

The Illinois Transportation Research Center, a cooperative research unit of IDOT and twelve public and private Illinois universities, requested this research to assist IDOT in determining the service lives of the various noise barrier materials and products currently in use in Illinois. The scope of this project included:

- development of a means to quantify the service lives of materials used for construction of noise barriers in Illinois
- development of a life cycle cost model for the evaluation of alternative materials
- evaluation of the need for potential changes to the Special Provisions for noise barrier construction currently used by IDOT.

The project included the following specific tasks:

- a review of literature
- a survey of state DOTs to develop information on experiences and histories with noise barrier products
- a review of materials approved by the Illinois Highway Development Council and used in Illinois
- a survey of IDOT and ISTHA maintenance personnel to obtain information on maintenance and replacement histories of Illinois noise barriers, and a field study to observe and evaluate current conditions of Illinois noise barriers
- development of service life criteria considering structural, functional, and aesthetic conditions
- development of a life cycle cost model to evaluate alternative materials or products
- review of specifications used for construction of Illinois noise barriers
- preparation of the final report.

The 40 states having noise barriers (FHWA 1996) were surveyed regarding their experiences with highway noise barriers; 30 states (75%) completed the survey. The information obtained showed that nationally, less than 1% of noise barriers (by length) have been repaired or replaced, although one material, metal, had been repaired or replaced by 20% of the states responding to the survey. There was no consensus among survey respondents on the average service life of noise barriers, although 20 years was considered a minimum. Routine inspection of noise barriers for structural integrity or acoustical performance is not being performed by most states responding to the questions.

The review of materials used and approved for use in Illinois showed that although ten proprietary noise bar-

Continued on page 15

Table 1. Summary of Noise Barriers (through Dec. 31, 1995)*

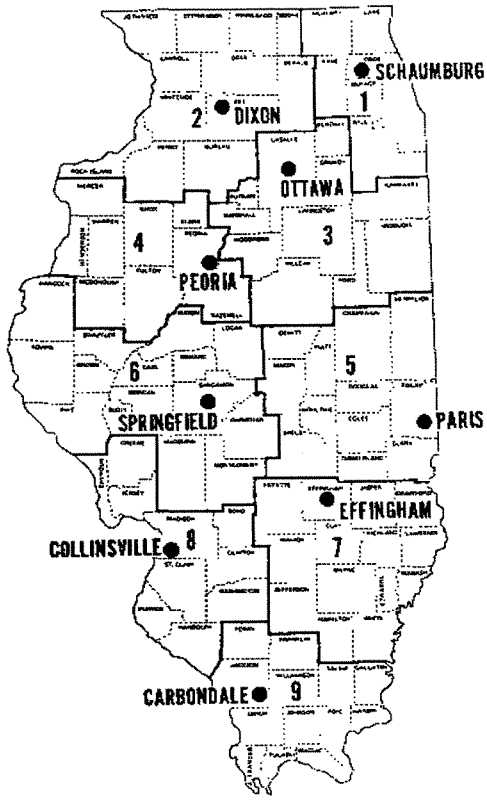
Wall Type	IDOT Area (sq. m.)	ISTHA Area (sq. m)	IDOT Percent of Total Area	ISTHA Percent of Total Area
Tropical Hardwood	48,715		32.9%	
Combination Berm and Wood	33,062		22.3%	
Glue-laminated Softwood	18,786	53,095	12.7%	28%
Precast Concrete (Post and Panel)		109,743		58%
Precast/Prestressed Concrete (Cantilever)	16,469		11.0%	
Durisol™	10,652		7.2%	
Berm Only	9,659		6.5%	
Fanwall® (Precast Concrete)	4,459		3.0%	
Metal: Noishield® (Steel)	3,690		2.5%	
Berm/Retaining Wall	1,902		1.3%	
Metal: Noishield® (Aluminum)	622		0.4%	
Softwood (Post and Panel)		19,791		11%
Carsonite®		5,698		3%
Total Area	148,016	188,327	100%	100%
Total Length	38.3 km (23.8 miles)	58.6 km (36.4 miles)		
Total Cost (1995 Dollars)	$20,744,709	$40,800,000		
Cost (by area)	$140/sq. m. ($ 13/sq.ft.)	$217/sq. m. ($20/sq. ft.)		
Cost (by length)	$542,300/km ($871,600/mile)	$696,100/km ($1.12 million/mile)		

Source: FHWA (1996)
*most current published report

Continued from page 15

rier products have been approved for use by the Highway Development Council, the majority of IDOT noise barriers (60%) have been constructed of wood or concrete. IDOT has used 11 different materials to construct over 38 km (24 miles) of noise barriers, while ISTHA has used only 4 materials for its 59 km (36 miles) of barriers. The majority (97%) of ISTHA barriers are either wood or concrete.

The current conditions of Illinois noise barriers were determined by field observation of noise barriers by the researchers and a survey of maintenance personnel in IDOT Districts 1, 2, 4, 6, and 8 (Figure 1). The maintenance survey gave new information regarding the maintenance and replacement histories and costs, and the observations and opinions of maintenance personnel regarding expected



service life of the noise barrier materials currently in use in the state. Two barrier sections were rated "failed, needs replacement" by the maintenance survey: a tropical hardwood barrier in District 1 (Figure 2), and a steel barrier in District 8 (Figure 3).

The information obtained through review of the literature, surveys of other state DOTs, surveys of IDOT maintenance personnel and the field observation of barriers led the researchers to estimate the service lives of the materials and products in service in Illinois. These estimates, which varied from a low of 25 years for wood and metal products to a high of 50 years for earth berms, concrete, and fiberglass, were subsequently used in developing a life cycle cost model for alternatives. A professional estimator produced year 2000 construction cost estimates for the barriers used or

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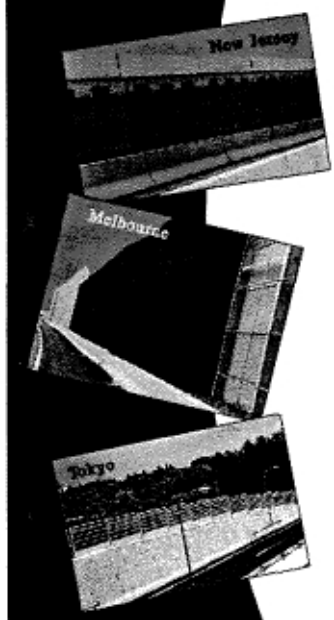

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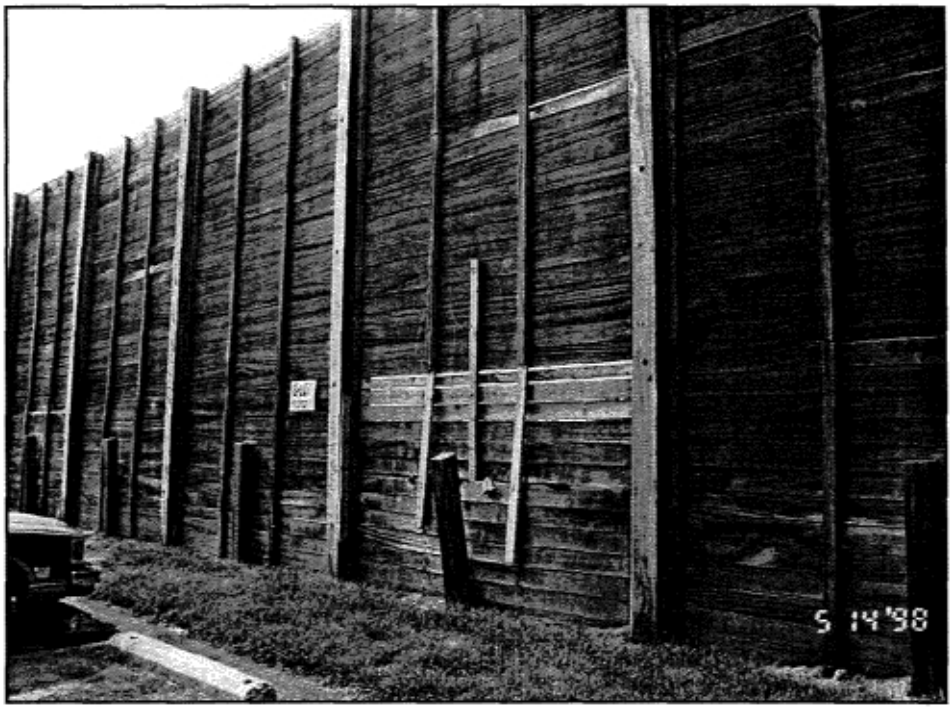

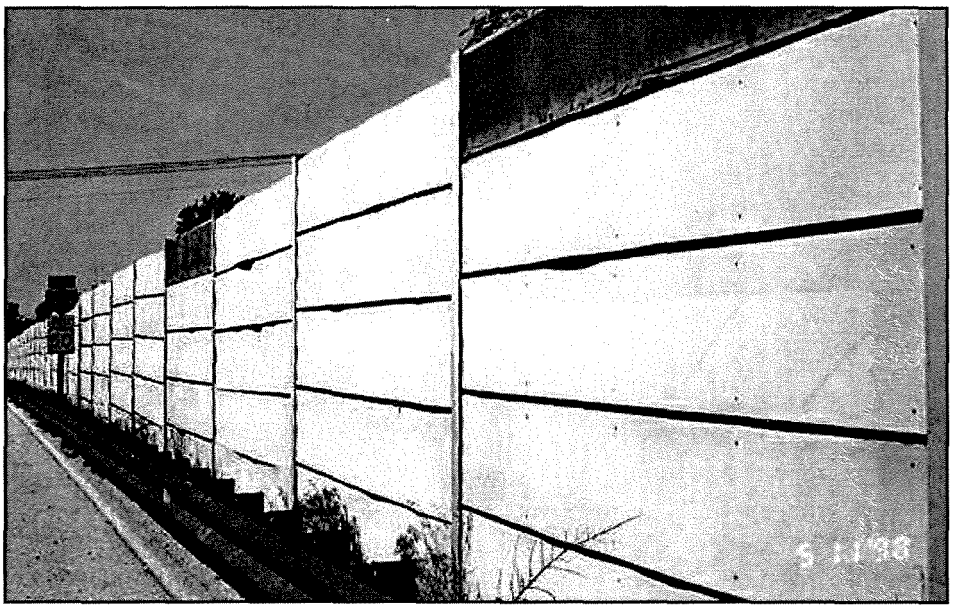

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approved for use in Illinois, including contractor's cost for supervision, overhead, contingency, profit, site restoration and foundations, and using the city of Springfield, Illinois for a basis. Construction cost estimates for all material types were made using an assumed barrier section 305 meters (m) (1000 ft) in length and 4.6 m (15 ft) in

Continued from page 16

height, a size that would allow some economies of scale in the construction process. Drilled pier foundations were assumed for all barriers except the precast/prestressed concrete "cantilever" barrier and earth berm. The diameter of the drilled pier was assumed based on a review of plans for a number of Illinois barriers and generalized design information provided by vendors. The depth of the pier for a barrier 4.6 m (15 ft) high was assumed to be 2.4 m (8 ft) based on averages from actual barrier construction in variable soils reported by the Illinois State Toll Highway Authority (ISTHA) and design data provided by Carsonite International. Post spacing was based on actual designs where available and from manufacturers' information.

It was found that, for the assumptions used in the analysis, earth berms represented the lowest cost alternative among the materials currently in service in Illinois. Metal barriers with absorptive panels were estimated to have the highest life cycle cost (up to 72% higher than earth berms). The life cycle costs of all other materials currently in use in Illinois fell within a narrow range of $28.00 to $32.00 per sq. ft. (Table 2).

It was concluded that, based on the assumptions made for this analysis, the life cycle costs of 8 of the 11 materials currently in use in Illinois are sufficiently similar that economically justifiable choices can be made from any of these materials. However, due to the importance of costs associated with the frequency of repairs and replacement, and the difficulty in obtaining reliable data on which to estimate such costs, it is recommended that life cycle cost analysis not be used as the sole criterion for selecting noise barrier materials.

The review of specifications was based on a limited number of specifications provided by Districts 1 and 8,

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Table 2. Illinois noise barriers sorted by estimated life cycle cost.

Barrier	Estimated Initial Construction Cost (Year 2000) ($/m², $/ft²)	Discounted Future Costs ($/m², $/ft²)	Estimated Life Cycle Cost ($/m², $/ft²)
Earth berm	111 (10.33)	39 (3.60)	150 (13.93)
Precast/prestressed concrete stacked panels, steel posts[1]	212 (19.67)	43 (4.03)	255 (23.70)
Precast/prestressed concrete stacked panels, concrete posts[1]	262 (24.33)	28 (2.62)	290 (26.95)
Timber post-and-panel (hardwood or softwood)	180 (16.70)	122 (11.35)	302 (28.05)
Precast/restressed cantilever	291 (27.00)	30 (2.80)	321 (29.80)
Carsonite ®	273 (25.33)	50 (4.65)	323 (29.98)
Precast concrete, full-height panels, monolithic posts	305 (28.33)	28 (2.62)	333 (30.95)
Glue-laminated wood	197 (18.33)	145 (13.48)	342 (31.81)
Durisol ®	212 (19.67)	152 (14.14)	364 (33.81)
Noishield ® steel	298 (27.67)	131 (12.19)	429 (39.86)
Noishield ® aluminum	377 (35.00)	163 (15.15)	540 (50.15)

[1]Type of barrier approved for use but not constructed to date in Illinois, included for cost comparison

and ISTHA. It was recommended that noise barrier specifications be standardized, and incorporate a number of specific topics synthesized from the literature.

For copies of the full report, contact the Illinois Transportation Research Center at (618) 650-2972 or via e-mail at dkay@siue.edu. Ask for "Evaluation of Service Life of Noise Barrier Walls in Illinois," Dianne H. Kay, Susan M. Morgan, and S. N. Bodapati, Project IIB-H1, FY 1997 Report No. ITRC FR 97-3, November 1999.

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From the Skipper:

I would like to encourage all committee members to attend the TRB Annual Meeting which is scheduled for January 7-11, 2001 in Washington, D.C. Although a specific agenda has not yet been laid out it is expected that A1F04-related activity will take place Tuesday through Thursday, and most related sessions will be held in the Washington Hilton. As always, we are planning four committee meetings -- aircraft, highway, rail and main. In addition, two paper sessions are currently scheduled, as well as two special sessions. The first special session will be jointly sponsored by the rail-grade crossing committee and will focus on issues related to railroad horn noise. The second special session will provide a broad overview of current noise-related activities. The session will feature a diverse group of noise experts, including Larry Finegold, who will speak on noise research and policy-making needs in the US for the next decade, George Maling, who will speak on US Institute of Noise Control Engineering (INCE) activities, Bill Lang, who will speak on International-INCE activities, John Erdreich, who will provide perspective with regard to the National Council of Acoustical Consultants, Bennett Brooks, who will speak on behalf of the Acoustical Society of America Technical Committee on Noise, Bernard Berry, who will provide the European perspective, and Paul Schomer, who will speak on U.S. standardization activities. I expect this to be a wonderful session, not to be missed by anyone truly interested in current activities in the noise arena -- both nationally and internationally."

Gregg Fleming
A1F04 Chairman

SUMMER MEETING HIGHLIGHTS

Thanks to Bill McColl and his friends at New York State DOT, the New York State Thruway Authority, the

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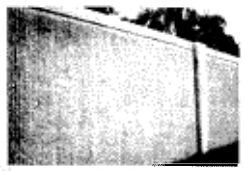

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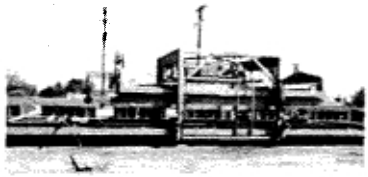

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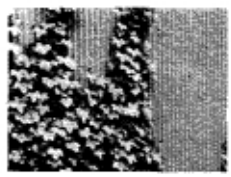
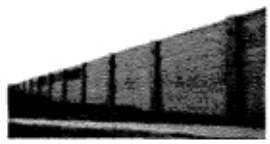

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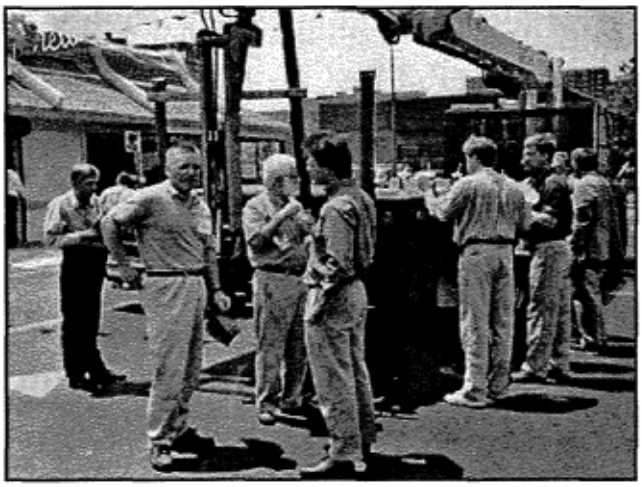
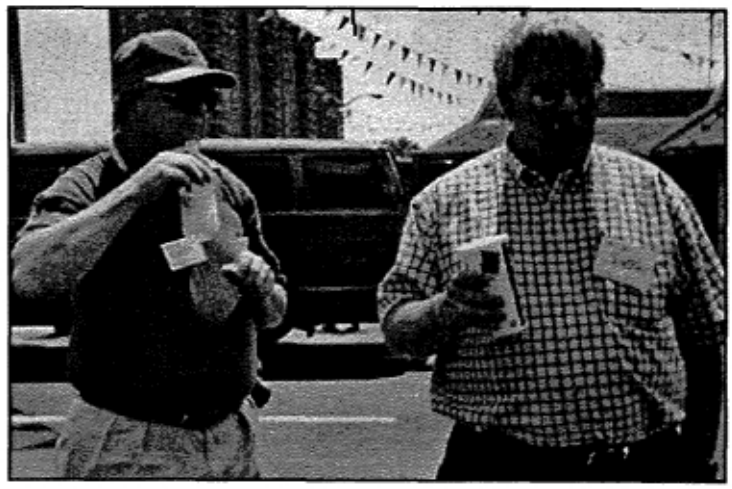


A truck bed provides an impromtu picnic table during one of the technical tours.



Chris Blaney and Soren Pedersen discuss the value of the Canadian dollar as they eat lunch

Port Authority of New York and New Jersey, and the New York Transit Authority, the summer meeting of Committee A1F04 was a memorable one. Of course, you can't overlook the contributions of the many presenters at the technical sessions, the fine exhibitors, and the technical tour guides. As usual, the meeting kicked off with a reception held in the Palm Room of the Roosevelt Hotel in mid-town Manhattan. It was a great time to renew old acquaintances, create new ones, and ask about those not present. For some of us, it was an opportunity to showcase a grandson (Now who would do a thing like that!) or to announce that a change in job status or location has occurred.

The opening session of technical papers featured presentations on a variety of topics including the "Big Dig" in Boston, the status of TNM, using railway and GIS models, and the evaluation of noise barrier effectiveness. This was followed by an afternoon of technical tours to either highway noise barriers in Westchester County or a rail/subway site. For those of you who missed the highway tour, it was a most excellent adventure into the countryside along the Connecticut border and even featured a scenic drive by of the John Jay homestead. Evening entertainment offered New York Yankee baseball, a Broadway play - The Music Man, a cruise of the harbor, or a Midnight Cowboy walking tour.

The second day featured a morning of technical papers on noise propagation, barrier optimization, sound absorbing noise barriers, vibration issues, aircraft noise over water, and a comparison of noise models. The afternoon tours featuring noise abatement activities along the Long Island Expressway or noise control in the Brooklyn/Queens area. On the social side, opportunities were provided to

Kevin Hughes and friends demonstrate their urban picnic style.

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attend a baseball game, a play - Les Miserables, a cruise of the harbor, or a walking tour of 5th Avenue and Central Park South.

The final day featured presentations on transit vibration, train horn noise, the latest version of the Canadian Standard for Certification of Noise Barriers, and an update on the status of The Wall Journal (see the related topics in this newsletter). The afternoon session was devoted to reviewing research needs in the areas of transit/train, highway, and aircraft noise and vibration. A number of research needs were identified and will be discussed in detail at the annual meeting in January. For everyone who attended, presented, or took the opportunities to socialize, the meeting has to be considered a success. Even the weather cooperated by being dry and cool, a rarity for New York during the summer.

Once again, our thanks goes to Bill McColl and all of the many folks responsible for hosting the meeting . A special thanks must go out to our many sponsors and exhibitors who made the event even more special.

Bill McColl: *host of the TRB A1F04 Summer Meeting in New York City - July, 2000.*

THE WALL JOURNAL CHANGES HANDS

Don't look now, but a major change has occurred in the ownership of The Wall Journal. The longtime owner and editor, El Angove, has passed on the editorial/publishing responsibilities to another longtime friend and member of A1F04, Soren Pedersen. Soren is

El Angove

hopeful that the next edition of the Wall Journal will be published and mailed sometime this summer. Of course, it is through the support of folks like you that the Wall Journal has become such a valuable part of the noise community. Be sure to contact Soren about articles, advertising, and other items that you would like to see in the next issues of The Wall Journal. Soren is trying to meet your needs in the best possible way and is looking into establishment of a website, a chat room, outline subscriptions, and a host of other neat ideas. Be sure to share your ideas, concepts, and activities with him. He can be reached at the Wall Journal, 26 Warrender Avenue, Etobicoke, Ontario, Canada M9B 5Z2. You can phone him at (416) 231-4514 or fax him at (416) 231-4564. If e-mail is your bag, contact him at INFO@THE-WALLJOUR-NAL.COM. Remember, Soren can't invent material for the Wall Journal, so be sure to support him with your input.

Soren Pedersen

UPDATED MEMBERSHIP LIST AVAILABLE

An updated A1F04 members/friends list has been placed on the A1F04 website. Please review your data to insure that it is correct. If corrections are needed or you wish to add information (such as phone, FAX or email address), contact Win Lindeman at (850) 488-2914, FAX (850) 922-7217, or email win.lindeman@dot.state.fl.us. You can also contact Cynthia Lee at the Volpe Center with your changes. She may be reached at (617) 494-2372, FAX (617) 494-3208, or email at lee@volpe.dot.gov. This newsletter and the updated information on members and friends can also be found at our website:

(http://www.tiac.net/users/A1FO4).

IT'S ON THE NET!

FHWA has announced that a number of highway traffic noise-related publications are available for downloading on FHWA's website. The Environmental Guidebook may be found at www.fhwa.dot.gov/environment/guidebook/contents.htm. The guidebook is a collection of guidance and other reference materials compiled over many years, which continue to be germane to FHWA's environmental responsibilities. The papers "Summary of Noise Barriers Constructed by December 31, 1998" and "Highway Traffic Noise Barrier Construction Trends" and the brochure Highway Traffic Noise in the United States: Problem and Response are available at www.fhwa.dot.gov/environment/ab_noise.htm. These three items are updates of previous publications with similar information. This web location also has the June 1995 paper "Highway

Traffic Noise Analysis and Abatement: Policy and Guidance" and the December 1999 memorandum on the phase-in of the FHWA Traffic Noise Model. The Highway Noise Barrier Design CD-ROM will be at this location soon.

NEW RULE PROPOSED

FHWA intends to publish an Advance Notice of Proposed

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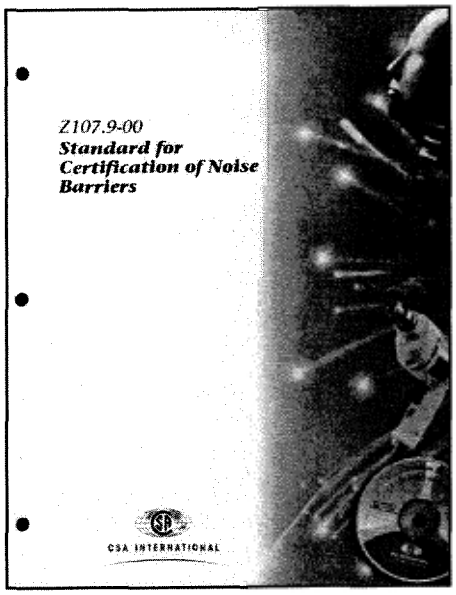
Rulemaking in the Federal Register to solicit views on allowing Federal participation in the noise insulation of private residences when a traffic noise impact occurs, i.e., when predicted traffic noise levels approach or exceed noise abatement criteria or when predicted traffic noise levels substantially exceed the existing noise levels. Currently, such participation is allowable only when a severe traffic noise impact occurs, e.g., absolute noise levels are 75 dBA Leq(h) or more, or noise levels increase 30 dBA or more over existing noise levels. For more information, contact Bob Armstrong at (202) 366-2073.

φΣΈ ΩωΠφρΠψρ ψΣυΣΠΩΣρ

What do you mean you don't understand Greek? This is a simple announcement that the Canadian Standards Association International (CSAI) released its standard for certification on noise barriers in February of 2000. The standard addresses design, materials, installation, safety issues and other considerations, footing and structural design, and certification. The report is available from CSA and ordering information can be found on the web at www.csa-international.org. According to Soren Pedersen, who worked on this project for many years, the standard is under consideration for adoption by the American National Standards Institute (ANSI) and possibly by the American Association of State Highway and Transportation Officials (AASHTO). The cost for this report is $34.00 US.



RESEARCH NEEDS LISTED

It is expected that TRB will soon be announcing a research needs conference to be held in 2001, probably in the fall. These research needs conferences are typically held every five years. Committee A1F04 has been preparing for this conference by having each subcommittee chairperson solicit research needs from their respective subcommittee members. At the recent summer meeting, each subcommittee chair (or representative) provided the results of their efforts so far. Those proposed projects identified for further consideration included: Atmospheric Effects on Highway Traffic Noise Propagation; Measurement of the Effect of Highway Noise Barriers on Air Pollutant Concentrations; Construction Noise and Vibration Impact Assessment and Mitigation; The Physics of Noise Within the Urban Highway Center; Using Recycled Materials in Noise Wall Construction; Highway Traffic Noise Emissions From the Underside of Bridge Structures; Method for In-Situ Testing of Noise Barrier Sound Absorption Qualities; Develop Standards for Tire Noise Characteristics of Pavement; Traffic Noise Impacts on Wildlife; Reverse Thrust Noise Impacts From Aircraft; Locomotive Warning Horn Noise Criteria Development; and Development of a Vibration "Schultz" Curve. If you have other areas that you feel warrant research consideration, be sure to contact your subcommittee chair or Gregg Fleming as soon as possible since the committee anticipates the completion of this effort at the 2001 TRB Annual Meeting.

Ken Polcak presented the proposed highway noise research needs projects during the 2000 Summer Meeting in New York City. Ken is flanked by David Coate and Paul ***Burgé on the left and Grant Anderson on the right.***

CONTINUE THE POOLED-FUND EFFORT

A little birdie told us that FHWA is seeking pooled-fund money to continue the noise project started many years ago with an evaluation of noise barriers at the Dulles Airport service road. Over the years this project has shifted to the development of an emission level database for the Federal Highway Administration Traffic Noise Model (FHWA TNM). The FHWA is now shift-

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ing the emphasis of the pooled-fund effort to provide (1) software improvements, (2) additional validation, and (3) training for the FHWA TNM. The training may include FHWA's Highway Noise Barrier Design package. A memo will be sent to FHWA Division Offices announcing this pooled-fund shift, to solicit participation by State Departments of Transportation (DOT's). The FHWA need funding assistance from the State DOTs to accomplish the software improvements, additional validation, and training in a timely manner. The pooled-fund effort will also likely continue into the future, as changes occur in computer hardware and software technology, new capabilities are added to the model (e.g., meteorological and atmospheric effects on noise propagation), and improvements occur in acoustical theory. Be sure to support FHWA in this effort!

SUMMER '01

The Transportation Research Board 2001 Summer Meeting of Committee A1F04,Transportation-Related Noise and Vibration will take place in New Orleans, Louisiana. The meeting will be hosted by the Louisiana Department of Transportation and Development (LADOTD) with the dates still to be determined. All are encouraged to make a special effort to attend and see the many local area attractions. After all, this the "Big Easy." The unofficial state motto, laissez

les bons temps rouler (let the good times roll), pretty much says it all for most people - and let there be no mistake, New Orleans rolls plenty.

See you in New Orleans. More to come in the fall/winter newsletter."

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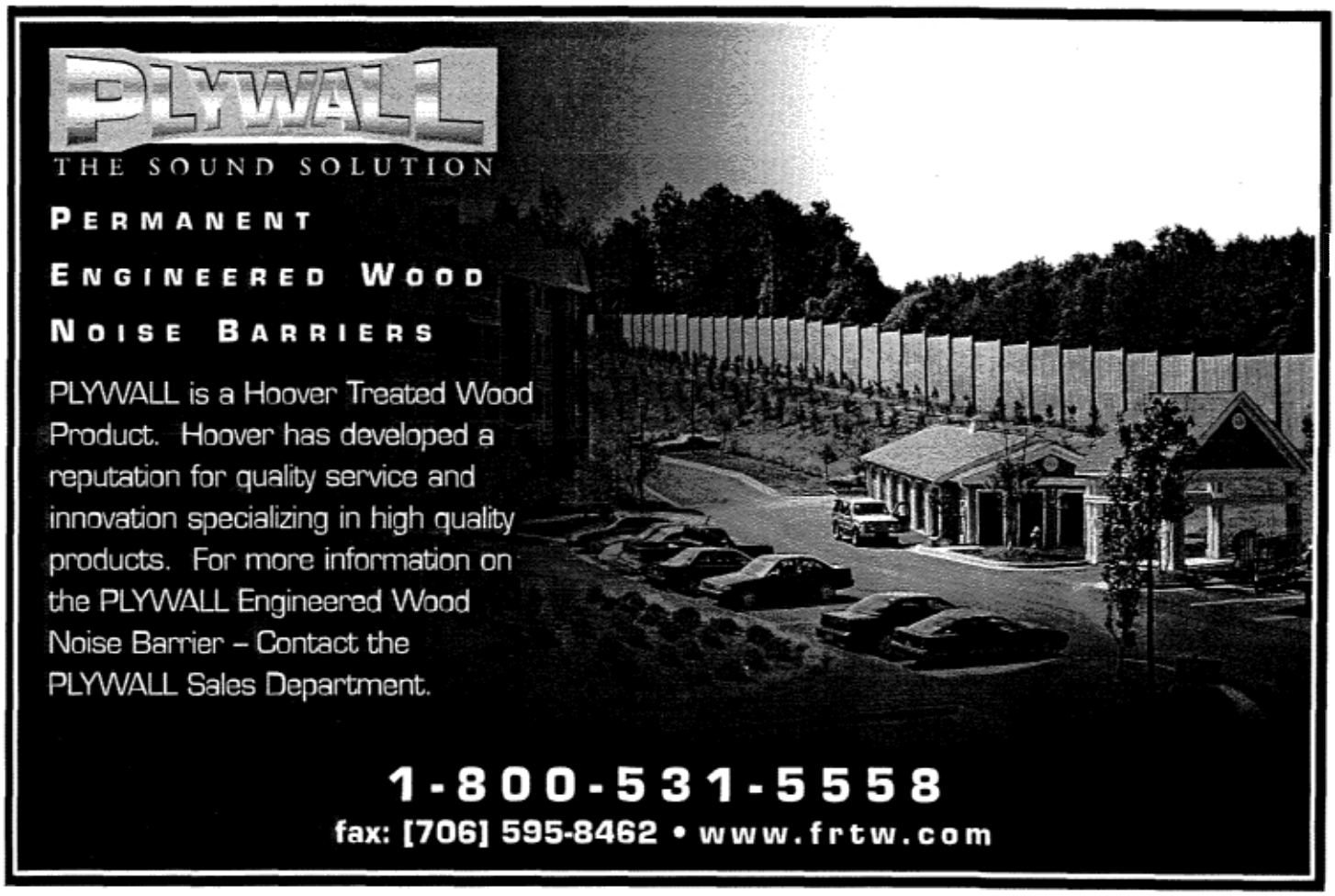

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