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Vol. 76-2

Our 90th Year

November, 2003

NOVEMBER JOINT DINNER MEETING

Philadelphia Section, American Society of Civil Engineers and the Younger Member Forum

THURSDAY, NOVEMBER 20, 2003

THE UNION LEAGUE OF PHILADELPHIA • 140 South Broad Street • Philadelphia, PA 19102 Cocktails – 5:30 p.m. • Dinner – 6:30 p.m. • Meeting – 7:30 p.m.

SUBJECT: The Quecreek Mine Disaster

SPEAKERS: Josepth A. Sbaffoni, Director, Bureau of Deep Mine Safety, PA DER

RESERVATIONS MUST BE SUBMITTED BY FRIDAY, NOVEMBER 14, 2003. Please send your check for the number of attendees @ \$30.00 per member or guest, \$15.00 per ASCE Student Members, payable to the Phila. Section, ASCE, P.O. Box 58186, Phila., PA 19102-8186; or call the Electronic Message Center: 1-800-461-4190 (Open 24 hours/day) or e-mail the Section at info@asce-philly.org.

SPECIAL FEATURE: VILLANOVA UNIVERSITY NIGHT – The ASCE Student Chapter, Faculty and Alumni of the Department of Civil and Environmental Engineering of Villanova University will be honored at this meeting. All Students, Faculty and Alumni are cordially invited.



On July 28, 2002, miners who had been trapped in a coal mine in Quecreek, Pennsylvania were miraculously rescued. The heroic efforts to save these trapped miners have been documented in newspaper accounts and at least one telemovie. Josepth A. Sbaffoni, the Director of the Bureau of Deep Mine Safety for the Pennsylvania Department of Environmental Resources, was part of the initial response team called upon to handle the situation and remained on site during the rescue efforts to make key decisions as events unfolded.

Mr. Sbaffoni grew up in the Harmer Township Area of Allegheny County. In the area where he lived, there were many large coal mines, and his father worked in most of them. The majority of his family have been, and still remain, coal miners. His grandfather was electrocuted in a coal mine accident at the age of thirty-three.

(Continued on Page 2)

DECEMBER JOINT DINNER MEETING

co-sponsored by the Philadelphia Section, American Society of Civil Engineers and the Society of American Military Engineers, Philadelphia Post

WEDNESDAY, DECEMBER 10, 2003

HILTON PHILADELPHIA AIRPORT (Directions on page 3) • 4509 Island Avenue • Philadelphia, PA Cocktails – 5:30 p.m. • Dinner – 6:30 p.m. • Meeting – 7:30 p.m.

SUBJECT: Green Building and Integrated Design: The Whole Building Process SPEAKER: Mr. Sandy Wiggins, Chairman of the Board of the Delaware Valley Green Building Council, Vice President of W.S. Cumby & Son, Inc., LEED Accredited Professional

RESERVATIONS MUST BE SUBMITTED BY FRIDAY, DECEMBER 5, 2003. Please send your check for the number of attendees @ \$28.00 per member or guest, \$14.00 per ASCE Student Members, payable to the Phila. Section, ASCE, P.O. Box 58186, Phila., PA 19102-8186; or call the Electronic Message Center: 1-800-461-4190 (Open 24 hours/day) or e-mail the Section at info@asce-philly.org.

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TECHNICAL GROUP ACTIVITIES

Structural Group

DATE: Wednesday, November 12, 2003

TIME: 6:00 pm

COST: \$5 (light refreshments included)

LOCATION: to be announced

SUBJECT: Emergency Repair of I-95 Bridge over Brandywine Creek in Wilmington

SPEAKERS: Gregory D. Burkhart, P.E., J.D. Eckman, Inc. and Harry R. Roecker, P.E., DMJM+HARRIS

A 7-ft fracture through the bottom flange and web of an 8-ft deep girder forced DelDOT to close 2 of 3 northbound lanes. The location of the fracture complicated repairs: 80-ft above the river at mid-span of the 245-ft river span. This photo-illustrated presentation will discuss the cause of the fracture, the analysis approach and construction issues. The presentation will highlight cooperation between design and construction engineers in evaluating alternative repair schemes.

Reservations are required. Please contact Ali Khan, Chairman, Structures Group, at (609) 530-9618; or call the Electronic Message Center: 1-800-461-4190.

Construction Technical Group – Luncheon Meeting

Joint Meeting with Transportation Technical Group

DATE: Wednesday, November 19, 2003

TIME: 12:00 Noon

LOCATION: 16th Floor, Municipal Services

Building (15th & Kennedy)

SUBJECT: Relocation of the Liberty Bell SPEAKER: Katie Diethorn, Curator, National

Constitution Center

On October 9, 2003, the Liberty Bell was moved from its former location in its own glass-enclosed pavilion to the new Liberty Bell Center. The move, although only 963 feet in distance, was carefully planned and orchestrated to ensure as little impact on the Bell as possible. Ms. Diethorn will cover the extensive preparatory work needed as well as the actual movement of the Bell itself.

The program will begin with lunch. The cost of lunch is \$10. Space is limited, so reserve now. Reservations will be accepted by Joanna Robinson at 215-922-8080.

ID is required to enter the Municipal Services Building.



THE PRESIDENT'S MESSAGE

Dear ASCE Friends,

Last month, we kicked off our Section meeting program and held our first dinner meeting since April. I enjoyed getting back to the Union League and seeing some old friends and colleagues as well as making new acquaintances. As we begin our new year of activities, I wanted to take this opportunity to highlight some key goals where we will be focusing our attention during the

course of this year.

Increasing Participation in Section Activities is probably one of our most challenging goals. The most visible measure of participation is attendance at our monthly dinner meetings. Typically, our meetings are attended by less than 5% of our overall membership. For a Section of about 2,000 members, that works out to be less than 100 attendees. I usually see the same faces at every meeting and wonder why I do not see so many more. We all seem to be so busy juggling our career and personal lives that little time is left for our profession. Our Board makes a tremendous effort each year to put together a diverse range of meeting topics that may appeal to many of our members. I hope that we can all find the time to attend at least one or two meetings a year. Attending a Section meeting is not the only way to participate. We have openings on many of our committees such as Scholarships, Awards, Website, Meetings Program, Community Service and Student Outreach to name a few. We also engage in a variety of educational and community service activities to promote the Civil Engineering profession. I encourage you to get involved and participate in our profession. Join a committee. Attend a meeting (and bring a colleague). Mentor a student. Remember, this is our Section. It thrives on our energy and participation.

Another one of our goals for this year is to Update our Local Website: www.asce-philly.org. Our Website Committee has met and proposed some changes to make our site more user-friendly and informative. We expect the initial changes to be made by the middle of November. I encourage you to visit the site and let us know what you think. The site exists for the benefit of our members and the public. We recognize that, like so many things, it is a work in progress. We welcome your comments and suggestions.

As I mentioned in my October message, we plan to develop a Philadelphia Civil Engineering Landmarks Guidebook. This will be another part of our ongoing effort to Increase Public Awareness of Civil Engineers. If you are aware of any significant projects you feel should be included in this guidebook, please feel free to provide a brief description of the project along with a representative photo, if available.

As I have already stated — this is our Section! We want to hear from you via the website, email, phone, letter or simply word-of-mouth. We want to know your thoughts and suggestions. What do you like about the Section? What would you like to see in the future? How can we improve our services for our members? Do you have a topic or speaker for a future presentation at one of our Section or Technical Group meetings? We encourage you to get involved and participate in the activities that promote our profession and help shape the future of Civil Engineering in our community and our country.

Sincerely, Allan F. Moore, Jr., P.E. President – Philadelphia Section, ASCE

November Meeting

(Continued from Page 1)

Mr. Sbaffoni began his career at the Russelton Mine as a surveyor in the engineering department, and assisting the safety department in 1970. He began taking classes at the Fayette Campus of the Pennsylvania State University and, in 1973, he graduated with an associate degree in

mining. He began his career with the Department of Environmental Resources (then known as the Department of Environmental Protection) in 1984. This past July, he was promoted to his present position, Director of the Bureau of Deep Mine Safety. He and his wife reside in Fairchance, Fayette County.



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SECTION WEB SITE!

Our Section's web site has taken on a new look! Check us out at www.asce-philly.org. Make sure you bookmark this site to check on latest meetings and events, links and much more Comments and/or suggestions? Please contact us either via our Electronic Message Hotline at 1-800-461-4190 (24 hours a day) or e-mail at info@asce-philly.org.

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COPY DEADLINE FOR DECEMBER 2003 ISSUE NOVEMBER 14, 2003

Walter J. Delury, Jr.

The Section is saddened to announce that our Jice President, Walter J. DeLury Jr., passed away suddenly on September 27, 2003 after a four-year battle with esophageal cancer.

Walt was born in the Kensington section of Philadelphia in 1949. Upon his graduation from North Catholic High School, he ventured away from the neighborhood for the first time to attend Texas A & M University, where he obtained his bachelors degree in aeronautical engineering in 1971. At A & M he participated in a number of activities, including the varsity football team. He also learned the finer points of golf and hunting. At least once during his college career, Walt was persuaded to go goose hunting rather than attend class!

Walt returned to the city of his birth after college and went to work at the Philadelphia Parking Authority, where he concentrated on the then-new parking garages and facilities being constructed at the Philadelphia International Airport. He rose to become the director of engineering for the Authority. While at the Authority, Walt met Connie Patrick, a co-worker who would become his bride in 1979.

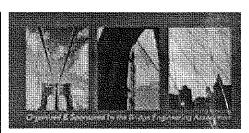
In 1981, Walt left his position at the Authority to try his hand in the consulting world. He took on assignments at Boles Smyth Associates, Parsons Brinckerhoff, Frederic R. Harris, VEP Associates, hd Perks Reutter Associates, among other firms. In 1996 he became the Vice President and Regional Manager at the Philadelphia office of KCI Technologies. He played critical roles in several significant projects in the Philadelphia area, including the direction of the Pennsylvania Turnpike/I-95 interchange effort.

In their spare time, Walt and Connie enjoyed many things together. They were avid fans of baseball, especially the Phillies. They attended plays and were faithful subscribers to the Walnut Street Theater's productions, in addition to taking regular trips to New York for Broadway shows. They were longtime residents of Frankford, where they became very active in the historical aspects of the neighborhood and served as officers in the Frankford Historical Society. In 1997, they relocated to the Tacony neighborhood, where Connie grew up and where her family still resides.

Walt has been active in the Section for a number of years and was elected to the Board of Directors in 1999. After two terms as a Director, he was elected Section Vice President and was installed in this position at the Spring Social this past May.

Walt's dry wit and ability to accomplish tasks will be sorely missed within the Section. With his many contacts in the engineering field, he was instrumental in the arrangement of speakers and topics for several Section meetings

Memorial donations can be made to the Frankford Historical Society, 1507 Orthodox Street, Philadelphia 19124.



2003 International Bridge Conference **New York City Hilton** October 20 and 21, 2003

Paper presented by Ali Khan, Chairman, Structures Group, ASCE, Philadelphia Section on "Seismic Analysis and Design."

December Meeting

(Continued from Page 1)

Learn about how sustainable buildings are designed and constructed, and about the LEED standard that is pushing developers to improve the environmental responsiveness of their facilities. Sandy Wiggins, will discuss these issues and more in an informative presentation on "Green Buildings." Mr. Wiggins is founder and current Chairman of the Board of the Delaware Valley Green Building Council and Vice President of W.S. Cumby & Son, Inc., a regional construction management firm. He is also a LEED Accredited Professional.

Buildings account for 40% of all natural resource consumption, 40% of all global energy use and 40% of the waste in our landfills. The discussion begins with a high level overview of the current state of earth's environmental health, the industrial ethic driving the global economy, and the role of the built environment in this downward spiral. The concepts of sustainability and green building are defined. The paradigm shifts required to change the way we build are addressed and the process of developing a sustainable project is laid out in detail. A number of case studies are included to highlight specific green building strategies as well as the process and benefits of sustainable building development. The presentation ends with an overview of LEED (Leadership in Energy and Environmental Design), which is becoming the international standard for quantifying the environmental responsiveness of buildings. (1 AIA LU/HSW)

DIRECTIONS TO HILTON PHILADELPHIA AIRPORT

4509 Island Avenue, Philadelphia, PA 19153

From the North

Take I-95 South to Enterprise Avenue/Island Avenue-Exit 15. Continue to the stop sign. Make a right on Island Avenue. Continue 1/4 mile and the Hotel will be on your right.

From the South

Take I-95 to Central Philadelphia/I-76 West, Exit 13. Follow signs for Island Avenue (stay in the right lane). Go to the traffic light and make a left. The Hotel will be on your left.



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ASCE Philadelphia Section Members

Are you interested in receiving the DVGI monthly newsle name to our email list by sending your email address to Mr. Yongli Min, PE @ yongli_min@urscorp.com and you will begin receiving our newsletter!

Editor's Note: This is a reprint of an article which appeared in the Summer 2003 issue of the ASHE (American Society of Highway Engineers) Scanner. Its author, Dave Smith is a Professional Engineer and Professional Land Surveyor, specializing in highway design, GIS, surveying and mapping, and custom engineering and CADD software development. Over the past 18 years, Mr. Smith has been involved in a wide variety of surveying and engineering projects up and down the East Coast, from Delaware to Vermont. In addition to surveying and engineering, he has a wide variety of eclectic outside interests, such as history and archaeology. He is past president of the North-East Penn Section of ASHE, and recently developed a website for the North-East Penn Section.

ALL ROADS LEAD TO ROME: ANCIENT ROMAN HIGHWAY TECHNOLOGY

By David Geoffrey Smith, P.E., P.L.S.

According to various genealogies and family histories, one of my ancestors who lived over 1,600 years ago was a fellow named Flavius Afranius Sygarius, nicknamed "The Wild Boar," who, as the culmination of a lengthy political career was ultimately appointed to serve as Consul to Lyons in Roman Gaul by Emperor Gratian in 382 AD. It is truly amazing to consider the state of highway engineering during the days when Sygarius last looked upon the landscape. It has been said that one of the keys to the success of the ancient Roman Empire was indeed its efficient and well-constructed highways. The Roman highway system allowed the speedy movement of troops, trade caravans, diplomats, and couriers. and enabled the rapid expansion of the Roman sphere of influence, offered military protection from barbarians and other invaders to local governors, allowed far-flung outposts to stay in close contact and communication with the centers of government, allowed citizens to prosper through trade, and a host of other tremendous benefits.

The ancient Romans, with their legendarily efficient administration, had systems of highway administration similar to our Federal Highway Administration and state Departments of Transportation, and as a result, like our modern highways, Roman roads likewise had different levels of classification in terms of usage, maintenance and funding. These classifications were, in order of priority from highest to lowest were:

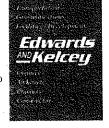
 viae publicae (major public roads, funded by the Empire),

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- *viae militarus* (military roads, with the army as responsible party),
- actus (local/regional roads, primarily funded and administered by the local Governor), and
- · privatae (privately funded roads).

The earliest and most well known of these Roman highways is the Via Appia, or Appian Way, running from Rome to the Bay of Naples, constructed around 300 BC. When I was growing up in Germany, I recall one well-known local corridor running from Frankfurt past my town of Weiterstadt down to Heidelberg was die Bergstraße, a German translation of the Latin Strata Montana- Much of the actual Strata Montana has, in the last two centuries, been brought up to modern standards, but originally it was yet another ancient highway known to the Romans as the Mountain Road. After the decline of Roman power and the Alemanni advanced beyond the Roman wall called the Limes displaced the Roman culture, this same ancient Roman road gave its' name to the whole region as "Bergstraße", and the ancient vineyards that had been established there along the Rhine by the Romans, combined with the local oak trees and the Alemanni skill at making tight oaken winebarrels made this improvement of aging wine in barrels to winemaking technology, as opposed to storing the wine in jugs and leather bags. To this day, the wine-making tradition and reputation of the region is legendary, now well-known for its excellent Riesling and Müller-Thurgau wines. There are numerous other well known, and in many instances, well preserved Roman roads, some of which are still in use today.

Like modern highways, ancient Roman roads like Via Appia, Strata Montana, Via Aurelia, Via Flaminia, and many others made up a vast network of highways and local roads that was extremely well-coordinated and so extensive that, at the height of the Roman Empire, aside from the sea crossings, my ancestor Sygarius could easily have traveled on continuous Roman highways from the northwestern limit of the Empire at the Antonine Wall in northern Britain, across the Channel to France, and then stopped at his city of Lyons, and then onward to Rome, Byzantium, Antioch, eventually to end his journey in Jerusalem at the southeastern extent for a distance of over 4,070 Roman miles, or approximately 3,740 U.S. miles. And naturally, as the center of power, Rome was the hub of it all. As they say, All Roads Lead To Rome.

Long before the days when winged eyes in silver ships flew above the land and captured the land in an accurate digital model, men would traverse the fields and mountains, mapping the land with parchment and quill. The ancient Roman surveyors were called agrimensores, and used an instrument called a groma, which was a vertical staff, upon which was mounted an offset star that had four arms at right angles, from which dangled plumb bobs for sighting. Horizontal deflections could also be measured by the use of the groma. Another instrument was the chorobates, which was a level for determining vertical height

(Continued on Page 6)

AND NOW FOR SPORTS...

While THE NEWS typically does not have a sports feature per se, we thought it might be appropriate to include some "blurbs" on civil enters in professional sports. (We don't expect to be a regular feature!)

You might not have known that the Eagles' starting defensive tackle, Darwin Walker (#97), is a civil engineer. He is a fourth-year pro with a degree in structural engineering from the University of Tennessee. He continues the practice of engineering in the off-season as a member of a consulting firm in Tennessee.

A name you have heard in the past has recently been in the baseball news again. Doug Glanville, a civil engineering systems graduate of the University of Pennsylvania in 1992, has played a pivotal role in the Cubs' march to its first pennant in many of our lifetimes. Doug started his professional career with the Cubs before coming to the Phillies for several years. (You may also recall Doug's service as a speaker at one of the Section's monthly meetings a few years ago, giving his spin on the location of a new baseball stadium for the Phillies. Doug's choice, the 30th Street Station area, obviously did not make the cut.)

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ERRORS AND OMISSIONS...

...is a phrase most engineers don't like to hear. Neither does your editor. However, as long as we're all human, this is going to happen. If you see something incorrect in THE NEWS, please feel free to advise the editor, and the appropriate correction will be noted. (As we like to say, if we learned from our mistakes, your editor would be a genius by now!)

In the October issue, there are two corrections that need to be made.

The "Younger Member Forum News" article was actually authored by Asha Maliakal, who will be providing this article in future editions. Mike McAtee, who got the credit for the piecewas kind enough to point out this oversight.

In "This Month in Section History", the 1920event incorrectly identified Richard L. Humphrey as the Section's Vice President. At the time he chaired the National Convention effort, Mr. Humphrey was the National Vice President.

COMPANY PROFILE



Enjoying a festive and celebratory atmosphere, from left to right, are Harry Woehr (Occupational Psychologist for EP Henry), Walter Arader (EP Henry Advisory Board Member) J.C. Henry (President and CEO of EP Henry Corporation) and Jack Bayer (EP Henry Advisory Board Member).

EP HENRY MARKS 100™ ANNIVERSARY WITH WATERFRONT GALA

WOODBURY, NJ—EP Henry, the company that's become synonymous with the term "HardscapingTM" is marking its 100th Anniversary as one of the country's leading manufacturers of unit concrete products.

The fourth generation, family-owned comoany, which is headquartered in South Jersey, celorated its centennial with a gala reception and dinner on board the tall ship Moshulu.

The September 10th event on the Philadelphia waterfront was attended by more than 800 of the company's top customers, design professional and vendor partners.

EP Henry annually produces the nation's largest Hardscaping-specific expo and trade show and is also the official Hardscaping supplier and sponsor to the world-famous Philadelphia Flower Show

As host and initiator of the annual EP Henry Middle Atlantic Hardscaping Trade Show (MAHTS), the company attracts more than 2,000 contractors, engineers, and other landscaping and design professionals for a full week of hands-on, how-to seminars, workshops certification classes and exhibits each winter.

Hardscaping describes the wide range of EP Henry Paving Stones and Wall Systems manufactured for patios, driveways, walkways and garden and retaining walls for both residential and commercial applications.

Dogs need to sniff the ground; it's how they keep abreast of current events. The ground is a giant dog newspaper, containing all kinds of late-breaking dog news items, which, if they are especially urgent, are often continued in the next yard.

— Dave Barry

YOUNGER MEMBER FORUM NEWS

by Asha Maliakal Forum Editor

> Michael McAtee, PE 2003-2004 President Urban Engineers, Inc. 530 Walnut Street, 14th Floor Philadelphia, PA 19106 (215) 922-8081 mjmcatee@urbanengineers.com

The Younger Member Forum (YMF) membership includes college students, recent graduates and young engineers, including Registered Professional Engineers, who are 35 years of age or younger. The objectives of the group are: 1) to provide networking opportunities, 2) to interact with schools and the general public to promote civil engineering and 3) to enhance career development.

Young engineers or college students who would like to become part of the YMF and be added to the announcement list should contact James Markham of Pennoni Associates, at secretary@ymfphilly.com or at (215) 222-3000. There are no fees to join!

Recent Accomplishments

Recently, the YMF secured two much coveted construction tours of the new Phillies stadium, Citizen's Bank Park. On October 15, 2003 and October 22, 2003, participants got a back stage preview of the country's newest ballpark. Though the grass is not in yet, the stadium is definitely taking shape and there was much to see. Thanks to Leo Leonetti of Urban Engineers and Chuck Boschen of the Phillies for offering themselves as tour guides and Mike McAtee for getting us this opportunity!

The YMF held a joint event with the Lehigh Valley Young Members on Saturday, October 18, 2003. The group toured the historic Mercer Museum in Doylestown, PA. The museum's collection included dramatic displays of the furnishings and folk art of early America, as well as 40,000 tools of early American crafts and trades. The architecturally significant building constructed entirely of reinforced concrete, completed between 1913 and 1916 by Henry Mercer and eight laborers, is a National Historic Landmark. Thanks to Mike McAtee and Greg Kuklinski for arranging this event!

On a recent beautiful fall Sunday, a dozen members of the YMF gathered for a bike/blade along the Schuylkill River. With the weather fully cooperating, the October 5th group enjoyed a leisurely ride along the tree lined lanes fortified with YMF provided snacks and drinks. Thanks to Asha Maliakal for organizing the event!

The Younger Member Forum held their Fall Kickoff Happy Hour at the Black Sheep Bar & Restaurant in Rittenhouse Square on September 24, 2003. The YMF provided a private room, free appetizers and reduced drink prices to the twenty or so younger members that attended. Even better, the younger members were treated to free Guinness and various prizes when Mike



YMF members tour the new Phillies home, the Citizen Bank Stadium.

Missanelli and Joe Conklin from the 93.3 WMMR morning show showed up for a promotional guest appearance. All in all, it was a great way to start off the season. Thanks to John Federico for setting up this event!

On September 17, 2003, YMF Members got a behind the scenes peek at the Kimmel Center and an opportunity to meet with George Schaffer, a driving force behind its construction. The tour provided insight to the functionality of the Center, hidden just beneath its amazing beauty. George and volunteer, Gil Silverman led members through every area of the Center, from its magnificent roof-top garden and elaborate concert halls, to the cozy backstage hideaways that are normally reserved for performers. While taking in the beauty, members were given the rare opportunity to hear a first-hand account on the Center's Development. George provided highlights on its evolution, including the various financial moguls and challenges that played a part in the Center's planning and design. Photos from the Kimmel Center tour will soon be available on the YMF Website. Thanks to Alvson Lester for getting us this opportunity!

Upcoming Events

JOIN US! Trail Works Day 2003 — The Friends of the Wissahickon (FOW) and the YMF are joining forces once again to help preserve one of the City of Philadelphia's most important resources, Wissahickon Park. On Saturday, November 8, 2003, come out from 9:00 AM to 1:00 PM and support a great cause! We will be meeting at the "Tree House" which is located near the intersection of Forbidden Drive and Northwestern Avenue in the City of Philadelphia's Chestnut Hill Section. Everyone is welcome, so bring your non-engineer friends and family! For more information or to volunteer, contact John Federico at jefederico@urbanengineers.com.

COME CHECK IT OUT! On November 18, 2003, come tour the new, state-of-the-art slag grinding facility in Camden, NJ and learn about the final product. Nestled between the Ben Franklin and Walt Whitman bridges on the banks of the Delaware, the St. Lawrence Cement slag grinding facility is state-of-the-art with new technology in grinding; the plant is home to the largest slag cement vertical mill in the world. The final product, slag cement, is utilized as a partial replacement for Portland cement in concrete to enhance concrete properties. The tour will include

(Continued on Page 9)



GALLAGHER WINS KEY AWARD

Dr. Patricia Gallagher, an Assistant Professor in the Civil, Architectural and Environmental Engineering Department at

Drexel University, and a Member of the Board of Directors of the Section, was recently awarded a prestigious five-year NSF Career Award to investigate methods of ground improvement to help prevent or mitigate the occurrence of soil liquefaction at developed sites in the event of an earthquake. During an earthquake, liquefiable soils, such as loose, saturated sands, are forced apart by the ground water. As a result, the soil becomes liquefied and extremely unstable.

Though there are currently methods available to stabilize or densify loose soils at undeveloped sites, the same cannot be said for developed areas. Dr. Gallagher's work focuses on this need. By digging a trench at the upgradient edge of a site and adding a stabilizer such as colloidal silica,



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which will flow underneath the site along with the ground water, Dr. Gallagher hopes to prove that the stabilizer will set up safely and efficiently underneath the developed area, preventing any soil liquefaction in the case of an earthquake. Preliminary feasibility studies have provided positive results, allowing Dr. Gallagher to seek answers to the question of how to best ensure delivery of the stabilizer.

Dr. Gallagher's other research areas involve geotechnical centrifuge testing of soils improved with colloidal silica grout and box modeling to develop a technique for non-disruptive delivery of colloidal silica to sands. A registered Professional Engineer, Dr. Gallagher also serves as a reviewer for ASCE's Journal of Environmental Engineering.

ASCE NATIONAL CONVENTION

The 2003 Civil Engineering Conference and Exposition will be held November 12-15, 2003 in Nashville, Tennessee. Watch your mailbox for information on the Convention. You can also check the National website for more information: www.asce.org/conferences/annual03.



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REMINDER — SEND YOUR SID ROBIN STORIES

We remind you to send in your favorite stories and anecdotes about our departed Editor, § Robin. THE NEWS will print a collection of these remembrances in an upcoming issue as a tribute to Sid. Any story you can put to paper (with hopefully a trace of truth to it!) will be considered. Humorous ones are especially welcome (and we know there are more than a few of these out there!). Stories should be directed to the Interim Editor at our Post Office Box or in person at the next Section meeting. Thanks to those of you who have already sent yours in.

THIS SPACE COULD BE YOURS!

You could be looking at your business card in this space instead of this notice. Your card could be here among those of your colleagues and competitors. If you would like to be a Section Sponsor, please read all about this program_on page 10 of this edition of THE NEWS.

> Michael V. Griffin, PE Senior Vice President



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OCTOBER JOINT DINNER MEETING

October 23, 2003

The Union League of Philadelphia

"The Frankford Swing"
By Bob Wright, Interim Editor

Roughly 60 attendees enjoyed an interesting and enlightening presentation on the recent \$187 million modernization of SEPTA's Frankford Transportation Center (FTC). The specific aspect of this effort reported at the meeting was the nineday period during which the Market-Frankford Elevated line was moved from its 80-year old structure above Frankford Avenue to a new location within the reconfigured FTC.

In addition to Section officers, members and guests, the Mid-Atlantic Chapter of the Construction Management Association of America (CMAA) participated as a co-sponsor of the meeting.

Section President Allan Moore chaired the meeting and made pertinent announcements. A moment of silence was observed in honor of two Section officials who recently passed away – Editor of THE NEWS Sid Robin and Section Vice President Walt DeLury.

President Moore welcomed CMAA Mid-Atlantic Chapter President Ron Kerins, who gave a short synopsis of CMAA's purpose and goals. The Mid-Atlantic Chapter, one of 22 nationwide, has approximately 150 members, with over 2200 ationwide. He encouraged those who were intersted to visit the CMAA website, www.cmaanet. org, for more information.

President Moore introduced the evening's speakers, Kevin O'Brien, Senior Program Manager, and Thomas Nuxoll, Community Relations Manager, two key components of SEPTA's project management team for the FTC effort.

Project Overview

Mr. O'Brien gave an overview of the project and its site. The FTC is the busiest hub on the SEPTA system, with 16 bus routes terminating here in addition to the El. Roughly 50,000 transit customers per day pass through the complex. Not all of these riders are transferring between bus routes and the El, as about 22% of them are changing from one bus route to another. This contributed to the complexity of how best to phase the work and maintain routes at the FTC since the buses and patrons would have to be accommodated in some fashion during all stages of construction. In the fully-developed confines of the area, this would prove to be a difficult task.

The FTC, known to generations of Philadelphians as "Bridge and Pratt" (technically incorrect, as these streets are parallel and do not meet!), was first opened on the site of a trolley car barn when the Frankford Elevated was opened to service in November 1922. At that time, the area was

sleepy semi-rural locale on the edge of the rankford neighborhood. Over the next forty years, the El and its feeder bus routes would transform Northeast Philadelphia from an area of farms and small-town settlements into a vital urban residential and commercial area.

The FTC reconfiguration is the largest singlesite infrastructure project undertaken by SEPTA to date. It represents the culmination of the \$650 million Frankford El reconstruction project, which has been ongoing since 1985.

The design team for this effort is **Philadel- phia Transit Consultants**, a consortium of local firms, with construction management being handled by **Urban Engineers** and **URS Inc.** Several contractors were involved in the construction phase of the FTC.

Moving the El

Mr. O'Brien presented the overall scope of the "Frankford Swing," the most complicated and tricky portion of the project. This would entail the relocation of the last 800 feet of El structure from its former alignment over Frankford Avenue to a new "cross-country" route directly into the FTC. Considerable preparatory work had to be undertaken to facilitate the "Swing" within a minimal period of time.

The work could only take place in the summer, when sufficient buses were available to provide the anticipated extra service needed while the El was shortened. That period of time was determined to be a 9-day window during which El service would be terminated at Margaret-Orthodox Station, one stop south of the FTC, and the various feeder bus routes would be rerouted to deliver riders to other El stations. The 9-day outage would begin at 8 PM on Friday, July 25, 2003 and end at 4 AM on Monday, August 4, 2003. This would permit the contractors a 224-hour continuous work schedule. An alternative schedule of 9 consecutive weekends was considered, but was determined to be too impactive as well as not providing sufficient consecutive work hours to complete given tasks.

Effects on Riders

Transit service planning was a critical element of the entire operation. During other phases of the work, buses were moved out of the FTC area to adjacent streets, and loading/unloading areas had to be clearly identified and publicized so riders could easily find them. While the FTC was out of service, bus routes had to be rerouted to other El stations, but transfer points between bus routes additionally had to be established for those riders who needed this ability. Of the 16 bus routes, 9 were rerouted to the Erie-Torresdale station and 1 to Margaret-Orthodox, with 6 still terminating on the streets adjacent to the FTC. A shuttle bus operated between Erie-Torresdale and the Terminal for patrons who may have needed this service.

El trains themselves had to be repositioned to provide continuous service during the outage. About half the El fleet is stored at the Frankford Yard adjacent to the FTC. There would be no access to the yard once construction started, thus sufficient trains had to be moved to 69th Street Yard for the interim period.

Preparation for the work included the assembly of structural panels and deck sections off-site. These were moved to an adjacent parking lot, which was used by contractors during the "Swing" as a marshalling point, and then erected as needed. As an example of the complex nature of the work, 34 deck panels were assembled, but no two were exactly the same size or shape. Thus, careful planning was needed to get the right segments in the right places.

Mr. O'Brien detailed the sequence of operations once the "Swing" was begun. Streets were closed almost immediately and maintenance of traffic measures were implemented. Demolition was started shortly after streets were closed, and continued in some fashion around the clock during the entire "Swing" period. The removal of the southernmost 300 feet of the old El was critical since this would be the portion where the new alignment would cut in to meet the old structure. The work was accomplished remarkably smoothly and El service was begun at the new FTC station as planned on schedule.

Community Concerns

Mr. Nuxoll reported on the community and public relations portion of the effort. A community partnership was crafted in 1992 and regular meetings were held between a community advisory team and the project management staff. To address community concerns, provisions and conditions were included in all construction and consultant contracts that outlined the obligations to the neighborhood.

The good, thorough planning of the entire effort resulted in no surprises and contributed to the smooth flow of the project and the alternate transit services.

Mr. Nuxoll concluded that the overall El project and the FTC revitalization are expected to be catalysts for redevelopment in the Frankford neighborhood.

Question and Answer Period

The speakers addressed several questions. The construction contracts included liquidated damages to ensure that the work was completed on schedule. The penalty was \$150,000 for the first day, \$65,000 for additional days. Remarkably, there were no accidents during the frenzied pace of construction.

President Moore thanked the speakers and presented them with tokens of the Section's appreciation for their presentation.

A dog teaches a boy fidelity, perseverance, and to turn around three times before lying down.

- Robert Benchley

All Roads Lead to Rome

(Continued from Page 4)

and deflections. The ancient Roman surveyors were extremely skilled in mapping, geometry, and documentation.

Long before a CADD designer would squint at a screen showing 3-dimensional horizontal geometry and vertical profile in the virtual space of a digital terrain model, ancient Roman highway engineers, with an experienced and learned eye, would lay out roadway geometry by analyzing the surveyors' maps, noting hills and vales, selecting the best points for crossing streams, mountain crossings and other obstructions, and connecting them with a series of very long, perfectly straight tangents, with minor deflections as dictated by those terrain constraints.

Given primarily traffic consisting of horse, wagon, beast of burden, and pedestrian, speed was not much of a constraint, so Roman highways typically did not need to consider curves or superelevation. While the ancient Roman surveyors could accurately lay out curves, the Roman roadway plans typically were linear, due to the techniques used in sighting along these segments, which typically utilized distant sighting points. This is most noticeable in the fact that Roman roads make most of their key turns and deflections on high ground where sighting was most easily facilitated. These long, straight tangents would often run perfectly straight for many miles, and would be laid out sometimes with series of hundreds of sighting points and beacons.

Before there were electronic traffic counters, and modern concepts of axle loadings and structure numbers, the Roman highway engineer would use his years of empirical observations of the local custom and traffic, as well as the quality of local soils and geology to determine the ideal typical roadway section. There was typically no "standard" typical section in Roman highways, however the majority was constructed on an earthen embankment, called an agger, which would provide a well-drained base. On important routes, this agger could be constructed as high as 6 feet above the surrounding terrain, and 40 to 50 feet in width. This agger would typically be constructed of locally excavated earth and stony rubble, called statumen, which was either placed directly on level ground or within an excavated trench or then built up.

Often some of the material for the agger would come from scoop ditches, which would be excavated, to either side of the proposed embankment, which would also aid in intercepting stormwater and for providing drainage. These scoop ditches were on occasion so extensive that they were in fact quarry pits providing roadway stone

Upon this embankment, the agger, would be constructed a middle layer of finer material, called the rudus, which would be well rammed down and compacted. The upper layers would typically be laid very carefully in layers, to maximize this compaction. This middle layer would also often contain sand and similar fines. The uppermost layer would be the "metalling", a wearing surface, typically paving stones, as locally available within a few miles. At a bare minimum this would consist of gravel, however many would use cobblestone pavers or stone slabs, if available. This finished grade would also typically feature stone curbs, to contain the paving stones and delineate the edges of the road. If alternative or unique local materials were available, for example burnt lime or volcanic tufa, they would also be used to maximum advantage to provide concrete-like wearing surfaces. As another example, in areas where there was an iron working facility, the iron slag left over from manufacture would be brought in and incorporated into the upper course, to provide an incredibly hard wearing surface.

As an additional feature to the finished grade, the Roman highways would typically be cambered for drainage, and would also sometimes have intentional wheel ruts gouged into them, to aid carts and wagons on potentially difficult stretches of road, given rain-slick or icy conditions. Similarly, there were also occasionally grooves perpendicular to the roadway scored into the road to prevent horses from slipping.

While there were no official criteria for roadway width, decrees by Augustus and others provided for roads varying in width dependent upon importance and function. The widest, most important roads, decumanus maximus, were approximately 40 feet wide, whereas country roads were often 20 feet wide, to allow passing or two lanes of travel in opposing directions. Minor roads were typically around 8 feet wide.

Roman highways also had a "right-of-way" or easement of sorts, which were strips of land to either side of the agger embankment and main drainage ditches, which were typically kept clear, and where cultivation and building were forbidden. These clear zones may have served multiple functions, such as to prevent assault by unfriendly forces or highwaymen, or to provide an area for roadside grazing. Small, shallow ditches, called boundary ditches, which served no apparent drainage function, typically delineated these clear zones. In Roman Britain, many of the major roads had a clear zone 84 feet wide, whereas smaller

country roads had a clear zone of 62 feet. These roadways were also well signed, and marked at every mile with a stone monument, of tremendous accuracy. The ancient Romans util lized a form of odometer, built upon a calibra

geared mechanism attached to the wheel of a cart for measuring distances and setting mile markers. These mile markers were often monumental in themselves, often standing 6 feet tall, and bearing mileages to the next town and to intermediate points, as well as dates and names of the builders.

Amazingly, many sections of the ancient Roman roads, like Via Appia and die Bergstraße are still, to this day intact in one form or another, even after 2000 years of continuous use, weather, neglect, political upheaval and other circumstances that often ruin a nation's infrastructure. It is said that these ancient Roman highways were unparalleled in their design and construction until the 19th century. To place it all in a proper context and perspective, perhaps the lesson to learn is that even with 2000 years of technological advance, with such advances as aerial photography, GPS and laser-guided graders, there is still no substitute for vision, experience, and ingenuity in highway design.

THIS MONTH IN SECTION HISTORY...

As part of our 90th Anniversary year happenings, THE NEWS will offer certain historical information and tidbits that happened each month for your edification. Here are some for November...

1925 - Plans were finalized for the 56th Ani ASCE Convention, to be held in Philadelphia in 1926 in conjunction with the Sesquicentennial Exposition marking the 150th anniversary of American independence. The Convention would be held at the Bellevue-Stratford Hotel. Section Past President Richard L. Humphrey served as the Chairman of the Convention.

1952 - A Civil Defense Committee, formed by the Section in November 1950 at the suggestion of National, submits its report on Center City to Mayor Joseph Clark. Eighty members surveyed 150 blocks. Mayor Clark presented a Certificate of Award to the Section in January 1953 in appreciation of this effort.

1957 – The Section forms the Women's Auxiliary "to further social contacts among its members." The Auxiliary disbanded in 1989, a sign of changing times both in terms of the rising percentage of women in Section membership and the increasing numbers of women in the workplace.

If you have any events which should be noted in this column, please send them to our Editor for inclusion in coming issues of THE NEWS.

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YMF News

(Continued from Page 5)

a complete look at the facility as well as a presention on the production and benefits of slag cement. Watch your in-box for more information on the tour. If you have any questions or want more information, contact Jamie Phillips at JPhillips@stlawrencecement.com.

Announcements

ASCE National Awards — Interested in being recognized by ASCE National for your accomplishments and winning some extra CASH? The Philadelphia Younger Member Forum wants our outstanding Young Engineers to be recognized for their superior professional achievements! The YMF will reward any Philadelphia Younger Member:

- \$150 for winning one of ASCE's National Young Member Awards
- \$75 for being recognized as a runner-up by ASCE National
- \$50 for being selected as the Philadelphia Sections Official Submission

To learn about these ASCE Awards, visit http://www.asce.org/pressroom/honors. If you would like to participate or if you need additional information, contact Secretary@YMFPhilly.com.

FUTURE CITIES JUDGES & MENTORS NEEDED — Interested in sharing your knowledge with the engineers of the future? The Phila-

Iphia Regional Future Cities Competition needs your help! This engineering contest sparks interest in engineering and gives 7th and 8th grade students the opportunity to win prizes. Volunteers are needed to help out as judges and evaluators on competition day at Widener University on January 24, 2004. Also, mentors are needed! Contact Jill Wetzel at jwetzel@futurecityphilly.org if you are interested or if you would like more information. Please visit the Future Cities website (www.futurecityphilly.org) for more information or to sign up on-line.

COLLEGE OUTREACH — The YMF is looking for volunteers to organize and lead discussion sessions with Civil Engineering students at local colleges. No preparation is required. Using personal experience, volunteers will help inform students of what to expect after graduation and will respond to questions and concerns from students. If you would like to volunteer as a speaker, please contact Joe Platt at JPlatt@trafficpd.com or (610) 326-3100.

YMF SURVEY — The YMF has prepared a survey to enable us to better serve your needs during the upcoming months. Please contact Suggestions@YMFPhilly.com to receive a copy of the survey. Any input that you can offer would be greatly appreciated.

Member Spotlight



Jeremy Colello, P.E. is a Civil/ Water Resources Engineer with Parsons Brinckerhoff (PB) in Philadelphia. Jeremy started his career in the PB Herndon, VA office in January 1999. In March of 2000, Jeremy transferred to the Philadelphia office where he has become an integral part of the staff and an active member of the engineering community.

Jeremy earned a BS in Civil Engineering from Lehigh University in 1997 and a MS in Hydrosystems Engineering from Penn State University in 1998. Though Philadelphia is his home office, Jeremy has been a valuable asset to PB as a company, serving as project engineer on ventures up and down the east coast and even in the Southwest, including Arizona, New York, Pennsylvania, Maryland, Virginia, West Virginia, and Washington, DC. Jeremy has not ignored his home office either. His current workload includes the role of Deputy Project Manager/Lead Engineer for a pair of high profile projects in the area: Reconstruction of US 202, Section 65S and Rehabilitation of SR 73, Section M05 & SR 29, Section M04.

Jeremy is a well published young engineer and has presented several technical papers in the field of water resources. Most recently, he presented a paper titled "Surface and Ground Water Modeling of Bog Turtle Habitats" at the July 2002 American Water Resources Association (AWRA) Conference in Keystone, Colorado.

Jeremy currently serves as the ASCE YMF Technical Groups Chair; this is his first year as a member of the Board. In his spare time, Jeremy enjoys playing tennis and golf. A native of Trenton, NJ, Jeremy currently resides in Ardmore, PA.

THE ASCE, PHILA. SECTION IS "BUILDING BIG"!

The Philadelphia Section brings civil engineering to students through "Building Big" sessions. These sessions help to explain what civil engineers do through both presentations from en-

gineering professionals and hands-on activities through which the students employ the engineering principles presented in experiments and class projects.

Over the past four years, two schools have participated in this program. These included the 5th and 6th grade classes at the Shawmont School, a "magnet" academic elementary school in Northwest Philadelphia, and high school students in the Environmental Technology Academy at Abraham Lincoln High School in Northeast Philadelphia, which is a Philadelphia Academies Inc. school. In the Lincoln program, the participation was limited to girls as part of a coordinated program for young women in engineering. The program mentors, volunteers from private consulting firms and local government agencies, worked closely with the schools' teachers and administration. Generally, they visited the classes on a monthly basis to present new concepts and ideas, answer questions, direct hands-on activities, and assign the next set of challenges to the students. The program agenda varied to include field visits to engineering offices, local universities, laboratories, and construction sites and these proved difficult to do in many cases given the extremely constrained academic calendars at the schools.

We encourage you to reach out to your local schools or the schools from which you graduated, to show students how wonderful engineering can be — either through the monthly sessions or even once a year — whatever fits your schedule. We have some useful information and we also offer training programs for those who would like to do use the **ZOOM into Engineering** experiments.

It is hoped that the **Building Big** program and our **Educational Outreach** will continue and expand in coming years. Anyone interested in volunteering, please contact **Sandra May** at (215) 841-5269 or at **sandra.may@exeloncorp.com**.

THE PHILADELPHIA SECTION E-NEWS AN ALTERNATIVE TO THE MAIL

The Phila. Section, ASCE Board of Directors is currently exploring ways to reduce the Section's operating expenses while continuing to provide a high level of service to the membership. One possible reduction method we are considering is to offer our membership the opportunity of receiving THE NEWS via e-mail vs. through the US Postal Service. If you opt for e-mail delivery, your copy of THE NEWS should arrive 7-10 calendar days ahead of the US Postal Service delivered version. E-mail delivery will not only be quicker than the current method, but it will save the Philadelphia Section considerable printing and mailing charges as well. Another advantage with an electronic version is that you can forward THE NEWS to others interested in our Section's activities. E-mail receipt of THE NEWS will require downloading a free copy of Adobe Acrobat Reader 4.0 with receipt of your first edition of THE NEWS.

At this time we are providing members with a survey form to elicit their opinion of how they would like to receive THE NEWS in the future. If we do not hear from you we will assume that you want the USPS option.

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Your e-mail address is necessary since we are updating our database and it will help us to better serve you. You can: call in your response to the survey at 1-800-461-4190 (24 hours a day); e-mail your response to us at info@asce-philly.org or mail your response to PO Box 58186, Philadelphia, PA 19102-8186.

Be sure to include your name, address, e-mail address(es), if applicable, and your ASCE Membership ID Number with your preference.

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IMPORTANT! 2003-2004 MEETING NOTICES

MARK YOUR CALENDAR NOW! The Section Meeting program for the 2003-04 season is still being finalized. Several topics have been tentatively set but some remain to be finalized. Please place the following dates in your calendar. Section Meetings are scheduled for these times and locations. We have also included some information as we know it at press time. PLEASE KEEP IN MIND THAT THE TOPICS ARE SUBJECT TO CHANGE! Watch this space in future issues of THE NEWS and the Section website for more information.

ALL DINNER MEETINGS (except as noted): Cocktails – 5:30 pm; Dinner – 6:30 pm; Meeting – 7:30 pm Students: All dinner and/or luncheon are at discounted price. If you prefer, you are welcome to attend all meetings after dinner or luncheon, at no charge.

Wednesday, January 14, 2004

"PaDOT Secretary of Transportation" • Joint Meeting with American Society of Highway Engineers, Delaware Valley Section • College – Drexel University • Radisson Hotel, Valley Forge

Thursday, February 19, 2004

Joint Meeting with ASCE South Jersey Branch • Colleges – Temple University, Rowan University • Wyndham Hotel, Mount Laurel

Thursday, March 18, 2004

"Green Concrete" • Joint Meeting with American Concrete Institute, Delaware Valley Chapter • College – Swarthmore

College • Union League

Thursday, April 15, 2004

Joint Meeting with Women's Transportation Seminar, Construction Management Association of America, and Mid-Atlantic Section, Institute of Transportation Engineers
• College – Widener University • Union League

Friday, May 7, 2004

Annual Spring Social and Dinner Dance • Location to be determined

THANKS TO OUR SPONSORS

We have expanded our Section Sponsorship program this year. Many of our local firms have responded to this. These firms have made the commitment and their business cards are included in the pages of THE NEWS.

If your firm has not already decided to become a Section Sponsor, we hope you will review the many benefits available to our sponsors, and we welcome your support. We are sure you would like to see your firm's card along with the others in THE NEWS.

To those of you have decided to become a Section Sponsor, we offer our collective "Thank You", and we look forward to your continued support. This support helps the Phila. Section provide our various activities and programs for our membership. This indirectly helps our community as well, as we continue to expand our outreach programs to "spread the word" as part of our VOICE (VOlunteering In Civil Engineering) effort.

Various benefits are available to your firm as a Section sponsor. Your business card appears in

THE NEWS, and this remains the most visit evidence of your support. If you have attended any of our Section meetings thus far, you have also seen our poster with your logo on it prominently displayed in the meeting room.

Several of you have taken advantage of the Meeting Sponsor opportunity available to Section sponsors. As such, you are welcome to bring company representatives, literature, displays, handouts, and "give-aways" at a specific meeting at which your firm will be featured. If you have not yet signed up to sponsor an upcoming meeting, and would like to do so, please let us know.

You are able to place two employment want ads on the Section website during the season, free of charge. Again, if you require this service, we can offer it to you.

We hope this reminder is useful for you, and we hope you will take full advantage of the benefits your firm has as a Section sponsor. We thank you for your continued assistance and generosity in this regard.



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