



# ASH AT WORK

AMERICAN COAL ASH ASSOCIATION, INC. • 2760 EISENHOWER AVENUE • SUITE 304 • ALEXANDRIA, VIRGINIA 22314 • 703-317-2400 • FAX 703-317-2409

## *May 1995 Newsletter*

### ***Conferences, Exhibits, Standards and Promotional Activities***

#### **ECONOMIC AND ENVIRONMENTAL ASPECTS OF COAL UTILIZATION -- CONFERENCE VI Santa Barbara, CA**

ACAA's Executive Director, Sam Tyson, presented a paper at the Sixth Conference on Economic and Environmental Aspects of Coal Utilization sponsored by the Engineering Foundation in Santa Barbara, CA on February 1, 1995. Tyson also helped to organize the session chaired by Rick Keyser, of ACAA member Tennessee Valley Authority. Other speakers included Debra Pflughoeft-Hassett, University of North Dakota-EERC, and Dean Golden, Electric Power Research Institute (EPRI).

The conference, held January 29 - February 3, 1995, addressed the significant changes occurring in the electric utility industry. The sessions dealt with the topics of competition, lowering the cost of electricity, and inter-utility relationships. The attendees at this conference represented a significant base of coal-burning electric utilities that are potential ACAA members. Other attendees included research scientists and design and construction professionals from throughout the USA.

#### **STORMWATER MANAGEMENT SEMINAR Richmond, VA**

ACAA's Tom Blackstock, Director of Technical Services, attended a seminar on the design and construction of underground stormwater retention structures in Richmond, Virginia on February 15, 1995.

The seminar focused on the use of corrugated steel pipe (CSP) for these structures and discussed the use of flowable fill as a backfill material for CSP construction. This seminar provided a chance to network with consultants and engineers involved in the construction of CSP structures.

#### **UTILITY COAL CONFERENCE St. Louis, MO**

ACAA's Tom Blackstock, Director of Technical Services, presented a paper entitled *Coal Combustion Byproducts (CCBs)-- Overview of Applications and Opportunities in the U.S.A.* at the Utility Coal Conference in St. Louis, MO on February 27, 1995. The meeting was attended by some 90 electric utility representatives, [CONTINUED ON PAGE 3]



## ***Executive Director's Remarks***

Sam Tyson, P.E.

### **NEW FORMAT FOR ACAA's NEWSLETTER**

**Style and Content Revised**

ACAA's newsletter format has been revised, beginning with this May 1995 issue. First, a two-column arrangement of articles has been selected to provide ACAA members with a readable document more closely resembling the style of other newsletters in wide circulation today. The articles have been edited to allow all readers to have an understanding of ACAA's overall activities. For those who want more details about specific activities, information is available on request.

Next, the newsletter will be published quarterly, following ACAA's quarterly committee meetings and workshops. This pattern is a very reasonable one in that member involvement in committee activities tends peak on a quarterly cycle, and this participation drives the establishment of milestones and subsequently, the completion of tasks.

Finally, a major change in format is the addition of a section, beginning on page 9 in this issue, describing ACAA member activities. It is hoped that this section will not only continue but will grow in future editions of the newsletter. This will happen, of course, to the extent that members are able and willing to share their knowledge and experiences in the daily management and use of CCBs.

### **ACAA EXPLORES STATE REGULATIONS GOVERNING CCB USE**

**ACAA's Report on State Solid Waste  
Regulations--A Tool for Change**

During 1994, ACAA initiated a review of state solid waste regulations and/or policies governing the use of CCBs throughout the USA. In April 1995, ACAA published a report, *State Solid Waste Regulations Governing the Use of Coal Combustion Byproducts (CCBs)*. The report presents a summary of information obtained for each state during the period August 1994 through April 1995.

The report provides an overview of state solid waste regulations and/or policies governing the use of CCBs throughout the USA and identifies several states in which such regulations and/or policies have one or more favorable features with respect to the "beneficial use" of CCBs.

ACAA's report will be most useful to ACAA members and others who already are familiar with "beneficial use" regulations for CCBs in their particular state. The abbreviated information in the report will assist both environmental analysts and state regulators in the exchange of regulatory guidance that may enhance the use of CCBs.

*The reader is cautioned to seek appropriate technical, environmental and legal advice with respect to any actions that may be undertaken concerning the management and use of CCBs in any state.*

***Ash at Work***  
is a publication of the  
**American Coal Ash Association**

Samuel S. Tyson, P.E.,  
Executive Director  
Thomas H. Blackstock, Jr., P.E.,  
Director of Technical Services  
Lisa G. Harrington,  
Manager of Finance & Administration  
Jill M. Hunger,  
Communications Coordinator  
Earline T. Marshall,  
Executive Assistant

***For more information***  
concerning this publication  
or any other matter concerning the  
management and use of CCBs contact--

American Coal Ash Association  
2760 Eisenhower Avenue, Suite 304  
Alexandria, Virginia 22314 USA  
Phone: 703-317-2400; Fax: 703-317-2409



primarily from operations and fuels departments. ACAA's paper focused on the use of CCBs in beneficial applications and on ACAA's role as the only national organization dedicated to advancing the management and use of CCBs on behalf of the entire "CCB industry" in ways that are technically sound, commercially competitive and environmentally safe.

The Utility Coal Conference is a non-profit corporation of electric utility employees and is designed to educate engineers, power plant personnel, accountants, fuel specialists and others interested in coal and power plant operations. This conference provides an opportunity for ACAA to meet many potential members and advance ACAA's mission. A listing of the papers presented at the conference is available from ACAA.

### **AMERICAN CONCRETE INSTITUTE SPRING CONVENTION**

ACAA's Director of Technical Services Tom Blackstock attended the Spring Convention of the American Concrete Institute in Salt Lake City, UT during March 6-9, 1995. Blackstock represented ACAA at committee meetings on fly ash in concrete, controlled low strength material (CLSM), and cellular concrete.

Guidance documents produced by ACI committees have a great deal of influence in the construction industry and must be continually reviewed and updated to assure that properties and applications of CCBs are appropriately represented. ACAA's involvement is crucial to the success of the standards development process. Reports of current committee activities are available from ACAA.

### **SOCIETY FOR MINING, METALLURGY & EXPLORATION** Denver, Colorado

Executive Director, Sam Tyson, participated in the Society for Mining, Metallurgy and Exploration (SME) annual meeting in Denver, CO, on Tuesday, March 7, 1995. While there, he presented a paper entitled *Coal Combustion Byproducts (CCBs) - Overview of Applications and Opportunities in the U.S.A.* in the morning

session -- Upgrading Coal Preparation and Combustion Byproducts.

SME's 124<sup>th</sup> annual meeting and exhibit attracted over 5,000 participants from throughout the United States. The meeting lasted from March 6 - 9, 1995 and consisted of over 80 technical sessions and over 250 exhibitors.

SME has a membership of some 18,000 individuals involved in minerals exploration, extraction, production, processing, economics and metallurgy. This meeting enabled ACAA to educate a broad range of engineers on the information available from ACAA concerning the management and use of CCBs.

### **ELECTRIC POWER FOR A SUSTAINABLE FUTURE** Morgantown, West Virginia

Sam Tyson, ACAA's Executive Director, attended a meeting to discuss "the need for technology improvements in power generation, transmission and distribution; the current model for providing such improvements; and how industry roles are changing." The meeting, including a panel session, was held on March 28, 1995, in Morgantown, WV.

The meeting, sponsored by the Office of Science and Technology Policy under the National Science and Technology Council [which includes the Vice President of the United States and others with responsibility for significant science and technology programs], introduced the report *Technology for a Sustainable Future: A Framework for Action*. This report is the commencement of a "development of a long-term, comprehensive environmental technology strategy." The full report and executive summary are available at ACAA's office.

The Morgantown meeting provided an opportunity to strengthen the synergistic relationship between ACAA and various federal government agencies, especially the Department of Energy and the Environmental Protection Agency. The meeting was attended by approximately 300 invited representatives.



**CIVIL ENGINEERING RESEARCH  
FOUNDATION  
NATIONAL COUNCIL FOR CIVIL  
ENGINEERING RESEARCH**

ACAA's Director of Technical Services Tom Blackstock attended a meeting of the National Council for Civil Engineering Research (NCCER) in Washington, DC on March 29, 1995. NCCER is sponsored by the Civil Engineering Research Foundation and is a forum for construction-related organizations to influence public and government policy. The council is currently providing input for the development of a national construction goals strategy and participating in the federal Rapid Commercialization Initiative (RCI). Both of these programs are designed to improve the competitiveness of the US construction industry and simultaneously, address US environmental issues.

ACAA is involved in NCCER to ensure the advancement of CCBs as an engineering material and to support the accomplishment of the association's mission.

**AMERICAN ROAD AND  
TRANSPORTATION BUILDERS  
ASSOCIATION  
ANNUAL CONVENTION  
San Antonio, TX**

ACAA's Tom Blackstock, Director of Technical Services, made a presentation to the Board of Directors of the American Road and Transportation Builders Association (ARTBA) on Saturday, April 1, 1995, at the annual meeting in San Antonio, TX.

ACAA is a member of ARTBA and participates in the Recycling, Rehabilitation, Recovered Materials, and Stabilization committee. Blackstock presented the results of a survey conducted by the Recycling Committee and outlined the committee's goals and program of work for 1995.

ACAA's involvement in the Recycling Committee is a key to developing partnerships between universities, government and the CCB industry.

**STRUCTURAL FILL TASK GROUP  
Guidance Document Completed  
at American Society for Testing and Materials  
(ASTM)**

Coal fly ash may be used as a borrow material, similar to the use of compacted soils, in the construction of fills. When the fly ash is compacted in lifts, a structural fill is constructed which is capable of supporting buildings or other structures. An embankment is constructed when the fly ash is placed to support roads or to impound water. The size of structural fills/embankments that have previously been constructed with fly ash ranges from small fills, consisting of a few thousand cubic yards of material covering less than one acre, to fills covering several acres.

When used in structural fills and embankments, fly ash offers several advantages over soil and rock such as low unit weight and relatively high shear strength. The compacted maximum dry density of fly ash is typically within the range of 70 to 105 pcf. Compared to fills of silty sand that have a compacted maximum dry density of about 115 pcf, placing fly ash over weak, compressible foundation soils results in lower total settlement. Hauling costs may also be reduced because there is less tonnage for a given volume of fill. One of the most significant characteristics is its strength. Compacted fly ash is as strong or stronger than many compacted soils. In particular, high-calcium fly ash will self-harden, resulting in a fill that is stronger than most compacted soils.

During April 1995, ACAA's Director of Technical Services Tom Blackstock and approximately ten ACAA members met in Denver, CO to participate in a meeting of the American Society for Testing and Materials (ASTM). The Task Group on Structural Fill, a part of ASTM Subcommittee E50.03 on Pollution Prevention, Recycling and Reuse, held a meeting to resolve the ballots on a proposed standard which would serve as a guide for the use of coal combustion fly ash in structural fills. The proposed document had undergone balloting by the full ASTM E50 committee and there were several negative votes which were resolved. [CONTINUED ON NEXT PAGE]



After the ASTM E50.03 task group took appropriate actions to resolve all negative votes, the document was passed by the subcommittee and will be published on or about June 1, 1995 as a "provisional standard". The standard will be designated PS 23-95. The "provisional" status of the resulting structural fill standard will require that the standard be reconsidered by the ASTM committee after a two-year period instead of the five-year period required by ASTM for all other (non-provisional) standards.

The ASTM E50.03 task group on structural fill is chaired by Gary Brendel, GAI Consultants. Additional standards are being proposed by the subcommittee and will be available for general review as soon as they can be distributed following normal ASTM policies and procedures.

#### **ASTM SUBCOMMITTEE E50.03 Additional Standards Proposed**

In addition to the proposed guide for the use of coal combustion fly ash in structural fills, ASTM Subcommittee E50.03 on Pollution Prevention, Recycling and Reuse had proposed the development of standards for the use of coal fly ash in **Controlled Low Strength Materials (CLSM)** and in **Waste Solidification and Stabilization**. The proposed standard for CLSM was withdrawn due to an agreement between ASTM and the American Concrete Institute (ACI) which limits the standards development of each organization.

ACAA continues to work with its members and others to develop standards that promote the increased use of CCBs in construction and manufacturing applications.

#### **AMERICAN PUBLIC POWER ASSOCIATION** Philadelphia, Pennsylvania

Sam Tyson attended the April 5, 1995 annual meeting of the American Public Power Association (APPA) in Philadelphia, PA. He presented a paper to the environmental and engineering committee of APPA.

In addition, ACAA member, Joel Pattishall of Pennsylvania Power & Light, presented a paper

to this committee. The moderator for the session was ACAA member, Don Pauken of Muscatine Power.

APPA, a national trade association, has over 2000 members which are publicly-owned electric utility systems. These members, therefore, represent a significant base for membership in ACAA. Information pertaining to ACAA and membership in ACAA was distributed by Sam Tyson. Letters were sent to follow up many of the conversations and contacts.

#### **ACAA's April 1995 COMMITTEE MEETINGS & WORKSHOP** Memphis, TN

Members of ACAA met in Memphis, TN for the Southcentral Region CCB Workshop and Spring Committee Meetings during April 17-19, 1995.

ACAA's quarterly meetings provide a regular opportunity for ACAA's committees to meet and review ongoing activities. Three of these committees, Communications & Marketing, Technical and Government Relations, met on Tuesday, April 18. Other committees including the Administrative, Steering and Executive met during the week as well.

The workshop focused on certain environmental benefits of using CCBs. Papers presented by ICF Resources, an environmental policy consulting firm located in Fairfax, Virginia, were coauthored by ACAA's Executive Director, Sam Tyson. The papers, available from ACAA, are titled--

**--Climate Change and New Opportunities for Coal Combustion Byproducts; and**

**--Further Opportunities for Coal Combustion Byproducts to Reduce Greenhouse Gas Emissions.**

The workshop also included a tour of the Ensley Levee structural fill project, which resulted from a joint effort by ACAA members, TVA and JTM, for the U.S. Army Corps of Engineers and the Memphis/Shelby County Port Authority.



## AMERICAN POWER CONFERENCE

Chicago, Illinois

Several ACAA member companies and Executive Director, Sam Tyson, represented ACAA at the 57<sup>th</sup> Annual Meeting of the American Power Conference. The meeting was held April 18 - 20, 1995 in Chicago, IL and sponsored by the Illinois Institute of Technology.

John Nerison of Duke Power Company co-chaired the High Volume Coal Ash Utilization session in the Environment and Air Quality section in which Sam Tyson presented his paper, *Overview of Coal Combustion Byproduct (CCB) Production and Use in the USA*. Other papers in that session presented by ACAA members were: *Utility Management Issues in Improving Coal Ash Utilization*, John Nerison, Duke Power Company; *Increased Utilization of Coal Combustion Byproducts (CCBs) and Related Benefits*, Howard Humphrey, American Electric Power Service Corporation; and *pH Control of Ash Pond Effluent at SCE&G's Wateree Station*, A.K. Oden, South Carolina Electric & Gas Company.

The APC is "an annual national forum for the discussion of the broad, overall aspects of generation, transmission, distribution and utilization of power. The three-volume set of conference proceedings is in the ACAA library. A copy of the table of contents is available to any ACAA member wishing to obtain one or more papers.

## EARTH DAY 1995

### ACAA Sponsors Exhibit

The 1995 celebration of "Earth Day" in Alexandria, VA was held on Saturday, April 22 in conjunction with a larger national celebration on the Mall in Washington, DC. Earth Day, first celebrated in April 1970, has become synonymous with environmental growth and change. Like previous Earth Day celebrations, the 25<sup>th</sup> anniversary was well attended by the public, local government officials, and environmental groups.

An exhibit sponsored by ACAA was displayed and was attended by ACAA staff members Jill Hunger, Communications Coordinator and Tom

Blackstock, Director of Technical Services. Samples of coal fly ash in plexiglass cubes and autoclaved cellular concrete (ACC) containing approximately 75 percent coal fly ash by volume were distributed at ACAA's exhibit.

Other printed items distributed by ACAA at the Earth Day celebration included brochures and brief articles explaining the energy-related benefits of ACC and other CCB applications.

ACAA member, Cyrus Roher of Potomac Electric Power Company, also had the opportunity to devote some time to ACAA's exhibit.

Earth Day attendees were given a clear message through ACAA's exhibit that electric utilities, marketers and others, in supporting the development of products like ACC and numerous other CCB products and applications, are fulfilling a commitment to environmental leadership and recycling.

## EXHIBIT WITH COUNTY ENGINEERS

### ACAA Attends Annual Meeting

ACAA's Communications Coordinator Jill Hunger and Director of Technical Services Tom Blackstock represented ACAA at the 1995 National Association of County Engineers (NACE) Convention and Trade Show held in Davenport, IA, April 23<sup>rd</sup> through 24<sup>th</sup>.

The county engineers' meeting attracted some 200 individuals representing county governments throughout the USA. Many individuals were interested in CCB applications and expressed appreciation for ACAA's continuing support of NACE. The 1996 NACE meeting and exhibit will be held in Seattle, WA.

The members of NACE, primarily county engineers, have significant authority both for the specification and the procurement of materials such as CCBs for construction and maintenance applications including base stabilization, concrete and embankments.

ACAA's exhibit emphasized the importance of CCBs as a locally available material for use in local projects.



**WEST VIRGINIA COAL MINING  
INSTITUTE AND WEST VIRGINIA  
COAL ASSOCIATION**  
Charleston, WV

ACAA's Tom Blackstock, Director of Technical Services, presented a paper entitled *Coal Combustion Byproducts (CCBs)-- Overview of Applications and Opportunities in the U.S.A.* at the first joint annual meeting of the West Virginia Coal Mining Institute and the West Virginia Coal Association in Charleston, WV on May 6, 1995. The meeting was attended by over 170 coal company executives and other representatives of the coal industry in West Virginia. ACAA's paper focused on the use of CCBs in beneficial applications and on ACAA's role as the only national organization dedicated to advancing the management and use of CCBs on behalf of the entire "CCB industry" in ways that are technically sound, commercially competitive and environmentally safe.

The meeting provided an opportunity for ACAA to meet many potential members and advance ACAA's mission and generated interest from a broad audience including coal companies, research and development companies and consultants. A copy of the program is available from ACAA.

**POWER-GEN EUROPE**  
Amsterdam, The Netherlands

From May 16 - 18, 1995, ACAA's Executive Director, Sam Tyson, participated in the Power-Gen Europe Conference and Trade Show in Amsterdam, The Netherlands. During the week, Sam attended conference sessions and manned a table-top exhibit. At the exhibit, Sam provided information to the delegates regarding ACAA's international symposium; responded to interest regarding ACAA and membership; and disseminated materials on the various applications of CCBs.

POWER-GEN is a showcase for virtually every supplier of equipment and services to the electric power generating industry. Its mission is "to provide a platform to increase the understanding of power generation issues and business opportunities to support economic, clean and safe energy."

The 1995 Power-Gen conference offered 30 technical sessions and hosted over 200 exhibitors. A listing of the table of contents from the conference proceedings (131 papers, 2664 pages) is available to ACAA members and others who may be interested in obtaining copies of one or more papers.

**FOURTH INTERNATIONAL  
CONFERENCE ON FGD AND  
SYNTHETIC GYPSUM**  
Toronto, Ontario, Canada

ACAA's Tom Blackstock, Director of Technical Services, presented a paper entitled *Coal Combustion Byproducts (CCBs)-- Overview of Applications and Opportunities in the U.S.A.* at the Fourth International Conference on FGD and Synthetic Gypsum in Toronto, Ontario, Canada on May 18, 1995. The meeting was attended by over 160 individuals representing the various producers, consumers and brokers of the gypsum industry, as well as many ACAA members.

ACAA's paper focused on the data gathered as part of the annual survey of CCB production and use in the USA. The presentation included information on recent ACAA publications and a history of the regulatory activities concerning the CCB industry in the USA.

The purpose of the conference is to promote the increased use of synthetic gypsum by informing and educating potential consumers of FGD material. With an annual production in 1993 in the USA of some 20 million short tons, and use of only 1.1 million short tons (6%), the need for increased research, development and education is clear.

This conference provides ACAA with an opportunity to meet the interested individuals and to assist in the dissemination of the much needed information. A copy of the table of contents of the proceedings is available from ACAA for those wanting to know more about the conference.



## ***On-going ACAA Activities***

### **COOPERATIVE EFFORT PRODUCES FLOWABLE FILL VIDEO**

**Video from ACAA Supports Educational  
and Promotional Activities**

ACAA, in cooperation with ACAA member companies and others, is currently producing a video describing the use of coal combustion byproducts (CCBs) in flowable fill applications. The eight to ten minute video introduces CCBs as a valuable resource derived from the coal-fired generation of electricity. The video will be completed by July 1, 1995 and distributed to all ACAA members. Additional copies of the video will be available through ACAA.

### **FEDERAL HIGHWAY ADMINISTRATION (FHWA) Update of Fly Ash Bulletin Completed**

ACAA has submitted a final draft of proposed revisions to the Federal Highway Administration (FHWA) bulletin, "Fly Ash Facts for Highway Engineers," which was first published in July 1986. The original publication contained chapters on the use of fly ash as a mineral admixture in concrete and as a stabilization material for road bases. The new bulletin will retain the information concerning fly ash use in concrete and road bases with revisions to include technical updates where needed. Additionally, four highway applications of coal fly ash not included in the original publication will be added: flowable fill; grout (for pavement subsealing); fast-track concrete paving; and structural fills. Final review and approval for publication is expected from FHWA during the second quarter of 1995.

### **UNIVERSITY CONTACTS IN CIVIL ENGINEERING**

ACAA recently obtained a mailing list from the American Society for Engineering Education. This list included over 500 names from civil engineering departments in universities throughout the United States. ACAA hopes to promote its activities and distribute valuable information, including symposium proceedings, to these universities for their libraries.

### **NEW ACAA PUBLICATIONS**

ACAA has recently added the following publications to its library:

- *Coal Combustion Byproduct (CCB) Production & Use: 1966 - 1993 -- Report for Coal-Burning Electric Utilities in the United States*, ACAA, March 1995.
- *Sulfate Resistance of Fly Ash Concrete: An Overview of Selected Publications*, ACAA, March 1995.
- *Solidification and Stabilization of Wastes Using Coal Fly Ash: Current Status and Direction*, ACAA, April 1995.
- *State Solid Waste Regulations Governing the Use of Coal Combustion Byproducts (CCBs)*, ACAA, April 1995.
- *Use of Fly Ash to Improve Concrete Durability by Reducing Permeability*, ACAA, May 1995.

### **ACAA ADVERTISES MISSION**

ACAA sends a clear message of its mission in advertising: ACAA's mission is to advance the management and use of CCBs in ways that are technically sound, commercially competitive and environmentally safe.

During the last six months, ads have appeared in the following publications:

- *Electric Light & Power (EL&P)*  
December 1994
- *Engineering News Record (ENR)*  
January 2/9, 1995
- *Concrete Today*  
May 8, 1995

Co-sponsored by:

American Coal Ash Association  
American Concrete Paving Association  
American Concrete Pressure Pipe Association  
American Society for Concrete Construction  
Concrete Reinforcing Steel Institute  
International Concrete Repair Institute  
Portland Cement Association

- *Electric Perspectives*  
May/June 1995
- *ARTBA Transportation Officials & Engineers Directory* (June 1995)



## ***ACAA Member Activities***

### **WOODWARD-CLYDE Solid Waste Rules**

**Problem:** New rules for management of solid waste proposed for implementation in the state of Florida caused concern in the electric power industry with respect to the management of combustion fuel byproducts.

**Solution:** Florida Administrative Code 62-701 included the opportunity for the regulated community to submit requests for alternative standards. ACAA member Woodward-Clyde was contracted to review and evaluate current waste management practices for several waste streams and submit the results of findings to the Florida Department of Environmental Protection (FDEP).

**Result:** A letter was issued from FDEP stating the requirements of 62-701 until new rules for management of industrial solid waste can be promulgated.

**Background:** Woodward-Clyde represented Florida's electric power industry during the course of a several-month evaluation of current solid waste management practices within the state. The objective was to evaluate current solid waste practices, compare these to the requirements proposed in 62-701, and generate recommendations for continuation of existing waste management practices or for modifications to existing practices as appropriate. The client for this project, the Florida Electric Power Coordinating Group, Inc. (FCG) is an organization of 37 electric utilities located throughout the state. FCG member utilities consist of 5 investor-owned, 17 municipal, and 15 rural electric cooperatives. They account for virtually 100 percent of the electrical generation and transmission capabilities within Florida. The waste streams within the scope of this study were as follows: fly ash/bottom ash/boiler slag; oil ash; FGD sludges; land-applied industrial wastewater sediments; cooling tower sludges; land-applied screen cleanings; refractory sand; oil-water separator sludges; sand-blast material; and wood poles.

### **DUKE POWER COMPANY CCBs Compacted for Church Project**

ACAA member Duke Power Company of Charlotte, NC has recently negotiated a contract to provide 300,000 tons of CCBs from its Riverbend fossil-fired plant in Mount Holly, NC, for use as fill material on a nearby church construction project.

John Nerison, manager of Duke's CCB management group, said the fill project at the New Covenant United Methodist Church in Gaston County is Duke's largest to date, and is an example of what Duke hopes to do to meet its goal of 75% CCB utilization by 1998. Duke's eight fossil-fired stations generate about 1.3 million tons of CCBs a year, and the utility typically has been landfilling three quarters of it and selling the rest for reuse by the construction industry.

The New Covenant project, which will use about one-third of the CCBs now stored at the Riverbend station, came about as the result of suggestions by some retired Duke employees who are members of the church's congregation. The project calls for trucking the CCBs about three miles and using it to fill a valley that makes up about half of the 28 acre church site. Nerison said that because the CCBs to be used are inert, no liner or special drainage will be required.

Nerison noted that the CCBs are being handled in basically the same way as natural soils by contractors; and he pointed out that compacted CCBs can easily serve as the base for typical low-rise buildings. The CCB-fill project has been approved by the North Carolina Department of Environment, Health and Natural Resources. The church will "share" with Duke Power the overall cost of using the CCBs as fill. Nerison said the plan benefits the church by providing low-cost fill material, and helps Duke by freeing up CCB-storage space and delaying the need for new disposal sites. He added that Duke Power also has agreed to provide 50,000 tons of CCBs from its Marshall coal-fired station in Terrell, NC, for another fill project.



## **IES UTILITIES**

### **Ottumwa-Midland Landfill Access Road**

**Background:** In the summer of 1995, IES Utilities (IESU) will begin operation of the Ottumwa-Midland Commercial Landfill (OML), located five miles north of Ottumwa, to initially accept CCBs produced by the Company's five fossil-fueled generating stations. The OML is permitted to accept approximately 100,000 tons annually of the Company's CCBs.

The OML will be accessed by a new, one-half mile road running west from Brick Plant Road to Keb Lane Road. The road consists of a wearing course of asphaltic concrete, and an 11-inch stabilized base course composed of a blend of C-Stone (hydrated Class C fly ash from IESU's Ottumwa Generating Station) and two separate activators (cement kiln dust (CKD) and fluidized bed combustion (FBC) residue) to help strengthen the base course and provide structural integrity. A 4-inch aggregate sub-base is placed under the C-Stone base to help prevent percolating water from contacting and degrading the stabilized base course. The road base is composed of structural fill material.

The material for the stabilized base course is produced and placed as follows: CKD and CFB combustion residue are spread and mixed with C-Stone at the Ottumwa power plant in the appropriate amounts (10% CKD added by weight and 15% CFB combustion residue added by weight); the materials are transported to the OML access road; the blend is then unloaded, spread, watered and compacted to achieve strength; and then transverse saw cuts in the road are made at designated points to allow for contraction and expansion.

**Purpose:** The purpose of this project is to test and observe the performance of a unique road material and construction concept which uses 100 percent byproducts from the electric generation and cement manufacturing industries. IESU's intent is to also introduce this approach to engineers and street and highway construction officials who are interested in reducing road construction costs, and consequently opening up additional construction projects.

A similar access road to serve IESU's Sutherland Generating Station was constructed in the summer of 1994. It was constructed from a combination of hydrated Class C fly ash from IESU's Prairie Creek Station in Cedar Rapids; a small portion of CFB combustion residue from non-utility CCB producer, Archer Daniels Midland (ADM) in Cedar Rapids; and CKD from Lehigh Cement Co. in Mason City. Iowa State University periodically test the compressive strength and freeze-thaw durability of the separate CKD and CFB combustion residue sections of the access road.

**Potential Applications:** Besides being used to construct roads, a blend of hydrated Class C fly ash and an activator such as CKD FBC material can also be used as a load-bearing layer in city streets, alleyways, parking lots or other areas which experience traffic loads.

The material can also serve as a hardened pad for animal feedlots. Additionally, it can be used as a pad to stockpile materials such as aggregate, coal or bottom ash.

#### *Summary of Potential Applications*

- |               |                          |
|---------------|--------------------------|
| •Road Bases   | •Cattle Feedlot Pads     |
| •Alleyways    | •Swine Feedlot Pads      |
| •Driveways    | •Material Stockpile Pads |
| •Parking Lots | •Equipment Storage       |

### **UPCOMING MEETINGS**

- Fifth CANMET/ACI International Conference**  
Marc Plaza Hotel, Milwaukee, WI  
June 4 - 9, 1995
  
- National Concrete & Masonry Engineering Conference III**  
San Francisco Airport Marriott,  
San Francisco, CA  
June 15 - 17, 1995
  
- Western Region Ash Use Workshop & Summer Committee Meetings**  
Embassy Suites Hotel, Denver, CO  
July 17 - 19, 1995





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AMERICAN COAL ASH ASSOCIATION, INC. • 2760 EISENHOWER AVENUE • SUITE 304 • ALEXANDRIA, VIRGINIA 22314 • 703-317-2400 • FAX 703-317-2409

## **BENEFITS OF MEMBERSHIP IN ACAA**

### **Unified Industry Voice--**

- use of CCBs as mineral resources
- treatment of CCBs as engineering/manufacturing materials
- internationally recognized annual survey of CCB production and use
- representation to national committees, industry groups
- representation before federal, state and local agencies
- addressing liability exposures that could exceed millions of dollars
- coordinated technical contributions to regulatory and legislative issues
- defining CCBs as recycled products and reducing barriers to use
- management of CCB issues among other industry groups
- service as a centralized source of technical information
- organization and presentation of educational programs
- information on CCBs to government, industry and public sectors

### **Market Awareness and Development--**

- development of consensus standards for use of CCBs
- expansion of government policies for procurement of CCBs
- energy savings by comparison to competing materials and products
- reduced CO<sub>2</sub> emissions from CCB use in cementing applications
- professional development through exchanges of technical information
- awareness of CCBs on par with competing materials and products
- removal of technical, legal and regulatory barriers to the use of CCBs
- support for "Infrastructure Development" and "Sustainable Growth"
- application manuals and videos for educational and promotional activities

### **Educational Opportunities and Professional Growth--**

- quarterly committee meetings and educational workshops
- international symposium on management and use of CCBs
- workshop and conference proceedings
- certification program for managers of CCBs
- newsletters, technical letters and meeting notices
- listing of technical publications and videos
- regional technical assistance programs

### **Information Exchange and Networking--**

- meetings with specifiers, purchasers and users of CCBs
- technical papers for publication and for presentation
- development of national standards and guides for use of CCBs
- informing members of regulatory and legislative opportunities
- national trade shows and exhibits including annual Earth Day
- promotional items and literature for the CCB industry
- networking opportunities for technical information
- distribution of ACAA membership directory





# ASH AT WORK

AMERICAN COAL ASH ASSOCIATION, INC. • 2760 EISENHOWER AVENUE • SUITE 304 • ALEXANDRIA, VIRGINIA 22314 • 703-317-2400 • FAX 703-317-2409

## COAL ASH - LOCAL MATERIAL FOR LOCAL DEVELOPMENT

The **American Coal Ash Association (ACAA)** has represented coal ash producers, marketers and distributors of coal ash, and suppliers of related equipment and services since 1968. **coal ash** [not to be confused with incinerator ash] is produced in four major forms: fly ash, bottom ash, boiler slag and flue gas desulfurization (FGD) material.

Coal ash has an established record of satisfactory performance in:

- cement and concrete products
- road base and subbase
- mineral filler in asphalt
- blasting grit
- flowable mixtures
- mine reclamation
- filler in plastics and paints
- waste solidification and stabilization (municipal, industrial and hazardous)
- structural fills
- soil stabilization
- snow and ice control
- roofing granules
- grout
- soil amendment
- wallboard

In planning materials requirements for the above applications, it should be remembered that coal ash, in one or more of its four major forms, has met successfully in head-to-head competition with numerous virgin and manufactured engineering materials including:

- portland cement
- sintered clays
- soils
- lightweight aggregate
- cement kiln dust
- talc
- anti-skid materials
- crushed stone
- lime
- oxide abrasives
- gypsum
- sand/gravel
- limestone
- ceramics
- fertilizer

The economics of coal ash use is dependent on local and regional factors including production rates, processing/handling costs, transportation costs, price/availability of competing materials, and seasonal adjustments. The economics of coal ash use also is dependent on the knowledge and experience of materials specifiers, project designers, purchasing agents, contractors and local, regional and state agencies.

To obtain a copy of ACAA's membership directory of **producers and marketers** of coal ash, contact ACAA by mail, telephone or fax.



## **COAL ASH IS AN ENGINEERING MATERIAL**

- **Coal ash is a byproduct of coal-fired power generation**, with physical characteristics similar to volcanic ash, and chemical characteristics similar to portland cement and aggregates.
- **Coal ash moves "as is"** from power plant to customer for mixing with other products or for direct use.
- **Coal ash is an engineering material, not to be confused with municipal solid waste (incinerator) ash.**
- **Coal ash is an engineering material often used in waste stabilization/solidification procedures** in the treatment of municipal, industrial, radioactive, and hazardous wastes.

## **LANDMARKS IN COAL ASH USE**

- **In the mid-1930s, U.S. Government agencies, such as the Corps of Engineers and the Bureau of Reclamation, had begun to develop procedures for coal fly ash** use in structural concrete.
- **By the early 1960s, the American Society for Testing and Materials (ASTM) had developed specifications for coal fly ash** in concrete (ASTM C 618) and soil stabilization (ASTM C 593).
- **In 1968, the American Coal Ash Association (ACAA) was established** to represent coal ash producers and marketers, as well as coal companies and suppliers of related equipment and services, in protecting and expanding the various markets for coal ash.
- **Today, coal ash competes successfully** with numerous virgin or manufactured engineering materials.