#### Department of Civil Engineering, Kansas State University



# April 2004, Volume 4, Issue 1 April 2004, Volume 4, Issue 1 April 2004, Volume 4, Issue 1

## KSU hosts 2003 ASCE Regionals

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The 2003 Mid-Continent Regional ASCE Student Chapter Conference, hosted by KSU CE April 23–26, was deemed a great success. The event brought together CE students from Kansas, Nebraska, Oklahoma, Missouri, Illinois, and Arkansas, the Kansas section of ASCE, local engineering firms, and the Manhattan community.

The conference banquet held at the Holiday Inn in Manhattan was attended by 300 and featured Patricia Galloway, president of ASCE, as the speaker. Conference activities included traditional competitions such as the steel bridge, concrete canoe, and Mead ethics paper, and new ones such as concrete bowling, K'nex competition, and the mystery competition. First place overall for steel bridge went to Southern Illinois University-Carbondale and for concrete canoe, the University of Oklahoma. KSU received the inaugural Spirit of the Conference Award. The KSU CE concrete canoe squad

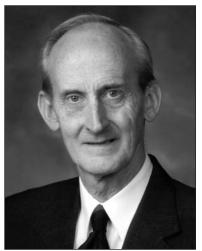


The KSU Student Chapter of ASCE received the inaugural Spirit of the Conference Award at the 2003 ASCE Regional Conference held in Manhattan.

received the Spirit of the Competition award. Graduate students Mike Stein (BSCE '02) and Chris Harker (BSCE '01, MSCE '03) were cochairs of the conference organizing committee.

### Thorn elected ASCE's Honorary Member and VP

Bob Thorn (BSCE '50) has been named an Honorary Member of ASCE for his outstanding contributions to the organization; his 51-year career as an inspiring leader in civil engineering bridge design; his commitment to and involvement with civil engineering students; and his efforts as a leader and promoter of education, the civil engineering profession, and ASCE. He was also appointed as ASCE's Zone III vice president.



Bob Thorn

Working at Finney & Turnipseed, Topeka, Thorn has been involved in the design of 14 bridges spanning the Kansas River and 27 bridges on the Kansas Turnpike. He has served as a contact member for KSU's ASCE chapter for 43 years and is its first life-time contact member.

**Editors** Alok Bhandari Lakshmi N. Reddi Page 2 Volume 4, Issue 1

## News from the department head



Lakshmi N. Reddi, prof. and head of civil engineering

2003 has been a year of celebrations. As you will note from the cover story, our constituents (students, faculty, staff, alumni, and advisory council) had a lot of fun participating in the ASCE Regional Conference. This was a conference where students took the driver's seat and the rest of us followed to learn leadership lessons from them. Ms. Patricia Galloway, ASCE president, graced the occasion with her presence. Our fall banquet in December was the second event of celebrations last year with two hours of nonstop award presentations and recognitions.

Also in 2003 our faculty undertook a critical review of our departmental mission and objectives. With the help of the CE advisory council and student leaders, our faculty revisited the

(left to right) Mike Stein and Chris Harker, graduate student co-chairs of ASCE regional conference; Patricia Galloway, national president of ASCE; Lakshmi N. Reddi, CE dept. head; and Alok Bhandari, faculty advisor, ASCE student chapter.

#### CE advisory council members 2004

Kevin Honomichl Jane E. Jordan David J. Karnowski Richard L. McReynolds Jeri L. Meyer Kerry A. Moore Eric H. Siew Robert R. Snell Stuart E. Swartz Cindy L. Wallis-Lage department's educational objectives and learning outcomes. By the end of this exercise, we all felt a sense of unity in purpose and felt connected to each other more than ever before.

Our faculty accomplishments gave us more reasons to celebrate. Our research funding continues to increase, requiring us to expand our facilities. As you will note in an associated article in this newsletter, we are looking for ways to expand our off-campus Civil Infrastructure Systems Laboratory (CISL).

From a Fulbright Scholarship to KSPE Outstanding Young Engineer of the Year, our faculty members have enjoyed a range of regional and national/international recognitions. We are very proud that our own Bob Thorn (BSCE '50) was named an Honorary Member of ASCE and was also appointed as ASCE's Zone III vice president.

Our undergraduate enrollment grew by another 10%, and our graduate enrollment (including both on-campus and distance education students) is at an all-time high. Our professional academy has enjoyed a growth in corporate and individual membership. I am most fortunate to have met several of our academy members during the various celebration events. We are truly thankful for the loyal support of our alumni. Our faculty, staff, and students continue to take pride and joy in sharing their successes with you.

anshim N. Reddi

Best wishes.

Lakshmi N. Reddi

## **Educational Objectives**

## and Expected Outcomes

## Civil Engineering at Kansas State University

The following educational objectives and expected outcomes have been developed and adopted by the faculty, students, and advisory council of the K-State Department of Civil Engineering. The educational objectives describe expected accomplishments of our graduates during their first few years in

- Objective 1: Students will become technically competent for the practice of civil engineering.
- Outcome 1.1 Each will demonstrate an understanding of mathematics, science, and engineering principles necessary to solve problems in four major areas of civil engineering.
- Outcome 1.2 Each will demonstrate the ability to design engineering systems, components, and/or processes in four civil engineering subject areas.
- Outcome 1.3 Each will participate in a major integrated (capstone) civil engineering design experience.
- Outcome 1.4 Each will demonstrate the ability to use modern computational, laboratory, and field techniques/tools used in civil engineering.
- Outcome 1.5 Each will demonstrate the ability to design and conduct experiments, and analyze and interpret engineering data.
- Objective 2: Students will become knowledgeable of the natural and social context of the practice of civil engineering.
- Outcome 2.1 Each will demonstrate an understanding of significant historical developments and contemporary issues in civil engineering.
- Outcome 2.2 Each will demonstrate an understanding of the local and global societal context he or she will live and work in, including social, economic, environmental, and

the profession. The expected outcomes describe what our students should know and be able to do upon graduation. These objectives and outcomes are directed toward the further development and continuous improvement of our undergraduate educational program.

public safety aspects of civil engineering projects.

- Outcome 2.3 Each will demonstrate an understanding of business, economics, project management, and other related issues of civil engineering.
- Outcome 2.4 Each will be able to function within multi-disciplinary teams.
- Objective 3: Students will become critical thinkers and effective communicators.
- Outcome 3.1 Each will demonstrate the ability to extract and synthesize information from a variety of technical resources.
- Outcome 3.2 Each will demonstrate the ability to analyze, formulate, and evaluate alternative approaches to solving problems.
- Outcome 3.3 Each will demonstrate the ability to write quality technical reports.
- Outcome 3.4 Each will demonstrate the ability to create and deliver quality oral presentations.
- Objective 4: Students will become engineers with high standards of professional ethics.
- Outcome 4.1 Each will demonstrate an understanding of professional and ethical responsibilities of the practice of civil engineering.
- Outcome 4.2 Each will recognize the importance of professional licensure and the need for lifelong learning and continuing education.

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### 2003 fall banquet recognitions



Kelly Blackwell receives her APWA scholarship check from Robert Stokes, prof. and director of the CE undergraduate program.

The following awards for students, faculty, and staff were announced at the annual CE banquet in the fall of 2003:

Richard Benninghoven (BSCE '03) was the recipient of the 2003 Kansas Section ASCE Outstanding Senior Award for the spring semester.

Jennifer Hancock (Manhattan) received a \$500 scholarship from the American Public Works Association (APWA) in spring 2003.

Kelly Blackwell (Kansas City) was recipient of a \$1000 scholarship from APWA for the academic year 2002–2003.

Matthew Holopirek (BSCE '03) and Travis Rapp (Pawnee Rock) received the Kansas County Highway Association Awards for 2003–2004.

Marshall Bird (El Dorado) and Peter Clark (Manhattan) were recipients of the Outstanding Sophomore and Junior Awards, respectively, for 2003.

Larry Close (BSCE '02), graduate student in environmental engineering, received an \$18,000 fellowship from the U.S. Environmental Protection Agency under its National Network for Environmental Management Studies Fellowship program.

Dahzi Mao (MSCE '03) received the 2003 CE Outstanding MS Student Award.

Kishora Panda and Srinivas Mandavilli were recipients of the 2003 CE Outstanding Ph.D.

Student Awards. Mandavilli secured first place in the Missouri Valley Chapter of the Institute of Transportation Engineers (MOVITE) student paper contest and a \$1,000 Jan Kibbe Student Scholarship from MOVITE.

Alok Bhandari, assoc. prof., received a Certificate of Commendation for Advising (Zone III) from ASCE and the Outstanding Young Alumni Achievement Award for 2003 from the Virginia Tech Department of Civil and Environmental Engineering. Bhandari was promoted to associate professor with tenure in 2003.

Angela Fairbanks, accounting specialist, was the recipient of the 2003 CE Outstanding Staff Award.

Susan Gerth, instr., received the 2003 CE Outstanding Teaching Award.

Hani Melhem, prof., received the 2003 Chi Epsilon Outstanding Teaching Award. Melhem was promoted to professor in 2003.

Yacoub Najjar, prof., received ASCE's Outstanding Faculty Award for 2003, the CE department's 2003 Outstanding Teaching Award and the 2003 Outstanding Colleague Award. Najjar was also awarded a visiting professorship to the University of Lille, France, for summer 2003. Najjar was promoted to professor in 2003.

Robert Peterman, assoc. prof., was awarded the 2003 CE Outstanding Research Award. Peterman was promoted to associate professor with tenure in 2003.

Lakshmi Reddi, prof., was awarded a Chapter Honor Membership by KSU Chi Epsilon.

Stefan Romanoschi, asst. prof., received the 2003 Chi Epsilon Excellence in Advising Award and the 2003 CE Outstanding Research Award.

Hayder Rasheed, asst. prof., received the 2003 CE Outstanding Graduate Faculty Award.

Steven Starrett, assoc. prof., was named the Outstanding Young Engineer of the Year for 2003 by the Kansas Society of Professional Engineers.

Robert Stokes, prof., was awarded the 2003 CE Outstanding Service Award.



David Suhling, started as a research technologist in the CE department in fall 2003.

## Safety inspections for aging dams

Steven Starrett, assoc. prof., has spent the past year performing safety inspections of earthen dams in Kansas. He reviews "as built" plans, conducts extensive site visits, reviews hydrologic and hydraulic details, and writes reports stating recommended operational and maintenance issues. Most dams in Kansas are "watershed dams," or detention facilities funded by state and federal agencies (mostly the U.S. Department of Agriculture's Natural Resources Conservation Service) and owned by watershed districts. Many of these silent protectors of our communities are now 40 to 50 years old. Some show signs of aging and need repairs or upgrades to handle larger flows caused by

## CE participates in summer institute

CE participated in the 2003 Engineering and Science Summer Institute (ESSI) by offering a Water Quality Workshop to selected high school students and their science teachers from Kansas. The workshop included an interactive discussion on water quality, a hands-on laboratory exercise focusing on coagulation-flocculation processes in water treatment, and a site visit to the Manhattan water and wastewater treatment facilities. The workshop was organized by CE graduate students Larry Close (BSCE '02), and Monica Palomo (MSCE '03), Alok Bhandari, assoc. prof., and Tom Roberts, asst. dean of engineering, and was sponsored in part by a grant from the U.S.E.P.A.'s Youth and Environment Program.



A participant at the 2003 ESSI Water Quality Workshop removes a water sample during a coagulation-flocculation experiment.

upstream development. Starrett is able to bring this professional experience into a new "Water Resources Engineering" class through his realworld examples.



Steven Starrett, assoc. prof., conducts dam safety inspections around the state of Kansas.

## Drugs in wastewater

The discovery of environmentally significant amounts of pharmaceutical agents in the nation's surface waters and groundwater has been receiving a lot of attention from the scientific and mainstream press. Pharmaceutical drugs are introduced into municipal wastewater through direct disposal of medicines or from human excreta, which contain large quantities of non-metabolized and partially metabolized medicines.

Alok Bhandari, assoc. prof., and graduate students Larry Close (BSCE '02) and Zachary Cook (Plains) are conducting research at several Kansas wastewater treatment plants to evaluate the occurrence and treatability of three widely prescribed antibiotics—ciprofloxacin, sulfamethoxazole, and azithromycin. If released into the environment, these compounds have the potential to perturb microbial ecology, increase the proliferation of antibiotic-resistant pathogens, and pose threat to human health. Utilizing state-of-the-art analytical procedures and instrumentation to separate these chemicals from the background material in wastewater samples, Bhandari and coworkers have been able to detect several antibiotics at low partsper-billion levels. Their work is funded by the Kansas Water Resources Institute and Region 7 of the U.S.E.P.A., and is being performed in collaboration with researchers at KSU's College of Veterinary Medicine.





A wastewater treatment plant operator helps graduate student Larry Close (BSCE '02) collect a sample (above). Wastewater and biosolids at several Kansas wastewater treatment plants are being tested for the presence of pharmaceutical drugs such as routinely prescribed antibiotics (below).

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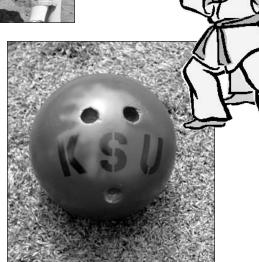
## In pictures—2003 Regional ASCE Student Conference











Clockwise from top left: Matt Williamson (BSCE '03) and Joe Wuertz (Richmond) help Kelly Cool (Topeka) and Tricia Petr (Blue Rapids) steer the KSU canoe to shore after they placed first in the women's distance; Jennifer Tucker (Independence) holds a piece of concrete from the bottom of the KSU canoe; Michael Stein (BSCE '02) and Chris Harker (BSCE '01, MSCE '03) co-chaired the KSU regional con-

ference organizing committee; the KSU concrete bowling ball was made possible by the freshman CE class; the KSU concrete canoe is lowered into the flotation tank at the Union Plaza; Professors Yacoub Najjar, Robert Stokes, and Stefan Romanoschi take in the sun at the River Pond State Park and cheer on the concrete canoe team.









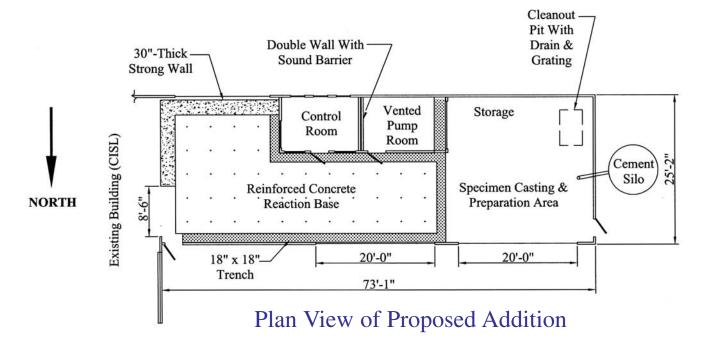


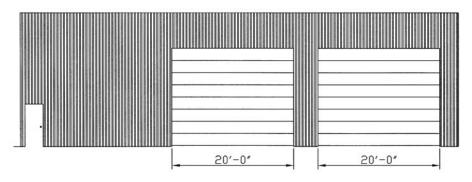
Clockwise from top left: The University of Nebraska-Lincoln team at work during the K'Nex competition; Steve Linehan (Derby) outbowls the competition during concrete bowling at Memorial Stadium; catapults designed and built for the mystery competition were later tested for their performance at Memorial Stadium; Ed Volkmer (Kansas

City, Mo.) designs the aesthetic Powercat footings for the KSU steel bridge; Homer—the KSU entry for the steel bridge competition; and Kelly Cool (Topeka) and Tricia Petr (Blue Rapids) present the oral report for the concrete canoe competition.

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## CISL looks to add 1800 square feet of additional space





#### North Elevation

Fundraising is underway for a new 1800-sq-foot addition to the KSU Civil Infrastructure Systems Laboratory (CISL), located in the Manhattan industrial park. The proposed addition will be attached to the existing structure at the southwest corner and will serve as the nucleus for full-scale structural engineering research at K-State. The proposed CISL extension will also serve as the primary research area for an envisioned Center for Strand Bond Evaluation and Research. This center would serve as a national laboratory for evaluating the effect of new concrete admixtures on prestressing steel bond.

During the past five years, there has been a dramatic increase in both the level of funding and the number of funding sources pertaining to full-scale experimental research, and K-State is now viewed as the preferred venue for a research laboratory by many prestressed concrete producers. The proposed CISL addition will have a 650-sq-foot concrete reaction base, plus two orthogonal reaction walls at the southeast corner to allow for both vertical and horizontal loading of structures. Total cost of the building and site work has been estimated at \$300,000, with an additional \$70,000 needed for equipment and start-up expenses.

## Hossain completes Fulbright visit to Malaysia

Mustaque Hossain, prof. in the pavement materials area, completed a five-month (August–December 2003) sabbatical visit to the University Putra Malaysia (UPM) as a U.S. Fulbright Visiting Scholar. Hossain was awarded the Fulbright Fellowship to help develop guidelines to maintain Malaysia's continually growing highway infrastructure.

As a Fulbright scholar, Hossain co-taught at UPM an undergraduate course on pavement analysis and design and a graduate course on pavement materials. Hossain also participated in a curriculum workshop on highway transportation and engineering, attended several seminars and workshops, and submitted research proposals to funding agencies in Malaysia. During his sabbatical, Hossain also offered seminars to engineers from the department of public works, and participants from various universities and industries. He also visited the Asian Institute of Technology in Thailand.



Mustaque Hossain, prof., (5th from left) with staff members of the Malaysian Institute of Transportation.

Hossain said he was overwhelmed by the respect shown by his hosts in Malaysia. He discovered that the KSU CE program was on par with the best CE programs around the world. Hossain described his Fulbright experience as "simply thrilling and enjoyable" and said, "The Fulbright program is very successful in carrying our academic and cultural messages to other countries." KSU was among the top ten universities in the nation in papers published in the Transportation Journal, the Journal of Transportation Research Forum, and Transportation Research.

KSU ranked 14th in the nation by the number of articles published in transportation and logistics journals.
Twenty-seven papers were published by KSU researchers between 1992 and 1998.

#### **ASCE**

The KSU ASCE Student Chapter had a membership of 134 in 2003. Out of these, 54 students were also national ASCE student members. The chapter organized 15 activities including speakers, joint dinners with the University of Kansas chapter and the Kansas section of ASCE, socials, field trips, highway cleanup, and senior project presentations. Chapter members participated in the concrete canoe, steel bridge, concrete bowling, K'nex competition, mystery competition, and the Mead paper at the regional conference held in Manhattan.

Matthew Williamson (BSCE '03) and Jared Barnhart (BSCE '03) were chapter presidents in the spring and fall semesters, respectively. Other officers included Richard Benninghoven (BSCE '03), Michael Bailey (Wichita), Marshall Bird (El Dorado), Mark Breuer (BSCE '03), Kelly Carlton (Lansing), Kelly Cool (Topeka), Brandon Decker (Manhattan), Jarred Green (Paola), Chad Grisier (Manhattan), Sarah

Grotheer (Pittsburg), Derek Hake (McPherson), Chris Harker (BSCE '01, MSCE '03), Bob Harrison (BSCE '03), Trevor Kurth (BSCE '03), Steve Linehan (Derby), Tricia Petr (Blue Rapids), Jeff Shamburg (Manhattan), Mike Stein (BSCE '02), Mike Stewart (BSCE '03), Tom Strathman (Seneca), Steve Sunnenberg (BSCE '03), AJ Toloza (Overland Park), Dave Vermetten (BSCE '03), Luke Williams (BSCE '03), Joe Weurtz (Richmond), and Russell Yarnell (Lucas). Alok Bhandari, assoc. prof., and Hani Melhem, prof., served as faculty advisors.

#### **National recognition**

The KSU ASCE Student Chapter and chapter advisor, Alok Bhandari, assoc. prof., were awarded Certificates of Commendation for Zone III, 2003.

Yacoub Najjar, prof., received the chapter's Outstanding Faculty Award for 2003.

Matthew Williamson (BSCE '03) was the recipient of the Student Chapter Vernon Rosebraugh Award.

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## Division of Continuing Education

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KSU Chi Epsilon's Fall Initiation Ceremony

## 2003 XE Chapter honor members:

Warren K. Wray (BSCE '68), provost, Michigan Technological University

Lakshmi N. Reddi, head, KSU Department of Civil Engineering

## Distance graduate courses

#### Fall 2004 CE courses:

CE 732 Advanced Structural Analysis

CE 751 Hydraulics of Open Channels

CE 766 Wastewater Engineering

CE 775 Traffic Engineering I

CE 776 Pavement Performance and Mgmt.

CE 786 Land Development for Civil Engineers and Planners

### Chi Epsilon



In 2003 Chi Epsilon inducted into membership Jason Eichenberger (Ottawa), Richard Harrison (Gardner), Julie Peterson (Hesston), Travis Rapp (Pawnee Rock), James Riener (Herndon), Jared Barnhart (BSCE '03), Kelly Blackwell (Kansas City), Peter Clark (Manhattan), Alexander Darby (Topeka), Nathan Ewert (Hutchinson), Chad Grisier (Manhattan), Sarah Grotheer (Pittsburg), Jeffrey Holste (Ludell), Stephen Mazouch (Great Bend), Shawn Mellies (Morganville), Justin Owens (Manhattan), Shawn Sherraden (Chapman), Alfred Toloza (Overland Park), Edward Volkmer (Kansas City, MO), and Matthew Williamson (BSCE '03).

There are currently 33 students in K-State's chapter of Chi Epsilon. Officers for the past semester were Ryan Farmer (Manhattan), president; Crystal Ackerman (BSCE '03), vice president; Jamie Klein (Clay Center), secretary; Julie Peterson, treasurer; Sally Bosak (Topeka), pledge marshal; and Derek Hake (McPherson), newsletter editor. The current officers are Julie Peterson, president; Jamie Klein, vice president; Peter Clark, secretary; Russell Yarnell (Lucas), treasurer; Alfred Toloza, pledge marshal; and Kelly Blackwell, newsletter editor. Hayder Rasheed, asst. prof., and Steven Starrett, assoc. prof., served as faculty advisors.

CE 790 Portland Cement Concrete Pavements

CE 790 Structural Dynamics

CE 828 Advanced Soil Mechanics

#### Spring 2005 CE courses:

CE 680 Economics of Design and Construction

CE 752 Advanced Hydrology

CE 762 Water Treatment Processes

CE 773 Hot Mix Asphalt Mix Design & Const

CE 822 Shear Strength & Slope Stability of Soils

CE 833 Advanced Structural Analysis II

CE 857 Advanced CE Design Using GIS

## CE alumni—Where are they now?

Leslie Barnt (BSCE '91), associate, George Butler Associates, Inc., Lenexa

Mohan Bonala (PhD '97), California Dept. of Transportation, Los Angeles

Brenda (Donahey) Macke (BSCE '00), project engineer, George Butler Associates, Lenexa

Jeffery Hancock (BSCE '98, MSCE '00), city engineer, Manhattan

Heather (Lesan) Phillips (BSCE '99, MSCE '01), process engineer, Black & Veatch Corp., Kansas City

Greg Luttrell (PhD '01), assistant professor of civil engineering, Southern Illinois University, Edwardsville

Karl Mueldener (BSCE '73, MSCE '74), director, Bureau of Water, Kansas Dept. of Health and Environment, Topeka

Kevin Palic (BSCE '00), construction manager, Kansas Dept. of Transportation, Seneca

Charles Butler (BSCE '69, MSCE '73), partner, Schwab Eaton Consulting Engineers, Manhattan

Karen Weathers (BSCE '98), design engineer, BG Consultants, Manhattan

### Partnership with K-State CE

Please support the K-State CE Department through your financial contributions and/or suggestions/recommendations on our curricular and extracurricular activities.

				_
	Name			
Year of Graduation	P.E.	Yes	No	
I would like to contrib activities within the de		follov	wing	

☐ Student and faculty professional development

☐ Concrete canoe/steel bridge, other activities

☐ Outreach activities of the department

☐ No preference

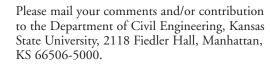
Enclosed please find a check to the KSU Department of Civil Engineering in the amount of:

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□ \$300

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### CE Professional Academy

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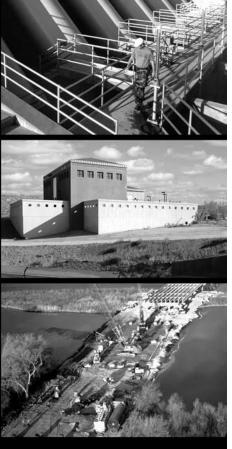
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