

SCANNER

NEWSLETTER OF THE AMERICAN SOCIETY OF
HIGHWAY ENGINEERS



April, 1990

28th Annual American Society of Professional Engineers National Convention Hosted by the Altoona, PA Section



Altoona ASHE Convention Committee - Seated (L to R) Gabe Pelligrini, Finance; Craig Weaver, Co-Chair./Tours; Don Snively, Publicity; Bob Hilldale, Co-Chair./Exhibits. Standing (L to R) Bill Gohn, Entertainment; Jack Stefanko, Convention Book; Ed Stoltz, Finance; Larry Bilotto, Program; Ed Bellock, Entertainment; Bob Green; Board of Directors; Carol Leib, Board of Directors; Bill Wilson, Section Treas.; (not in photo) Al Laich, Registration, Bill McKee, Recreation.

MARK YOUR CALENDAR NOW!
Plan to attend the 1990 National Convention in Altoona on June 7, 8 and 9 at the Ramada Hotel (formerly Sheraton Inn).

This year's theme "*The Changing Face of Transportation - Moving Into the 90's*," will reflect on transportation history in the Altoona area and throughout Western Pennsylvania.

A variety of interesting events that are in keeping with the theme have been planned by the Convention Committee and will offer information, fun and diversion for all convention participants and guests. These include relevant technical programs, tours of historic transportation facilities and

scheduled visits to other local points of interest.

For nearly two centuries - from the early stage coach lines, to the Pennsylvania Canal, the Pennsylvania Railroad and up to date with our modern expressways, Altoona is and has been an important part of transportation in the state. The convention will use both past and present transportation facilities to demonstrate how this industry has changed throughout this time. Also historical sessions will be presented featuring "The Canals, the Portage Railroad and the Horseshoe Curve" offered by the National Park Service, and "The Pennsylvania Turnpike's 50th

Anniversary," offered by the Pennsylvania Turnpike Commission.

Interesting and enlightening technical sessions include "Rehabilitation of a Steel Truss Using Cables," "T-Wall and Its Uses," "Stressed Timber Deck Bridges with Sandwich Plates," and "Bonded and Unbonded Concrete Overlays."

As in the past many convention exhibitors representing the varied facets of the highway industry will be present with displays and information on the latest innovations in design, construction and maintenance.

But...all will not be work! A fashion show and make-up seminar is planned for those who want to keep up-to-date on fashion and beauty trends. During the first evening the Ice Breaker reception and party is sure to be a time for frolic while attendees enjoy an Hawaiian Luau complete with roasted pig. Members are encouraged to dress in tropical attire to promote the "island spirit," so bring your flowered shirts, shorts and sundresses.

There's also a bus tour of area historical attractions: the Allegheny Portage Railroad, Altoona Railroad's Museum and the Baker Mansion. In addition, self-guided tours can be made of other local points of interest such as the Penn State University

Continued on page 3

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1990 A.S.H.E. CONVENTION

PACKAGE:

Schedule - Registration Forms

.....Letters to the Editor:



Engineering Dilemma - A Solution:

The December 1989 issue of the *Scanner* had an article titled "Encouraging and Keeping Tomorrow's Engineers...What Can We Do?"

May I suggest what to do? We can start by paying wages above the level of embarrassment and humiliation.

Here in the Pittsburgh area I see school teachers starting for over \$30,000 for 180 days. I see the average teacher making over \$40,000 for the same 180 days with no change in duties or responsibilities from that of a beginner. Why should a student tolerate the rigors of a tough engineering program when the deal is much more lucrative elsewhere?

I have been working for a contractor for 17 years. I've seen young engineers working as the lowest paid person on a construction site. I've seen engineers with 10 years of experience making less money than a laborer.

Don't blame students for avoiding the engineering profession - it speaks to their intelligence that they choose not to be degraded.

Mike Rinker
Butler, PA

(Ed note: The Scanner welcomes and will print letters from those who wish to express opinions on recent articles or topical subjects relevant to the highway industry. Letters should include the writer's name, address and telephone, and may be edited for purposes of clarity or space. Address to: ASHE Scanner LETTERS, Editor, 339 Blvd. of the Allies, Pgh., PA 15222.)

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From The Editor:

PennDOT Elicits Help to Beautify Pennsylvania's Roads

At Secretary Yerusalem's direction the Pennsylvania Department of Transportation has recently announced the "Adopt-A-Highway" campaign scheduled to be launched in late April, 1990 in conjunction with the 20th anniversary of Earth Week. Betty Serian, Director of Customer Relations for PennDOT and ASHE member, has stated that this program was prompted to address the increasing problem of litter-strewn state highways and as part of PennDOT's overall Beautification Initiatives for 1990 that are concurrent with Gov. Casey's Pro-active Program Development.

Last year PennDOT spent over four million in tax payers' dollars on highway clean up and trash removal - money that could have been used for more significant long-lasting construction or repair work. As a result PennDOT reviewed the "Adopt-A-Highway" program as it operates successfully in 24 other states (including Maryland) and moved to implement it in Pennsylvania. PennDOT anticipates the same response and results here... cleaner highways, reduced costs.

According to Ms. Serian, "Many community service groups are already contacting the state and accepting the responsibility to maintain clean, debris-free roadways; inspire a feeling of community pride through these actions; and provide a cost savings to the agency." Once this program is fully underway a tough Anti-litter Program will be publicized and a state-wide wildflower planting project will continue the beautification efforts.

As an organization whose members are dependent on the highway industry the "Adopt-A-Highway" campaign

seems an ideal one for us to join. Who better to assist in these efforts than the people whose designs, materials, inventiveness and labor helped to build the highways and continue to be involved in their construction and repair? This program offers each one of us the opportunity to answer that "What can I do?" question about the environment in a way that openly demonstrates concern and sets an example. Also since highway projects are directly affected by the availability of tax dollars our efforts to help lower these clean up costs could even result in increased business opportunities and financial rewards for our firms.

The program requires a two year commitment for clean up services four times per year. Each group selects a two mile section or interchange area of their choice. PennDOT will supply trash bags, safety vests, safety tailgate talks and a video explaining the program. Through the group leader they will also coordinate trash bag removal by agency trucks. In addition permanent plaques will be placed along the roadway to acknowledge the "adoptive" group for their efforts. Again, ASHE would benefit from this recognition and publicity... which may result in increased membership.

Individual sections should explore this opportunity and solicit full support. Further information may be obtained by contacting the "Adopt-A-Highway" Coordinator at the local county maintenance office in your area.

Editor

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28th Annual American Society of Professional Engineers National Convention Hosted by the Altoona, PA Section

Continued from page 1

Altoona Campus, the Benzel Pretzel Factory, new routes U.S. 22 and U.S. 220, the Johnstown Flood Memorial, and the Raystown Dam.

Our annual Golf Tournament will be held at the Sinking Valley Country Club located near Altoona. This beautiful 18 hole championship course will challenge even the most enthusiastic and accomplished golfer. And for the tennis players in the crowd arrangements have been made with a local racquet club so that either indoor or outdoor tennis may be enjoyed.

The area also offers many large stores, boutiques, gift shops and several malls for convenient shopping forays for enthusiasts so inclined.

The Altoona Ramada Hotel is located at the Plank Road Interchange, easily accessed from the new four lane U.S. 220. This modern facility offers fine food, beautiful rooms, comfortable meetings areas and an indoor pool. ASHE guests at the Ramada will

also have the use of the nearby Backwall Fitness and Wellness Center which has Nautilus equipment, a 25 meter pool, saunas, steam rooms, whirlpools and indoor running and walking track.

In the near future you will be receiving your convention reservation packet in the mail. If you return your reservation by April 30, 1990 the \$35.00 registration fee will be reduced to \$30.00... so be sure to return your reservation early, or you may use the form included in this issue.

ASHE Altoona members have worked hard to assure that everyone attending this convention will have a good time. Plan to be there throughout the entire three days!

REMINDER... CONVENTION BOOKLET ADVERTISERS... be sure to submit your ad to Jack Stafanko, Ad Committee Chairman, 1210 Johnson Ave., Portage, PA 15946, phone: (814) 696-7171 8:00 a.m. to 4:30 p.m.

THE SCANNER

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 - 21% are contractors
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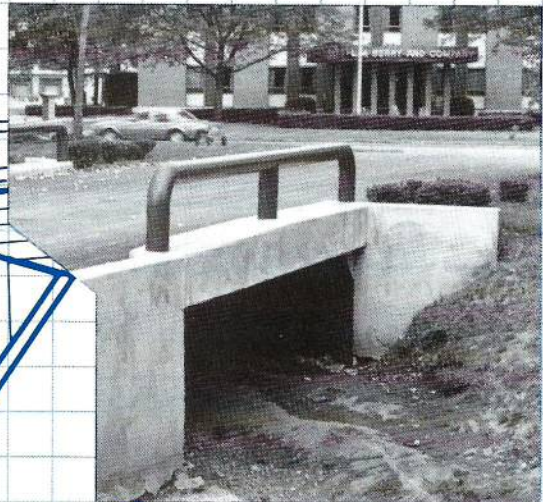
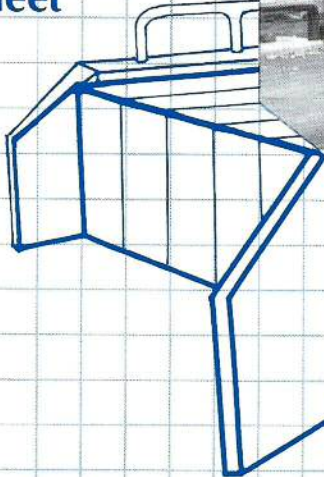
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Federal, State Road Budgets Slashed

Government Robert P. Casey's proposed budget to begin in July has earmarked **18 percent fewer dollars** for "highway and bridge construction and reconstruction" while the national budget submitted by President Bush shows a **cutback of \$1.6 billion** in highway authorization to the states.

"The highway and bridge investment by both the state and federal governments has been eroding and is of deep concern," Ralph E. Peters, president of PHIA said. "We must reverse this disturbing trend and reinvest in our road network if we are to reach our economic potential," he added.

State Budget

The new Casey budget is calling for \$849.8 million for highway and bridge construction in fiscal year 1990-91. This compares with \$1.042 billion budgeted for the current year ending June 30. A 36 percent decline in state highway construction funding is predicted in the Casey budget through 1994-95.

Further defining the state's cutback is the reduction in the number of

PennDOT road and bridge project lettings, down 14 percent for the first seven months of 1989-90 as compared to the same period last year. The number of projects let during 1988-89 was down 23 percent over the three previous years.

Correspondingly, support for "local highway and bridge assistance" will drop 13 percent under the budget proposal.

However, PennDOT will spend \$30 million more for "highway and bridge maintenance," a three percent increase over last year while fewer dollars will be available for contract work.

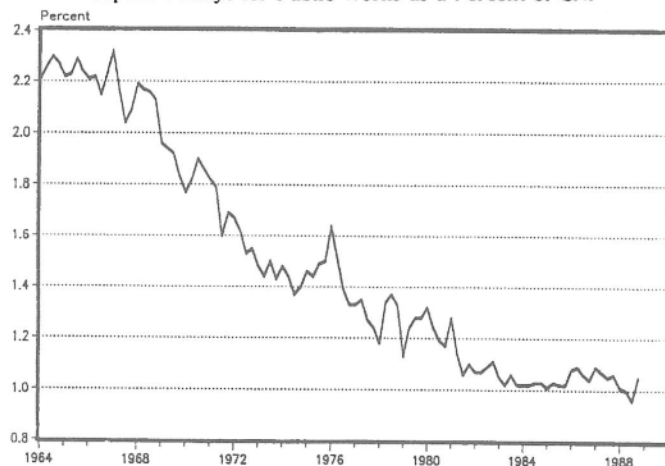
The Bush budget proposes a \$13.2 billion level for highways. This year, \$14.8 billion was available for the states.

The Bush Administration's lackluster position was telegraphed earlier when U.S. DOT Secretary Samuel K. Skinner said state and local governments will soon have to pay "a larger share of project costs."

'Disinvestment'

According to data being distributed by Merrill Lynch, capital outlays for public works accounted for more than two percent of the GNP 25 years ago, but now make up about one per-

Capital Outlays for Public Works as a Percent of GNP



SOURCE: Department of Commerce.

The nation has continued to "disinvest" in public works over the last 25 years. The largest portion of public works projects are highway and bridge improvements.

cent. (See graphic.)

"Mainly highway and bridge construction projects could be accelerated if all of the money highway users pay into the Federal Trust Fund was returned to the states," Peters said.

The balance in the Federal Highway Trust Fund has ballooned to more than \$10 billion. Pennsylvania's share has grown to more than \$500 million since highway user fees were first withheld in the 1960s.

A PHIA study released last year highlighted the economic value of roads. The case study of a Route 220 four-lane link near Altoona was shown to create more than 5,000 jobs while boosting the area's yearly retail sales by 37 percent and dramatically cutting accidents.

Yes!

I know how important good highways are to the Commonwealth. I want to join PHIA and receive newsletters promoting highways and bridges for the economic development of Pennsylvania.

☐ Payment enclosed ☐ Bill me

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Over 200 Attend Concrete Symposium

by: Warren Baas, Ohio
Ready Mix Concrete Assoc.

THE FIRST MATERIALS Symposium on Concretes For The 1990's, presented by the associate members of the Ohio Ready Mixed Concrete Association, was a very successful undertaking. Over 200 engineers, architects, contractors and materialmen attended the informative program at the Hyatt Regency Hotel in Columbus, Ohio in late 1989.

Special features of the symposium included a kickoff presentation by Dr. Weston T. Hester, Professor of Civil Engineering, University of California at Berkeley; six sessions on relatively unique cements, flyash, fibers, microsilica, superplasticizers and relatively unique admixtures; and the displays of twenty exhibitors.

Dr. Hester began the symposium with a rousing presentation entitled "Concrete—Partner To The Professional." His theme illustrated how a design professional can utilize concrete in creating large benefits for clients. Dr. Hester is currently working as the high strength concrete consultant to Turner Construction Co. on their Society Center Project in Cleveland, OH.

Each of the six different 75-minute symposium sessions was presented twice during the day, once in the morning; again in the afternoon. They were scheduled so that three sessions were ongoing at the same time which afforded each attendee the opportunity to hear four of the six sessions. Although the crowd distributed themselves well among all of the concurrent programs, the sessions on microsilica attracted the larger crowds.



Featured speaker, Dr. Weston Hester in discussion with attendee at the first Concrete Symposium in Columbus, Ohio



20 firms provided informative displays at the well-attended event.



Highway and Traffic Engineering

For more information, call Mark Roth at
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A three person team gave a coordinated slide presentation, then the host/moderator of the session and the presenters participated in a four person panel discussion to answer questions.

Ample time was provided during breaks and after lunch so that attendees could visit the exhibitors.

The consensus of evaluations from the attendees and

participants was very positive, with many recommending that it be presented again in other cities. Roger Jones, President of the Ohio Ready Mixed Concrete Assoc., commented that "It is very likely that we will present this symposium again in the Cincinnati and Cleveland areas during 1990 or 1991."



AMERICAN SOCIETY OF HIGHWAY ENGINEERS

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ALTOONA SECTION

**YOUR 1990 CONVENTION HOST
JUNE 7-9, 1990**

RAMADA HOTEL OF ALTOONA

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"The Changing Face of Transportation - - -
Moving Into the 90's"

CONVENTION REGISTRATION

To register for the 1990 ASHE National Convention to be held at the Ramada Hotel of Altoona on June 7, 8 and 9, complete the following form and mail to:

ASHE Registration Committee
c/o Mr. L.J. Bilotto, P.E.
916 Jones Street
Hollidaysburg, PA 16648

Please print or type name as you wish it to appear on your badge:

Member _____ Badge Name _____

Guest _____ Badge Name _____

ASHE Section _____ Employer _____

	Number Attending	Total Fee
Convention Registration Fee is \$35.00 (\$30.00 if before 4/30/90). Registration includes guest.	_____	_____
<u>Thursday</u>		
Ice Breaker/Hawaiian Luau (\$5.00/person)	_____	_____
<u>Friday</u>		
Technical & Historic Sessions	_____	0
Fashion Show/Make-up Seminar	_____	0
Annual Luncheon (\$7.50/person)	_____	_____
Past President's Banquet (\$15.00/person)	_____	_____
<u>Saturday</u>		
Golf Tournament (\$30.00/person registration fee w/cart). To be paid at Registration Desk.	_____	_____
Members & Guests Historic Tour (\$8.00/person)	_____	_____
Reception & Dinner (\$20.00/person)	_____	_____

TOTAL AMOUNT OF ENCLOSED CHECK: _____



AMERICAN SOCIETY OF 1990 NATIONAL CONVENTION "The Changing Face of Transportation"

Host: Altoona, PA Section

CONVENTION SCHEDULE

Thursday, June 7, 1990

4:00 p.m. - 8:00 p.m.
4:00 p.m. - 6:00 p.m.
7:00 p.m. - 11:00 p.m.

Registration
Convention Exhibits
Ice Breaker/Hawaiian Luau

Friday, June 8, 1990

8:45 a.m. - 9:30 a.m.
9:00 a.m. - 6:00 p.m.
9:00 a.m. - 11:30 a.m.
9:30 a.m. - 4:00 p.m.
9:45 a.m. - 10:30 a.m.
10:45 a.m. - 11:30 a.m.
12:00 noon - 1:30 p.m.
2:00 p.m. - 2:45 p.m.
3:00 p.m. - 3:45 p.m.
6:00 p.m. - 7:00 p.m.
7:00 p.m. - 8:30 p.m.
9:00 p.m. - Midnight

Annual Meeting
Registration
Fashion Show & Makeup Seminar
Convention Exhibits
Technical Sessions 1 & 2
Technical Sessions 3 & 4
Annual Luncheon
Historical Presentation 1
Historical Presentation 2
Reception
Past President's Banquet
Entertainment

Saturday, June 9, 1990

8:15 a.m. - 9:30 a.m.
9:00 a.m. - 12:00 noon
9:30 a.m. - 11:30 p.m.
9:30 a.m. - 4:00 p.m.
1:00 p.m. - 5:15 p.m.
6:00 p.m. - 7:00 p.m.
7:00 p.m. - 9:00 p.m.
9:00 p.m. - 1:00 a.m.

National & Section Officers Mtg.
Registration
Convention Exhibits
Golf Tournament
Historic Transportation Tour
Reception
Installation of Officers Banquet
Dancing and Entertainment

Sunday, June 10, 1990

8:00 a.m. - 12:00 noon

Checkout and Departure

All Breakfasts are Dutch Treat

TECHNICAL SESSION - Morning

- 1. REHABILITATION OF A STEEL TRUSS USING CABLES**
Joseph J. Pullaro, P.E., A.G. Lichtenstein & Assoc., Inc.
- 2. T-WALL AND ITS USES (Reinforced Earth)**
Dave Reynauld, The Neel Company
- 3. STRESSED TIMBER DECK BRIDGES WITH SANDWICH PLATES**
Dr. Ralph R. Mozingo, The Pennsylvania State University
- 4. BONDED AND UNBONDED CONCRETE OVERLAYS**
William C. Berg, Northeast Chapter ACPA

HISTORICAL PRESENTATIONS - Afternoon

- 1. THE CANALS, THE PORTAGE RAILROAD AND THE HORSESHOE CURVE**
Frances Robb, Historian, National Park Service
- 2. THE PENNSYLVANIA TURNPIKES 50th ANNIVERSARY**
Louis R. Martin, Executive Director, PA Turnpike Comm.

HIGHWAY ENGINEERS - ALTOONA, PENNSYLVANIA Registration . . . Moving into the 90's" on . . . June 7, 8, 9, 1990



GOLF TOURNAMENT REGISTRATION

The Annual Golf Tournament will be held at the Sinking Valley Country Club, which is an 18 hole championship course that will challenge all golf enthusiasts.

Tee times are reserved beginning at 9:00 a.m. on Saturday June 9 for the tournament.

The \$30.00 tournament fee, which includes golf registration, green fee and cart fee, **will be collected at the Convention Registration Desk.**

A sign-up sheet will be provided if you have preferred partners or wish to be paired with a foursome.

Prizes will be awarded at the dinner on Saturday night.

Space can be guaranteed for only 48 golfers, so register early.

Questions about the Golf Tournament should be directed to Bill McKee, Recreation Committee Chairman, at (814) 944-5035.

RAMADA HOTEL OF ALTOONA REGISTRATION

The following form should be mailed to the Ramada Hotel of Altoona, 1 Sheraton Drive, Altoona, PA 16601, so that it is received by May 25, 1990.

HOTEL RESERVATION FORM

Group Name/Convention ASHE
Rates: Sgl. \$55 Dbl. \$55
Date of Function June 7, 8 & 9, 1990

Name (print) _____
Address _____
City _____ State _____ Zip _____
For arrival on _____ Depart on _____
Please reserve _____ (day) _____ (date) No. of Rooms for _____ (day) _____ (date) People
Name(s) of person(s). sharing accommodations: _____

☐ Carte Blanche ☐ Visa* ☐ Master Card* ☐ Check or money order enclosed
☐ American Express ☐ Diners Club Amount \$ _____
Credit Card Number _____ Expiration Date _____
*Interbank Number _____ (must be included for all Visa & Master Card).

I authorize the Ramada Hotel of Altoona to charge my account for one night's deposit and all applicable taxes.

Signature _____ Phone # () _____

Check-out time is noon. Rooms may not be available for check-in until after 1:00 P.M.

Cutoff date: _____ Reservations made after cutoff date are subject to availability. Cancellations must be made 48 hrs. in advance. Rate does not include 6% PA State Occupancy Tax.

Legislative Review

by: Roland Nesslinger, P.E.

Early this year President Bush signed into law the FY 1990 appropriations bill for the U.S. Dept of Transportation. The bill set a highway obligation ceiling of \$12.6 billion. Spending levels were affected by the Gramm-Rudman-Hollings Balanced Budget Law.

The President also signed into law legislation increasing the \$3.35/hr. minimum wage to \$3.80 on April 1, 1990 and to \$4.25 on April 1, 1991. Improving safety in the transportation of hazardous materials is on the top of Congress' transportation agenda for the second session of the 101st Congress.

ARTBA Federal Highway Program Categorical Recommendations

In addition to seeking an additional \$25 billion per year in federal highway funding, here are the categorical recommendations that ARTBA will push in Congress.

1. A one-time, \$4 billion appropriation to close-out the Interstate Highway System construction project, initiated in 1956. Under the plan, to be eligible for federal funds any new construction project on the system, would have to be underway by Sept. 30, 1996;
2. A more than doubling - to \$6.8 billion per year - of federal funding for Interstate System rehabilitation work;
3. A tripling - to \$5 billion/year - of federal funding for bridge repair and replacement, with each state required to develop a plan that places priority on eliminating structurally deficient bridges;
4. Creation of a \$4.5 billion/year "Metropolitan Area Transportation Assistance Program" to ease urban/suburban traffic congestion. In addition to construction-related improvements, the program would help fund transportation system demand and incident response management programs, as well as projects that implement computer-based "smart highways" technology;
5. Creation of a \$3.5 billion/year "New Transportation Corridors" program to fund construction of new highways or substantially upgrade existing ones to near-interstate highway standards in high-growth areas not currently served by the Interstate System. Criteria for inclusion in the program would be established by the Federal Highway Administration after consultation with the U.S. departments of labor and commerce;
6. Redefining the Primary Highway system to include only routes of national significance and instituting a program to upgrade those roads to near-interstate highway standards;
7. Continuing and expanding the current federal assistance program for secondary and rural roads, funded at \$5 billion per year;
8. Bolstering federal funding for highway safety programs to \$2 billion per year, with increased emphasis on protecting workers and motorists in highway construction zones. ARTBA will also seek a federal study to determine the need for a national program to upgrade existing highway signs and traffic devices to take advantage of new technology;
9. \$1 billion per year in funding for expanded federal support of research and development programs.

Chairman Don Rostenkowski of the House Ways and Means Committee continues to support a federal gas tax hike dedicated to various non-highway purposes. He is quoted as saying "If I'm the tax man, I'm going to try to raise the revenue where there is the least resistance."

The following are several extracts that identify positions taken on future highway initiatives by the American Road & Transportation Builders Association (ARTBA). The positions stated by this association merits support of all ASHE members.

AS THE WHEEL
TURNS...



(Ed note: Please forward all announcements of promotions, new employees, changes in position, etc. for this column to the Editor, ASHE Scanner by the deadlines noted for next issue.)

DeROSS HONORED IN PITTSBURGH

JOHN F. DeROSS, P.E. Past National President of ASHE and Past President of the Pittsburgh Section was presented the 1990 "Dedicated Service Award" by the Pittsburgh Chapter of the Pennsylvania Society of Professional Engineers (P.S.P.E.) at the Annual Engineer's Week Banquet in February, 1990. John's involvement and service to the highway industry spanned 35 years with the Pennsylvania Department of Transportation. He retired in 1986.

NEW POSITION FOR AL LYG

ALFRED F. LYG, P.E. of Eardman, Anthony, Associates, Civil Engineers & Surveyors in Camp Hill, PA was recently selected as Chairman of the Pennsylvania Highway Users Federation. The Federation is a non-profit national organization representing many diverse groups and interests concentrating on the goals of better roads and bridges, safer highways, research and vehicle energy alternatives. Lyng has many years of association with highway concerns and is a former Chief Engineer for the Pennsylvania Department of Transportation.

R. MELANI RECEIVES P.S.P.E. AWARD

Past President of the Pittsburgh Section of ASHE, RUDOLPH MELANI, P.E. was presented the 1990 "Distinguished Service Award" by the Pittsburgh Chapter of the Pennsylvania Society of Professional Engineers at the Annual Banquet in February, 1990. Mr. Melani has spent a total of 41 years in service to the highway industry, 28 of which were with the Pennsylvania Department of Transportation, and 10 years with a consulting engineering firm.

Microsoft QuickBasic

by: Joseph E. O'Melia, P.E.

With the growing popularity of home computers, many engineers have acquired PC's to use at home, and are trying their hands at writing computer programs to solve work related problems. Initially, they use the Basic Interpreter that came with their computer, since they have it and it is cheap. Microsoft's QuickBasic is an alternate that is very affordable (under a \$100), powerful, and offers the following features:

1. On line help that explains the basic keywords and shows you examples.
2. Debugging routines that allow you to step through the program and watch the program flow, and the values of selected variables.
3. Error messages that explain what went wrong and shows you the line where the error occurred.
4. The ability to create multi-line functions that behave just like basic functions.
5. To use named subroutines, not just GOSUB XXXX.
6. Named line labels, not numbers.
7. The ability to break the 64k limit that is imposed by a basic interpreter for the program and data. This is a real plus if you are writing a program that has to store a lot of information: ie a structure analysis program using the stiffness method.
8. Multi-line IF THEN statements to reduce the use of GOTO and make your program more understandable.
9. The ability to write your program in modules that could be reused in other programs.
10. You can compile (that is make a stand alone program) to give to others and they cannot change your program.
11. Supports graphics on all the available graphic systems.

If it sounds like I am sold on QuickBasic, I am and would recommend it to anyone who likes to play programmer at home.

(Joseph O'Melia is with PennDOT, District 2-0; & can be reached for information at 814/765-0479.)

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National Infrastructure

Statistics being provided by numerous groups including the government indicate the extent of our nation's failing infrastructure. The need to address these problems is eminent – consider the following conditions:

- Over a million miles of U.S. highways will need to be resurfaced by the year 2000.
- Fifty-two percent of the nation's estimated 575,607 bridges are structurally deficient or functionally obsolete.

Some facts pertinent to these conditions and an indication of the relation to highway user costs are:

- By the year 2000, approximately 7.5 billion gallons of gasoline will be wasted due to traffic congestion.
- A delay of 20 minutes each day in rush hour traffic will waste two years of the person's time waiting for traffic and another six months waiting for red lights to change.
- Operating costs for small cars are almost one-third higher on poor roads than on well-maintained roads.
- One bridge collapse occurs approximately every 2 days.

A need to increase the funding base for maintaining and upgrading the highway infrastructure is mandatory and, more importantly, a release of the present available funding paid to date by the users. The \$28.8 billion which remains unspent in the federal transportation trust fund has to be combined with the increases in user taxes and other revenue sources to meet the challenge.

A need to educate the public regarding the cost to each person for inadequate, deficient, and functionally obsolete highways and bridges has to be given a high priority by knowledgeable groups and the government. In most cases, the public accepts the cost for an auto or truck purchase, fuel, maintenance and insurance without any relationship to the user cost unless the work "tax" is added. Yet the user tax is such a small part of the overall cost to the user. An interesting fact is that at approximately \$1.00 per gallon, the users will spend \$7.5 billion on wasted gasoline due to congestion over the next 10 years.

The public is very tax conscience and should be concerned that all tax revenues are prudently spent to serve the intended purpose. We Americans firmly believe that we pay excessive taxes. However, the United States ranks fifty-fifth in the world in capital investment in infrastructure. Estimates of annual capital investment shortfalls range from \$17.4 billion by Congressional Budget Office to \$24.6 billion by Joint Economic Committee to \$71.3 billion by the Associated General Contractors.

The members of ASHE have to begin a public relations program to inform the public of the highway needs by addressing the improvements necessary and the cost benefits derived.

Managing Editor

(Information in this article is provided by the National Science Foundation, Rebuild America and the National Council on Public Works Improvement.)

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Experimental System Detects Pavement Ice

by: Brian S. Yedinak, P.E.

DURING WINTER especially there is a need for up-to-the minute monitoring of remote road and bridge locations for ice, snow and frost. Bridge decks and concrete interstate pavements are particularly vulnerable to rapidly changing freeze or near-freeze conditions. In the northwestern portion of Pennsylvania, PennDOT Engineering District 1-0 has recently employed a Color Weather Radar system to provide data to their six county maintenance units. This data assures that informed decisions are made regarding emergency call-outs, staffing, problem areas and storm severity.

Based on evidence reported from existing ice detection installations around the country that justifies the expanded use of these systems, District Engineer JOHN L. BAKER, P.E., initiated the Color Weather Radar storm monitoring program for District 1-0. Baker, who has continually supported the use of techniques and methods to enhance PennDOT's ability to respond to developing weather conditions was also instrumental in securing approval for this experimental system.

This project involves the evaluation of a remote, passive road surface condition and weather monitoring

system at a site located on I-80 in Venango County. Four pavement sensors were installed in a recently completed I-4R project that provided for the reconstruction of I-80 from MP 35 to 42. The installation of the sensors was handled by Work Order and was paid for with construction funds. This is the first installation of this type on a Pennsylvania state maintained highway.

Site Equipment Included:

- Four sensors placed in the pavement which transmit surface temperature, sub-surface temperature and pavement condition data to Remote Processing Unit (RPU).
- Atmospheric sensors mounted on a tower next to the RPU measure air temperature, relative humidity, precipitation, wind speed and wind direction and transmit this data to the RPU.
- An RPU, which is a micro-processor, transmits the data from the sensors to a Central Processing Unit (CPU).

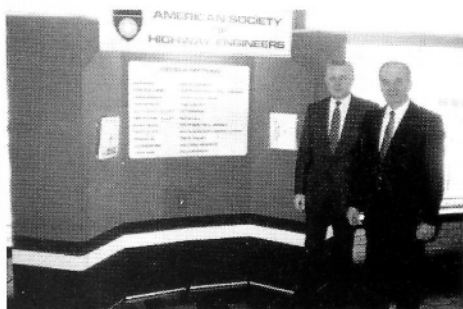
At the District Office:

- A CPU (mini-computer) communicates with the RPU to collect data. The CPU data can then be accessed by personal computer which was provided along with a printer and a modem.

The Color Weather Radar Unit is at the central monitoring location in PennDOT's Franklin Office where radar operators access the system. A telephone dial-up method is used to communicate the data. Parameters are established for each of the sensors at the RPU site. If the conditions being monitored fall outside these pre-set limits, the RPU dials-up the CPU, transmits its data and sounds an alarm to alert the radar operator. Once this occurs, a time cycle begins and the RPU continues to call the CPU at pre-

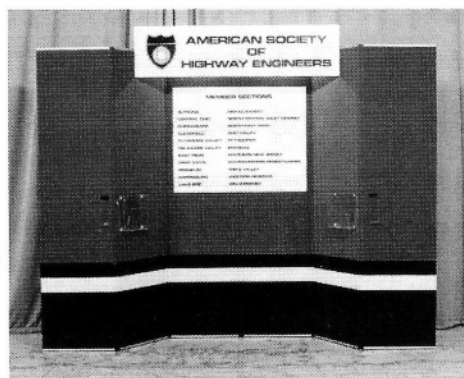
Continued on page 15

ASHE Display Completed



ASHE President Matt McTish and Al Kozel pose with our new display in bright red, white and blue and featuring the ASHE logo.

ASHE's colorful new free-standing display is now available for promotional use by sections and members. This 7' x 10' folding panel features a listing of ASHE area sections representing our expanding membership throughout Delaware, Indiana, Kentucky, Maryland, New Jersey, Ohio, and Pennsylvania. Hand out materials can easily be inserted in the two convenient pockets located on



the display walls, thus making them accessible to passersby.

The National Board wishes to thank Bill Bury of the Pittsburgh Section for his assistance in the research and purchase of the display. Members are encouraged to contact Al Kozel, Kozel Engineering Co., Inc., Pgh., PA to arrange and schedule use for the coming year.



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Experimental System Detects Pavement Ice

Continued from page 14

determined intervals until the sensor conditions fall back within the original parameters. Also, the radar operators have the ability to direct the CPU to "poll" the RPU at any time and get a download of its data.

The effectiveness of the system is evaluated by comparing the data recorded by the instruments with concurrent visual field inspections of road conditions. These comparison observations are made throughout the evaluation period by maintenance personnel and documented on observation forms. Special inspections take place during periods of expected freezing conditions. In addition, the system is programmed to store all the data transmitted by the RPU on the computer's hard disk and hard-copy prints

can be generated as a permanent record.

UMAKANT DASH, P.E., from PennDOT's Bureau of Bridge and Roadway Technology, Harrisburg, PA is the Project Manager. The Principal Investigator, CHRIS HEYDRICK, from Engineering District 1-0, coordinates the completion of the observation forms with the county maintenance personnel. He is also responsible for completing all required reports.

The pavement sensors were operational in January 1990. A construction report will be completed by May 1, 1990. PennDOT will evaluate the system through two winter seasons and a Final report will be completed by May, 1992.

The pavement sensor data, along

with the information available from the District's Color Weather Radar system, should provide the county maintenance staff with a number of benefits: more efficient use of personnel and materials during snow removal; lower costs of these operations; longer service life of the pavement and bridges due to reduced salt usage; improved perception by the traveling public; and a significantly improved response time for maintenance crews which will provide increased safety for motorists.

For additional information relative to this experimental project you may contact Chris Heydrich at (814) 437-4328, or Brian S. Yedinak, P.E. at (814) 437-4316 during the day.

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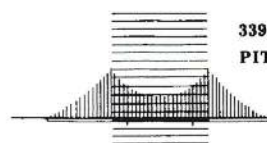
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