ASH AT WORK

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Orlando Is Site For Seventh International Ash Utilization Symposium in March 1985

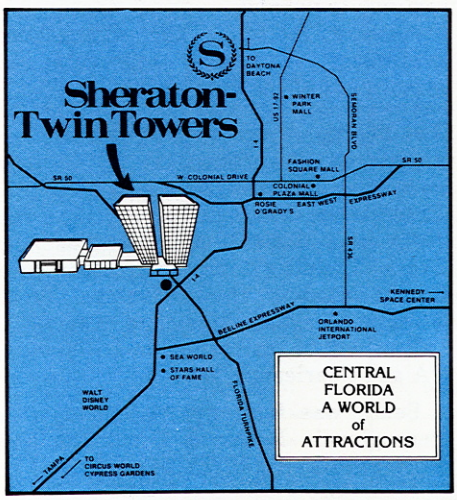
WASHINGTON — The NAA has contracted with Meeting Planning Associates of Menlo Park, CA to assist in the planning, coordination, and management of the Seventh International Ash Utilization Symposium to be held in Orlando, FL on March 3-7, 1985.

MPA President Kathy Davis will work directly with Co-Chairmen Allan W. Babcock and Jack Weber in staging the event which will be held at the Sheraton Twin Towers. John Gillis is the liaison with the NAA staff.

The group met with the hotel and convention reps in Orlando recently to finalize details for the four-day program which is expected to attract 400-500 delegates representing all facets of the ash industry.

An official Call For Papers will be issued by mid-March setting forth the various subject areas in which technical papers are being solicited. Special emphasis will be placed on "how-to presentations" dealing with specific applications.

The international symposium is held every three years. The initial program, which led to the formation of the National Ash Association, was held in Pittsburgh in 1967.



NAA Annual Meeting Set For Washington, April 3

WASHINGTON — The annual meeting of the National Ash Association will be held at the Ramada Renaissance Hotel here on Tuesday, April 3, according to President James P. Plumb.

The session will begin at 10 a.m. in the New Hampshire III Room. Agenda items include the President's Report and subcommittee presentations.

Members of the Board of Directors will convene at the close of the business meeting to elect officers and to designate an Executive Committee to conduct the day-to-day affairs of the association.

A luncheon will conclude the program.

Optimism Growing That EPA Findings Favorable

WASHINGTON — NAA Executive Vice President Tobias Anthony expressed optimism the Environmental Protection Agency will ultimately issue a favorable report stating power plant ash is a non-hazardous product.

The ash industry spokesman says he has been reliably informed "the EPA is leaning towards the conclusion that high volume ash presents no problem to the environment."

"At this point we are hopeful the language in the report to be submitted to Congress late this year or early in 1985 will not adversely impact the continued and expanded re-use of these valuable coal by-products," he added.

Anthony urged producers, marketers, and users to continue to document applications so the industry can develop the data base to refute allegations that power plant ash is harmful to human health and the environment.

The association will catalog the material in its reference library, he added.

Two Utilities Join Association Team

Two electric utilities operating coal-fired generating stations have been accepted into membership in the National Ash Association.

The first is Utah Power & Light Company headquartered in Salt Lake City. The utility operates six coal-fired stations with a rated capacity of 3.2 million kilowatts. UPLCo serves 470,000 customers in Utah, southeastern Idaho, and southwestern Wyoming.

Mr. Waite

Richard Waite, chief engineer-generation, is the firm's designated representative to the NAA Board of Directors. Harry Lundell is the president and chief executive officer for the utility.

Delmarva Power & Light Company of Wilmington, Delaware, is the second Class P member to join the Association in 1984. The utility serves the 292,000 customers residing in Delmarva peninsula in Delaware as well as portions of Maryland and Virginia. Delmarva currently operates six (6) coal-fired generating units and jointly owns four (4) others located in Pennsylvania.

Mark Schneider, a project engineer, is the designated representative to the Association's Board of Directors. Nevius M. Curtis is the president and chief executive officer.

Bayou Ash, Inc. of Baton Rouge, LA has become a Class M marketing member. The firm, owned by James J. Conner, serves customers in the Gulf Coast area extending as far east as Florida.

A Kansas consulting firm, Koch-Carbon, Inc. of Wichita, is a new Class E member. The contact person is Ms. Sarah Allender.

Steve Benza and Dennis L. Kinder, two ash industry exponents, have

(Continued on Page 2)

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James P. Plumb, *President* Allan W. Babcock, *Editor*

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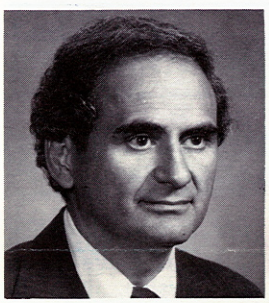


NAA Message Board

Tobias Anthony
Executive Vice President

Several weeks ago, I chatted with Ron Morrison about the prospects for increasing the use of coal ash. Ron is manager of American Electric Power's ash utilization and research section, a pioneer and a futurist.

It bothered me that we were using only 20% of our ash in this country while in Europe 70% or more is common. Then, he told me bluntly that if we took all of our ash and mixed it with all the concrete produced in this country, we wouldn't use more than 30%. Since not all ash is usable, that figure is on the high side.

Well, I did some investigating and found out that Ron was right, as usual. Last year's production of cement or clinker, was some 55 million tons. If you could use a maximum of a 20% mix, fly ash to cement, then in the best-of-all worlds we could not have used up more than 11 million tons of fly ash. Since we produced 48 million tons of fly ash in 1982, that would mean only 23% could have been used if you could use it all.

In addition to fly ash, we produce bottom ash and boiler slag. Last year, it amounted to 65 million tons in total. We utilized only 20% and disposed of the rest. How can we reverse that situation? That is my personal goal.

The answer for the near term, Ron says, lies in using ash as structural fill. In the future, it will be economical to mine materials from ash pits, but such is not the case currently. But, structural fill or creating a construction base is the way to go over the near term.

This is what I mean. Utilities are permitted to diversify and can enter the land development or even real estate business. Who knows more about real estate, demographics, promoting settlement of industry and working with governments then do electric utilities.

What is the incentive? Economists have a term called value-added and that is where the incentive lies. The story goes something like this. There is a lot of fallow land around which is unsuitable for building structures. Let's say that land can be bought for $100 an acre. A layer of ash, excellent for providing a construction base, could raise the value of that land to say, $1-2,000 an acre. Buildings such as commercial structures could raise the value to $10-20,000 an acre. The pay back comes in the form of capital gains.

Ash, which is not suitable for admixtures, can be used for fortifying construction land, and Baltimore Gas & Electric is already out front on this one.

Unquestionably, the real estate community will recognize this value and in the future I expect small entrepreneurs to jump into this market.

Of course, there is a benefit to state and local governments in that fallow land would be added to the tax rotable category.

The NAA is convinced that ash can be utilized safely this way, make it truly, the resource it is. One of the top priorities for 1984 will be to convince all governments that this proposition is valid and all barriers to this fact should be eliminated.

40 HIGHWAY DEPARTMENTS

WASHINGTON — A 1983 survey of highway departments revealed that 40 states have utilized power plant ash in actual road construction and maintenance projects, according to the National Ash Association.

All 50 states responded to the questionnaire. The survey also depicted a more diversified use of these versatile aggregates than at any previous time.

As one might expect, the most widely accepted application in highway construction is the use of fly ash as a cement replacement in concrete. Thirty (30) states permit its use in concrete pavements, median barriers, drainage ditches, or in structures. An additional four (4) highway departments use 1-P cement but not as a replacement in concrete.

The results of the survey are presented in the table on the opposite page on a state-by-state basis.

Ranking second is the use of fly ash as a mineral filler in asphalt mixes by 20 states, 16 others reported grout applications, 13 more utilize ash in stabilized base courses, and nine (9) in structural fills.

A total of 34 states have developed specifications for one or more uses of power plant ash. The 63 specs now on file in the NAA's reference library in Washington covered 23 different applications.

Some states reported satisfactory performances with fly ash, bottom ash, or boiler slag dating back to the 50's and 60's.

Sixteen (16) highway departments have utilized bottom ash or boiler slag in some way including 12 in asphalt paving, nine in ice control, seven in base course construction, five in skid resistant surfaces, and three in stabilized bases.

With the Federal Highway Administration advocating the use of power plant ash where "technically feasible and economically attractive," the use of coal ash in highway applications should continue to expand.

Another factor is the diminishing availability of natural aggregates in many areas of the country.

Two Utilities *(Continued from Page 1)* announced the formation of a new consulting and marketing company, KBK Enterprises, Inc., and have joined the NAA as a Class M member. The new firm will basically operate in a five-state area including Pennsylvania, West Virginia, Virginia, Maryland, and Ohio. Offices will be maintained in Mifflinville, PA and Charleston, WV.

Benza was formerly associated with Pennsylvania Power & Light Co. and Kinder with American Electric Power Service Corp.

TILIZE POWER PLANT ASH ON ROAD CONSTRUCTION & MAINTENANCE PROJECTS

X - Field Use
O - Experimental or Limited Use
S- Specification Written

	FLY ASH								BOTTOM ASH							BOILER SLAG						
	Type 1 P Cement	Grouts	Pavement & Incidentals	Cement Replacement in Concrete Structures	Structural Fill	Stabilized Subgrade	Stabilized Base	Mineral Filler in Asphalt	Asphalt Paving	Stabilized Base	Ice Control Material	Filter or Drainage Media	Structural Fill	Backfill	Unstabilized Aggregate Base	Base Course Aggregate	Asphalt Paving	Ice Control Material	Filter or Drainage Media	Backfill	Skid Resistant Surface	Chip and Seal
ALABAMA	X, S	X, S	X, S	X, S		X	X	X, S								X						
ALASKA																						
ARIZONA	X, S	X	X, S	X, S	X	X	X															
ARKANSAS		X, S	X					X, S													X	
CALIFORNIA	X, S	X, S	X, S	X, S																		
COLORADO		X	X, S	X			X	X, S														
CONNECTICUT								S														
DELAWARE																						
FLORIDA	X, S	X, S	X, S	X, S																		
GEORGIA	X, S		X, S	X, S			X, S	X, S		X		X		O	X	X						
HAWAII																						
IDAHO																						
ILLINOIS	X, S	X, S	X, S		X		X, S	X, S			X					X, S	S	X	X, S	X, S	X, S	
INDIANA	O										X					X, S	X, S	X, S			X, S	
IOWA		X	X																			
KANSAS								X, S									X, S	X, S				
KENTUCKY			X, S	X				X, S									X					
LOUISIANA	X	X, S			O			X, S														
MAINE																						
MARYLAND			X, S				X						X			X, S	X, S				X, S	
MASSACHUSETTS																						
MICHIGAN	X, S		X, S					X, S														X
MINNESOTA	S		X, S	X, S	X			X								X, S	X, S		X		X	X
MISSISSIPPI	X, S		X, S			O																
MISSOURI	X, S				X		O										X, S	X				
MONTANA								X, S														
NEBRASKA				X				X														
NEVADA	X, S	X, S	X, S	X, S				X														
NEW HAMPSHIRE																						
NEW JERSEY						O	X															
NEW MEXICO			X, S					X														
NEW YORK	X	X, S			X	O	O	X, S														
NORTH CAROLINA		X		X, S				X, S														
NORTH DAKOTA			X, S			X, S	X, S	X, S			X											
OHIO	X, S	X	X		X, S		X, S			X	X			X, S	X, S					X, S		
OKLAHOMA			X, S			X, S																
OREGON			X	X																		
PENNSYLVANIA	X		X, S	X, S	X			X, S			X, S						O	X				
RHODE ISLAND																						
SOUTH CAROLINA	X, S																					
SOUTH DAKOTA			X																			
TENNESSEE	X, S	X					X, S															
TEXAS	O	X, S	O	O		X, S	X, S		X			X			X							
UTAH			X, S																			
VERMONT																						
VIRGINIA	X, S		X																			
WASHINGTON			X																			
WEST VIRGINIA	X, S	X, S	X, S		X, S		X, S	X, S	X, S	X, S	X, S		X, S		X, S			X, S				
WISCONSIN			X, S		X																	
WYOMING			X				X, S	X														
FIELD USE (X)	17	16	27	13	9	5	13	20	2	3	6	2	2	1	4	7	6	5	2	2	5	
TOTAL EXPERIMENTAL (O)	2	0	1	1	1	3	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	
SPECIFICATION (S)	17	10	20	9	2	3	8	16	1	1	2	0	1	1	2	4	6	4	1	2	3	

BOR'S First RCC Dam to Keep It 'Cool' with Ash

SALT LAKE CITY, UTAH — When the Upper Stillwater Dam in Central Utah takes its place as a major water storage reservoir in the late 80's it will be the Bureau of Reclamation's first dam utilizing roller-compacted concrete (RCC).

RCC combines the basic building material of the concrete dam with the high volume construction methods of earth and rockfill structures.

The technique involves placing a lean dry concrete in horizontal layers and compacting the concrete with a vibratory roller. The BOR plans to place the RCC with facing elements, or curbs, which are formed horizontally by a laser-guided paving machine. The "curbs," similar to highway median barriers, serve as the upstream and downstream faces of the dam.

The roller-compacted concrete is placed without the use of artificial cooling pipes, which would drastically slow down the rate of placement. How does the RCC keep its cool without the pipes? Enter fly ash, a by-product of the power plant production cycle. By reacting with water and the free lime in cement while generating only half the heat of an equal amount of cement.

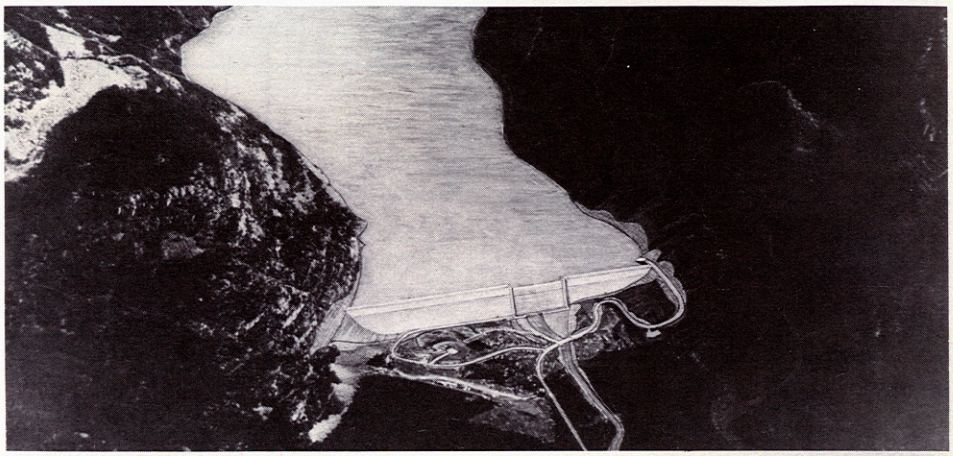
In the case of Upper Stillwater, 75 percent of the cement will be replaced with fly ash to achieve both high strength and lower heat generation. Although fly ash has been used in BOR dams for many years, it has never been used in such large quantities.

Upper Stillwater will be the world's largest RCC gravity dam, requiring about 1½ million cubic yards of the no-slump concrete mix. Also, it will be the first dam of its kind in the United States to be used strictly for water storage.

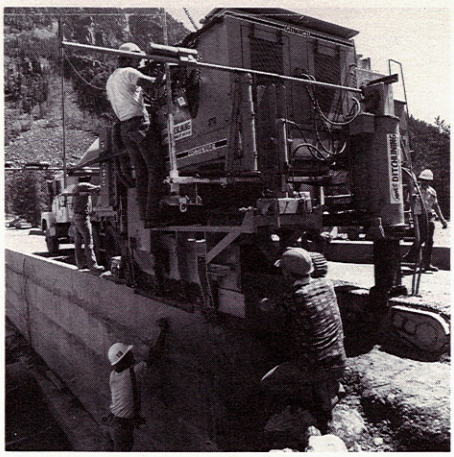
Located in the Uinta Mountains about 120 miles southwest of Salt Lake City, the RCC dam is expected to be completed in only two construction seasons as compared to three or four seasons for most dams.

The mix design for the dam includes 1½ inches of maximum sized aggregate, clean processed sand, and 290 pounds of fly ash plus 130 pounds of cement per cubic yard. The specs for the facing concrete will be one-inch maximum sized aggregate, clean sand, 270 pounds of fly ash, and 350 pounds of cement per cubic yard. This will represent a 50 percent replacement of cement with fly ash by volume.

The use of fly ash will also be a cost saving feature over conventional concrete or earth and rockfill structures. Savings will be achieved by less costly methods of concrete placement, a shorter construction time frame, and a reduction in the volume of materials such as labor intensive formwork.



Proposed Upper Stillwater RCC Dam. (BOR Photo)



RCC batch plant. (BOR Photo)

Test strip of RCC concrete. (BOR Photo)

Placing "test" curbs. (BOR Photo)

Bids on the low-cost method came in $15 million under the western water agency's estimate. Tyger Construction Co. of Spartansburg, SC was the low bidder among 20 contractors at $60.6 million.

Because of the remoteness of the dam site, it is estimated that 50-70 truckloads of cement and fly ash will be required to meet construction timetable. The contractor will be required to supply 6,000 tons of cement plus fly ash storage at his batch plant (about 4,300 tons of fly ash). Sand is to come from a source located seven miles south of the dam site. Coarse aggregate will be obtained from a quarry site located in the reservoir area.

RCC was first proposed as a means of rapid concrete construction in the early 1970's. Tests placement by the Corps of Engineers and the Tennessee Valley Authority indicated the concept was a viable means of construction. The Corps recently completed Willow Creek Dam, which was an RCC flood control structure.

The use of over million cubic meters of RCC for emergency repairs on an outlet works structure and spillway stilting basin at Tarbella Dam in Pakistan proved that large quantities of concrete could be placed in a short time span. As much as 20,000 cubic meters of RCC was placed in a single day - a placement rate which would allow the completion of a structure the size of the Grand Coulee Dam in less than 1½ years.