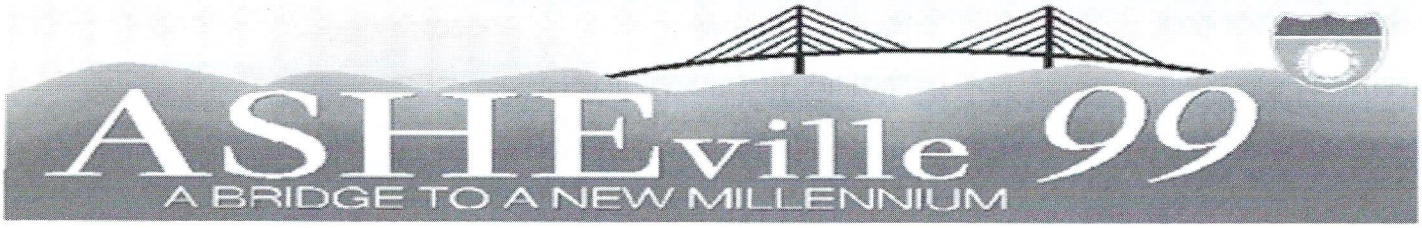
SCANNER

NEWSLETTER OF THE AMERICAN SOCIETY OF HIGHWAY ENGINEERS

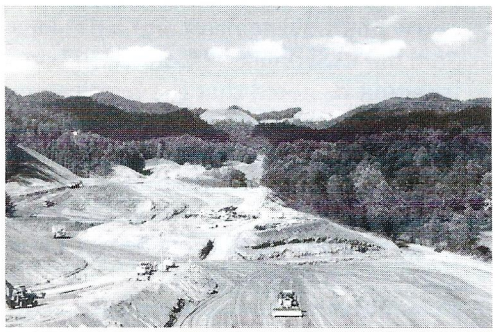
February 1999-1



The ASHE Carolina Triangle, Carolina Piedmont and Georgia Regional Sections invite all members to attend the 1999 National Conference in ASHEville, NC. This year's conference will be held during Memorial Day Weekend (May 26 - 30) in the scenic Blue Ridge Mountains. Plans are currently underway to include informative, enjoyable and unique activities that will make this a conference to remember.

In less than a year, the dawn of a new millennium will bring a variety of technical and environmental challenges, as well as an air of excitement. The theme of the 1999 Conference, "A Bridge to a New Millennium", captures both the enlightening and mystic qualities associated with the year 2000.

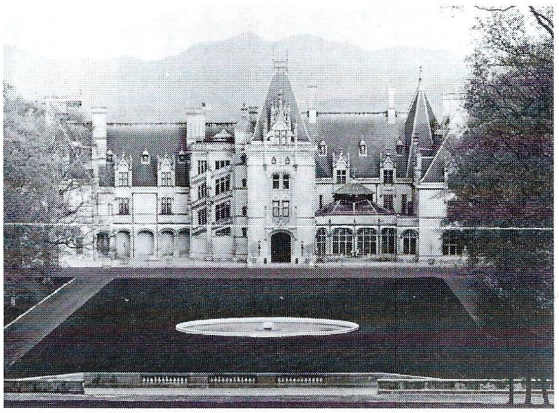
The technical sessions at this year's conference will present emerging computer advances and construction methods of the highway industry. In addition to presentations on computer-aided design improvements such as, "Interactive Highway Safety Design Module (IHSDM)" and "Computer Visualization in Highway Design"; a new process of highway design, the "Design - Build" concept, will be discussed. Representatives of the NCDOT and the SCDOT will discuss their experiences with this "one-stop" format that takes a project through the design and construction phases.



Courtesy of John Lansford, P.E. NCDOT

An event not to miss at the 1999 Conference is a tour of the NCDOT's I-26 (Project A-10) construction site. Two separate projects extend approximately nine miles through some of the most rugged and environmentally sensitive terrain in the Carolinas. The new- location facility traverses elevations that range from approximately 2500' to 4000', creating enormous cut sections (the deepest is approximately 500' below existing ground) and fill sections (the highest is approximately 200' above existing ground). As expected, moving such large quantities of earthwork has created unique erosion control challenges, especially in the areas of designated trout streams. To appreciate the magnitude and complexity of these projects, be sure to join us for a technical tour unlike any you've experienced.

Another unique activity planned for the 1999 National Conference is a candlelight dinner and tour of the famous Biltmore Estate. After traveling the three-mile approach road to the Estate, you will become mesmerized by the architecture of the house and the surrounding breathtaking gardens. Once inside, the original furnishings and décor will captivate your imagination and take you back in time to the Gilded Age. A guided tour of the Estate will provide intriguing details about the lives of the original owners, George Washington Vanderbilt and his wife, Edith Stuyvesant Dresser. Join us and learn fascinating facts such as, how the Vanderbilts had booked passage on the *Titanic*, but chose to sail on the *Olympic* instead. You definitely won't be disappointed by the 19th-century charm of America's largest home!



Courtesy of Biltmore Estate, Asheville, North Carolina

As was previously mentioned, this year's conference will be held during Memorial Day Weekend, so plan on bringing the family. Various fun-filled activities are being planned that are sure to please everyone! During the technical sessions on Thursday and Friday, tours are being arranged for the Asheville Antiques Mall,

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National Board News

National Board members met for a regular meeting on January 22, 1999, at the Ramada Inn in New Stanton, PA. National Board President James W. Charles, P.E. presided over the meeting. The following are highlights of the committee reports and board actions:

MEMBERSHIP

There have been 59 new members since the October 1998 meeting, Secretary Conner reported. Total membership in ASHE now stands at 4,968.

PRESIDENT'S REPORT

President Charles reported he recently attended the O-tech Conference and the Annual Venison Dinner held by the Franklin Section.

NEW SECTIONS

Chairman Cooper E. Curtis, P.E. reported that there has been no new activity concerning New Sections, but he informed the Board the new Director, Tracy Hill, P.E. representing Region 8, has agreed to work with the New Sections Committee.

CONSTITUTION/BYLAWS

Director Stuttler, chairperson, reported she has approved the Section Bylaws for both Pittsburgh and Delaware Valley. She has received the Bylaws for the Georgia Section for review and approval and will issue a report at the next Board meeting.

LEGISLATIVE REVIEW

The Federal Government's Competition Bill was reviewed by Chairman Charles L. Flowe, P.E. He said he expects the bill to be passed.

CONFERENCES

Conference 1999 - Director Hill emphasized the need to have business sponsorships for the 1999 Conference in ASHEville, NC. Registration packets will be mailed in early February.

Conference 2000 - Director David W. Jones, P.E. of Region 1 said the Central Dacotah Section Conference Committees are working on the technical programs and the special activities which will include a river boat cruise, golf and a Pitch Fork Fondue.

Conference 2001 - Mr. Conner and Domenic M. Piccolomini, P.E. first vice president, both of South West Penn Section, host of the 2001 Conference at Seven Springs Resort, reported that the first steering committee meeting to set up individual committees is scheduled for early February.

ASHE WEBSITE

Director Jones requested Sections to e-mail current events so they may be included on the Web page. He also reported there has been no progress on selling links to the ASHE Web pages.

MEMBERSHIP DIRECTORY

The Board agreed to provide electronic copies of the next membership directory to all Sections. There will be a $10.00 charge for each hard copy provided by National. However, Sections have the option to copy and provide copies to the membership with or without charge.

NOMINATING COMMITTEE

The following officers for the 1999-2000 year were recommended by the following Nominating Committee members: Pasquale A. Dougherty, P.E. and Roland Nesslinger, P.E. past presidents, Terrence Conner, P.E. and Beth Angstat of Region 8. The nominations were approved by the National Board:

President	Charlie L. Flowe, P.E.
1st Vice President	Domenic M. Piccolomini, P.L.S
2nd Vice President	Cooper E. Curtis, P.E.
Secretary	Terence D. Conner, P.E.
Treasurer	Robert E. Yeager, P.L.S
Director - 1 year	
Region 1	David W. Jones, P.E.
Region 2	Shirley A. Stuttler
Region 3	Lisle E. Williams, P.E.
Director - 2 year	
Region 4	Robert M. Peda, P.E.
Region 5	Robert E. Somers
Region 6	Rodney P. Pello, P.E.
Director - 3 year	
Region 7	Ronald Purvis, P.E.
Region 8	Tracy L. Hill, P.E.
Region 9	John McDowell

Man of the Year Award

There will be no individual selection this year due to a special presentation to change the award to the *Robert E. Pearson Person of the Year Award.* Bob Pearson, a member of the Carolina Triangle Section and National ASHE first vice president, passed away in September 1998. He was to have taken the oath of office as ASHE's National President at the ASHEville Conference in May. The special presentation of the name change of the award will be held at the ASHEville Conference. ■

ASHEville continued from page 1

the Blue Ridge Parkway, the Folk Art Center and the North Carolina Arboretum. If those activities don't entice your family, perhaps a visit through historical homes or a mountain crafts shopping spree will spark their interest. Saturday is being reserved for family events that take advantage of ASHEville's surrounding attractions. The daring can take an adventurous white-water rafting trip down the French Broad River; and the sportsman can compete in the annual ASHE golf tournament at one of ASHEville's mountainous courses. For a more relaxing excursion, you can ride the Great Smokey Mountains Railway along the scenic Tuckasegee River or explore Lake Lure aboard a pontoon boat. You'll be able to unwind and trade stories from the day's activities during the annual banquet on Saturday night.

The conference committee continues to improve and finalize the details of the 1999 National Conference to ensure a pleasurable, educational and memorable event. You can stay informed on all the activities planned and learn additional information by visiting the National ASHE web site (**www.highwayengineers.org**) and linking onto the "ASHEville 99 Conference" site. It should be noted that the registration form included in this issue contains tentative conference activities and fees and is for information only. Once the conference specifics are definite, a registration package will be mailed to members. When it arrives in February, take a few minutes to complete the registration form and get ready to enjoy some Southern hospitality! ■

Identification and Mitigation of Streams and Wetlands: How Does This Affect State Transportation Agencies?

By Gerald R. McCrain, Ph.D., CEP, President, EcoScience Corporation, Raleigh, North Carolina

Water resource issues have rapidly become the principal environmental topic of the 1990's. As we move into the 21st century, stream and wetland concerns, along with subsequent impacts on water quality, promise to remain in the forefront. This paper addresses matters pertaining to identification and mitigation of streams and wetlands, how we got to where we are in the process, and potential implications for state transportation agencies. North Carolina will be used as an example throughout this paper because of familiarity with state agencies and policies, and because North Carolina has been a leader in dealing with these environmental concerns.

On December 13, 1996, the U.S. Army Corps of Engineers (USACE) published final notice of intent regarding issuance, reissuance, and modification to nationwide permits (NWPs) for specific activities associated with the discharge of dredged or fill materials into waters of the United States, including wetlands (61FR 6584). The 37 existing NWPs were re-issued, some with modification, and 2 additional permits were authorized. The 39 NWPs became effective as of February 11, 1997.

Changes to NWP #26 were the most anticipated and controversial. Prior to February 1997, NWP #26 allowed 1 to 10 acres of impact to above headwater wetlands with flow rates less than 5 cubic feet per second (cfs). This permit had been used as a catch-all for a variety of often-considered "minor" impacts by the development community, to the bane of most environmentalists. Ecologists have long argued that headwater losses were the most critical since water quality impacts often originated in or around the origin of streams and associated wetlands.

With the new changes, NWP #26 thresholds were reduced to a maximum of 3 acres of impact, and reporting requirements to USACE were required for project activities involving headwater wetlands in excess of 0.33 acres. More importantly, impacts to water bodies of 500 linear feet or more were not allowed under NWP #26. For the first time, USACE recognized streams and tributaries (i.e. water bodies) as separate and distinct entities for permitting purposes. Until 1997, water bodies were generally thrown into the mix with wetlands when it came to permitting, and mitigation was generally folded into whatever wetland mitigation opportunities were available.

This new recognition of water bodies has created a whole host of new problems for the development community. First, how do you define a "water body" and what constitutes a jurisdictional stream? How does one mitigate for such losses?

Although USACE continues to maintain primary responsibility for determining the jurisdictional status of streams and wetlands, in many States, agencies responsible for implementing Section 401 Water Quality Certification programs stepped up to take the lead in the stream identification and mitigation process. After all, water bodies are generally considered synonymous with water quality, and Section 401 of the Clean Water Act specifically delegates water quality decisions to the States.

In North Carolina, the Division of Water Quality (NCDWQ) has attempted to objectively and quantitatively define a stream. A team of agency personnel and experts in the field initially attempted to define a stream by drainage area size in the Piedmont region, a 25 acre watershed was considered necessary to support a stream; in the Coastal Plain, 50 acres were deemed necessary for stream formation. Identification on a U.S. Geological Survey Quadrangle or Natural Resource Conservation Service soils map was also considered imperative. Identifiable parameters such as pool/riffle formation, evidence of bed and bank, and presence of aquatic life, were used to determine stream presence in the field. Currently, the NCDWQ working group is applying numerical rankings to various field indicators in an effort to develop a system for quantifying stream determinations.

After a stream determination is made, the issue of mitigation becomes relevant. What streams require mitigation? What mitigation measures are appropriate for replacement of lost functions? How much mitigation (i.e. replacement ratios) should be required and where should mitigation be performed? Currently, stream identification and mitigation is handled on a case-by-case basis. Unlike wetland mitigation which has been a top burner issue for a number of years, the science of stream restoration is still developing. Questions regarding what, where, when, and how much stream mitigation is required are largely left unanswered, contributing to the confusion of the regulated public.

How does all this affect transportation agencies? The answer is primarily in terms of time and money. As one of the largest development groups in the country, State Departments of Transportation (DOTs) have a vested interest in speeding up the 404/401 process. The North Carolina DOT (NCDOT) has publicly announced that a more environmentally sensitive approach would be taken to planning and developing highways. At the same time, NCDOT has determined that highway construction schedules must be expedited. Ironically, environmental review and permitting have been identified as primary factors in creating current delays. With stream identification and mitigation now part of Section 404/401 requirements, it is hard to believe that the process of building roads will be made any easier.

Mitigation costs must also be factored into the road building formula. In a recent Strategic Wetland Analysis and Mitigation Program 1998 (SWAMP98) report, NCDOT identified more than 9200 acres of wetland and approximately 1.9 million linear feet of stream mitigation needs for the ten-year highway program. Using North Carolina Wetland Restoration Program (NCWRP) restoration costs of $12,000 to $24,000 per acre for forested wetland mitigation (dependent upon wetland type; assumed average of $18,000), and $125 per linear foot for stream restoration, NCDOT will be facing over $400 million in mitigation costs alone over the next 10 years. Aggressive measures to avoid and minimize resource impacts may lower costs. However, this may also be a conservative estimate. If mitigation ratios are increased (NCDWQ) is proposing a 2:1 replacement for stream impacts, transportation-related mitigation costs will be substantially higher than initially projected.

One answer to the mitigation dilemma may be a reliance on mitigation banking. Recent TEA-21 legislation encourages the

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Innovation, Real or Imaginary? SAFE Foundations, Real

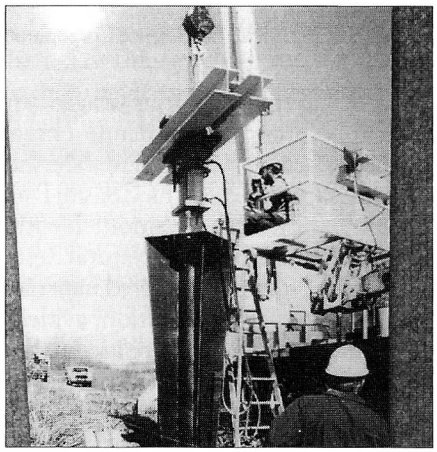
Innovation is something that the governmental agencies are talking about for financing, processes, designs and products. However when it comes to using an innovative idea, product or service, they are not as eager as they say. One of the problems is liability. Because of the rapid changing of technology, there are many products which are available to these agencies, but the process to get them approved is so time consuming that we, in the US, will fall behind those countries who are willing to try new ideas and products immediately.

The fear of failure, and the risk which goes with it, is too great for many public officials. If they try something new, they probably will receive little credit. However, if it fails, they will take all of the risk. We need a process that will protect the engineer or whoever will make the decision to use a new idea or product. Today's approval system is not working quickly enough for today's pace.

With more projects than funding, innovation is a necessity. There is a new, innovative, unique, steel finned tube foundation called SAFE Foundation, which is an alternative to concrete spread footers and concrete caissons. It can be placed into the ground with the above structure in hours, not weeks. It can support all types of structures, such as standard light poles, high mast light poles, type "A" signs, cantilevered signs, call boxes, noise walls, catenary poles and communication towers. When the SAFE Foundation is used, the foundation, because of its speed of completion becomes part of the solution and not part of the problem.

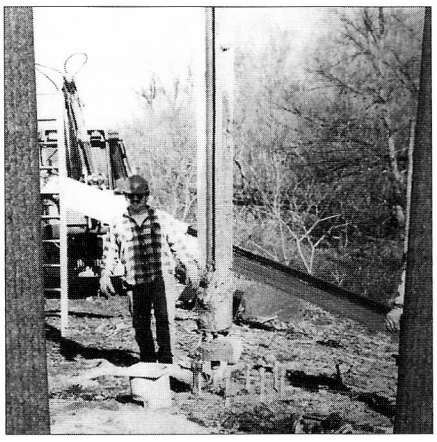
The SAFE Foundation is a product which is innovative, useful and competitive, but it is different or "outside of the box." PennDOT has approved the foundation for many difference types of above structures and SAFE is going through the approval process with a number of other State Agencies. The Pennsylvania Turnpike Commission and a number of states have used the SAFE Foundations. The FAA has also approved the SAFE Foundation for work on the airfield because of speed, cost and safety.

With right-of-ways so limited and therefore so valuable, the SAFE Foundation can be placed in smaller areas with far less disturbance of the existing ground and usually remain in the shoulder or sidewalk area, with no plates at all in the cartway. This will permit more room for underground facilities, such as fiber optics, or it may be the only foundation which will fit into the existing area with so many underground facilities already in place. This has been the case, for some catenary pole foundations, which have been successfully placed for a transit authority. The SAFE Foundation can usually be placed where the sign, light, or call box is required, not where the foundation will fit.



"Insert foundation"

"Hydraulically expand anchor"



"Remove anchor"

The SAFE Foundation is designed by a professional engineer using the required design load, geotechnical data and wind loading for each location. Depending upon the type of soil, we can either pull the foundations in, by jacking against an installed anchoring system, or push the foundation into the earth, by using a method similar to a boring machine mounted on a track called the "Push-it", which is used when loose and sandy materials are encountered. The SAFE Foundation has gone through extensive testing to assure that the design meets its expectations and to reduce or eliminate any liability.

If an electrical ground is required, the SAFE Foundation has a natural electrical ground in excess of the FAA's strict airfield requirement. Therefore, there is no additional cost for a costly grounding system.

It is easily and quickly installed, but removable. Some agencies are reluctant to construct new ITS structures because they are waiting for future roadway expansion. The Pennsylvania Turnpike has used the SAFE Foundation for a variety of uses such as cantilever signs, high mast light poles, Type "A" signs, and call boxes. After the installation of a call box, the call box was relocated because it interfered with a directional sign. The SAFE Foundation was easily removed and reinstalled with the call box to eliminate interference with the sign.

The SAFE Foundation can help solve your highway needs by providing a fast, efficient, dependable and cost-effective foundation. We need more public officials who will not be afraid to use innovative products, and we need a way to protect them when they do.

For further information, you may write, call or fax to the following:

John F. Graham, Jr. P.E.
Consulting Engineer for
SAFE Foundation Company
Century Bldg, 7th Street, Suite 920
Pittsburgh, PA 15222
Phone: 412-281-8300 FAX: 412-281-7239

Identification and Mitigation continued from page 3

use of mitigation banking by state DOTs and Federal funds are available to purchase mitigation credits from private banks or to develop mitigation alternatives within DOT.

In North Carolina, NCWRP was established for the purpose of promoting riparian restoration in an attempt to improve water quality. Sites are currently being identified in all State river basins. The program may accept payment into a fund for wetland/stream mitigation required for State 401 Water Quality Certification, and Memorandum of Agreement has recently been signed with USACE to allow consideration for use of NCWRP sites to meet mitigation conditions required under Section 404 - with case-by-case review and approval by USACE.

Private sector mitigation banks are also being developed to meet anticipated mitigation demand. In North Carolina, one entrepreneurial mitigation bank in the northeast section of the state has been formally approved, a second bank in the Cape Fear River basin in Cumberland County is awaiting final signature of the Mitigation Banking Instrument, and several other banks are in various stages of review and completion. TEA-21 legislation specifically encourages the use of private sector banks to meet state transportation mitigation needs.

In an effort to meet anticipated internal mitigation needs, NCDOT has recently increased its environmental staff; mitigation site identification, design, and implementation tasks have also been expanded. The Department expended approximately $10 million in 1997 for mitigation. An additional $25 million per year has been programmed over the next 7 years to cover expected mitigation costs.

However, stream/wetland mitigation design and implementation issues are far from being the only environmental problems facing state transportation agencies. Standardized identification of affected resources, expedited permit review, increased agency cooperation, prior agreement on project purpose and need in the environmental documentation process, and up-front availability of mitigation, will also affect highway construction schedules. Without a multifaceted attack on all the issues, the time and costs for roadway projects proceeding from concept to completion will continue to increase. ■

ASHE '99 CONFERENCE

Official Conference Host
Great Smokies Holiday Inn SunSpree Resort
Asheville, North Carolina
May 26 to 30, 1999

REGISTRATION FORM

(Please print or type)

Name: _____
Employer: _____
Address: _____
_____
Telephone: _____ Fax: _____

Name Badge Information:
Registrant's Name: _____
Spouse's Name: _____
Child's Name(s) / Ages(s): _____

Date: _____
Spouse's Name: _____
ASHE Section: _____
ASHE Member: o Yes o No
Sponsor: Level: _____ o Yes o No
National Board Member: o Yes o No
Exhibitor: o Yes o No
Past National President: o Yes o No
Company: _____

Conference Activities	Fee (per person)	No. of Persons Attending	Total Fee
ASHE Conference Full Registration registrant	$100.00		
After April 15, 1999, late registration fee	$125.00		
spouse	$25.00		
ASHE Conference One Day Registration registrant	$40.00		
spouse	$25.00		
Wednesday, May 26			
Icebreaker (in Exhibit Area)	No Charge		
Thursday, May 27			
Continental Breakfast (in Exhibit Area)	No Charge		
Spouse's Tours: Antique Shops (includes lunch)	$55.00		
Blue Ridge Parkway & Arboretum (includes lunch)	$50.00		
Lunch – Catered (in Exhibit Area)	$10.00		
Dinner – Old Fashioned NC Pig Pickin' w/ Live Entertainment	$15.00		
Friday, May 28			
Continental Breakfast (in Exhibit Area)	No Charge		
Spouse's Tours: Mountain Crafts (includes lunch)	$60.00		
Historic Asheville Homes Tour	$35.00		
Technical Tour: I-26 Construction Site (Morning)	$10.00		
Past President's / Person of the Year Lunch	$25.00		
Biltmore Estate Candlelight Tour & Deerpark Inn Dinner	$50.00		
Saturday, May 29			
Family Events: Chimney Rock / Lake Lure (includes lunch)	$60.00		
Great Smokey Mountain Railway (includes lunch)	$65.00		
French Broad River Rafting (includes lunch)	$75.00		
Golf Tournament (includes lunch)	$60.00		
Cocktail Reception and Annual Banquet	$30.00		
Sunday, May 30			
Conference Adjourns	No Charge		
TOTAL			

The above fee does not include hotel accommodations. Hotel reservations are the responsibility of each member. Make room reservations by contacting the Great Smokies Holiday Inn SunSpree Resort at 1(828) 254-3211. Conference room rates are $89 + tax.

Prices are subject to change due to finalization of agenda.

FOR INFORMATION ONLY

Contact: Pam Cloer (919) 515-7990 pcloer@unity.ncsu.edu

The Butler County Regional Highway

Submitted by Rich LaRocco, P.E., P.S. Cuyahoga Valley Section

The Butler County Regional Highway will be a full four-lane limited access divided highway connecting the city of Hamilton to Interstate 75 just north of Cincinnati, Ohio. Construction began on May 18, 1998, and the highway will be opened for traffic in early 2000. The sponsor is the Butler County Transportation Improvement District (TID).

This 11-mile project begins at the intersection of the current State Route 129 and State Route 4 in Hamilton and runs east between Princeton and Hamilton-Mason Roads. Interchanges will be constructed where the highway reaches I-75 and at Bypass 4, State Route 747 and Cincinnati-Dayton Roads. This is the largest single road project in Ohio.

The Butler County Transportation Improvement District issued over $158 million in Transportation Improvement Revenue Bonds. This allowed the TID to repay the three state infrastructure bank loans from the Ohio Department of Transportation.

Authorized by the United State Congress in 1995, the State Infrastructure Bank (SIB) loan program is a national pilot project designed to enable local governments to expedite transportation projects through low interest loans. The TID is also the first entity in the nation to repay SIB loans. These SIB loans were instrumental in allowing the TID to keep an aggressive schedule for the acquisition of right-of-way and engineering on the highway.

As a project manager for this major regional transportation improvement initiative, M.E. Companies is responsible for coordinating all phases of project development, including environmental documentation, preliminary studies, right-of-way acquisition and detailed design review. The result will be 10.2 miles of new four-lane divided highway which includes 11 structures, two over a major interstate, several county road overpasses and a major railroad valley crossing.

The innovative, concurrent design review and coordination process utilized the review team concept, which was developed and managed by M.E. Companies. The team includes representatives from M.E. Companies, Butler County TID, ODOT, FHWA and the Butler County Engineers Office. Monthly meetings were held to establish progress and resolve issues. During these meetings major review decisions were made which saved time by not having to wait for answers. By streamlining the design review process, the typical project schedule was reduced by almost two years.

By coordinating reviews of preliminary plans with right-of-way acquisition, we created an innovative method to maximize design components, mitigate damages and minimize potential acquisition problems. This created a win-win situation for right-of-way, design and acquisition issues by reducing the overall project costs and delays.

Coordinating efforts with the affected utility companies early in the project development process allowed for a timely response on relocation issues. By keeping the utility companies apprised during the design process, there was a cooperative process between the design team and all utilities to resolve the significant utility relocation work.

For the Butler County highway, bid documents were prepared as three separate projects while also allowing contractors to bid on all three sections as a single project. Kokosing Construction submitted the lowest bid for one project worth approximately $93 million. By awarding the bid as a single project, the savings on administrative and construction costs are potentially more than one million dollars.

Because the project consists of three separate project plan sets with quantity tabulations, recordkeeping is a major task. M.E. Companies' experienced construction administration team developed and implemented a manual of procedures that outlined the responsibilities of M.E. Companies and Resource International, the firm providing material control and inspection services.

The Butler County TID and M.E. Companies chose to use Info Tech Field Manager, a state-of the-art computer-based management system. This system is compatible with ODOT's CMS system and utilizes field book laptop computers that enable the inspector to enter fields on the site daily. This data is then assimilated and processed by the Field manager to produce the diaries, estimates and contract modifications. The system handles material approval, delivered material usage and payment tasks. The system has proven valuable in reducing time and staff required to maintain proper data collection, documentation, material approval and contractor payment functions.

The contract is ahead of schedule and is currently 30 percent complete after five months of actual construction. In fact, the project is 10 to 15 percent ahead of schedule and on track to beat the October 2000 contract completion date. Cost growth has been contained to one half of one percent with the help of value engineering savings realized. We believe the TID objectives of quicker, better and less expensive are being realized through the use of this innovative design and construction administration process and organization. ■

"AGILITY. . .Working Together In Pennsylvania"

By Don Mast, PennDOT Engineering District 9-0, Customer Advisory Board Coordinator
and
Ann Stacey, Director, Pennsylvania Economy League

The Agility Initiative, started in 1996, is a new way for the Pennsylvania Department of Transportation (PennDOT) to conduct everyday business. Agility is a new cooperative maintenance strategy for Pennsylvania's 112,000 miles of roads and bridges. The Agility initiative involves working with local municipalities in partnership to improve the quality of the Pennsylvania transportation system. The Department is listening to customers needs, saving tax dollars and making its services more efficient, responsive, and flexible to serve the citizens of Pennsylvania, smarter.

The Agility initiative focuses on Governor Tom Ridge's commitment to a "Maintenance First" philosophy that emphasized maintaining existing transportation systems and facilities before building new ones. The four principals of Agility include: Enriching the Customer, Cooperating to Enhance Competition, Organizing to Master Change and Uncertainty, and finally an emphasis on People, Information, and Technology.

- **Enriching the Customer**: Involve the customer in developing products and services, which are customized for them and meet their desires.
- **Cooperation to Enhance Competition**: Cooperate in temporary relationships with other organizations, including competitors, to increase competitive capabilities.
- **Organizing to Master Change and Uncertainty**: Create a flexible organization that can quickly adapt its human and physical resources to address changing needs.
- **Emphasis on People, Information, and Technology:** Place an emphasis on the value of people, information, and technology in lieu of bureaucracy when making decisions.

"The mission of the CAB is to provide critical input, feedback, and evaluation about the County transportation system through active participation and involvement in the maintenance and development of the system to best meet the needs of the transportation customer." This is a photo of the Blair County and Huntingdon County Customer Advisory Board's (CAB's) during a cooperative meeting in June of 1998.

Agility AMEs at work in District 9-0

District 9 is located in Hollidaysburg, Pennsylvania, where the Agility initiative is creating a positive impact. In 1996, the pilot stages unfolded in the form of AMEs or Agile Maintenance Enterprises. AMEs are temporary partnerships between the Department and local municipal governments to exchange equal value of services and resources. These AMEs are formed to capitalize on each partner's core competencies in accomplishing shared transportation goals. PennDOT and local governments may each have different proficiencies that complement each other in the overall delivery of transportation services to Pennsylvania's customers. A few District examples of AME partnerships include: PennDOT trading municipal line painting for mowing and sweeping or PennDOT painting lines for an airport in exchange for inlet and drainage cleaning. Currently, District 9-0 has 25 AMEs in progress with more partnerships being developed. Total 1998 estimated AME savings for District 9-0 is $164,190.00 and growing.

Customer Involvement in District 9-0

One way for the Department to reach out to involve and enrich the transportation customer was to develop Customer Advisory Boards (CAB). A CAB is a diverse group of transportation customers who are community-minded, interested in transportation, and ready to voice their concerns and suggest new ideas. CABs provide a way to communicate and understand the public. The CAB is designed to capture customer information, feedback, and evaluation about the county transportation system. The CAB educates the customers with PennDOT training resources, guest speakers, and materials. The mission of the CAB is to provide critical input, feedback, and evaluation about the transportation system through active participation and involvement in the maintenance and development of the system to best meet the needs of the transportation customer.

In July of 1997, District 9-0 along with the Pennsylvania Economy League; developed CAB's in four counties: Bedford, Blair, Cambria, and Huntingdon. Nearly 105 customers currently participate in the District's CAB initiative.

CAB accomplishments include: CAB members taking a field view bus tour to explore customer concerns and safety problems, working with the Bureau of Maintenance and Operations to develop and conduct face-to-face customer surveys with nearly 500 transportation customers during a county festival, attending municipal meetings and contacting officials to discuss the Agility AME projects, talking with Deputy Secretary for Administration Robert C. Wonderling during a video conference call, and volunteering to work at our County and District Open Houses to market the Agility initiative. It is the job of District 9-0's CABs to reach out into the community and see what these uses are. CABs provide countless benefits to a community through outreach, education, brainstorming and priority setting to help enhance customer involvement and enrichment.

Subsurface Utility Engineering (SUE)

by Steven J. Tidwell, TBE Group, Inc.

Innovative Cost Savings and a Quality Initiative

Subsurface Utility Engineering (SUE) is a relatively new service that provides the highest level of accuracy when obtaining existing utilities' horizontal and vertical locations. This is accomplished through the use of a combination of experience, high-tech equipment and techniques. SUE involves the practices of professional engineering, geology and professional surveying. The types of equipment involved include electromagnetic and magnetometers, as the most common, but also include terrain conductivity meters, resonant sonics, GPR (Ground Penetrating Radar), CADD and surveying and data collection equipment. The competitive edge to SUE is the vacuum excavation equipment that enables a utility to be exposed without the fear of damage to the utility facility.

Termed the "non-destructive" method of locating utilities, SUE has grown in popularity among State Highway Agencies (SHA's). Aside from other common errors and omissions within the highway plans, utility related impacts are the second most common recorded cause of highway project time extensions and delay claims.

In recent times, SHA's have had to be more accountable to the public for projects that don't open as committed to the public, and for project overruns that are exposed by audits.

The SUE process involves finding the various utility lines within the project limits, utilizing the various devices outlined earlier. Then, a 8" x 8" to a 12" x 12" opening is cut in the pavement or existing ground. Next the soil or base material is loosened, using high pressure air or water. Once this is done, the soil or solution is excavated, using the high velocity suction vacuum until the utility facility is visible for inspection or survey. The utility facility can then be surveyed and tied to an X,Y,Z coordinate common to the specific project survey. The type of information that can be collected includes type of utility, size, material and condition of facility. After all data has been collected, the soil material that was vacuum excavated is replaced in the hole. Considering the minimal pavement opening and the fact that the highway is slated for improvement, the restoration consists of cold patch asphalt or ready mix concrete material. As a result of the minimum pavement opening, density tests are typically waived by Permitting Agencies, allowing the roadway to re-open to traffic with the least inconvenience to the motoring public.

The use of SUE has become a competitive advantage to design consultants being considered for selection by SHA's in the consultant selection process. Identifying SUE under Optional Design Services or Innovative Concepts shows that a firm is concerned about producing a quality design product based on actual data, as opposed to "assumptions".

Contract Designating

Historically a surveyor has to call each utility company occupying right-of-way within the survey limits, for them to send a representative out to mark the lines and expose the facilities at specific locations. Presently, most surveyors are required to contact their local One Call Center, due to recent One Call legislation. As a result, no vertical data is collected, except on gravity type facilities that are accessed at manholes. All other utilities are assumed to reside at a standard depth or facility location is based on out of date, non-certified "As-Built" drawings.

The advantage of using a contract locator for designating a project at the initial survey start, as opposed to the traditional manner of contacting each utility agency to send out its own locator, is the quality of the actual utility locate. The accuracy of locating the various utility line improves when using only one company's locating technician(s) working in tandem with the surveyor. If issues arise, the designer needs to notify only one company, rather than a number of utility companies and a variety of field locators. Additional advantages of using this method include the ability to control the frequency of the locates by a set Scope of Services and the elimination of random paint marks provided by the various utility companies.

With the continual and increased pressure on SHA's to meet growing transportation needs, roadway design projects are expected to be completed in shorter time frames, utilizing decreased budgets. Therefore, the incorporation of SUE by design consultants accommodates the ever-present need for quality products to be delivered in less time for less money. As a result, consultants implementing SUE have an "edge" in the selection process by virtue of SUE being an innovative cost savings and quality initiative method of accomplishing highway design. ■

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