

# SCANNER

NEWSLETTER OF THE AMERICAN SOCIETY OF  
HIGHWAY ENGINEERS

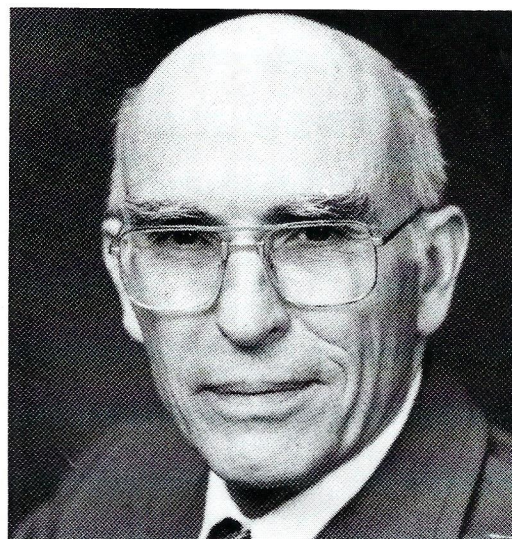


May 1988

## ASHE Members Head ODOT



Bernard B. Hurst, Director Ohio Department of Transportation. Effective Jan. 4, 1988. Date of birth Dec. 11, 1930



Wayne H. Kauble, Assistant Director for Highways, Ohio Dept. of Transportation. Effective Date Jan. 5, 1988. Date of birth May 25, 1926

The three top management positions at the Ohio Department of Transportation are now held by members of the Central Ohio Section of ASHE.

Bernard B. Hurst, P.E., was appointed Director of ODOT by Governor Richard F. Celeste effective Jan. 4, 1988. Hurst has served since 1983 as the Department's Assistant Director for Highways.

"Bernie has the kind of experience in state government that will help us build on the strong and innovative leadership we have seen at the Department of Transportation in the past five years," Governor Celeste said.

Hurst, a registered professional engineer and surveyor, is a graduate of Virginia Polytechnic Institute. He has been with ODOT 15 years. He plans to continue efforts to implement modern management systems and computer programs throughout the Department,

including a \$9 million computer-aided design and drafting system to make the designing of roads and bridges faster and more efficient.

One of Hurst's first actions was to appoint Wayne H. Kauble, P.E., another active member of ASHE, to the position of Assistant Director for Highways. A 37-year veteran of ODOT, Kauble will oversee the design, construction and maintenance of the state's 19,000 miles of highways and 14,000 bridges.

Kauble holds a bachelor's degree in civil engineering from the Ohio State University. Since 1983 he has served as the Department's Deputy Director for Planning and Design.

ODOT's other Assistant Director assumed his position in June 1987. R.A. Nesslinger, P.E., serves as Assistant Director for Transportation Modes and oversees the Division of Rail, Water and Public Transportation.

Nesslinger is a founder and was the

first president of the Central Ohio Section. He currently serves as an ASHE national director.

After graduating from Clarkson University with a degree in civil engineering, Nesslinger worked for 18 years at ODOT in various administrative and management positions. He then worked as a private consultant for 13 years before returning to ODOT last year.

Another ASHE member in a new position at ODOT is George Downing, P.E. Downing, the former Deputy Director of ODOT's District 6, was recently named Acting Deputy Director for Planning and Design by Director Hurst. Downing, a Franklin University graduate, has 24 years experience with ODOT.

ODOT has a state workforce of more than 7,600, and an annual budget of more than one billion dollars.



## President's Message



It seems just yesterday I was installed a President and wrote my first message. Now its time for my final message. In this year I have enjoyed serving the Society. I attended meetings in Delaware, Maryland, Ohio, Pennsylvania, and West Virginia. Everywhere I met many fine people and was treated warmly. The membership is truly a great body and each is deeply interested in the ideals of this Society,

The geographic area the Society encompasses is growing steadily. This year we chartered the a Mid-Allegheny Section (Indiana, PA), and the Chesapeake Section (Baltimore, Md.). Although each section conducts meetings and schedules in a slightly different manner; the membership of contractors, State officials, utility officials, suppliers, and consultants forms a solid nucleus for each Section and the entire Society. This union of people is strong and certainly is an excellent selling point to expand to new regions of this country.

Each member must understand past principles and decisions. This Society's treasury has slowly increased to the present value of just over \$50,000. The purpose of the reserve has been for future use when we encompass even a larger geographic area, need an Executive Secretary, and other unknown items. An item of extreme pride and a strong selling point to any new member is the dues structure. The Board has purposely kept the dues low so we can recruit and maintain a large membership. With a large membership, we can communicate openly with everyone in the highway industry. There are members who believe National should fund more activities to promote the industry. In general terms, our Constitution recognizes this activity. One must be ever mindful that more spending will ultimately mean higher dues. Therefore, future board members must carefully weigh the pros and cons of both actions before making a final decision.

As in any business, there are difficult decisions to be made. I am confident that we have qualified men on the Board of Directors who are willing to do the additional planning and work to keep this organization strong.

## ASHE Supports Ohio Transportation Engineering Conference

The Forty-First Annual Ohio Transportation Engineering Conference was held on December 1 and 2 at the Fawcett Center, Ohio State university. The conference is under the joint sponsorship of the Civil Engineering Department of OSU and the Ohio Department of Transportation (ODOT). The conference also has the cooperation and support of the Ohio Section of the Institute of Transportation Engineers, the Federal Highway Administration, the County Engineers Association of Ohio, and the American Society of Highway Engineers.

The Ohio Transportation Engineering Conference is planned to serve as a medium for integration of all transportation interests within the State. The program is arranged to afford an

opportunity for all persons interested in Ohio's transportation facilities to get better acquainted and to exchange ideas on planning, designing, constructing, maintaining, operating and managing our transportation facilities.

This year's conference was attended by over 800 members of Ohio's transportation community. These included employees of ODOT, City and County engineering departments, consulting firms, contractors, suppliers, and university students.

Twelve technical sessions were scheduled during the two day conference. Topics included bridges, construction, new materials, resurfacing, restoration, and rehabilitation, traffic and safety, and highway maintenance.

The annual luncheon on December 3 was highlighted by various awards and recognitions. Seventeen individuals received their AASHTO 25-year Award of Merit. Scholarship awards and financial

*Continued on page 3*

## EADS President Receives Honor



LEFT: R Stanton Over, P.E. Distinguished Service Award Recipient.

RIGHT: William J. Wilson, P.E. Altoona Section President

The Altoona Section of the American Society of Highway Engineers presented its 1988 Distinguished Service Award to R. Stanton Over, President and Chief Executive Officer of the EADS Group.

The presentation was made at a dinner on February 19, 1988 at the Calvin House in Altoona.

Over was recognized for his outstanding contributions to the transportation industry throughout the Southern Alleghenies Region and his years of dedication to the industry, according to William Wilson, Section President.

Wilson noted Over's participation in Appalachian Thruway Association, an organization that actively campaigned for the development of new Route 220 through the region, and his involvement with the William Penn Highway Association.



*Continued from page 2*

aid presentations were made in the names of Emmett H. Karrer, J. F. Schwar, and Charles E. McKee. Various smooth-riding pavement awards were also presented.

ASHE participation at this year's event included sponsorship of coffee and doughnuts during the opening day's registration hours. ASHE banners were prominently displayed from the various Ohio sections. ASHE history brochures and membership applications were also available to better acquaint conference participants with our organization. As in past years, the Ohio Transportation Engineering Conference was an educational and enjoyable experience for all in attendance.

By : Stuart Wilms

## SHRP Releases New Program

The Strategic Highway Research Program (SHRP) has released its third-quarter program announcements, involving \$5 million worth of research in improved concrete bridge protection, pavement repairs and snow control.

There are four contracts being offered:

- Concrete Bridge Protection and Rehabilitation: Non-Electrochemical Techniques-A five-year, \$2.2-\$2.7 million effort to improve existing repair methods, with a focus on protecting reinforced concrete from corrosion.

- Resistance of Concrete to Freezing and Thaw-This \$1.1-\$1.3 million project will search for better methods of mixing freeze-thaw resistant concrete.

- Innovative Materials and Equipment for Pavement Surface Repairs-This two-year, \$560,000-

\$660,000 project will devise fast, cost-effective methods of pothole repair and shoulder interface crack/joint sealing.

- Improved Displacement Plows and Blowing Snow Control- This five-year, \$1-\$1.2 million study will seek more efficient displacement plows and ways to reduce snow drifting.

SHRP is a five-year, \$150 million program that provides grants for research in high priority areas of highway research. It is funded through the *Surface Transportation and Uniform Relocation Assistance Act of 1987*.

The deadline for receipt of proposals is 4 p.m. (EST), April 8, 1988. For more information, contact Karen Haas Smith, SHRP, 818 Connecticut Ave. N.W., Washington, D.C. 20006. The phone number is 202/334-3774.

Provided by: ARTBA  
Washington, D.C.

## Legislative Review

### LEGISLATION

- At the national level, testimony continues before the Surface Transportation Subcommittee of the House Public Works and Transportation Committee in an effort to restore cuts proposed for the federal-aid highway and transit programs in the Administration's FY 1989 budget.

Subcommittee Chairman Glenn Anderson and Ranking Minority Member Bud Schuster have been openly critical of the budget plan. As proposed, the total obligation level for the year would be lowered \$695 million below the FY 1988 level. The planned reduction in federal spending for transportation comes at a time when state and local governments face growing needs for highways and bridges along with major repair and rehabilitation requirements on existing facilities.

The same subcommittee is also conducting hearings on the 65 mile per hour speed limit, drunken driving and motor carrier safety.

- The Senate Budget Committee heard a recommendation from Federal Reserve Board Chairman Alan Greenspan to raise the gasoline tax 15 cents to reduce the

federal deficit. Presently the federal excise tax on gasoline is nine cents and is used solely for transportation purposes.

- William Coyne (D-PA) has introduced the Infrastructure Improvement Act of 1987 as HR 3612. This measure would establish a program of loans to states and units of local government for infrastructure improvement projects. The bill was referred to the House public Works and Transportation Committee.

- Senator Robert Stafford (R-VT) has introduced the DOT's bill to commingle federal funds for construction of new toll roads on any federal-aid system other than the Interstate. The bill, S. 1823, was referred to the Environment and Public Works Committee. Earlier the same bill was introduced in the House as HR 3498.

### TRENDS

- The Heritage Foundation has published a report which raises the prospect of selling the nation's roads to the highest bidder for private operation. Several ways are identified how this privatization would be implemented--including access fees for road use and privately owned streets constructed by developers. The report offers the

chance of fundamental reform of road system financing and departure from political hassles such as the pork-barrel process. Private owners would have to listen to their customers!

- FHWA has commissioned a consultant to examine effects on the trucking industry of potential changes to truck size and weight laws and changes in issues such as truck regulations, user fees, speed limits and energy costs, and elimination of 80,000 lb. gross weight cap.

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# The Forgiving Highway

"THE FORGIVING HIGHWAY" was the name of an informative film presented by The EADS Group, an engineering firm with Headquarters located in Altoona, to commemorate "National Engineers Week" February 21-27, 1988. According to R. Stanton Over, P.E., EADS President, the program ran for 30 minutes and was shown 3 times during Engineers Week

on the local public access channel. The film describes some of the safety features incorporated in modern highway design and construction. Mr. Over stated that special thanks should go to both the Federal Highway Administration, and the Pennsylvania Department of Transportation, specifically District 9-0, for their assistance in making this presentation possible.

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# The Allegheny County Cold In-Place Recycling Experience

Allegheny County is located in Western Pennsylvania with a population of 1.4 million covering an area of 741 square miles. The County is known as the Bridge Capital of the world with more than 2,000 major and minor bridges spanning rivers, creeks, and springs. It is also the ninth most populous County in the United States.

The Allegheny County Department of Maintenance is a relatively new unit of county government created in 1978 by a recommendation of the committee for Progress in Allegheny County (COMPAC). This Department and the new Department of Engineering and Construction replaced the County Department of Public Works. Given its geographic location, climate, and meteorology, Allegheny County faces many major problems that most urban areas face: the deterioration rate of their infrastructures. Ten percent of our roadway system is considered substandard and another fifteen percent require preventative improvements to protect the base and pavement. The allotted road repair budget falls short of the quantity of rehabilitation demanded, and the gap continues to widen. Our Director of Maintenance, Joseph P. Moses recognizes that a solution to narrowing the gap between funds and the quantity and quality of repair may be the use of new construction techniques. The economic atmosphere creates a demand for change - a period for doing more with less, expanding technological ideas and experimentation. Allegheny County's Department of Maintenance has employed new construction techniques that promise to improve immediate and long-term repair economies. That method is In-Place Cold Pavement Recycling with refinements to eliminate some of the construction equipment commonly associated with the process.

Since the late 1970's, Allegheny County used recycled asphalt material on road projects. Milled asphalt bituminous material was utilized as a shoulder base on low-volume roads,

parking lot base and top, and on all stabilized road projects. A 1,100 ton hot recycled project was placed under contract in 1982. Milled material was transported to an asphalt plant and mixed with virgin material to produce an asphalt wearing surface. A maximum of 25 percent reclaimed material was placed on the County roads. There was 6,453 square yards of material placed at a savings well over \$10,000. In 1982, the Department of Maintenance was one of the first agencies in Pennsylvania to utilize Cold In-Place Recycling of bituminous pavement as a prepared base coarse for final resurfacing. The concepts of quality assurance and value engineering were utilized in this project. Furthermore, information from the Asphalt Recycled and Reclaimed Association (A.R.R.A.), our Pittsburgh section of (A.S.H.E.) the American Society of Highway Engineers, articles from the Public Works and Highway and Heavy Construction magazines, describing the advantages and disadvantages of various recycling techniques, aided in establishing our quality assurance program in Cold In-Place Asphalt Recycling. In fall of 1982, a local contractor proposed Cold In-Place Asphalt Recycling in lieu of extensive base repair on a 2.2 mile project. The contract originally provided up to 35 percent of base repair on a pothole and alligator cracked road. The road was rural in classification, an Old Farm to Market type, with an A.D.T. under 2,000. The contractor proposed an alternate of milling the existing road surface to a depth of 4 inches and in-place mixing to form a new uniform base. The roadway exhibited a broad spectrum of pavement materials and types of treatments applied through the years. The numerous pavement layers included: hot plant surface mix, hot asphalt base, slurry seal, oil chip, and both hot and cold patching compounds.

The preliminary lab analysis of the asphalt concrete averaged an asphalt

content of 7.9 percent. The viscosity of the material was 60,000 poises @ 140 degrees Centigrade and penetration was 18 @ 77 degrees Fahrenheit. Gradation analysis showed 52.1 percent retained on the number (8) sieve and retained on the number (200) sieve and 4.5 percent fines that pass a number (200) sieve.

The recycling train has been designed to reduce equipment needs to a minimum. To achieve this objective, the pavement milling machine performed several tasks. The mill began slicing through the pavement at specified depths between 2 to 4 inches. In addition, it appeared to blend the rejuvenating agent with the millings, maintained specified gradations of the milled material and conveyed it to the Paver Hooper all in one pass. The process eliminated the need for a pug-mill, portable crusher and a windrow pick-up device that are sometimes used in a In-Place Asphalt Recycling projects. The milling machine was also the sole prime mover within the equipment chain, averaging 14 feet per minute of production.

The contractor recommended Reclamite Emulsion as the rejuvenating agent. The rejuvenating agent flowed from an 1800 gallon Tanker through a 4-inch hose to a spray bar mounted on the front of the mill's cutter-module. The agent was sprayed onto the pavement as it entered the cutting-module at specified rates. The mill apparently blended the rejuvenator with the milled material. The mix was then transported by the mill's conveyor system into the paver hopper. The paver had no special modifications to spread and strike off the recycled mix. No heat was involved through the entire operation. The milled material was mixed with the rejuvenator agent at an ambient temperature of 65 degrees Fahrenheit.

Although the road surface had numerous sections of alligator cracking, particle gradation of 2 inches or less was maintained to not more



than a four percent variation over the entire project. The pavement was milled at a predetermined template grade to maximize pavement recovery. At the centerline of the road, the milling depth averaged 6 inches and 2 inches at the roadside. The overall depth averaged 4 inches. Basically, the paver relayed the processed pavement back in place at the same depth as it was removed.

Specifications called for the new recycled mat to be compacted to a density of 92 percent. The first two compaction passes were made with a double drum vibratory asphalt compactor with both drums in a vibratory mode. After 15 minutes, two more passes were made with the compactor rolling in the static mode. The final phase involved a pneumatic-tired roller providing numerous passes. After compaction of the recycled mix, the roadway was reopened to traffic and left to thoroughly cure for twelve days. The project was completed with an inch and a half of wearing coarse ID-

2 Top hot asphalt concrete layed over the recycled mix. Our Department estimated that this change resulted in a savings of \$79,144 on a \$200,000 project. The key factors discovered in pursuing the Cold In-Place Asphalt Recycling process are: 1) careful sampling and testing; 2) hot, dry weather; 3) thorough mixing; and 4) curing before sealing. This project on "State Road" was the beginning of our Cold In-Place Asphalt Recycling experience and was the foundation of which the specifications were modified and updated to assure a higher quality, economical end-result product. The chart below provides a "Summary of the Allegheny County Cold In-Place Asphalt Recycling experience" from 1982 to 1987.

Within the past six Construction seasons, many new equipment and material methodologies have been combined by the County in an effort to achieve an optimum pavement performance and duration at the lowest possible investment. The use of this

Cold In-Place Asphalt Recycling strategy by the County has been successful to date. In fact, we have not been able to formulate an accurate life-cycle performance curve that the Cold In-Place Asphalt Recycling process initiates for a road because our oldest project is only six years old and the road metal still remains maintenance free. Cold In-Place Asphalt Recycling provides a new uniform flexible base, repairing fatigue cracking and controlling the distressed pavement from reflecting through the surface. The underlying pavement is still cracked and flexes under load, but the 4" to 6" deep recycled base is resilient providing an apparent stress barrier.

As new technology provides better equipment, rejuvenating agents and methods, the future use of Cold In-Place Asphalt Recycling as part of a low-cost reconstruction alternative for the highway industry will increase in merit.

By: Paul Ostrowski

#### **ALLEGHENY COUNTY - MAINTENANCE DEPARTMENT** **SUMMARY OF THE COLD IN-PLACE RECYCLING PROCESS FOR THE PAST 6 YEARS**

YEAR	TOTAL MILES	TOTAL S.Y.	A D T AVERAGE	TYPE OF REJUVENATING AGENT	TOTAL YEARLY COST	IN-PLACE AVERAGE SQUARE YARD COST	TYPE OF BITUMINOUS OVERLAY	TOTAL ROAD
1982	2.2 MILES (1 ROAD)	28,000	1,000	RECLAIMITE	IN-PLACE: \$71,400 EMULSION: \$28,000 TOTAL: \$99,400	\$3.55/S.Y.	1 1/2" ID-2 \$72,000 2,100 TONS	\$171,400
1983	5.4 MILES (4 ROADS)	71,573		RECLAIMITE E-5 EMULSION	IN-PLACE: \$214,720 EMULSION: \$79,818 TOTAL: \$294,538	\$4.12/S.Y.	1 1/2 ID-2 \$183,281 5,198 TONS	\$477,819
1984	14.97 MILES (10 ROADS)	180,067	3,820 4,221	E-5 EMULSION AC 2.5	IN-PLACE: \$439,805 EMULSION: \$145,189 TOTAL : \$584,994	\$3.25/S.Y.	ID-2 D-TOP 3,503 tons 6,789 tons \$127,337 \$229,377	\$946,906
1985	7.88 MILES (7 ROADS)	103,780	2,352 12,118	E-5 EMULSION E-8 EMULSION ARA & E-8 BLEND	IN-PLACE: \$280,205 EMULSION: \$126,210 TOTAL: \$406,415	\$3.92/S.Y.	ID-2 D-TOP 3,119 tons 9,307 tons \$122,577 \$326,676	\$885,688
1986	3.63 MILES (3 ROADS)	47,571	8,814	ARA 60% E-8 40% (49,158 gal. of Blend)	IN-PLACE: \$130,821 EMULSION: \$69,805 TOTAL: \$200,626	\$4.22/S.Y.	2" D-TOP \$245,601 5,525 TONS	\$446,227
1987	5.1 MILES (4 ROADS)	66,410	2,352 4,064	ARA 50% E-8 50% E-8 MODIFIED	IN PLACE: \$112,897 EMULSION: \$88,144 TOTAL: \$201,041	\$303/S.Y.	ID-2 D-TOP 3,259 tons 2,598 tons \$127,003 \$105,843 RALUMAC: \$33,859	\$467,746
TOTALS	39.18 MILES (29 ROADS)	497,401	AVERAGE: 4,843		IN-PLACE: \$1,249,848 EMULSION: \$537,166 TOTAL: \$1,787,014	AVERAGE: 3.69/S.Y.		\$3,367,764



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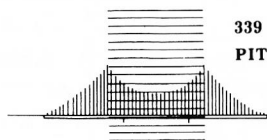
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# Attending A Trade Show: Tips on How To Make It Work For You

When it's time to purchase a new rebar cutter, a different form liner, or a more powerful computer estimating program, it's time to visit a trade show.

When your competition is surging forward by offering clients state-of-the-art equipment and procedures, it's time to visit a trade show.

When new large-scale equipment like a shopblaster or an all-terrain crane is needed for a job, it's time to visit a trade show.

And when the time comes to actually visit the trade show, knowing the best way to assemble information quickly and efficiently can make attending a highly profitable venture.

Dan Sladek, exposition manager for the World of Concrete, gives the following tips on making the most of a trade show visit.

## 1. Plan a viewing path

First obtain a show directory. These are handed out during the registration process and are vital tools. Make notes of any exhibitors who may have sent you invitations or notes prior to the show, or whose advertisements in the trade journals may have piqued your interest, or who you've dealt with successfully before. Write their booth numbers down. Then search for companies offering a similar product line or service, and write their booth numbers down also. Remember to include those booths that attract your interest even if you don't plan on purchasing the item.

Use the floor plan in the directory to organize a route that utilizes the least amount of distance, time, and energy, to

see the exhibits on the list.

Plan a route that groups exhibitors with the same product lines. This makes it easier to compare features and costs of competing companies. Jot down personal notes on the product literature when speaking with the booth personnel. This will jog your memory later when all the data accumulated is put together in a report or a purchase decision. Also make sure to get business cards from the booth representative in case something needs to be clarified after the show is over.

## 2. Set aside enough time

Always allow adequate time to make the rounds of a trade show. About two and a half days was the average time attendees spent visiting the exhibits at the last three World of Concrete trade shows. Seeing too many exhibits in too little time will just result in confusion and incomplete information. Remember that included in the time needed to view exhibits is time to see booths that attract spur-of-the-moment interest, time to chat with friends and peers, time to attend afternoon seminars, time to watch product demonstrations, and of course, some time for relaxation.

Trade Show Bureau research has shown that a trade show attendee spends on average 21 minutes in each exhibit gathering information. Twenty minutes is a good time to allot for each booth you plan to seriously visit.

## 3. Follow up on the second day

After spending the first day scouting the exhibits and taking notes on what are the key companies for your needs, re-visit the outstanding booths to obtain

additional details on the second day. This allows a more relaxed interaction because you've already made initial contact.

## 4. Talk with exhibitors

In general, you'll know within 90 seconds whether an exhibitor has what you're looking for. But the only way to find out is to walk up and ask. Most of the interaction at trade shows consists of meeting booth personnel and gathering information, not hard sell. When browsing the aisles, feel free to stop and ask for a demonstration of a product or for more literature describing its qualities and workmanship. This exchange benefits you by providing you with good background to use when deciding upon a future purchase.

Take time to jot down nuggets of information that might not be listed in the brochures handed out by an exhibitor. These notes will help you remember which products and services deserve additional attention and warrant another stop at the exhibit.

Many companies introduce new products at trade shows, so if there's an item you're not familiar with, ask. You may just find a machine that cuts in half the time needed for a certain job. Or you may learn about a new procedure that has been proven to reduce material costs. And best of all, your competitor may have just walked right by the display.

## 5. Write a report

While the tools and vehicles and materials you saw at the show are vivid in your mind, write a report including both factual details and your gut instinct. Keep handy the names of the exhibitors who you would like to do business with. The material you gather at a trade show serves as an excellent resource all year round, and by documenting your reactions and noting interesting items, you will be able to keep the memories fresh.

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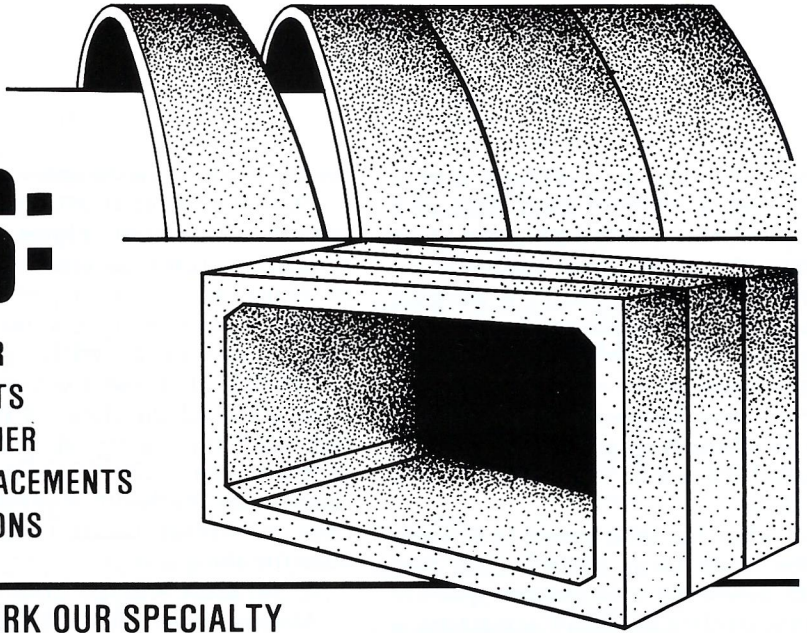
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## Central Ohio Section Hears Development Alternatives

The Central Ohio Section of ASHE gathered for a luncheon meeting on January 26, 1988 at the Jai Lai Restaurant in Columbus, Ohio. Gary Palatas, P.E., Engineer in Charge with the City of Columbus, addressed the subject of "Public/Private Financing of Roadway Projects".

Palatas cited examples of cooperative efforts between the City and developers in order to provide services in the rapidly growing area of Northwest Columbus. The fact that development was anticipated and master plans and construction drawings were "on the shelf" aided in the controlled growth of the development. In the Sawmill Road area, developers put up \$1 million dollars and requested a City contribution of \$300,000 in order to meet the financing requirements of the improvement projects. The City provided inspection services and materials up to the dollar amount of the City's participation limit.

Inspection was provided by City personnel and materials were provided through the City's annual contracts for same.

Palatas cited another example of private-public cooperation on the Cleveland Avenue widening on the City's northeast side. Large-scale commercial development required infrastructure improvements in order to accommodate increased traffic volumes. In this project, the City will construct the sewerage improvements and the developers will construct the roadway improvements.

In related development consideration, Palatas commented on the City's ring road concept (used in the Sawmill Road area) versus the frontage service road plan. The ring road concept uses a series of ring roads behind development. This permits alternative routing around a major intersection and thus reduces demand on that intersection. It also encourages reduction of congestion at the service

road/artery intersections, a problem frequently encountered in the Morse Road and S.R. 161 areas on the City's north side.

Palatas credited the cooperation between the various political entities and developers as crucial to the success and timely implementation of the projects.

In other news, the Central Ohio Section has exceeded 100 members with the addition of four new members. We look forward to continued growth

**By: Stuart Wilms**

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# Spread Sheet Programs and Engineering

The PC (personal computer) has now made its way into about every engineering office. In most cases it probably is an IBM compatible computer running MS-DOS. Commercial programs are available to perform engineering calculation, survey, structural design, and hydraulics. These programs make us do the problem in the manor the author of the program prescribes. But there is another way - by using a Spread Sheet program.

Spread Sheet programs are not just for balancing the check books and preparing a lot of fancy reports. They have the ability to perform all types of engineering calculations and the result would look similar to the hand calculations that were used to create the model.

The following example is the design of a retaining wall (to save space only shown to "CHECK STABILITY" and "FOUNDATION PRESSURE"):

To use the program you input the values on lines 1-11 to fit your particular situation, making assumptions for the footing thickness (line 4), toe (line 5), and base width (line 6). You then check the stability (lines 30-34) and the foundation pressure (lines 35-36) automatically while trying different values for the toe and base until a satisfactory result is achieved (just like you use to do on paper, but faster).

The complete program will calculate the Design Moments for the footing and the stem (this program can be modified to design abutments).

The above program can be implemented

1							Stem Height (ft)	12.000
2							Stem Top Width (ft)	1.500
3							Batter n/12	1.000
4							Footing thickness (ft)	2.000
5							Toe (ft)	1.500
6							Base Width (ft)	9.000
7							Depth of L.L. Surcharge (ft)	2.000
8							Soil Unit wt (kcf)	0.120
9							Equiv' Fluid Pressure (ksf)	0.035
10							Coefficient of friction	0.450
11							Wt on Conc (kcf)	0.150
12								
13	Footing	Design						
14	section	area of						
15		section						
16	stem	18.000	unit	weight	weight	moment	moment	
17	batter	6.000	0.150	2.700	2.250	6.075		
18	footing	18.000	0.150	0.900	3.667	3.300		
19	soil over			2.700	4.500	12.150		
20	footing	67.500	0.120	8.100	6.500	52.650		
21	soil over							
22	batter	7.667	0.120	0.920	3.333	3.067		
23								
24			Sum Fv = >	15.320	Sum MFv = >	77.242		
25	Horizontal soil forces							
26		Horizontal Block	0.980	7.000	6.860			
27		Triangular Loading	3.430	4.667	16.007			
28								
29			Sum Fh = >	4.410	Sum MFh = >	22.867		
30	Check Stability							
31		F.S. overturning		3.378				
32		F.S. sliding		1.563				
33		y-bar		3.549				
34		eccentricity (e)		0.951	B/6=	1.500		
35	Foundation Pressure							
36		Pmax		2.781				
37		pmin		0.623				

Lines 1-11 are the parameters describing the wall  
Lines 12-29 compute the forces and moments  
Lines 30-34 checks the stability  
Lines 35-37 computes the foundation pressure

on any computer that has a Spread Sheet program (Atari, Commodore, Texas Instrument, et al).

Once you have solved a particular type of problem using a Spread Sheet program, you should save it so it will be there the next time you come upon a similar design. Then, all you have to do is load the file and change the input parameters, thereby saving a lot of time on future projects

Spread Sheet programs give an Engineer the option of having the input and output their way without having to learn one of the programming languages ((Fortran, Basic, Pascal, QuickBasic, etc.), which are nice but take a fair amount of time to get working. Spread Sheet programs in general are not hard to use for this type of application and the results are worthwhile, so give them a chance.

By: Joseph E. O'Melia, P.E.  
District Bridge Engineer  
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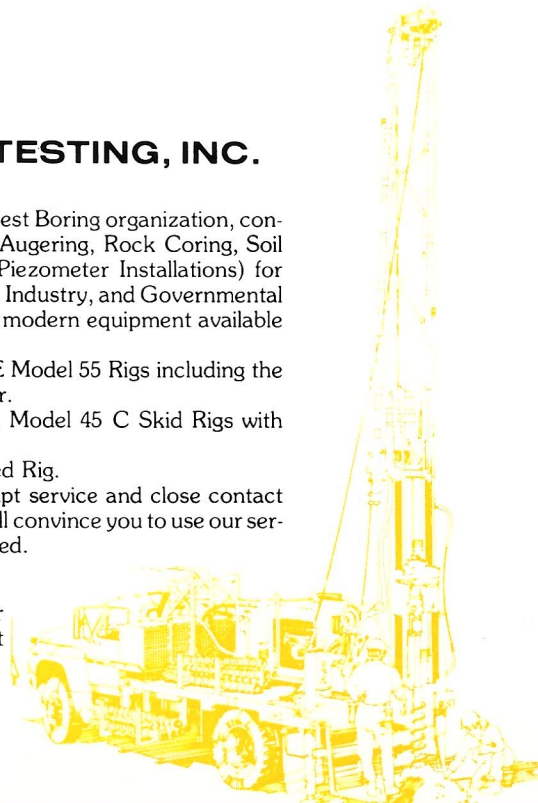
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## Secretary's Corner

We are rapidly reaching the end of another fiscal year. Please forward your officers roster for 1988/89 (name, mailing address and home and office telephone number) no later than June 15, 1988.

Just a reminder to check addresses on all new member applications. Some that I receive are illegible and /or very hard to read. The new member may not receive the Scanner or other Society mailings if the address is not clear.

Respectfully  
Terence D. Conner, P.E.  
National Secy.

## Membership

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Delaware Valley .....	387
East Penn .....	144
First State .....	107
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Western Reserve .....	72
Williamsport .....	125
<b>Total .....</b>	<b>2,680</b>
DOT .....	33%
Consultant .....	27%
Contractor .....	22%
Other .....	18%
Professional Status .....	39%