

The Wall Journal™

Issue No.

35

May/Jun 1998

THE INTERNATIONAL JOURNAL OF TRANSPORTATION-RELATED ENVIRONMENTAL ISSUES

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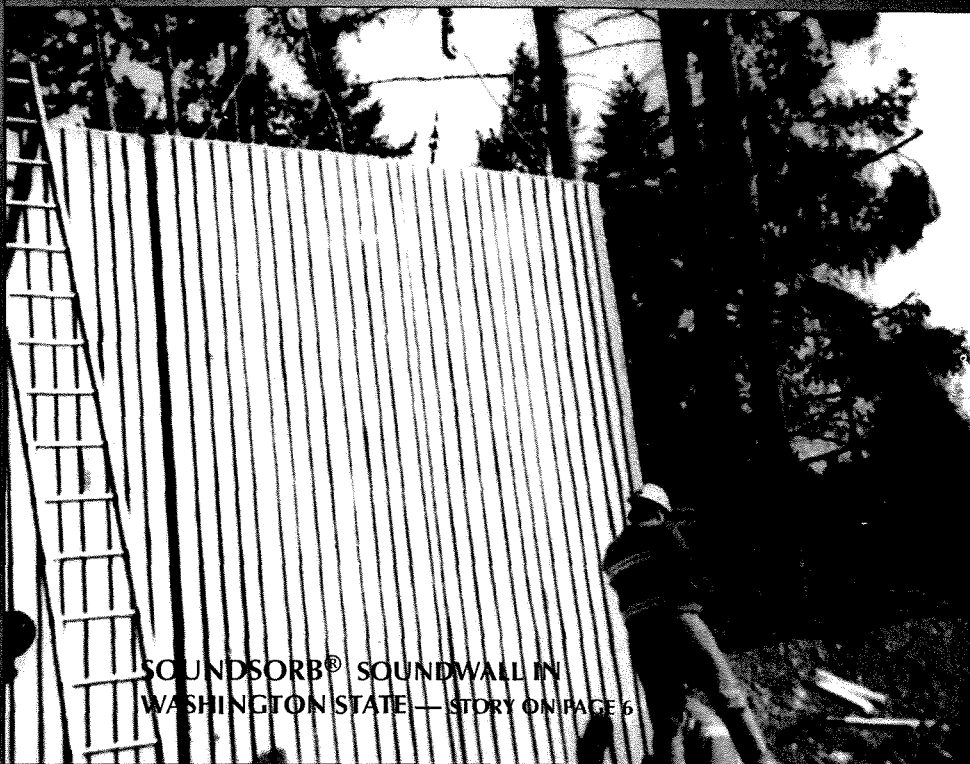
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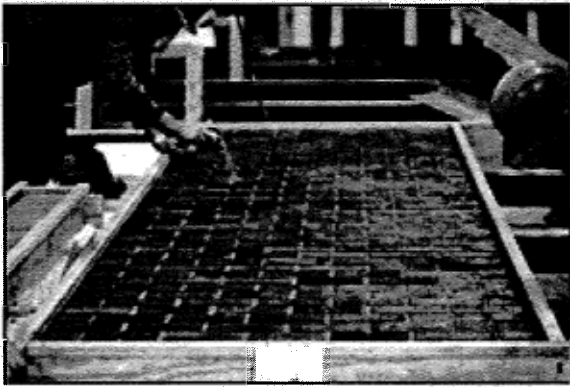
HAPPY 20TH ANNIVERSARY, TRB A1F04 COMMITTEE ON TRANSPORTATION RELATED NOISE AND VIBRATION



SOUNDSORB® SOUNDWALL IN
WASHINGTON STATE — STORY ON PAGE 6

SOUNDSORB® SOUNDWALL IN JAPAN — STORY ON PAGE 6





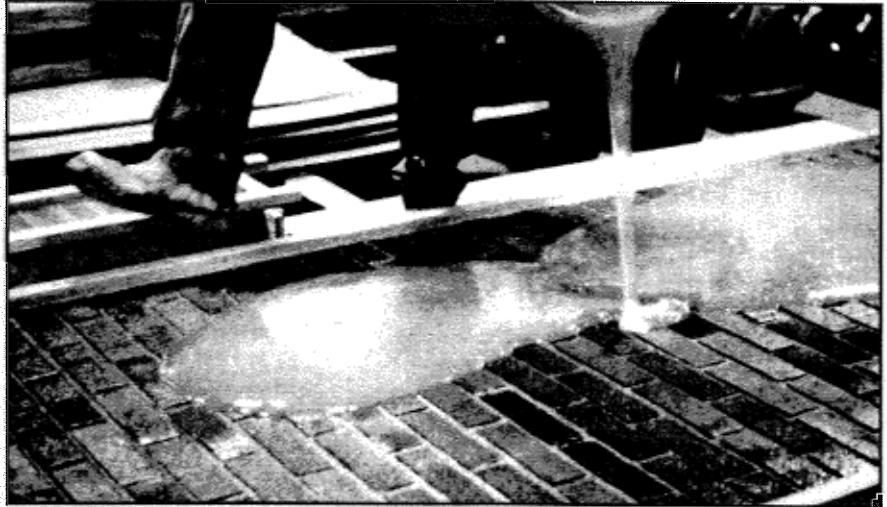
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Slowly He Turned ...

You probably think that I am going to present a comedic sketch of some sort, like I almost always do. It's probably my fault for having made some of you avowed fans of this column (I have been told of fan clubs of mine that exist around the country, but I have never been able to track any of them down to collect their dues—I'll have to ask Win Lindeman how he collects the dues from his fan clubs while I'm at the A1F04 Summer Conference), but I am also aware that there are many out there who consider my editorials third-class dog-doo, and have threatened to have me locked up in an abandoned anechoic chamber with 400 bats.

So be it. That done, let us turn to the constructive endeavors that brought this canvas to us to be written upon. This is the heralded The Wall Journal, which today is known and read by engineers, scientists, technicians, students and others engaged in making the world a quieter, safer and saner place.

Since its inception in 1992, The Wall Journal has grown from four pages at the start, to 24 pages with the ninth issue, where we then stabilized to maintain a healthy subject-matter-to-advertising-space balance.

We have a very selective readership, which is carefully monitored for accuracy and completeness. Our readers are in every state in the U.S., and in Canada, Hong Kong, France, Israel, Australia, Denmark, Republic of China, Japan, Saudi Arabia, Sweden and New South Wales.

We thought about building a website

for a while, but we couldn't figure out how we could run a paper issue and an Internet issue at the same time that made sense. Also, we live and breathe in the low-rent atmosphere, and could not therefore afford the luxury or expense of a website. Case closed.

Now, the other thing that I guess everybody knows, is that federal, state and local officials receive free subscriptions to The Wall Journal. Also universities, public libraries, certain authorities and institutions. Before we started The Journal, I polled some close friends about how a low-cost (less than \$20.00) subscription would be received by government officials.

In general, I was told that it wasn't the price so much as the bother of getting a voucher approved. Also, funding for such things was dropping fast. If we wanted readers, we would have to give it to them.

O.K. We'll take a shot. Maybe the ads revenue will make up the overhead and we'll just forget about salaries (I keep using the editorial "we" but there is nobody else here but me. Just me, not him, not her, no dog, no cat, no Aunt Mary, NO BODY!).

Now, we're doing our (my) 35th issue, and this has been one of the toughest. The problem is that, while noise mitigation work seems to be still growing, I don't get much information of it. Unfortunately, being retired, I'm out of the loop on funding and construction. As the Duke would say, "I don't get around much anymore." I barely had enough to fill out this issue. In fact, I had to throw in a lot of pic-



tures to fill up the empty spaces. Now that's a lousy way to treat an editor. What a good editor needs is lots of information to sort through and arrange in a pleasing format for the authors and photographers. Then, of course, the so-so stuff goes in a basket, where it stays until there is nothing, nada, that is worth printing, and you have to scan pictures out of catalogs and books to fill up the glaring, empty white spaces.

NOW, we come to the **Slowly He Turned....** If you don't know where we're going, you haven't been paying attention. See the picture of your editor above? He's a lot closer than he was in the last issue. He's got his face in your face!

He has slooowly turned to look at you, and he is examining everything. He is looking at The Journal and what it is doing for him and to him. Almost six years of work for absolutely no pay; in fact, he paid out of his pocket to keep The Wall Journal alive.

He wants you to know that, in the beginning, the editor was very, very enthusiastic about publishing a journal on transportation-related noise and vibration. Right now, he is slowly turning and slowly evaluating his life and his missions. ■

The Wall Journal

The International Journal of Transportation-Related Environmental Issues

Volume VII, 1998
Issue No. 35

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The Wall Journal Corporation.

Subscription and advertising information are shown on page 23. The Wall Journal is composed in its entirety on Apple Macintosh computers using QuarkXPress electronic publishing software.

The Wall Journal is published six times a year. Issues are mailed bi-monthly on or about the first of the second month in the designated two-month issue date.

The Wall Journal is a publication of The Wall Journal Corporation. Editorial, subscription and advertising offices are located at 205 Danby Road, Lehigh Acres, FL 33936. Telephone us at 941 369-0178 or fax 941 369-0451. Submissions of papers, articles, letters, and photographs for publication should be addressed to The Wall Journal, P.O. Box 1389, Lehigh Acres, FL 33970-1389.

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Circulation is made to government agencies, consulting engineers, scientists, universities, contractors, vendors and others with an interest in transportation-related environmental issues. Readership is primarily in the United States and Canada, with growing interest in Europe, Asia and the Pacific Rim.

ANNOUNCEMENTS

FEDERAL HIGHWAY ADMINISTRATION ANNOUNCES RELEASE OF TRAFFIC NOISE MODEL (FHWA TNM®)

The Federal Highway Administration (FHWA) is pleased to announce the release of the Traffic Noise Model, Version 1.0 (FHWA TNM). The FHWA TNM is an entirely new, state-of-the-art computer program used for predicting noise impacts in the vicinity of highways. It uses advances in personal computer hardware and software to improve upon the accuracy and ease of modeling highway noise, including the design of effective, cost-efficient highway noise barriers.

The FHWA TNM contains the following components:

Modeling of five standard vehicle types, including automobiles, medium trucks, heavy trucks, buses, and motorcycles, as well as user-defined vehicles.

- Modeling of both constant-flow and interrupted-flow traffic using a 1994/1995 field measured data base.
- Modeling of the effects of different pavement types, as well as the effects of graded roadways.
- Sound level computations based on a one-third octave-band data base and algorithms.
- Graphically-interactive noise barrier design and optimization.
- Attenuation over/through rows of buildings and dense vegetation.
- Multiple diffraction analysis.
- Parallel barrier analysis.
- Contour analysis, including sound level contours, barrier insertion loss contours, and sound-level difference contours.

These components are supported by a scientifically-founded and experimentally-calibrated acoustic computation methodology, as well as an entirely new, and more flexible data base, as compared with that of its predecessor, STAMINA 2.0/OPTIMA. The Data Base is made up of over 6000 individual pass-by events measured at forty sites across the country. It is the primary building block around which the acoustic algorithms are structured.

The most visible difference between the FHWA TNM and STAMINA 2.0/OPTIMA, is TNM's Microsoft® Windows interface. Data input is menu-driven using a digitizer, mouse, and/or keyboard. Users also have the ability to

import STAMINA 2.0/OPTIMA files, as well as roadway design files saved in CAD, DXF format. Color graphics will play a central role in both case construction and visual analysis of results.

Computer Requirements

The recommended computer system requirements for TNM Version 1.0 are:

- Computer: IBM-compatible PC;
- Processor: 120 MHz Pentium (or faster);
- Memory: 32 MB (or more);
- Disk Drive: 3.5 inch, 1.44 MB;
- Mouse input device;
- Monitor: Accelerated Super VGA (1024 x 768), 16 colors, configured with "small" fonts;
- Software: Microsoft® Windows 3.1 (or later): Note: TNM will run under Microsoft® Windows 95 or Windows NT, however, TNM is a 16 bit program and will not take full advantage of the 32-bit architecture associated with Windows 95 or NT.
- 10 MB of hard-disk space for the TNM system (including sample runs); and
- Up to 1 MB of hard-disk space for each TNM run.

To digitize coordinates from plan sheets and roadway profiles, the following is required:

- Digitizer: Any manufacturer/model that meets the LCS/Telegraphics Wintab Interface Specification, preferably with a 16-button puck. The digitizer manufacturer should provide the file WINTAB.DLL, which must be resident on the hard disk for digitizer use.

The FHWA TNM Package: The FHWA TNM package includes the following:

- Two TNM manuals: The TNM User's Guide and the TNM Technical Manual (Note: The User's Guide and Technical Manual may be photocopied. See below for information on how to order additional copies of either document.);
- The FHWA TNM software on three 3 1/2" diskettes;
- One CD-ROM with the "TNM Trainer" tutorial; and ■ The TNM registration card. Please fill out and return this card. Registered owners are entitled to receive technical support and information on upgrades and supplementary guides.

Copyright: FHWA TNM is a registered copyright.

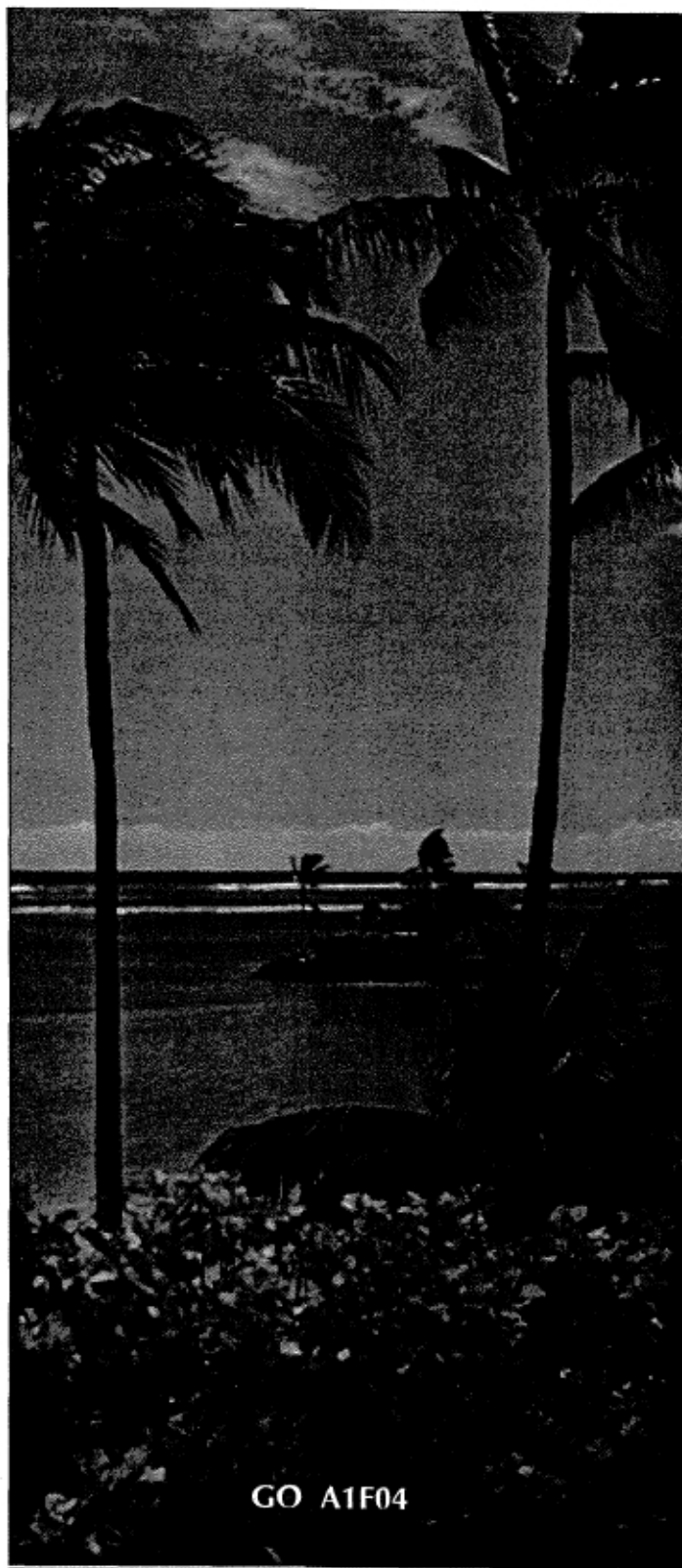
Trademark: FHWA TNM is a registered trademark.

Availability: The FHWA has distributed TNM Version 1.0 free of cost to every State Department of Transportation (DOT). All State DOTs may make sufficient copies of the TNM package for internal use only. For all other users, TNM will be distributed by the McTrans Center at the University of Florida. Non-State DOT users have three McTrans licensing options for the FHWA TNM: (1) they may purchase a single license, which is valid for a distinct address (or site); (2) they may purchase an unlimited agency license, which is valid for multiple addresses (or sites) within the same organization; or (3) they may purchase a license for training or educational purposes. A McTrans order form is available from McTrans Center (see below). Purchase the FHWA TNM by selecting from the following McTrans product ordering numbers:

Product		
No.	Description	Cost
TNM.WIN	FHWA TNM (for single site license):	\$695.00
TNM.AL	FHWA TNM (for unlimited agency license):	\$2750.00
TNM.TC	FHWA TNM (for training/educational license):	\$2750.00
TNM.D	FHWA TNM User's Guide:	\$20.00
TNM.DS	FHWA TNM Technical Manual:	\$20.00

Further information on TNM can be found on the McTrans website: <http://www-mctrans.ce.ufl.edu> Purchase orders, checks, or money orders payable to "McTrans", with the McTrans Order Form, may be sent to:

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Gainesville, FL 32611-6585



GO A1F04

You should really be in St. Petersburg, Florida in July 12-15 where the water is purest blue and it never, ever snows, and the flowers are gorgeous and the palm trees are swaying, and the music is playing, and the brightest and best-informed acoustics scientists will be performing before an enthusiastic audience.

Concrete Solutions Inc. Launches New Product Line World Wide

Patent Issued, New Light Weight Acoustical Panel Design and Additional Products

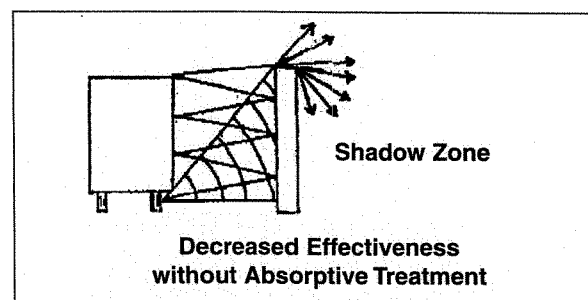
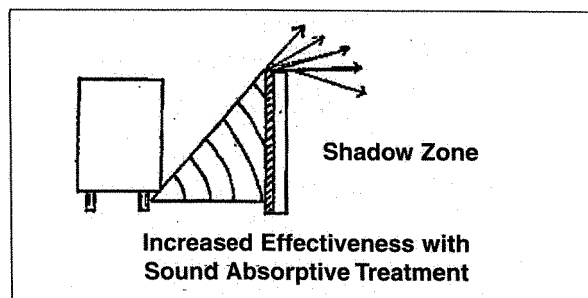
Concrete Solutions, Inc. announced the approval and entry of their open cellular cementitious sound absorptive material into Japan in this publication in 1996. Since then, two projects have been installed and continuous production is under way for four more additional projects. Japan is pleased with the cost savings of over 30% compared to traditional sound absorptive material used in the past. The front cover of their brochure (attached inside this issue) displays the latest installation in Japan. The qualifications and specifications established by the Japan Institute of Standards are more rigorous than the United States and thanks to our representative and quality minded manufacturer, the approval process was accomplished in three years, rather than the ten years, as we were originally advised. Our acoustical cementitious material is the first, and thus far, only U.S. construction related sound absorptive material approved for use for sound barriers in Japan.

The approval in Japan was related to the advancements made in the mix design, which the material has been based on since 1996, with changes significant enough for a patent filing. The patent was granted in April 1998.

Product submittal was also made in Canada and after durability testing by the Ministry of Transportation, our product was approved for use, however, we also found our trade name, SoundTrap®, unavailable. Since our trade name was unavailable in both Japan and Canada, and along with the advent of our new patent and sound absorbing light-weight panel, an internal decision was made to associate all these products under a name to be used internationally. Our flagship and basic product is now called SOUNDSORB® and the light weight panel is SOUNDSORB® 2000. The SOUNDSORB material in both product lines is a low-cost solution and provides effective anti-noise qualities that exceed typical state requirements.

During the period of the approval process, CSI was working in the U.S. with the appointed manufacturer in Washington State, Concrete Products, Inc., to develop a low cost light-weight (35 lbs/sq ft) sound absorptive barrier with exceptional properties. SOUNDSORB 2000 was developed and designed to address the need for a light-weight wall system with acoustic qualities. Tests were conducted on a 15' x 12' x 6" wall with a six inch edge beam at 4000 psi. Physical flexural tests were conducted on the panel manufactured by Concrete Products, Inc. with excellent results. The test panel was stressed to determine a seismic load equivalent to seismic zone 4 and was successful. The wind load equivalent was in excess of 115 mph. Originally, the purpose was to develop a light-weight monolithic panel for application where typical precast weights are unsuitable, i.e. bridges, unstable soil, high water tables and high level seismic zones. The panels were then submitted to NVLAP certified independent labs for noise testing and found that the panel also provided not only sound abatement, but noise absorption properties, as well. This was of particular significance, as the

change in our mix design and higher product density resulted in acoustical properties that exceed an NRC of .80 and an STC of 26. SOUNDSORB 2000 exceeds state highway noise barrier requirements and is AASHTO compliant. Both SOUNDSORB products serve in the typical use for parallel barrier applications, but as noted in the "Technical Assessment of the Effectiveness of Noise Walls," reported in the March 1998 edition of Noise News International, there is a need for absorption when walls are erected on only one side of the highway. The reason is what's being termed, "Time Related Effects." This occurs as the vehicles, such as cars, trucks and trains, are actually reflecting bodies that are moving. The noise/sound reverberation actually occurs between the vehicle and reflective walls, which degrades sound abatement performance. Therefore, the conclusion derived in the above technical assessment was **"placing absorptive material on a single barrier has theoretically two advantages (see drawings below). One is to reduce diffracted sound into the shadow zone. The second is to minimize sound reflection between the source and the barrier surface, thus avoiding the build-up of the sound level."**



Sound absorption is created primarily by porosity, and if this porosity allows water to enter the pores or to be wicked into the porous cementitious material, the sound absorptive effectiveness is diminished. It appears that the most overlooked issue concerning the field use of sound absorptive highway barriers is the water (rain) effect. It is well known that the most effective sound absorber is shag carpet, but if it becomes wet, it loses its sound absorptive qualities. It is also well known that a wet road surface emits more noise than a dry surface. Therefore, it is quite obvious that during those periods when noise absorption is needed most, the barriers are less effective. That effect now has a solution, SORBSHIELD®.

PRODUCT NEWS

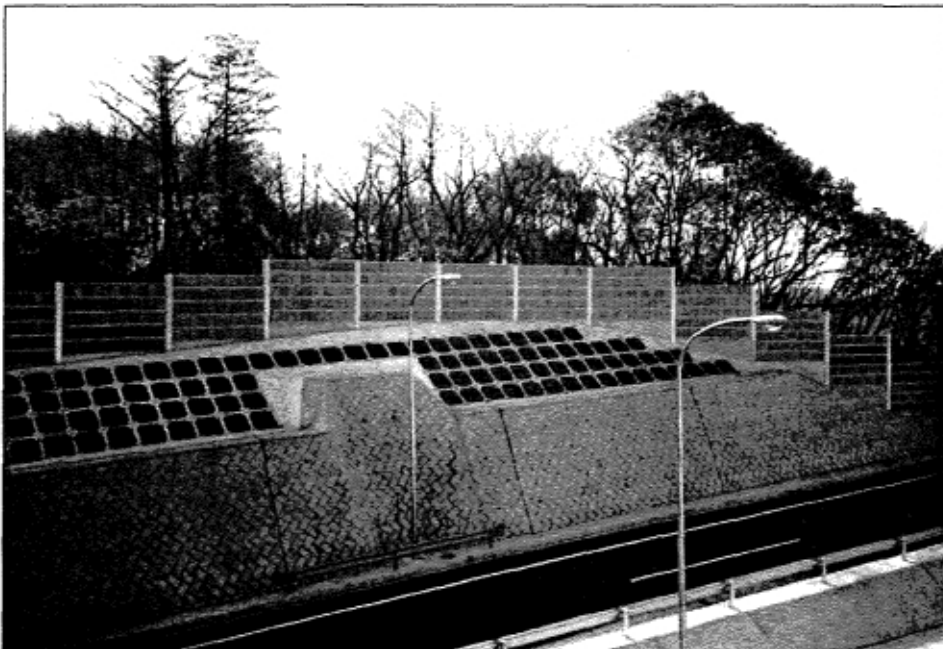
Exterior Noise Absorptive Material Has Interior Applications:

SORBSHIELD is a hydrophobic clear liquid that prevents water from entering a porous cementitious surface by setting up a naturally occurring negative ionic charge on the surface of a wall or panel. Since water also carries a naturally occurring negative ionic charge, water is repelled from the surface. SORBSHIELD is unique when compared to all other water repellents used with cementitious material, be it porous or non-porous structural. There are no solids, which typically lose their effectiveness by UV degrading. In fact, ultra-violet light actually, either direct or indirect, activates and electrostatically charges the surface of the material naturally. Water repellents are typically useful only for a five year period due to the UV degrading and are not used with porous material surfaces, as the solids in the solutions tend to clog the pores, diminishing the natural sound properties. This does not occur with SORBSHIELD, **allowing for lasting acoustical protection.** The cost of this product is approximately .15 to .20 cents per square foot, depending on its application. It has also been tested to be compatible with the Fosroc Cemen-trate Stain and can be applied over the stain.

Concrete Solutions, Inc. continues to provide the transportation industry with quality solutions to all forms of noise abatement. For more information, contact our web site at WWW.SOUNDSORB.COM or e-mail csi@soundsorb.com or by phone at 512-327-8481. ■

Concrete Solutions, Inc. (CSI) announces that its highly sound absorptive porous cement based material, SoundSorb® is being used within buildings to absorb reverberating noise. SoundSorb, which is typically integrated with a structural concrete backing and used in North America, Australia and Japan along highways, railway and industrial sites to abate noise, also has interior retro-fit capability. The "pure" SoundSorb material in panel or cladding form affixed to interior surfaces or integrated into a concrete precast wall during the manufacturing process can provide an attractive natural look, such as brick, stone, rock, wood, graphic art, etc., while preventing sound reverberation and reflection due to its acoustical properties. Imagine the exact appearance of a stone, brick, etc. "sound reflective" wall becoming a "sound absorptive" wall. This is easily and cost effectively accomplished with the porous cement based material, SoundSorb. Additional features are the fireproof and insulating characteristics of SoundSorb, which lend themselves nicely to the interior and exterior applications. This patented material is manufactured world wide by CSI licensed wet cast wall manufacturers. For more information on SoundSorb, please see the advertisement on p.17. Brochures are available from CSI, 3300 Bee Cave Rd., Ste. 650, Austin, TX 78746. (Ph: 512-327-8481) & (Fax: 512-327-5111). Web site: WWW.SOUNDSORB.COM ■

PLEASE LOOK FOR OUR ADVERTISEMENT ABOUT SOUNDSORB ON PAGE 17 OF THIS ISSUE, AND VISIT US AT OUR SITE ON THE INTERNET.

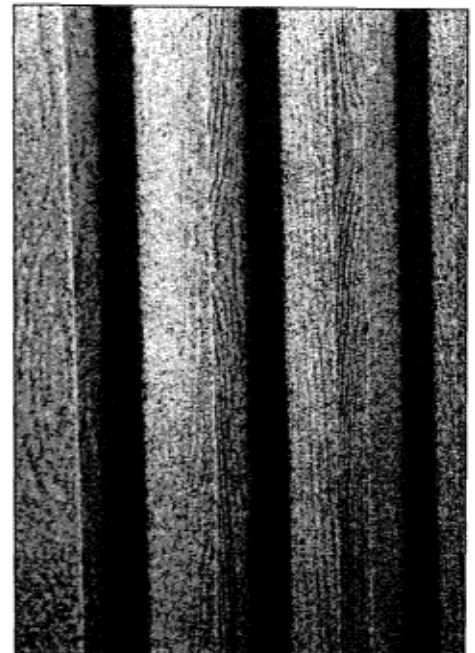


Above: Portion of SoundSorb installation mounted on retaining wall structure in Japan.

The photo on the cover of this issue is a close-up of the wall under installation, using the stacked panel style with basic steel I-beam posts 4 meters high. The panel texture is alternating vertical and horizontal deep rib surface.

Below: Close-up of the textured wall in Washington State, showing the fine wood grain appearance and capture of detail that has been stamped on the absorptive material's surface. A photo of the wall being installed is on the cover of this issue.

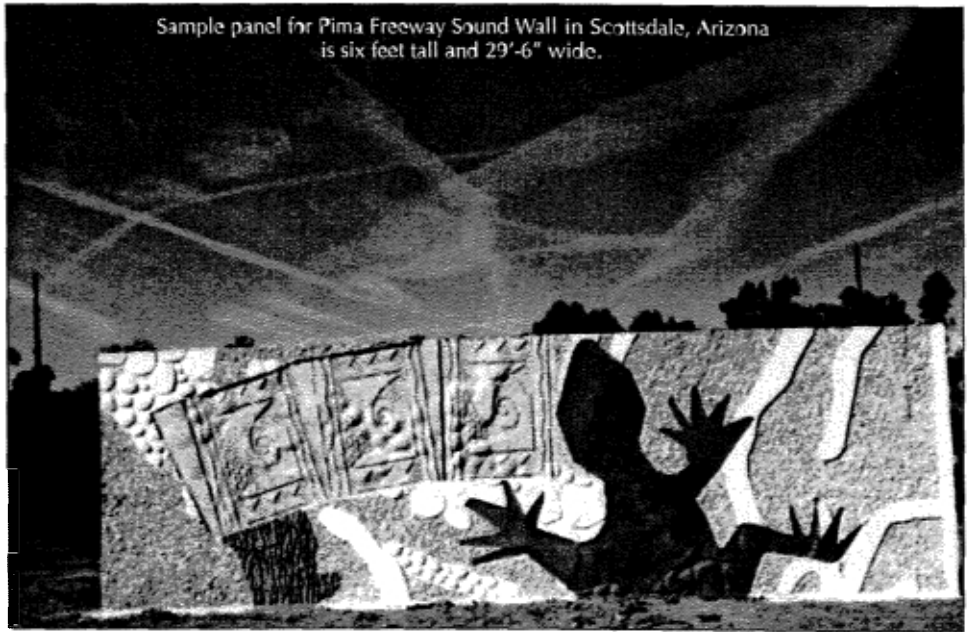
The project uses a monolithic panel style 15 to 22 feet high with integrated concrete posts on the residential side.





Pima Freeway 101 Sound Wall, Scottsdale, AZ **An 8-mile long work of art under construction**

By Dana Scott, Scott System, Inc., Aurora, CO



Scottsdale, AZ - How does a 67 foot lizard scale a concrete wall? On Scottsdale's Pima Freeway sound barrier, it takes the coordinated efforts of many. The city is spending over 4 million dollars on design components to turn the Pima Freeway into an 8 mile work of art. The barrier currently under construction, ranges in height from 20'-60' and is undoubtedly the most extensive public art project utilizing concrete and custom molds ever attempted. Instead of standard gray and imposing concrete, the Pima project features a variety of cactuses, lizards, and mountain range reliefs in shades of mauve, purple, sage green and tan.

"The key to the success of the Pima art/sound wall project, has to be the team work effort of all those involved. Close communication and coordination has been maintained between the designers, engineers, city officials, suppliers and contractors alike", according to project manager, Jeff Englemann of landscape architectural firm, Coe & Van Loo (Phoenix). Englemann has been a central point of contact from the project's early phase although his firm was brought in after design was about 60% complete. Joining the Pima team at this stage allowed Coe & Van Loo only four months to put together the entire design package, including plans, specifications, and cost estimates. Englemann

was faced with creating a signature piece for Scottsdale, meeting a tight design schedule and persuading ADOT that the art could truly be replicated in urethane molds and transferred to the highway walls.

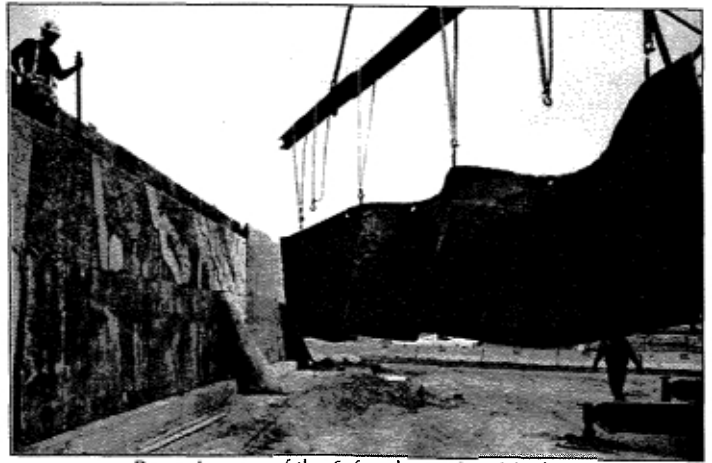
Kate O'Mara, Scottsdale Public Arts Project Manager, headed up the artist selection process that awarded the creative work to Colorado artist, Carolyn Braaksma. Braaksma, whose credits include public art projects in Minnesota, Colorado, Florida and now, Arizona, teamed up with Englemann and Andrea Forman of Forman Architects to create the unique images. "We spent many long weekends together just designing and laying out patterns," Braaksma said, referring to their time together burning the midnight oil. The design team drew their inspiration from desert themes and patterns of the Maricopa Indians. Their concepts were brought to manufacturer, Scott System of Aurora, Colorado to create special molds replicating their images.

Scott System, with a 30 year history of producing urethane form liners for architectural concrete, was eager to take on this highly visible and unique project. According to Buck Scott, president of Scott System, "We were faced with a number of challenges requiring some creative planning to meet the fast-track schedule." Scott System's Graphics Department had to create a variety of textures and patterns

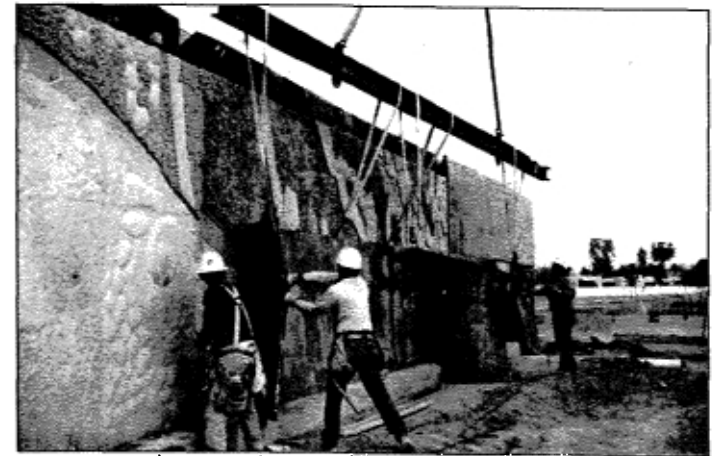


in multiple combinations for designs featuring lizards, prickly pears and other southwestern themes in massive sizes. Scott advised that the team incorporate existing textures wherever possible and to limit the depth of relief. Textures of 1 1/2" depth or less were utilized, yet the shallow relief does not appear to have limited the imagination of the designers.

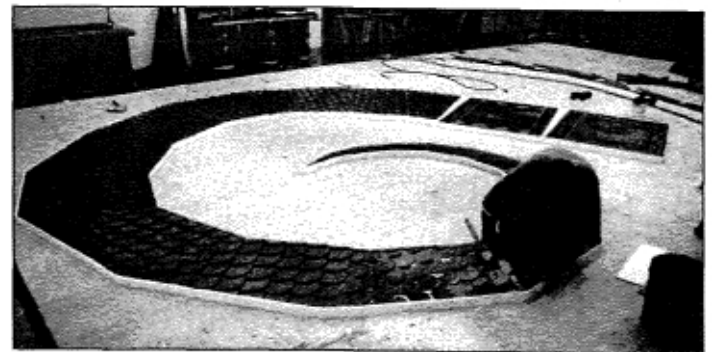
Once production of the special molds began, Scott realized that additional hands were needed. By contacting art and civil engineering departments of local colleges, Scott System soon had a work crew of talented students cutting and producing the custom liners. "The students were great workers and happy, I think, to add this project to their resumes," according to Terrance Charters, Scott System project coordinator. Over 20,000 square feet of urethane liner has been



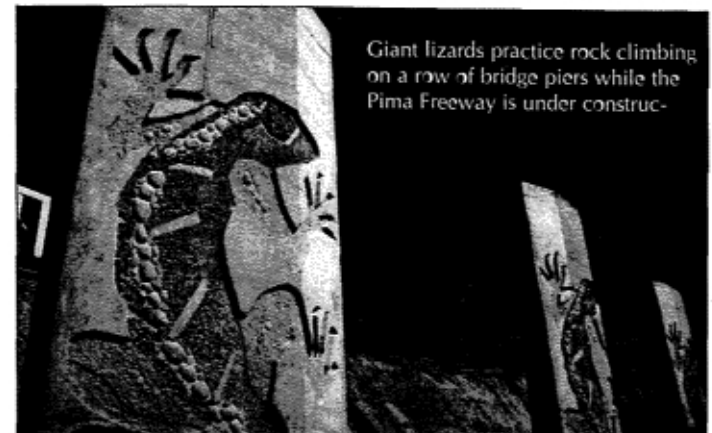
Removing one of the 6-foot by 29 feet 6-inches urethane molds on the Pima Freeway Sound Wall Project



Workers removing one of the massive urethane liners used to create the artistic images on the Pima Freeway project.



Scott System mold maker works on the spiral Maricopa design used on the Pima Freeway project.



Giant lizards practice rock climbing on a row of bridge piers while the Pima Freeway is under construc-



Civil Engineering students get hands-on experience creating urethane molds for the Arizona DOT Pima Freeway project.

produced for the Pima project so far.

CAD software that was used for the shop drawings enabled all the participants to make changes and updates easily. With over 90 different images combined with 10 types of textures, the project team found computer-aided design an essential tool.

Construction management for the Arizona DOT is under a partnership between URS Greiner Engineering and Entranco Engineering of Phoenix. Meadow Valley Contractors, also of Phoenix is heading up the entire freeway construction project, including the concrete form work. Dick Weston, Construction Manager of Greiner/Entranco partnership, is enthusiastic about the statement the walls will make. "Our freeways have become our main streets," Weston comments, "...and we have an obligation to make them aesthetically pleasing." On the Pima Freeway, "aesthetically pleasing" means lizards the size of dinosaurs scampering over 40 foot cactuses. Here in Scottsdale, the collaboration of the Pima project team is providing a creative monument for a city that has more than a passing interest in art.

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- PLUS a fully operational MicroStation interface program to create/edit STAMINA input files from roadway design files or to digitize from plan sheets (provided to participants at no additional cost)
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- FHWA has mandated the TNM software be purchased from the McTrans Center at the University of Florida.

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Drs. Cohn or Harris at 502/852-6276

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of LOUISVILLE**



We hope to see you in St. Petersburg, Florida, July 12-15
— The TRB A1F04 Committee

LETTER TO THE EDITOR

HOOVER TREATED WOOD PRODUCTS, INC.
P.O. Box 746, Thomson, Georgia 30824
(706) 595-5058 Fax: (706) 595-1326

El Angove, Editor
The Wall Journal

May 29, 1998

Re: Noisy conclusions in "Evaluation of Low Cost Highway Noise Barriers"

The referenced report is the subject of an article in Issue 33. It statistically ranks competing 12-foot high noise barriers. I believe the report's data and conclusions are very "noisy." Some of the reasons are as follows:

1. Constructability: Page 66 quotes an unrealistic installation rate of 120 panels per 3-man crew per 8 hour day for the top-ranked system, which is about 500% faster than contractors actually bid.
2. Foundation depth: Table 4-1 quotes some manufacturers' recommended foundation depths that are only 33% of wall height. Job specs, on the other hand, consistently require foundations to be 60% or deeper. All equal span widths should be assigned the same foundation depth. (p. 24).
3. Structural Integrity: Page 14 states that all barriers claiming to meet AASHTO specifications shall be considered structurally equal, but concrete barriers are assigned the highest base score because they "include reinforcing steel which increases the integrity of the

barrier" (pg. 51 and 61). Using similar logic with a twist one could say that concrete should be penalized because it requires reinforcing steel.

4. Longevity: Concrete barriers are assigned a higher score even though three of the concrete systems have shorter life spans than wood (Table 5-17 and 5-20).

5. Aesthetic Scoring: Page 65 incorrectly states that the highest aesthetic score for all reflective barriers is that of three of the concrete barrier systems. Table 5-24 on the same page shows higher aesthetic scores for all 3 wood systems than for any of the concrete systems.

6. Safety (i.e., fire): In spite of the fact that no barrier (to my knowledge) has ever been destroyed by fire, some wood systems take a big penalty in this category (page 63). Wood sound walls do not burn easily. Model building codes recognize the high fire resistance of heavy timber. It is difficult to ignite.

There are other problems which I will not mention here in the interest of brevity. Suffice it to say that I believe this report's conclusions are biased and are drowned out by the noise in the data.

Sincerely,

Glenn Wilson
Hoover Treated Wood Products, Inc.

(ED. NOTE: Mr. Wilson's comments are referenced to the final report, which was not published in The Wall Journal, but was made available by the author of the article, James Byers of PennDOT).

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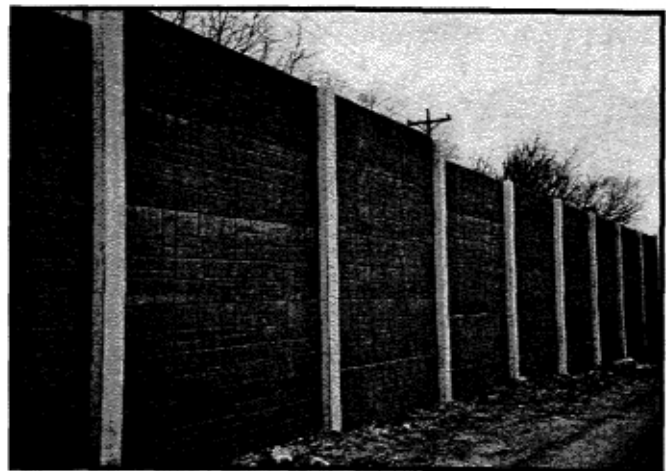
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What anniversary, you say? You say you positively do not have any old anniversary coming up now, or ever!

Well, bubba, this is certainly your year, and I can prove it. Let me tell you a little story about some people who, 20 years ago, that's right, 20 years ago these people opened up a new world to you. There you had been for years, plugging away at sewer and drainage problems, and an occasional clean-up of a toxic waste dump to break the tedium. And suddenly, you were becoming immersed in the glamorous

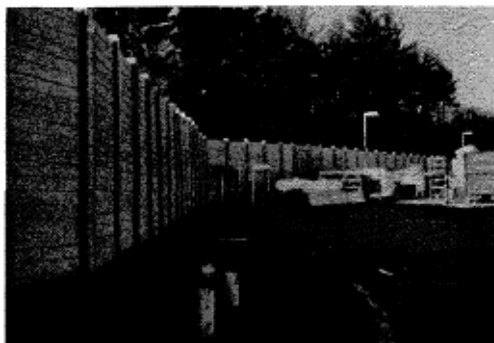
and exciting world of protecting the environment! You were joining the battle against air, noise and water pollution. And, federal and state funding programs were sprouting up all about.

Happy anniversary, bubba. Twenty years ago, you got off the train at Los Angeles' Union Station and hurried to meet the more than 100 attendees at the TRB Conference at the Bonaventure Hotel. There were many things that you were going to learn from the conference sessions, and as much more in the after hours sessions.

A good time was had by all, as they say, but there were some that had a better time than others. A complete list of attendees is at the end of the next few pages of information on that first real conference in California. — Ed.■

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In the Fall of 1978, many of us received an invitation to attend a conference which would ultimately and forever impact the lives and careers of some. But, at that faraway time, highway traffic noise barriers were just coming on the scene, and were just a curiosity to some. For people like me who lived in Massachusetts, a conference in Los Angeles in December was just what the doctor ordered. So, I sent in my money and my reservations and waited for the snow to fall.

Here's what the invitation had printed on its cover:

**Conference on
Highway Traffic
Noise Mitigation**

Los Angeles Bonaventure Hotel
Los Angeles, California
December 11-15, 1978

Transportation Research Board
National Research Council
Federal Highway Administration
U. S. Department of Transportation

Here's what the invitation said:

"At the request of the Federal Highway Administration of the U.S. Department of Transportation, the Transportation Research Board will conduct a Conference on Highway Traffic Noise Mitigation. The conference will provide a national forum for the discussion of noise abatement experiences and techniques that have been used successfully at the state level, with specific emphasis on noise-barrier design tools, materials, systems, and community interaction in barrier projects. The conference will provide an opportunity for highway designers, engineers, and planners to review current mitigation techniques and exchange valuable information on the selection of appropriate techniques within the existing economic, social, and environmental climates that will solve noise problems.

Federal-Aid Highway Program Manual 7-7-3, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, contains specific standards that require state highway agencies to perform a traffic noise analysis and prepare a noise study report. In the

traffic noise analysis, the state is required to examine and evaluate alternative noise abatement measures for reducing or eliminating traffic noise impacts. The noise study report requires that the highway agency discuss the proposed noise abatement measures and provide descriptive information that portrays their design details, anticipated effectiveness, and estimated costs and benefits. However, there is little documented field information on the effectiveness of various noise mitigation strategies or the conditions under which they are effective. This conference will provide an assessment of mitigation techniques that have been used at the state level. Emphasis will be on practical experience rather than on theoretical applications."

On the following pages, you will find the Conference Program, with paper titles and author names, and on the pages following those, you will find the names of the registered attendees, as they were submitted. You will find names which have been in the forefront of this business for 20 years. ■

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Monday, December 11, 1978 10:30 a.m., REGISTRATION
1:30 p.m., PLENARY SESSION, Louis F. Cohn, New York
State Department of Transportation, presiding
INTRODUCTORY REMARKS AND CONFERENCE
OBJECTIVES, Louis F. Cohn

SESSION 1: CASE HISTORIES OF STATE BARRIER
PROJECTS, Louis F. Cohn, presiding

A CASE STUDY IN CONNECTICUT:

Barriers on I-84 in the Hartford Area, Joseph Pulaski, Con-
necticut Department of Transportation

A CASE STUDY IN FLORIDA:

Barriers on I-275 in St. Petersburg,
Win Lindeman, Florida Department of Transportation

A CASE STUDY IN MARYLAND:

Barriers on the Harbor Thruway Tunnel Project in Balti-
more, Eugene Miller, Maryland Department of Transporta-
tion

A CASE STUDY IN MASSACHUSETTS:

Barriers on I-95 in Eastern Massachusetts, Thomas Wholley,
Massachusetts Department of Public Works

A CASE STUDY IN CALIFORNIA:

Foothills Form Noise Barriers, William Green, California
Department of Transportation

Tuesday, December 12 8:30 a.m., SESSION 2: FIELD TRIP
A morning field trip to experience several noise barriers
along Southern California roadways will fill the morning.
These barriers are of interest because of their successful
design, community acceptance, and low installed cost.

1:30 p.m., SESSION 3:

COMMUNITY INTERACTION IN BARRIER PROJECTS
Fred L. Hall, McMaster University, Hamilton, Ontario,
presiding

COMMUNITY OPINION ON BARRIER AESTHETICS
Charles Adams, Maryland Dept of Transportation

YOUNGMANN HIGHWAY EXPERIMENTAL NOISE
ABATEMENT PROJECT
William McColl, , New York State Dept of Transportation

COMMUNITY ATTITUDE SURVEYS
Gary Orlich, Minnesota Department of Transportation,

CALIFORNIA EXPERIENCES IN COMMUNITY
INTERACTION PROCEDURES
Oscar Janeway, California Dept of Transportation

LIVING WITH THE BARRIER: THE COMMUNITY'S VIEW
Fred L. Hall, McMaster University, Hamilton, Ontario

(Continued on page 16)

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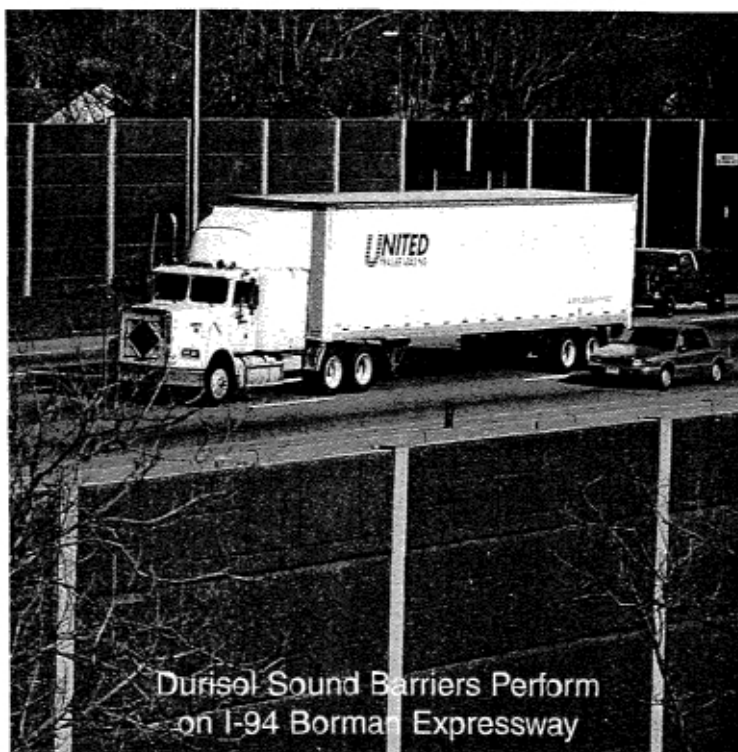
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(Continued from page 15)

Wednesday, December 13

8:30 a.m., SESSION 4:

NON-BARRIER MITIGATION OF ROADWAY NOISE, Harter Rupert, Federal Highway Administration, presiding

LOCAL AGENCY NOISE AND LAND USE CONTROL
Ali Soliman, City of Cerritos, California

PAVEMENT EFFECTS ON TIRE PAVEMENT NOISE
James M. Lawther, Pennsylvania State University

FULLERTON EXPERIENCE IN DEALING WITH THE
IMPACT OF HIGHWAY NOISE ON NEW RESIDENTIAL
DEVELOPMENT
Barry D. Eaton, City of Fullerton, California

NOISE INSULATION OF SCHOOLS IN CALIFORNIA
Walter A. Whitnack, California Dept of Transportation

INSULATION OF BUILDINGS AGAINST
HIGHWAY NOISE
Louis C. Sutherland, Wyle Laboratories

TRAFFIC MANAGEMENT AS A NOISE ABATEMENT TOOL
Jesse Borthwick, National Association of Noise Control
Officials, Florida

1:30 p.m., SESSION 5: FIELD TRIP

A field trip to an insulated school building and to a self shielded subdivision in Irvine, California, are scheduled.

Thursday, December 14

8:30 a.m., SESSION 6: NEW BARRIER DESIGN TOOLS
William Bowlby, FHWA, presiding

INSIGHTS INTO THE FHWA BARRIER
DESIGN PROCEDURE

Timothy M. Barry, FHWA

EFFECTIVE DESIGN OF HIGHWAY NOISE BARRIERS
USING THE NOISE BARRIER DESIGN HANDBOOK
Myles Simpson, Bolt, Beranek and Newman, Inc.

THE BARRIER COST REDUCTION (BCR)
COMPUTER PROGRAM
Grant S. Anderson, Bolt, Beranek and Newman, Inc.

NOISE BARRIER PARAMETER STUDY
James M. Lawther and Sabih I. Hayek, PA State University

VISUAL QUALITY IN NOISE BARRIER DESIGN,
Randolph Blum, Organization for Environmental Growth

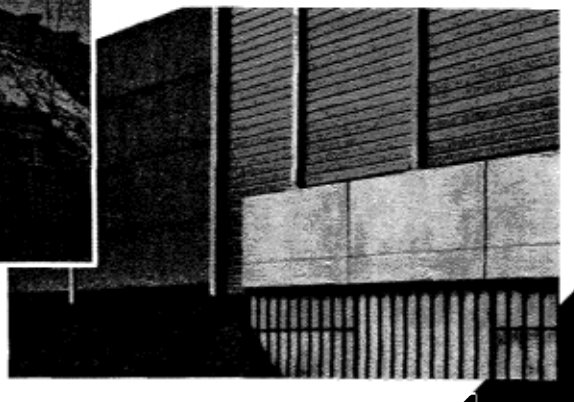
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1:30 p.m., SESSION 7: BARRIER MATERIALS

Charles B. Adams, Maryland Department of Transportation,
presiding

SOUND BARRIER PLANNING IN VIRGINIA: A COMPRE-
HENSIVE REVIEW AND SELECTION PROCESS DESIGNED
TO MAXIMIZE THE PERFORMANCE AND SOCIAL ACCEP-
TANCE OF HIGHWAY SOUND BARRIERS

Ahmet C. Anday, Virginia Department of Highways and
Transportation

OPTIMUM WEIGHT OF BARRIER MATERIALS,

Daryl N. May, Ontario Ministry of Transportation and Com-
munications

SURVEY OF NOISE BARRIER MATERIALS ,

Earl C. Shirley and Mas Hatano, California Department of
Transportation

SOUND ABSORBING BARRIERS: MATERIALS
AND APPLICATIONS

Christopher W. Menge, Bolt, Beranek and Newman, Inc.

Friday, December 15

8:00 a.m., SESSION 8: BARRIER SYSTEMS, Mas Hatano
presiding

NEVADA'S EXPERIENCES WITH BARRIER SYSTEMS

Randy Bowling, P.E., Nevada State Highway Department

NOISE BARRIER SYSTEMS SELECTION ON STATE
HIGHWAYS IN THE SAN FRANCISCO BAY AREA

Ron Olson, P.E., et al., California Department of Transporta-
tion, San Francisco

FREEWAY BUFFERING SYSTEMS, CITY OF CERRITOS,
Ali Soliman, City of Cerritos, California

FREEWAY TRAFFIC NOISE ABATEMENT PROGRAM
IN THE LOS ANGELES AREA

Frank J. Weidler, P.E., California Department of Transporta-
tion, Los Angeles

MINNESOTA'S EXPERIENCE WITH
NOISE BARRIER SYSTEMS

Ronald Canner, Jr., Minnesota Department of Transportation

And that was the end of a great conference and a very enjoyable experience. I was amazed at how quickly comradeship blossomed, and how gifted professionals were able to develop close rapport with technical people they had just met. Fortunately for me, I was able to attend many A1F04 meetings in the 20 years since the Los Angeles event, and I find that the same people seem to be the ones who are driving the big environmental bus for the transportation sector. I know you will find most of their names in the list on the following pages. — Ed.

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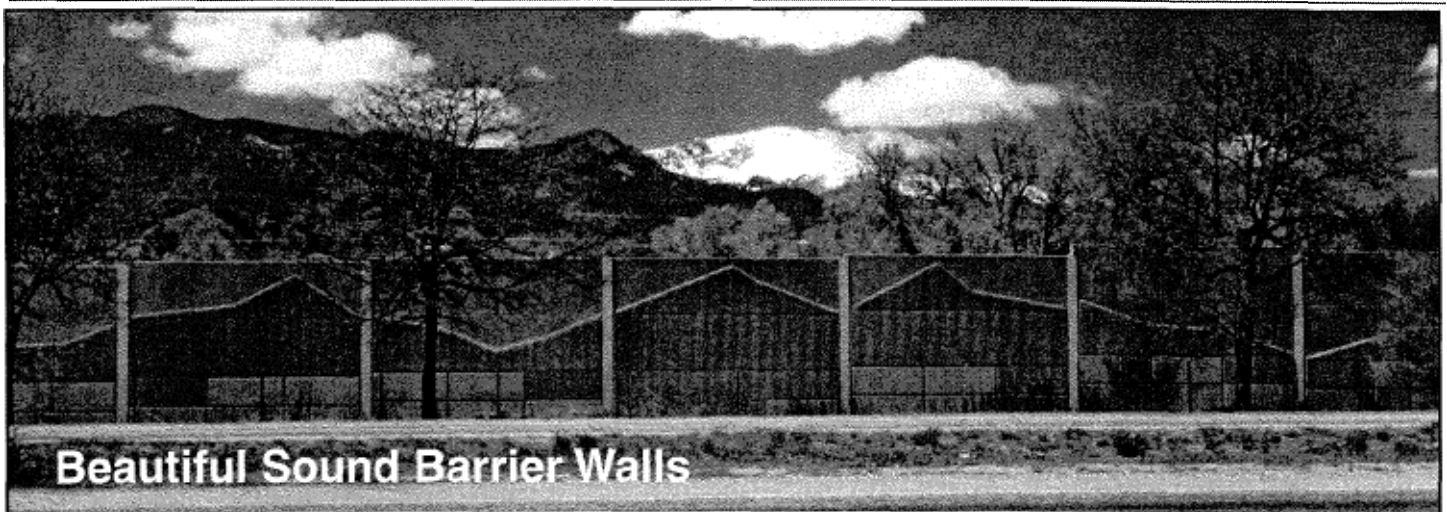
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LIST OF ATTENDEES

CONFERENCE ON HIGHWAY NOISE MITIGATION
LOS ANGELES BONAVENTURE HOTEL
December 11-15, 1978

Charles B. Adams, Maryland DOT, Baltimore, MD
Larry W. Ahlheit, Tennessee DOT, Nashville, TN
A. C. Anday, Virginia Dept of Hwys & Transp, Richmond, VA
Grant S. Anderson, Bolt Beranek and Newman, Cambridge, MA
George E. Andrews, Nevada State Highway Dept, Carson City, NV
El W. Angove, The Fanwall Corp., Framingham, MA
Nathan M. Banks, FHWA, Sacramento, CA
Timothy M. Barry, FHWA, Washington, DC
Alex H. Beanum, City of Cerritos, Cerritos, CA
Steve Blake, Transportation Research Board, Wash., DC
Howard E. Blower, Armco Inc., Lafayette, CA
Randolph F. Blum, OFEGRO, Washington, DC
R. E. Bockstruck, Washington State DOT, Olympia, WA
Jesse Borthwick, NANCO, Shalimar, FL
Raymond F. Bova, FHWA, Washington, D.C.
William Bowlby, FHWA, Arlington, VA
Randall C. Bowling, Nevada State Hwy Dept, Carson City, NV
Cormac Brady, City of San Francisco, San Francisco, CA
D. Wayne Branch, FHWA, Sacramento, CA
Bryant Terry Brothers, Wilbur Smith & Assoc., Los Angeles, CA
R. M. Canner, Jr., Minnesota DOT St. Paul, MN
Louis F. Cohn, New York State DOT, Albany, NY
George H. Cramer II, Louisiana DOT Baton Rouge, LA
David W. Dettmann, Wisconsin DOT, Madison, WI

Huck DeVenzio, Koppers Co., Inc., Pittsburgh, PA
Robert D. Douglas, Interstate Division for Baltimore, Balto., MD
Barry D. Eaton, City of Fullerton, Fullerton, CA
Speros J. Fleggas, North Carolina DOT, Raleigh, NC
John Freeman-Marsh, Alberta Transportation, Edmonton, Canada
George G. Fung, CALTRANS, Sacramento, CA
James G. Geest, FHWA, Baltimore, MD
William R. Green, CALTRANS, Sacramento, CA
Rob Greene, County of Orange, Santa Ana, CA
Herbert W. Gregory, FHWA, San Francisco, CA
Robert W. Gubala, Connecticut DOT, Wethersfield, CT
Fred L. Hall, McMaster University, Hamilton, Ontario, Canada
Wendell L. Hartman, County of Orange, Santa Ana, CA
Mas Hatano, CALTRANS, Sacramento, CA
Patrick Hironaga, Hawaii Highways Div., Honolulu, HI
Alford L. Hoak, Housing & Urban Development, Los Angeles, CA
Robert M. Hochheiser, Industrial Acoustics Company, Bronx, NY
Edmund Hockaday, Weyerhaeuser Company, St. Paul, MN
John Horton, Asmose Wood Preserving Co, Santa Rosa, CA
Robert L. Humphrey, Iowa DOT, Ames, IA
Robert L. Jacobsen, FHWA, Denver, CO
Oscar Janeway, CALTRANS, Sacramento, CA
W. Darwin Kates, Delaware DOT, Dover, Delaware
Murrell King, FHWA, Sevierville, TN
Dale, L. Klohr, Illinois DOT, Fairview Heights, IL
Harvey S. Knauer, Pennsylvania DOT, St. Davids, PA
Ingolf Rohn, Triborough Bridge & Tunnel Auth., Randall's Isl., NY
Mark J. Kowal, New Jersey DOT, Trenton, NJ
James M. Lawther, Pennsylvania State University, Univ. Park, PA



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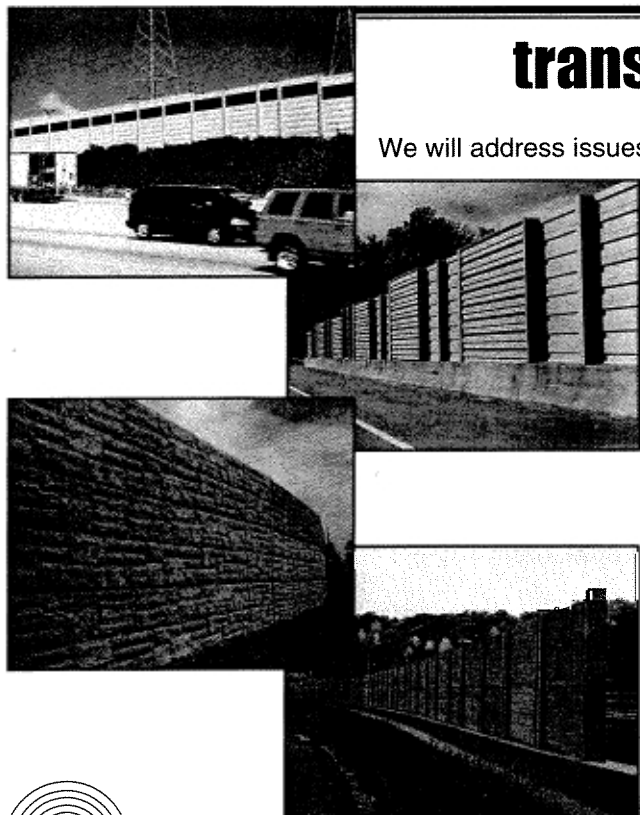
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Richard R. Lemieux, FHWA, Sacramento, CA
Eva Lerner-Lam, PRC Troups Corp., La Jolla, CA
Win Lindeman, Florida DOT, Tallahassee, FL
Ed. C. Lokken, Portland Cement Assn, Skokie, IL
Matthew J. Macchio, Illinois DOT, Springfield, IL
Russell E. Machol, FHWA, Washington, DC
Daryl N. May, Ministry of Transp., Downsview, Ont., Canada
William McColl, New York State DOT, Albany, NY
Christopher Menge, Bolt, Beranek & Newman, Cambridge MA
Eugene J. Miller, Maryland DOT, Baltimore, MD
John D. A. Neil, Utah DOT, Salt Lake City, UT
John O'Fallon, FHWA, Washington, DC
Ron Olsor, CALTRANS, San Francisco, CA
Lee Onstott, FHWA, Sacramento, CA
Gary P. Orlich, Minnesota DOT, St. Paul, MN
Kristen L. Owen, Koppers Co., Inc., Pittsburgh, PA
Diana L. Parsons, City of Calgary, Calgary, Alberta, Canada
Gordon Pate, Calif. Metal Enameling Co., Los Angeles, CA
James Phelps, Armco Inc., Middletown, OH
William H. Pickett, The Fanwall Corp., Framingham, MA
Joseph B. Pulaski, Connecticut DOT, Wethersfield,
Hans J. Rerup, Durisol Materials Ltd., Toronto, Ont. Canada
Filbert Rios, New Mexico State Hwy Dept, Santa Fe, NM
James W. Ross, CALTRANS, San Francisco, CA
Harter M. Rupert, FHWA, Washington, DC
Ernest Satow, CALTRANS, San Francisco, CA
Kathy Scutt, Soc. of American Wood Preservers, Arlington, VA
Kenneth L. Semple, American Wood Preservers Inst. Mclean, VA
Al Shablo, Colorado Dept of Highways, Denver, CO

Edward A. Sheldahl, FHWA Sacramento, CA
Earl C. Shirley, CALTRANS, Sacramento, CA
Myles Simpson, Bolt, Beranek & Newman, Inc. Cambridge, MA
Ben L. Smith, Tennessee DOT, Nashville, TN
Cloyd Smith, General Acoustics Corp, Los Angeles, CA
Ali Soliman, City of Cerritos, Cerritos, CA
Alvis H. Stallard, Kansas DOT, Topeka, KS
Winston L. Stebbins, Michigan DOT, Lansing, MI
George Stuopis, H. W. Lochner, Inc., Boston, MA
Louis C. Sutherland, Wyle Laboratories, El Segundo, CA
Robert Tanner, Acome Wood Preserving Co, Buffalo, NY
Roger I. Toffolon, Atlantic Pipe Corp, Plainville, CT
Jan Vidmar, Atlantic Pipe Corp, Plainville, CT
Bob Walsh, Kemlite Corp, Joliet, IL
Frank G. Waterhouse, CALTRANS Fresno, CA
Frank J. Weidler, P.E., CALTRANS, Los Angeles, CA
Gary E. Wells, Ultrasystems Inc., Irvine, CA
Walter A. Whitnak, CALTRANS, Sacramento, CA
Donald R. Whitney, General Motors Corp, Warren, MI
Thomas F. Wholley, Jr., Mass. Dept of Public Works, Everett, MA
Marilynn Wickers, Michigan Dept of State Highways, Lansing, MI
Robert Winter, Minnesota DOT, St. Paul, MN
David F. Zawada, H. W. Lochner, Inc., Chicago, IL

Well, folks, it was great seeing you all again, even only in remembrance of the meeting, but we sure hope to see a whole bunch of you in sunny St. Petersburg in July 12-15, y'all hear.



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Sound Transmission Class	38	51	38
Transmission Loss at 125 Hz	23	36	16
Std Panel Height, in. (mm)	24 (610)	48 (1219)	48 (1219)
Std Post Spacing, ft (m)	16 (5)	32.8 (10)	16 (5)
	REFLECTIVE SYSTEMS		
	NoiShield-R	Soundcore	AcoustaWood
Sound Transmission Class	27	51	38
Transmission Loss at 125 Hz	13	36	16
Std Panel Height, in. (mm)	16 (406)	48 (1219)	48 (1219)
Std Post Spacing, ft (m)	10 (3)	32.8 (10)	16 (5)



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May 15, 1998

Dear El:

After reading the many laments of your readership about wall effectiveness, transmission loss, absorption, etc. it is clear that we lack a standard method test for barrier effectiveness. The furniture industry faced the same problem in miniature years ago when "Partial Height Acoustical Screens" became popular for application between open-office work stations.

The same conundrum arose: What does the STC and NRC of a barrier material have to do with its effectiveness as a barrier between work stations?

After much deliberation, we on ASTM Committee E 33 evolved Standard Test method E 1375 "Measuring the Interzone Attenuation of Furniture Panels Used as Acoustical Barriers." A barrier screen material specimen is installed, where its width is at least twice its height.

This test then places a loudspeaker 6 feet from that screen and 4 feet above the floor. The sound level over a

set of standard receiver locations from seven through 14 feet from the barrier is measured. The sound level over a set of locations from three to six feet from the loud-speaker is measured as a reference.

The Interzone Attenuation (IZ) is calculated as the decibel difference between the averages of the two measurement sets. A single number rating is then calculated using a ASTM E 1110 "Standard Classification for Determination of Articulation Class," which weights the decibel IZ value according to frequency (where sound at frequencies above 1,000 Hz is far more important to speech intelligibility than sounds below 1,000 Hz., for instance).

For highway noise barriers, the E 1375 test concept can be applied, using different dimensions and frequency ratings. We would use greater spacing, perhaps double those used for furniture. The microphone height should be perhaps 8 feet to simulate the average height of a truck noise source and residential window. Frequency weighting factors would be applied according to the annoyance of traffic noise sounds to generate a single number Barrier Class (BC) value. ■

(Ed. Note: Questions, anyone?)



Close-up detail of one of many architectural patterns available for highlighting long walls and accents as shown in photo below.



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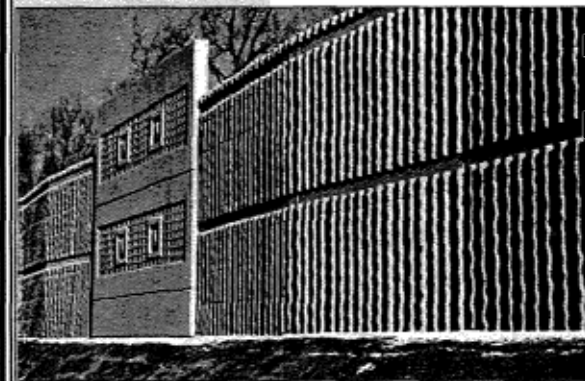
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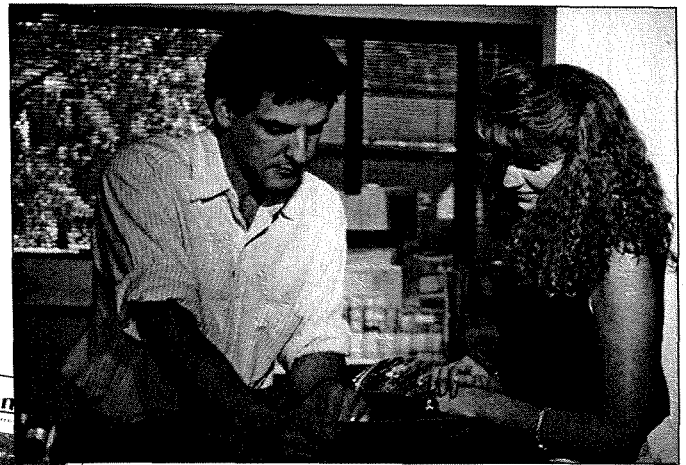
UNITED STATES



In the Back Issue Room with Sweet Darlene and Agent Adams' bodyguard



"Mr. Angove, I think that you should know that Darlene is in the back room, talking with a man who said he was with the FBI. He came with another man wearing dark glasses, who is sitting in the back seat of their car, staring at me. Should I call the police?"



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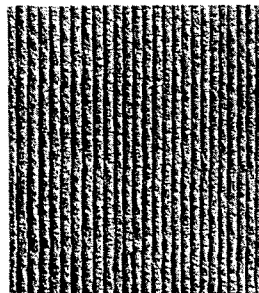
"Darlene, I'm also with the FBI so don't worry about a thing. Agent Adams is right outside in the car and he won't let anything happen to you. He just wants you to help him on an important and highly under cover surveillance case. He can't show himself just now, so I have this recent photo of him for you to see, but I can't let you keep it. You will join him at the right time. We will all soon be going to the Renaissance Vinoy Resort in St. Petersburg, at night, in disguise, to meet with Agent Adams and set up the sting. May the force be with you."

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FST NAMES STEVEN R. WHITE TO BOARD OF DIRECTORS

Burlington, Massachusetts, March 26, 1998—Fay, Spofford & Thorndike (FST), Inc. of Burlington, MA, has named Steven R. White, P.E., to its Board of Directors. White is also a Vice President of the firm and heads its Bedford, NH, office.

White has over 29 years of professional experience. He has led major highway and bridge improvement programs throughout New England. Notably, he managed the F. E. Everett Turnpike reconstruction and the ongoing Broad Street Parkway projects in Nashua, NH, and the Route 89, Exit 20, project in Lebanon, NH.

FST is a consulting engineering and planning firm that was founded in 1914. Its professional staff includes engineers, planners, and scientists with expertise in planning, design, and construction services for a wide range of projects. The staff is multidisciplinary, with civil, transportation, traffic, environmental, waterfront, structural, electrical, mechanical, geotechnical, and sanitary engineers; and transportation, traffic, environmental, and urban planners. The company has completed more than 23,500 projects in various parts of the world. ■

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SoundPLAN Wins, the leading international noise and air pollution modeling software, announces the newly established Website: <http://www.SoundPLAN.com>. Areas to explore include SoundPLAN's product pages which outline the new features of the SoundPLAN Wins modules along with various graphic presentations showing the variety of flexible graphics available. The Downloads pages offer a comprehensive overview of the algorithms used in the propagation models for Road, Rail and Industry Noise in SoundPLAN. The Support pages provide a hyper-linked listing of the SoundPLAN Distributors representing SoundPLAN Worldwide. Visit this Website for more information about SoundPLAN for Windows 95/NT.

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The Exit Ramp

You all are probably too young to remember a best-selling book titled, as I remember, "Up the Down Staircase," which I think was written by Erma Bombeck. If that is so, then I think she is the lady who also wrote a book titled "Jelly Side Down." And if that is true, then I still have a few brain cells left in working order, but the downside of that is that those cells are the ones that remember old stuff and not the ones that will tell you what your social security number is or where you left the car.

Anyhow, Erma was a neat person who I only knew from hearing her on the radio and reading her books. I had little kids running about the house at that time, and I could really strike rapport with her on the 'jelly side down' business. My little Gary (who is a brute now), has done the old JSD trick many a time while he tried to juggle his peanut butter and grape jelly sandwich (which he had sculptured himself) on the back of one hand while he tried to lick the oozing grape jelly from the sandwich being squeezed by his other hand. In time, we had to recarpet the house in purple Astroturf.

But Erma made me do some serious thinking about life and living. The 'jelly side down' thing bothered me for a long time. I wondered if it meant that I was being slovenly and careless, and being punished for it. But, I went over to Gary's house and asked him if he was still eating peanut butter and grape jelly sandwiches. Gary turned to me and said, "Dad, I'm an engineer. Engineers don't eat peanut butter and grape jelly sandwiches. What's the matter with you?" I apologized and left.

This left me now with the "up the down staircase" dilemma. You see, that coordinates with 'off ramp' and 'on ramp.' You see, sometimes on our highways, the 'off ramp' goes down and sometimes it goes up. And sometimes the 'on ramp' goes down and sometimes it goes up. Depends on the terrain. It certainly calls for...

Excuse me, there's a couple of men ringing my doorbell and I don't know who they are. I wonder why they are wearing those long white coats. ■

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