The Wall Journal™

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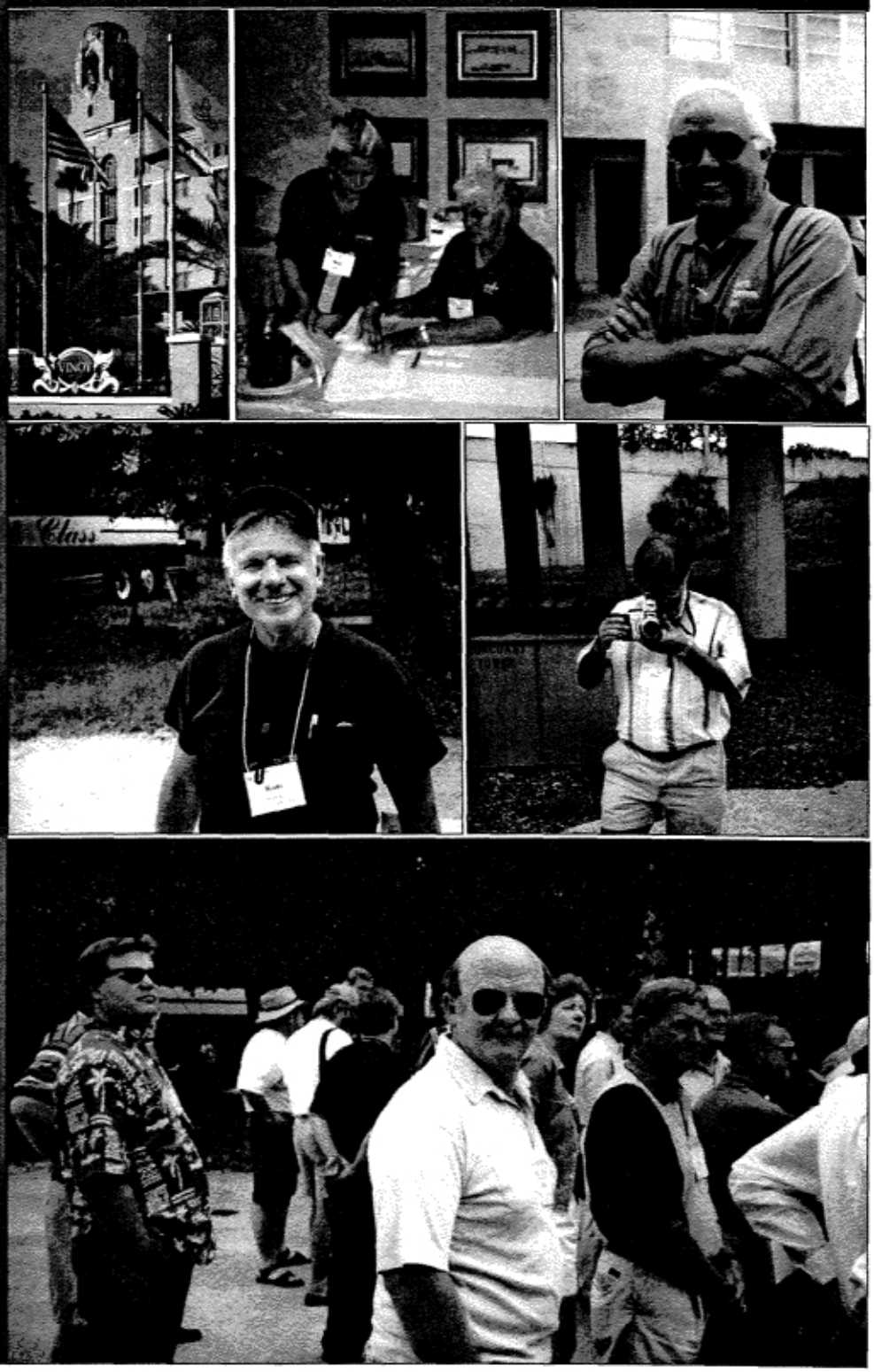
THE INTERNATIONAL JOURNAL OF TRANSPORTATION-RELATED ENVIRONMENTAL ISSUES

In This Issue:

ATTENTION:
Remove the center staple only in the stitched edge at left to release the client brochure for your files and to facilitate easy reading of The Journal

The A1F04 Committee breaks ground at the Vinoy Resort and settles into the 'conference shuffle' as work begins...



The Wall Journal
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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.

Tempus Fidgets...

No, I am not trying to say *tempus fugits*; time is certainly not flying by in my neck of the woods. Rather, I am pretty much stagnated in the crawling slime of the world of terrorism, drive-by gang shootings, genocidal mass murdering, third-world hoodlum leaders who drain their country's coffers to live big in multiple castles while their population starves, and how about that dark army of people who sneak through the city streets distributing drugs to ordinary people, which will ultimately lead them all to that same exit door marked, "Good-by, all."

And now, when we need the "Iron Man" leader most, it seems that ours has been doing an incredible job of self-destruction for the most stupid of reasons. Unfortunately for the nation and our allies, any weakening of the presidency encourages our announced terrorist enemies to even more car and truckload bombings, which are likely to take place in the good old USA as well as foreign embassies and such.

If things get bad enough, we might find the presidency moved to the Pentagon, with a 5-star general running the country, lesser-starred generals running the House and Senate, most of the politicians shipped back to their state of origin, massive mobilization of all of the armed forces, a military draft program, curtailment of casual travel and practically no overseas travel to certain areas of the world.

Now, that could be only the beginning if Osama bin Laden is serious about waging war against the U.S. If he begins to murder the U.S. population with bombing moving transportation and occupied buildings and outdoor gatherings, it will take a president the like of Norman Schwarzkopf to take total control of the situation.

It is clear that we are now in the outskirts of real war. Almost everywhere in the world people are fighting...now, or recently, or soon, or frequently. Unfortunately, religion seems to be the firebrand that perpetuates the fighting, and that makes it easy to start a war and almost impossible to stop one.

However, certain truths are self-evident—"If you want peace, you must prepare for war."

The people of the whole United States have seen and heard bin Laden on television declare war on the U.S. He has said that he will begin a long war with the U.S., not with words but with acts.

That sounds like a fight to me. O.K., I know he has bitten off more than he can chew, but that's his problem. Now, what I want is my top fighter—not for his curly hair, but for his split-second decisions and his lightning-quick action.

It's got to be Stormin' Norman. He's a man's man who likes to kick butt and take names. And I think he can take bin Laden in the same kind of storm he blew up in Desert Storm.

After that, I hope he runs for president. If not, I hope Jeb Bush does—or Jeb's daddy. Or Mr. Ashcroft from my home state, Missourah. Any one of these old boys will do—just don't give Willie a key to the White House again. He might start selling off the rooms upstairs. ■

Coatings and Stains
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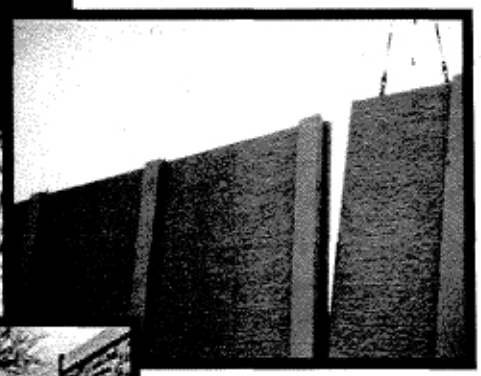

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ANNOUNCEMENT

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Presented by Speed Scientific School and Center for Continuing and Professional Education
October 5–9, 1998 and April 5–9, 1999
Shelby Campus, University of Louisville, Louisville, Kentucky

Attend the nation's longest-running highway noise analysis seminar.

Our semi-annual seminars have provided over 500 international highway noise specialists, including representatives from over 30 state highway agencies, with the training and technical tools required to conduct advanced highway noise studies.

In addition, more than 300 sets of the course software are in use throughout the world.

You should attend if you:

- ❑ provide noise analysis services for state highway agencies
- ❑ serve as an analyst for a state highway agency
- ❑ direct an environmental department for a state agency or consulting service

Course curriculum is structured to accommodate both novice and experienced analysts. Beginning students with a desire to learn will leave this workshop with the ability to conduct highway noise studies. Previous attendees desiring to update their technical skills and software can register at a 10-percent discount.

This up-to-date course will focus on FHWA's new traffic noise model. (FHWA requires that the software be purchased directly from the McTrans Center at the University of Florida.)

You'll also receive a convenient, easy~to~use software library containing powerful analysis capabilities not found in any other package. (Approved by FHWA for at least two more years).

- ❑ FHWA's STAMINA 2.0, OPTIMA, and HICNOM
- ❑ a complete input/output file management/program control menu system
- ❑ two different automated barrier design programs that provide consistent, effective, and economical barrier design
- ❑ screen editor
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- ❑ a program for checking line-of-sight between highway and receiver
- ❑ interface program with MicroStation

BONUS! Upon request, the software library will be sent immediately upon receipt of your paid registration to help familiarize you with the programs.

Your $995 registration fee also includes:

- ❑ five full days of hands-on modeling, case studies, lectures, and workshops led by Al Harris and Lou Cohn, representing over 50 years of combined highway noise analysis experience
- ❑ a comprehensive take-home manual
- ❑ a comprehensive user's manual for the software library
- ❑ Continuing Education Units
- ❑ certificate of completion
- ❑ free telephone consultation for attendees

Take advantage of convenient, campus housing and a wealth of nearby restaurants, entertainment, and shopping. For an additional $100, you'll receive five nights of campus housing (subject to availability). Or if you prefer, stay in one of the area hotels located within minutes of the campus.

Register early.

This workshop sells out quickly and enrollment is strictly limited to the first 26 students.

Benefit from the expertise of these highway noise specialists:

Louis F. Cohn, Ph.D., P.E., is Professor and Chairman, Department of Civil and Environmental Engineering, University of Louisville. He has served as chairman of several national technical committees, including the (TRB) Committee on Environmental Analysis in Transportation and the Committee on Transportation Related Noise, and the ASCE Committee on Advanced Technology in Transportation, the Committee on Expert Systems, the Committee on Transportation Education, and the Urban Transportation Division Executive Committee. Dr. Cohn has served as a consultant to the Federal Highway Administration and numerous state highway agencies.

Roswell A. Harris, Ph.D., P.E., is Professor of Civil and Environmental Engineering, University of Louisville. He serves as a member of the TRB's Committees on Transportation-Related Noise and Environmental Analysis. Formerly responsible for highway noise analysis and abatement design for the Georgia Department of Transportation, he has served as a consultant to the Federal Highway Administration and numerous state highway agencies.

WORKSHOP AGENDA:

Monday, October 5
Monday, April 5

9:00-9:30 am	Welcome and Introductions
9:30-10:30 am	FHWA Policy
10:30-10:45 am	Break
10:45 am-Noon	Fundamentals of Noise
Noon-1:00 pm	Lunch*
1:00-2:15 pm	Acoustic Issues in Traffic Noise Modeling
2:15-2:30 pm	Break
2:30-5:00 pm	STAMINA 2.0 and OPTIMA

Tuesday, October 6
Tuesday, April 6

8:30 am-Noon	STAMINA 2.0 and OPTIMA Computer Workshop
Noon-1:00 pm	Lunch *
1:00-2:15 pm	Introduction to TNM 1.0— Updated Fundamentals
2:15-2:30 pm	Break
2:30-5:00 pm	TNM 1.0—Computer Applications

Wednesday, October 7
Wednesday, April 7

8:30-9:30 am	TNM 1.0—Site Modeling Workshop
9:30-9:45 am	Break
9:45 am-Noon	TNM 1.0—Input Development
Noon-1:00 pm	Lunch *
1:00-5:00 pm	TNM 1.0—Site Analysis Workshop

Thursday, October 8
Thursday, April 8

8:30 am-Noon	TNM 1.0—Barrier Design Workshop
Noon-1:00 pm	Lunch*
1:00-2:15 pm	TNM 1.0—Interrupted Flow Workshop
2:15-5:00 pm	TNM 1.0—Parallel Barrier Workshop

* Public Involvement Videos prepared by the USDOT Volpe Transportation Systems Center, the Pennsylvania Department of Transportation, and the Louisiana Department of Transportation and Development will be shown during lunch on Tuesday Wednesday, and Thursday.

Friday, October 9
Friday, April 9

8:30 am-Noon	TNM 1.0—Comprehensive Problem Workshop
Noon-1:00 pm	Lunch and Noise Measurement Workshop
1:00-2:00 pm	Noise Barrier Case Studies — Slide Show
2:00-2:45 pm	The Noise Study Report
2:45-3:00 pm	Break
3:00-4:00 pm	Construction Noise and HICNOM

Four Easy Ways to Register!

- ☐ FAX this page to (502) 852-8573 or
- ☐ Mail to Center for Continuing and Professional Education, Shelby Campus, University of Louisville, Louisville, KY 40292 or
- ☐ Phone (502) 852-6456 or 1-800-334-UofL, ext. 6456 between 8:30 a.m. and 4:30 p.m., Monday-Friday or
- ☐ E-Mail all information requested on this form to our Internet address: TRAINING@ULKYVM.LOUISVILLE.EDU

Schedule:
Monday through Friday
October 5-9, 1998
Or
April 5-9, 1999

Fee:
$995; $1095 (includes 5 nights campus housing, single occupancy). A 10-percent discount is given to previous attendees and to 3 or more registrants from the same company.

Location:
Shelby Campus
University of Louisville
Louisville, Kentucky

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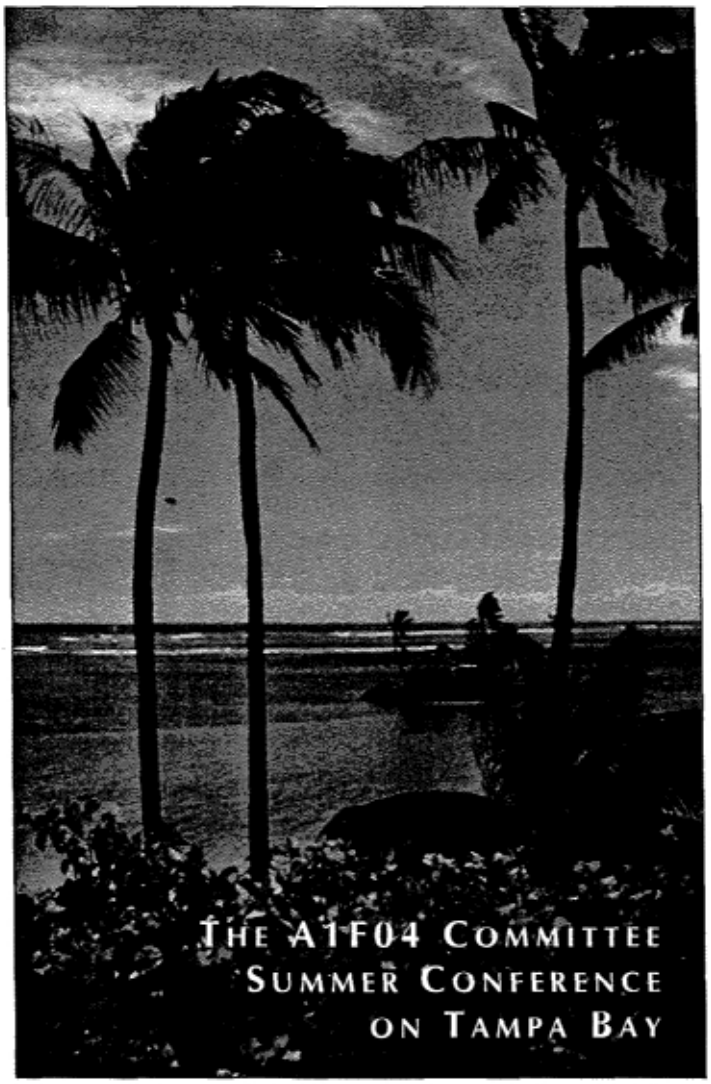
Title _____SS#_____
Organization _____
Address _____
City _____State____Zip+4_____
Business Phone _____Fax_____

Questions? Call (502) 852-6456 or 1-800-334-UofL, extension 6456

- ☐ Please register me for the folbwing session:
  - ☐ October 5–9, 1998 (97DHA)
  - ☐ April 5–9, 1999 (97KHA)
- ☐ Sorry, I can't attend either session, but please add me to your mail list.
- ☐ Check enclosed, payable to **University of Louisville**
- ☐ Purchase Order enclosed
- ☐ Bill my company (Attn:_____)
- ☐ **Charge to my:**
- ☐ MasterCard
- ☐ Visa
- ☐ Card # _____
- ☐ Exp. Date_____
- ☐ Signature _____

■



You might think that not a lot of people would show up for a working conference in Florida in the middle of July, in the heart of the vacation season, in the heat of the el nino or whatever it was that was burning up thousands of acres of the state, and having to travel hundreds and thousands of miles to get from their homes all over the U.S. all the way to St. Petersburg, just to get up early in the morning and sit in a big conference room and listen to speeches and take notes for hours, and then load into buses to travel on busy highways for more hours, looking at things we look at every day in our own work at home. It boggles the mind.

Well, God bless those missionaries — they just keep coming. It's like a giant homecoming that doesn't have a home, but keeps moving around and the people always follow it wherever it goes.

This summer, more than 114 attendees came to St. Petersburg. The attendees list I picked up just before the conference ended had 114 names on it. I thought that readers who couldn't make the conference, might be interested in the list of attendees. These people are all intensively involved in noise and vibration mitigation — many have spent their entire lives contributing to the growing of the data and scientific information resource on the subject.

Take a few minutes and see what you may have missed by not being in their company at such an event. — Ed.

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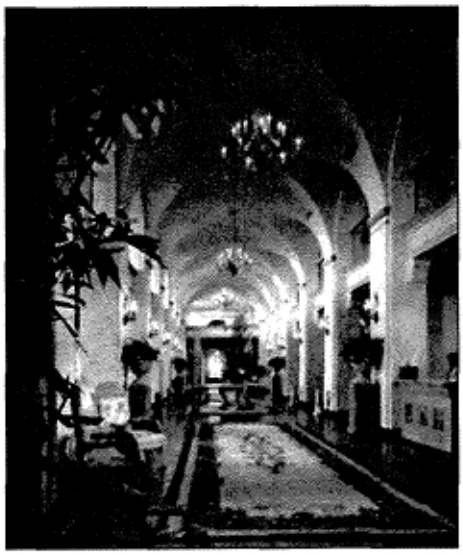
Chicago, IL 60606

As you have read, people have come from far and wide to attend the A1F04 Summer Conferences, and they keep coming back. The 1999 Conference is tentatively scheduled for opening in San Diego in August. Don't pass this one up. – Ed.

Dawn breaks at the Vinoy, and the hotel minions scurry about their appointed tasks while Betsy Howard and Joan Durden gather their handouts for the registrants and guests.



The day begins with a sumptious breakfast spread over long tables at the bottom right of the stairs at the far end of the lobby. This setup is in a wide corridor which is faced on one side by the spacious conference room, and on the other side by a row of rooms in which the vendors had set up their exhibits. This produced a busy hour in which a lot of food was consumed while a lot of conversation and information was exchanged before the conference opened.

The mornings were reserved for the presentation of the professional papers, announcements, awards, and other committee business. The abstracts of the professional papers are printed beginning on page 12.

The afternoons were filled with technical tours. Shown here at right are the unloading of the tour buses at the first and last stops of the highway noise barrier tour of nine sites. Attendees were provided with booklets with photos and physical data on each of the barrier sites. The airport tour was also well attended, but I don't have the information yet.

The evenings were well planned and were crowd pleasers. Everyone had a great time. It was a very fine conference. ■

Meanwhile, Betsy and Joan have busied themselves with setting up the conference registration process, registering attendees, passing out name badges, distributing agenda and other information on the Conference. They are also distributing maps, guides and schedules of entertainments for the guests and spouses of the attendees, who are well attended to.

The attendees disembark from the buses and gather to listen to Win Lindeman describe the histories of Walls 1 and 2 on the I-375 Distributor in St. Petersburg

The buses unload at Wall 8 on I-275 and 54th Avenue in St. Petersburg, for a walking inspection of the Fanwall© Noise Barrier which was requested by the homeowners.

Identifying some of the actors on the cover of The Wall Journal

Betsy and Joan

Top: Buck Scott, Pres. of Scott System, Inc.

Left: Rudy Hendriks of Caltrans
Right: Hans Rerup, Pres. of Durisol Intl.

Bottom, ctr. of foto: Bob Armstrong FHWA

This Fanwall noise barrier was erected in 1984. It is located adjacent to the ROW line along 54th Avenue South to protect 11 homes and three vacant lots.

Barrier Length: 405.8 m (1330.5 ft)
Barrier Area: 990.2 m^2 (10,644 ft^2)
Barrier Height: 2.44 m (8 ft)
Existing Noise Level: 69 dBA (Leq)
Predicted Noise Level w/o barrier) 69 dBA (Leq)
Average Barrier Insertion Loss Predicted: 6.1 dBA
Average Barrier Insertion Loss Measured: 7.5 dBA

Buck Scott (Scott System, Inc.), Michael Rock (Durisol International) and Bill Pickett (Pickett Wall Systems) (L to R), gather at the core design elements of the Fanwall free-standing wall system — the rotatable panel joint which provides the stability, and the stainless steel cable which connects the panels.

Buck Scott, being in the formliner business, pays little attention to them, he being totally absorbed in the beige Manhattan brick finish on the residential side of the wall (the highway side has a raked concrete finish).

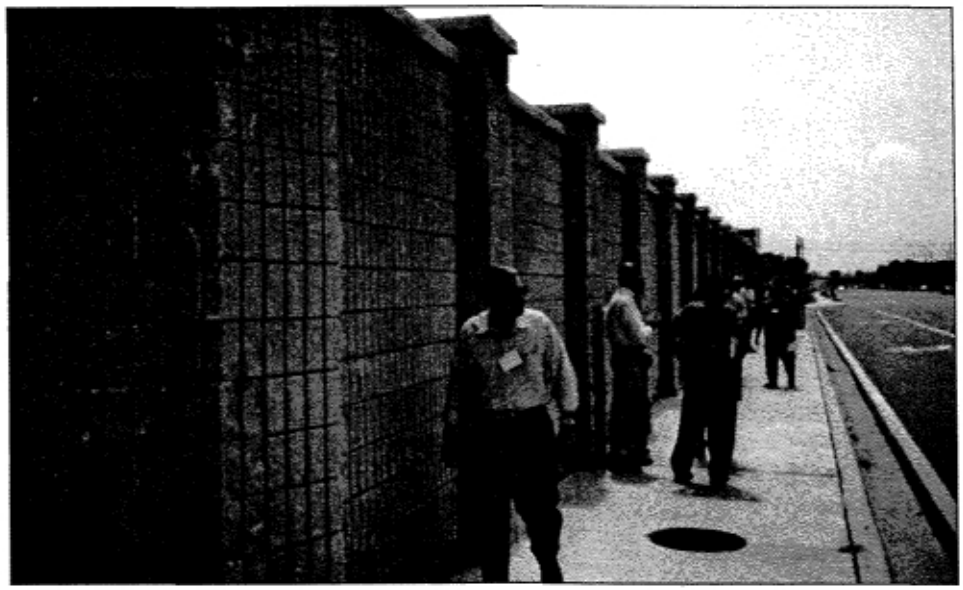
Bill and I were requested (or threatened, I don't remember which), to stand up against the wall which he invented and which I marketed, for a photo op, they said. But, while we stood there with these sappy grins on our faces, I heard someone in the back rows who sounded a lot like Charlie Adams, yelling, "Ready!...Aim!... FIRE! Shoot! They're getting away!"

Bill and I had some great years with launching the Fanwall system, and we like to visit our older walls whenever we can.

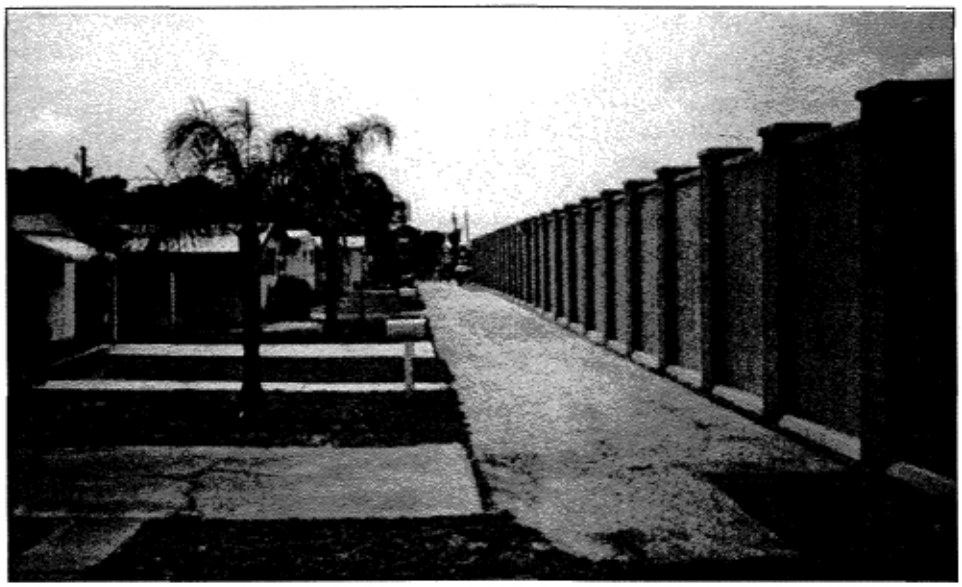
Do you think we need help?

The group begins to saunter back to the buses, after a relaxed and close-up examination of the Fanwall noise barrier at this site. The free-standing undulating capability of the wall system permits on-site wall relocation to avoid trees, shrubs and other landscaping. That feature was well utilized at this site, and the back yards of the residents are pleasant to view.

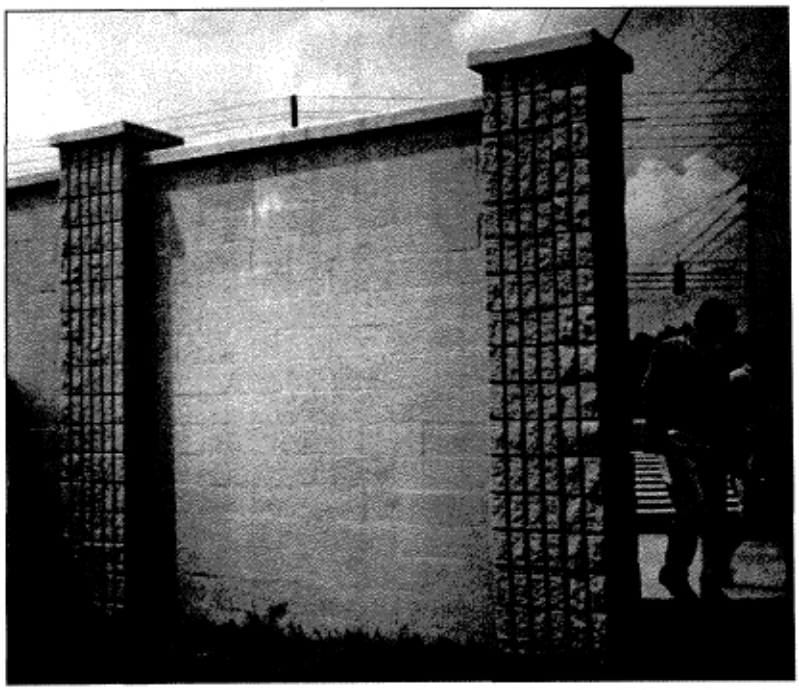
The bus tour of highway noise barriers is concluded with barrier number 9 in the Clearwater area on SR 686, shown on this page. The barrier is constructed of concrete block with columns and precast cap. The block is textured on the roadway side and painted smooth face on the residential side.



The sound barrier was not included in the original plans. It was added by supplemental agreement after the roadway portion of the project. The mobile home project donated three feet of right-of-way to allow construction. The wall protects 8 first row mobile homes (single and double wides).



Barrier Length: 101 m (331 ft)
Barrier Area: 1110 m^2 (3641 ft^2)
Barrier Height: 3.4 m (11 ft)
Barrier Cost: $154,576. ($42.45/ft^2)
Predicted Noise Level (w/o barrier)
69 dBA (Leq)
Average Barrier Insertion Loss
Predicted: 6.8 dBA
Average Barrier Insertion Loss
Measured: N/A



This Technical Tour was programmed by the hosting party of Florida Department of Transportation, PBS&J (Post, Buckley, Schuh and Jernigan, Inc.), Transportaion Solutions, Inc. and by URS Greiner.

A spiral-bound booklet containing maps and locations of the nine barrier sites visited, construction and acoustical data, and photos of each site. It is a very well crafted and informative piece and may well be a model for others.

Win Lindeman was in the field as this is being written, and I could not find out the availability of the booklet. If you have interest, call Win at FDOT at 850/488-2914, fax at 850/922-7217. ■

CONGRATULATIONS!!

THE TEAM GOT A LOT OFF THE GROUND AND INTO THE BODY OF [illegible] KNOWLEDGE

THE COACHING STAFF:

Gregg Fleming, USDOT, Chairman
John Temple, FDOT, Tampa
James Kennedy, Sr. V.P. PBS&J
Jerry Roberts, Trans. Solu[illegible]
Bill McDaniel, Mng. Dir. [illegible] Tampa
Win Lindeman, FDOT, [illegible] and
Summer Meeting Chair
Betsy Howard and Joan Dur[illegible] were Win Lindeman's tireless workers, and there were many others whose names I do not have, and for which I apologize.

STATE AND CORPORATE INPUT

Florida Department of Transportation
Post, Buckley, Schuh and Jernigan, Inc.
Transportation Solutions, Inc.
URS Greiner

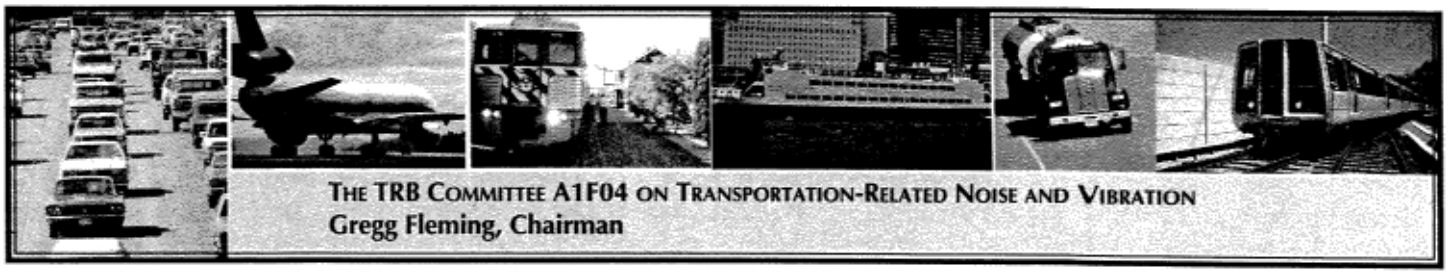
IT WAS A GREAT MEETING! THANKS!

THE PLAYERS:

The players, of course, are the attendees, all 114 of them, most of whom come back year after year to maintain the vitality of the A1F04 Committee. The camaraderie which has built up among those attending the meetings, and particularly the summer meetings, has developed into some close working associations which have furthered the careers of those involved.

New [illegible] us every year, and soon become [illegible] of the A1F04 quest for more data on mitigating transportation-related noise and vibration. This environmental transportation noise problem hits every one of us, and the lucky ones are those who discover the means to abate this noise for the benefit of everyone; it is a singular gift not sold in any department store.

IT WAS A GREAT MEETING! THANKS!



Following are the abstracts of the professional papers which were presented at the Summer Conference, in the order in which they were given. Some of the presentations utilized projected images on a screen to lead an extemporaneous speaker, and thus may not have a large amount of text here. The Wall Journal offers its apology to Ulf Sandberg of Sweden for not publishing the 'abstract' of his paper, "Tire/Road Noise: The European Perspective, Including Standardization Efforts," since it was three pages long. If you wish to contact Ulf, you may reach him at Swedish National Road and Transport Research Institute, SE-58195, Linkoping, Sweden, phone 01146-13204131, fax 01146-13141436, e-mail: ulf.sandberg@vti.se ■

THE NOISE IMPACT OF AIRCRAFT OPERATIONS IN THE DENVER AREA: A CASE STUDY

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This paper describes a study of aircraft operations and the associated noise impact in the Denver area. The objectives of the study were to determine whether or not current noise impacts in the Denver area were being minimized and what impact the construction of a sixth runway at Denver International Airport (DIA) would have on aircraft noise issues. The study was limited to aircraft operations from DIA, Buckley Air National Guard Base, and Centennial Airport.

The study used state-of-the-art procedures and computer software to examine the noise impact from current operations at these airports and the potential for altering flight paths to mitigate this impact. It also examined several future scenarios for which projected increases in aircraft operations and replacement of all Stage 2 aircraft with Stage 3 aircraft were taken into account.

In carrying out the study, Version 5.1a of INM was used to predict noise impact from operations in the three-airport system. Recent radar data from DIA was employed to determine current flight tracks at that airport; recent studies at Buckley and Centennial were used to model flight tracks at those airports. Ground elevation data was used to accurately determine the distance from aircraft to receiver positions in the noise model; 1997 population projections were used to update the 1990 U. S. Census database; and satellite photography was used to better define the distribution of this population. For all cases studied, proprietary optimization software was used to identify a complete set of aircraft flight tracks at all three airports which minimized the overall noise impact to people in the study area. ■

FAA NOISE RESEARCH PROGRAM FOR THE NATIONAL PARKS OVERFLIGHT RULE

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The Federal Aviation Administration (FAA) and the National Park Service (NPS) are developing a national rule that establishes a process for managing commercial tour flights over National Parks. In support of the rulemaking, both agencies are interested in conducting research that will lead to guidelines for evaluating the environmental consequences of commercial air tour and sightseeing aircraft over National Parks. Noise effects are a significant, if not the most important, environmental impact to be considered. The proposed noise research program is intended to establish appropriate noise criteria and assessment,methodologies for identifying noise sensitive areas and analyzing noise impacts.

The proposed research program builds upon previous efforts of the FAA, NPS, U.S. Air Force, and other organizations. It consists of three major components: ambient noise mapping of parks, dose-response studies, and acoustic zone management. Supporting research activities include a literature review, sensitivity analysis, and technology development.

The FAA has completed a draft research plan and draft guidelines for the measurement and assessment of low-level ambient noise. In addition, the FAA has completed its first in a planned series of dose-response studies to determine the relationship between aircraft noise and park visitor annoyance. The results of the study, which was conducted at Bryce Canyon National Park in August 1997, are encouraging in terms of the volume of survey and acoustics data and the variability of noise level measurements. Fourteen noise metrics or descriptors were evaluated for predictive ability as were several social variables including citizenship, gender, and group size.

Additional dose-response studies are scheduled this year in contrasting front country and back country conditions. These studies will attempt to quantify the suspected differences in reaction to aircraft noise based on type of visitor activity and exposure. ■

PREDICTION OF INSERTION LOSS FOR PARALLEL AND JAGGED EDGE BARRIERS

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Existing algorithms for solving the insertion loss for a parallel barrier use some type of image source scheme to account for the reflections caused by the second barrier. Those techniques use ray acoustics to determine the field over the near barrier and then use standard solutions to determine the diffracted field in the barrier shadow. The technique presented here not only accounts for the diffraction over the near barrier of the multiple reflections, but also the diffraction in the inhomogeneous free field between the barriers. Results are presented that show the significance of including the free field diffraction effects. ■

INTEGRATED MEASURES TO ABATE MASS TRANSIT NOISE

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The Mass Transit Railway is the first underground railway in Hong Kong, providing a relief of the much congested surface transport infrastructure for millions of residents. But some portions of it are of open sections and because of the close proximity of many residential buildings to the railway systems, noise from train movements and depots was a concern to nearby residents.

Noise from train operations and train depots is controlled under the law. Solutions to the noise problems would require retrofitting works. But recognizing the need to deal with the problems, the railway operator has provided a package of measures to reduce the impact. This paper will discuss how prevalent train noise is tackled in Hong Kong leading to an integration of noise control measures (such as barriers, wheel dampers, speed reduction) for abating train noise. An account will also be given on the effectiveness of the retrofitting works (block walls, noise enclosures) applied on existing structures to improve the noise environment of a high-rise residential development located above a train depot and penetrated by a railway line. ■

(Continued on page 14)

NOISE REDUCTION: ALTERNATIVE STRATEGIES FOR AN EXISTING HIGHWAY

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Ramon Nugent

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Acentech was hired by Caltrans to address the concerns of area residents dissatisfied with the performance of the noise walls built as part of the construction of Route 85 in Santa Clara County, California. A study was performed to investigate the noise reduction options for a relatively new section of controlled access highway which already had noise barriers in place. Pertinent issues included parallel barrier performance degradation, sound reflection, and pavement effects.

The alternatives were evaluated to see if they could achieve an additional three decibel noise reduction - over and above the attenuation provided by the existing noise barriers. As part of the evaluation process, an extensive literature search was performed and a survey was distributed to the primary state highway agencies inquiring about their success with various highway noise mitigation options. On-site field measurements were performed using ANSI S12.8-1987 as a guide, to gather data for calibrating a parallel barrier noise model.

The following options were evaluated: vehicular source controls, traffic controls, special pavement types, covered roadways, earth berms, vegetation, increases to noise wall height, application of acoustically absorptive materials, special barrier shapes, and active noise control. Each option was evaluated in terms of acoustical benefit, installed cost, service life, maintenance costs, visual impact, practicality and safety concerns. More detailed analyses were performed using computer modeling to study the benefits of changes to highway pavement, barrier height, and adding absorptive material to the existing parallel, vertical walls. The results of the study were documented along with specific recommendations in a technical report, which is available upon request. ■

A STUDY OF SERVICE LIFE OF HIGHWAY NOISE BARRIERS IN ILLINOIS

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Noise barrier walls gradually have become a familiar roadside appurtenance in urbanized areas of the United States since the 1 970's, when abatement of highway traffic noise was first addressed by Federal Highway Administration (FHWA) regulations. Nationwide, FHWA reported approximately 2120 linear kilometers (1317 miles) of noise barriers constructed by the end of 1995, with a 5-year average of 161 km (1200 miles) of new noise walls being constructed annually. The expected trend is for increased use of noise walls in response to increased public awareness of environmental issues.

The cost of noise abatement is high. Figures from projects across the nation indicate that $1 million per mile is the current average cost. Concrete and masonry currently make up an estimated 66% of noise wall construction; wood walls contribute another 11%. Other construction materials and innovative proprietary products are competing for market-share. However, the long-term performance and serviceability of noise wall systems under field conditions has not been well studied.

The study being conducted by researchers at Southern Illinois University, Edwardsville Campus is a 15-month project funded by the Illinois Transportation Research Center (ITRC). ITRC is a joint public-private university unit underwritten by the Illinois Department of Transportation (IDOT).

The study will examine existing noise walls in Illinois and in other states to develop information on long-term performance of various products. A set of criteria for evaluating service IHe will be developed. Maintenance costs for noise wall systems will be quantified. The application of life cycle costing will be examined as a means of making rational choices among alternative noise wall products. Finally, IDOT's currently used tion specHfications will be examined for possible improvements. The study is scheduled to be completed by December, 1998. ■

17TH STREET CAUSEWAY CONSTRUCTION NOISE MONITORING PROGRAM

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The Florida Department of Transportation (FDOT) is currently replacing the 17th Street Causeway Bridge in Fort Lauderdale, Florida. The $62,100,000 bridge replacement project will require an around the clock work effort totaling one thousand (1,000) construction days. Due to the length of this massive construction effort, and the sensitivity of the bridge location, noise impacts were identified as a potential concern.

The 17th Street Causeway, located in the yachting capitol of the world, is surrounded by both Intracoastal residences and upscale hotels which are protected by the City of Fort Lauderdale's Noise Ordinance. In an effort to allow around the clock construction operations, the Florida Department of Transportation (FDOT) requested a degree of relief from the existing Noise Ordinance established by the City of Fort Lauderdale. In an effort to provide this relief, the City of Fort Lauderdale hired a private consultant to establish both the existing ambient noise levels (LEQ and LMAX) and their acceptable tolerances. The consultant also established the required noise monitoring locations within the limits of the construction project.

The Florida Department of Transportation (FDOT) then developed a noise monitoring program that included the set up of

(Continued on page 16)

the designated noise monitoring locations, establishment of the existing ambient baseline noise levels (peak and off peak season), twenty-four (24) hour manned monitoring, twelve (12) hour manned monitoring, additional noise monitoring during major construction phases, automated noise monitoring, and public involvement/noise sensitivity training.

The results of the 17th Street Causeway Constr~ction Noise Monitoring Program may be utilized to aid the FDOT with future construction projects where noise impacts have been identified as a potential concern. The results of this analysis to date suggest, that 1) field noise monitoring is effective in identifying construction tasks that result in noise impacts; 2) noise abatement measures can be implemented to allow most construction activities to continue in a timely fashion; and 3) public involvement by the noise specialist has a positive impact on both residences and businesses adjacent to the 17th Street Causeway Bridge. ■

FROM LORD RAYLEIGH TO THE INTERNET: SOME ACOUSTICAL REFLECTIONS FROM THE UK NATIONAL PHYSICAL LABORATORY

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E-mail: bernard.berry@npl.co.uk

The UK National Physical Laboratory, the national standards laboratory, was founded in the late 1890's as a result of the recommendations of a committee of enquiry under the Chairmanship of Lord Rayleigh,(1842-1919) probably England's most famous acoustician and polymath.

In this paper I will explain the origins of NPL and trace the origins of work on noise in the 1920's. I will then review highlights of NPL work since then, with emphasis on transportation noise. Aspects of program will be summarized, and some thought given on future developments in noise standards, including the revision of ISO1996 and new initiatives from the European Commission. It will be shown that technological developments in the late 1990's will not only continue to influence the techniques applied in research on noise and its effects, but will also change the very infrastructure by which the process of standardization happens, with increasing use of the Internet. ■

FUNDAMENTALS OF EMPATHY - THE UNCOMMON SENSE NEEDED FOR SUCCESSFUL PUBLIC INVOLVEMENT

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Although most of the contents of this presentation should be common sense, the author is constantly being amazed at the lack of this vital quality in people (with the exception of A1 FO4 members, of course) in both their personal and professional interactions. Through specific examples from the author's experiences over the past 15 years in public and private meetings with our ultimate clients, the public, the importance and power of empathy for the successful completion of projects will be conveyed so clearly

that this presentation will hopefully make a difference in the way the audience members handle the public from then on. Through this open discussion, people will be forced (or, at least coaxed) to look at the public in ways they may never have before. Given the emphasis we are placing on public involvement at this year's meeting with a special session devoted to educating the public on transportation noise issues, this presentation will bring an appropriate perspective to that session. ■

PENSACOLA STREET RELOCATION TRAFFIC NOISE ABATEMENT CASE STUDY

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This paper will present the results of a design stage traffic noise study which was conducted for the Pensacola Street Relocation project in Tallahassee, Florida. Several unique features were investigated as part of the study including the potential location of a barrier on top of embankment and aesthetic considerations for residents with a critical view shed. The paper will focus on the results of the public involvement effort conducted to solicit the opinions of the effected property owners. The paper will also discuss the final decision not to provide abatement. This decision was made in spite of the fact that the recommended abatement scenario satisfied the conditions of feasibility and reasonableness.

NOISE MITIGATION PRIORITIZATION STUDY FOR AN EXISTING RAIL LINE

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This is a rather unusual study that presents the methodology and execution of a large scale retrofit noise mitigation prioritization study for an existing rail corridor (a "Type II" rail noise study). Over 2500 receptors were evaluated for a variety of mitigation techniques. A Geographical Information System (GIS) was developed to help analyze the data and to store results. This study was initiated in part due to public concerns over implementation of Amtrak's new high speed rail service through the corridor. ■

SOUND BARRIER POLICIES, PROGRAMS AND PEOPLE

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Phone: (410) 545-8641
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(Continued on page 18)

Maryland's sound barrier program began in the late 1970's and has resulted in the construction of over $130 million in Type I and Type II barriers. A formal noise policy was adopted in 1986 to guide the decision making process for sound barriers. In 1996, a process began to update the State's noise policy, with the assistance and input of elected officials and citizens. This paper will examine the history of the Maryland sound barrier program, with emphasis on the policy making process and the relationship of the program to communities and people. ■

AIRPORT NOISE MONITORING: WHAT IS THE STATE-OF-THE-ART?

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Airports are spending millions of dollars to install complex combinations of hardware and software that aims to be the objective eyes and ears for the airport and its neighbors. Several vendors provide systems that perform noise monitoring and flight tracking, along with a variety of other options, to meet the needs and fulfill the desires of their clients. This paper will compare the available features and attempt to clarify the diversity of "techno lingo" associated with these systems. ■

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROJECT SYNTHESIS

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This presentation will describe the recent work that has just been completed for an NCHRP synthesis on the topic of tire/pavement noise. The synthesis, now being printed, will permit attendees to understand what research has been done, what is underway, and an overview of the findings that are in the literature. The presentation will serve as an excellent "sounding board" into the discussions that will follow.

Topics to be presented will include: sound generation mechanisms of the tire/pavement interface; measurement techniques; close proximity measurement results; passby measurement results; and, overall findings reported in the literature. ■

ON-GOING U.S. ACTIVITY, PART 1 (SIX STATE PAVEMENT NOISE STUDY - STATUS REPORT)

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Exterior and interior noise measurements were taken on 53 PCCP and 4 ACP test sections in six (6) states. In addition to the noise measurements, FHWA's ROSAN was used to quantify texture and friction data was collected on numerous test sections. During the measurements the noise in the passenger test vehicle was recorded. Twenty of these recordings were played back to twenty (20) human subjects to determine which pavement they found the noisiest. Correlation of the data is presently underway. The objective is to find the pavement that provides the best overall attributes of surface texture and noise. ■

ON-GOING U.S. ACTIVITY, PART 2

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Although it is well known that the noise characteristics of the different pavements commonly used can vary considerably, optimizing for low noise generation levels is usually not a design criteria for those pavements. To successfully optimize pavement for low traffic noise, a thorough understanding of the sound generation and absorption characteristics of pavement surfaces is required. In our ongoing work, various absorption tests were performed on numerous aggregate and asphalt mixtures to determine the factors that effect sound absorption. We are working at designing new mixtures that are optimized for absorption and also in the acceptable design specifications of asphalt pavement. The goal is to achieve broadband noise absorption while maintaining the structural integrity and safety aspects of the pavement.

VEHICLE NOISE EMISSIONS AND PURE-TONE CHARACTERISTICS OF DIFFERENT PAVEMENTS: A CASE STUDY

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Vehicle noise emission levels were measured on five different types of pavement along portions of the New England Thruway (1-95 and I-90) in New York. The objective of the measurement program was to determine the sound level differences between Portland cement concrete with variable spaced transverse tining (PCCV), Portland cement concrete with regular spaced transverse tining (PCCR), ground Portland cement concrete (PCCG), and open graded asphaltic concrete (OGAC). The analysis of the measured overall emissions show that automobile and heavy truck emissions on grooved PCC are approximately five (5) decibels greater than on OGAC. The statistical approach used in the new national vehicle noise emission data base of the Federal Highway Administration's Traffic Noise Model (TNM) was used to analyze the data.

Community noise measurements were conducted to determine the tonal qualities for vehicles traveling on PCCR as experienced by the residents in their back yards. The tone corrected perceived noise level (PNLT) was used as an alternative to the A-weighted sound level to account for the presence of pure tones. ■

The Wall Journal Forum

Where, hopefully, opinions and positions may be expressed and discussed in the open air for all to hear and to join.

Contention and controversy can become powerful movers of ideas and ideals when stirred with a mixture of intelligence, patience, honesty and fairness.

COME TO THE FORUM — SOON

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
BUREAU OF ENVIRONMENTAL QUALITY
HARRISBURG, PA

August 19, 1998

To the readers of The Wall Journal:

The primary objective of the study, "Evaluation of Low Cost Highway Noise Barriers," sponsored by the Pennsylvania Department of Transportation, was to review the cost implications of noise barrier alternatives relative to the most critical performance attributes. Inherently, such a study must involve certain subjectivity and qualifying assumptions; and its results should not be taken unequivocally. At each step of the study, assumptions with respect to field conditions, noise abatement performance, length of the wall system, and other characteristics were made.

Also, the opinions of noise wall manufacturers and others were necessary in assigning unit costs, construction productivity, aesthetics scores, and safety scores. Results based on such opinions should not be interpreted unequivocally, but should consider how situations and circumstances may be different than that assumed in the study. Also, the subjective nature of the opinions of the manufacturers should be considered. For example, a manufacturer of a proprietary wood barrier

(continued on page 23)

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

Back Issues from No. 1 to present are available at $3.00 each, postpaid. Send check to The Wall Journal, P.O. Box 1389 Lehigh Acres, FL 33970-1389

In the Back Issues:

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

"Darlene, this is agent J. Edgar Blooper. I'm still in St. Pete. It looks like agent Adams has somehow slipped away from us...he just disappeared into thin air. I called the office, but they haven't heard from him since he went to St. Pete. Call me on my beeper if you hear from him. It's very, very important. Agent out."

"Listen, J. Edgar Poop-de-do. You are a fine one to talk about slipping away. Where did you go after Mr. Adams made his wonderful speech at the Conference? I was in the back of the room with Mr. Angove when Mr. Adams came off the podium straight to where we were sitting, and he whispered something in Mr. Angove's ear and pressed something into his hand. They made some sort of sign to each other, then Mr. Adams kissed my hand and he turned around and melted into the crowd, and I never saw him or you again. Thanks a lot for a memorable experience at the Vinoy. Drop dead, agent. Out."

PRESS RELEASE

RICHARD J. PEPPIN BECOMES PARTNER IN SCANTEK, INC.

Silver Spring, Maryland... Scantek, Inc. is delighted to announce that after a short three year absence, Mr. Richard J. Peppin has returned as a Partner and as President. He re-joined the existing technical and administrative staff working in its Silver Spring, Maryland office. As a partner, he will become a predominant shareholder of the company.

Mr. Peppin will provide marketing and technical support for the growing acoustical product line of Scantek,Inc. including Norsonic, Rion, RTA Technology, TOPsonic, and others. He will also provide technical expertise to customers, and support the company's technical activities with standards development, seminars, testing, and professional association liaison. Future plans for Scantek,Inc. include a significant enhancement of its calibration capabilities.

Richard J. Peppin holds graduate degrees in Mechanical Engineering, and Theoretical and Applied Mechanics; is a Fellow of the Acoustical Society of America and the American Society of Mechanical Engineers; is Chair of the Acoustical Society of America's Technical Committee on Noise, and is a member of several national and international standards working groups. Mr. Peppin is a past president of, and board certified by the Institute of Noise Control Engineering. He is also an ISO 9000 Certified Auditor and an Assessor for NIST's Acoustics Laboratory Program.

For further information call or write: Debra A. Meyers, Scantek, Inc., 916 Gist Avenue, Silver Spring, MD 20910, telephone: 301-495-7738, fax: 301-495-7739, e-mail: scantek@erols.com ■

(Evaluation, *continued from page 20)*

expressed burning as a safety concern, when there appears to be no documented cases of such an event.

To the extent possible, the authors attempted to minimize any inaccuracies associated with a reliance on data from manufacturers by first surveying individual firms for data, compiling it, and then returning it to the manufacturers for verification. While this approach in general was effective, there are certainly cases where the data provided was inaccurate or inconsistent. For example, an installation rate of 120 panels per three-man crew per eight hour day was quoted for one wall system when assessing constructibility. This rate is likely to be unrealistically high.

The occasional inaccuracies in the data provided by manufacturers and subjective nature of the of the study did have an impact on the final scoring tabulations, particularly in assessing the relative merits of proprietary concrete versus proprietary wood barriers. Further, the authors wish to note a statement from the report which was in error; Page 65 incorrectly states that the highest aesthetic score for all reflective barriers is that of three concrete barrier systems. However, Tables 5-17 and 5-20 do correctly show that wood barriers of this category score higher aesthetically than concrete.

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