

THE CONSTRUCTION WEEKLY

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In terror's wake, construction
forces work around the clock

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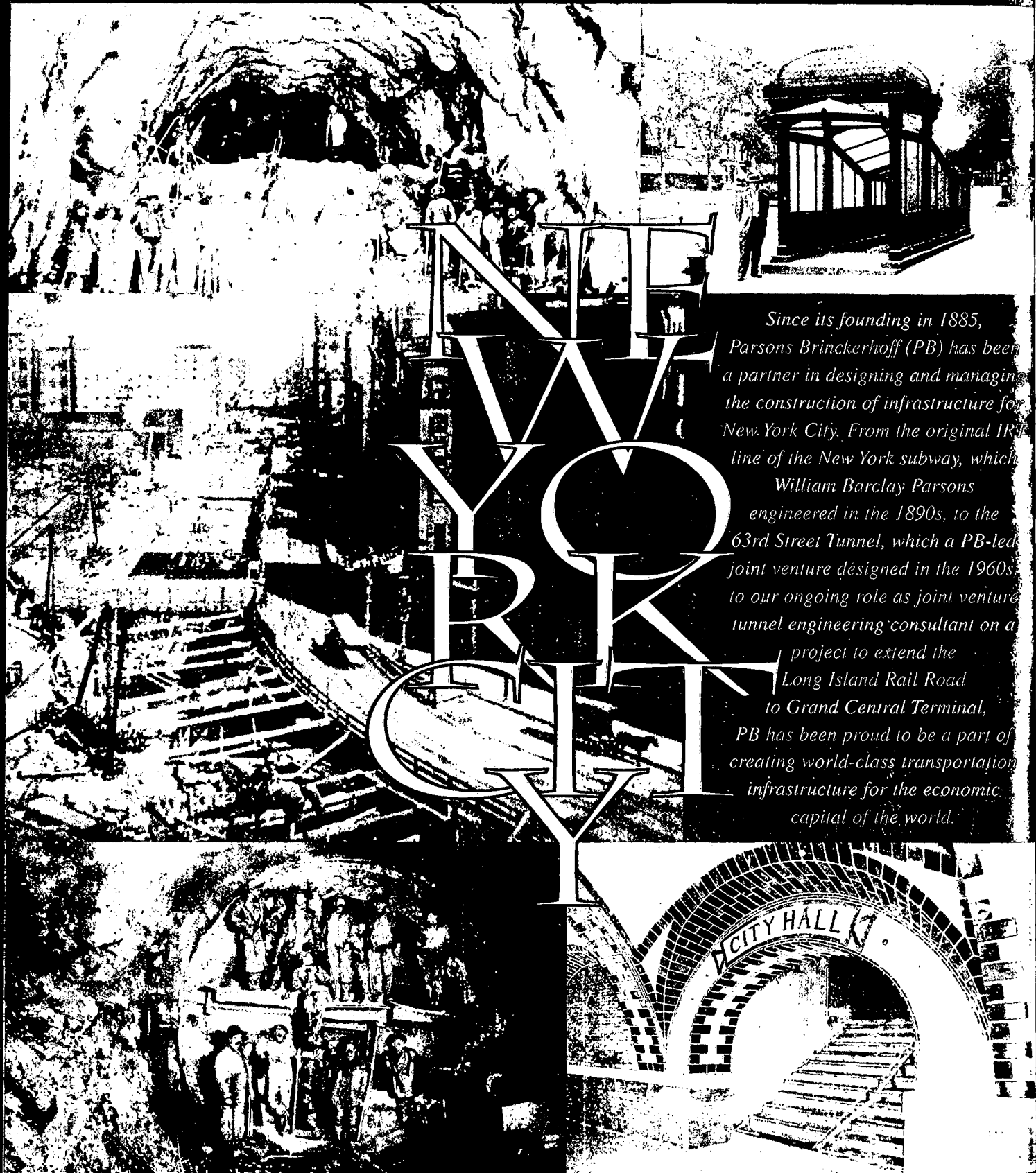
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COVER



Voices from Ground Zero

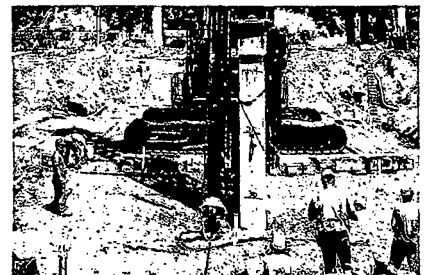
Construction forces—contractors, engineers and building trades—have played a big role in cleaning up the World Trade Center and Pentagon following the Sept. 11 terror attacks. ENR profiles a cross section of the many now working round the clock. PAGE 26

Cover photo by Michael Goodman for ENR; photo above courtesy of FEMA



QUESTIONS Britain's Prince Charles told members of the tall buildings council that it is more important than ever to question how such buildings are built. Buildings professionals are debating over how much security, if any, is needed to ensure high-rise survivability. PAGE 10

PLA PLAN NIXED
The Federal Highway Administration rejected Maryland officials' rationale supporting a union project labor agreement on part of the Woodrow Wilson Bridge project. PAGE 12



AIRPORT PLANS
Chicago Mayor Daley (left) will get his wish for a \$6-billion O'Hare expansion plan after agreeing with the governor on a suburban airport and soundproofing of homes. PAGE 15

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LETTERS

BOLSTERING EDUCATION

I WOULD LIKE TO INCLUDE MY TWO cents to the industry effort to make your C-School Article an annual feature (ENR 10/29 p. 26). Construction education and training is a critical issue for the industry. An annual feature on the subject will have the effect of motivating schools with substandard programs to improve; and reprints could become valuable in attracting future generations to choose construction professions.

BRUCE D'AGOSTINO, CAE

Executive Director

Construction Management Association of

America

McLean, Va.

THANK YOU. ENR DID THE CONSTRUCTION industry a tremendous service when it prepared the review of "The Nation's C-Schools." There's been a lot of controversy within the academic community on the article but the most important factor is that ENR prepared a review of C-Schools for the first time in 20 years. The industry needs a single source where high school guidance counselors and other career advisors can learn more about the available education options. I was surprised by comments from constructors and other practitioners who didn't know there were so many different programs. If industry practitioners don't recognize the variety of educational options and the progress of construction education over the past 20 years, how can we expect those outside the industry to recommend our profession to others? I believe that an annual C-School review can be an important tool to attract talent and educate others.

T.J. FERRANTELLA, AIC, CPC

Chairman

American Institute of Constructors

Constructor Certification Commission

St. Petersburg, Fla.

CONGRATULATIONS ON A GREAT ARTICLE. You covered all the bases. Hopefully, you will have done construction education a great service by your depiction of the perception of "second-class" status. In my opinion, that is the biggest challenge we have. Our local industry groups fail to see the significance of that problem.

VERNON L. HASTINGS, PE, FAIC

Professor Emeritus

Del E. Webb School of Construction

College of Engineering and

Applied Sciences

Arizona State University, Tempe

THE NATION'S C-SCHOOLS THAT MANDATE a Ph.D. as a faculty requirement truly miss the opportunity in developing seasoned industry professionals, defined as minimum 15 years of professional experience and a graduate degree, into any construction management program.

CM programs struggle to attract Ph.D.s with any serious relevant construction management experience to teach "meat and potato" construction courses, like estimating or scheduling. C-schools that line up to fill faculty staff with Ph.D.s to satisfy administration demands short-sell students who, in some instances, bring more construction experience to the classroom than the professor.

The reality is, while the burgeoning Ph.D. has been completing rigorous doctoral requirements, teaching freshmen courses and working summers at Bechtel or Turner, the industry counterpart has been estimating a \$35-million project, project managing a 12-story high-rise or negotiating a design-build contract with a Fortune 500 firm. While the industry professional often lacks the body of research, curriculum development and scholarly achievements associated with academia, the construction professional brings an in-depth knowledge and intuitiveness of the construction process that can only be acquired by working at length in industry.

This experience legitimizes any serious construction program. I don't envy the construction department head who must juggle the student's demand for experienced faculty and the administration's demand for academic requirements for a construction management program. The symbiotic balance between the research-oriented Ph.D. and the experienced industry professional develops the best of both worlds.

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A Salute To American Heroes

To all of the police, firefighters and EMS who serve and protect our communities...
To all of the recovery and rescue workers who continue to work tirelessly...
To all of those who defend our country, our freedom and our way of life...
To all of the American people who demonstrate their bravery everyday...

We want to thank each of you for showing the world the strength and good nature of our nation's character, for the passion and courage in your hearts and for the sacrifices you are making.

We are more confident than ever in our nation's extraordinary ability to build a better world and that good always triumphs. The spirit of America shines brighter than ever.

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CONSTRUCTION WEEK

LEGAL

GOVERNOR CAN FIRE OFFICIALS WHO BLOCKED CA/T FUNDS

The Massachusetts State Supreme Judicial Court ruled Dec. 10 that acting Gov. Jane Swift (R) has the authority to fire two contentious members of the three-member Massachusetts Turnpike Authority Board of Directors. The board members appealed an earlier suspension on the grounds that they were an independent authority. They sought the clarification after they postponed a toll hike in October that was part of a 1997 agreement turning control of the Central Artery/Tunnel over to the MTA. Swift alleges their action cost the state \$30 million in lost revenue, which she says was needed to pay rising central artery costs. The two, Christy Mihos and Jordan Levy, have been critics of CA/T project consultant Bechtel/Parsons Brinckerhoff's role in cost overruns and had demanded the firms pay \$200 million in "reparations." Swift is expected to schedule hearings to show cause for removal.

ECONOMICS

FED DROPS INTEREST RATES TO LOWEST LEVEL SINCE 1961

The Federal Reserve Board continued its fight against economic recession by cutting interest rates for the 11th time this year. The latest move reduced the Fed's federal funds rate by a quarter of a percentage point to 1.75%, the lowest rate in 40 years. "Economic activity remains soft, with underlying inflation likely to edge lower from relatively modest levels," the Fed said in its statement. Passage of an economic stimulus package by Congress would go a long way to shore up confidence in an economic turnaround, says Martin Regalia, chief economist for the U.S. Chamber of Commerce.

BUILDINGS

TAX SHORTFALL WON'T SLOW NEW D.C. CONVENTION CENTER

The Sept. 11 terrorist attack has affected tourism in Washington, D.C., but the Washington Convention Center Authority says it still has \$815 million in hand to finish a new downtown convention center under construction. The authority draws its finances in part from a local dedicated tax. In August, the authority said project costs had risen to \$778 million, a 9% increase over the original 1998 estimate. The authority's post-Sept.

11 analysis shows it could withstand up to a 40% decline in tax revenue for the next two years, says spokesman Tony Robinson. The authority also is in talks with the project's construction manager, a joint venture of area firms Clark Construction Group Inc. and Sherman R. Smoot Corp., that could raise the firms' guaranteed maximum price beyond the current \$519 million.

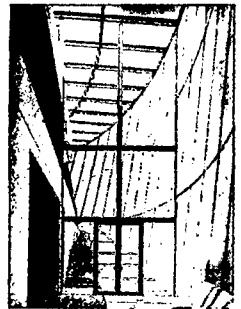
PEOPLE

JAPANESE ARCHITECT WINS AIA'S 2001 GOLD MEDAL

Tadao Ando, the Japanese architect known for pure geometric shapes and pristine poured-in-place exposed concrete walls, is the winner of the American Institute of Architects' 2001 Gold Medal. Some of Ando's best-known buildings are in Japan and include the Rokko Housing Complex and the Chapel on Mount Rokko, both near Kobe, and the Naoshima Art Museum, on an island in the Inland Sea. Ando's



first nonresidential commission in the U.S., the Pulitzer Foundation in St. Louis, opened in October. A new home for the Modern Art Museum of Fort Worth, designed by Ando, is currently under construction and is scheduled to open in November 2002.



INFRASTRUCTURE

TAMPA TO LAUNCH LARGEST PUBLIC-PRIVATE WATER DEAL

Tampa Bay Water was set to sell \$110 million of private-activity bonds to help finance the largest desalination plant in the U.S., now under construction in the Tampa area. The deal is reportedly the first such public-private transaction in the drinking water industry. Tampa Bay Water is issuing the bonds on behalf of the plant's developer, Poseidon Resources Corp. Poseidon will own the 25-million-gal-per-day plant under a 30-year deal. The utility will buy the desalinated water.

Hang On WORKER RAPPELS DOWN CANYON WALL TO PREP FOR BRIDGE

Geologists for AMEC Inc. have begun laser mapping the Black Canyon walls for a new Hoover Dam bypass bridge. AMEC started work Dec. 8 on the long-awaited crossing that would be 1,500 ft downstream and 230 ft above the dam's crest. The 1,900-ft-long deck-arch bridge and its 3.5 miles of four-lane roadway will help alleviate the heavily congested U.S. Highway 93 crossing. AMEC was hired by HDR Engineering, Sverdrup Civil and T.Y. Lin International, the engineering consortium that landed the six-year, \$22-million Federal Highway Administration contract on July 12. Construction of the \$198-million project is scheduled to start in late 2002 and finish by 2007.

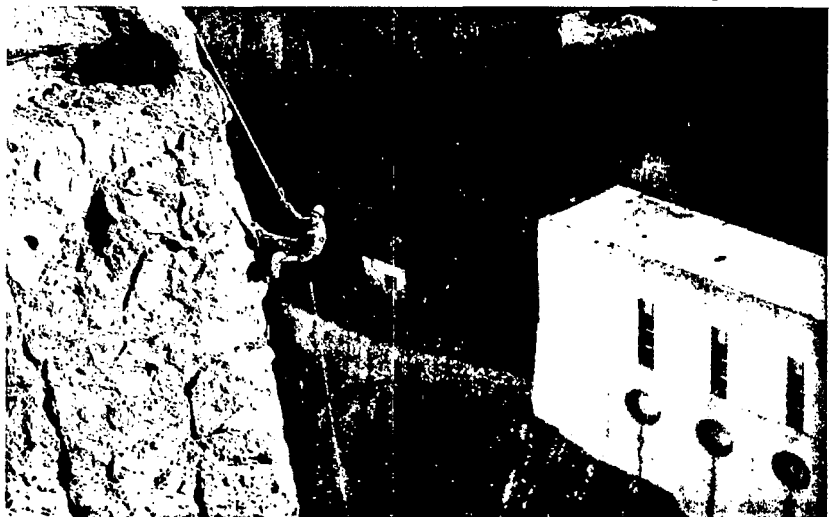
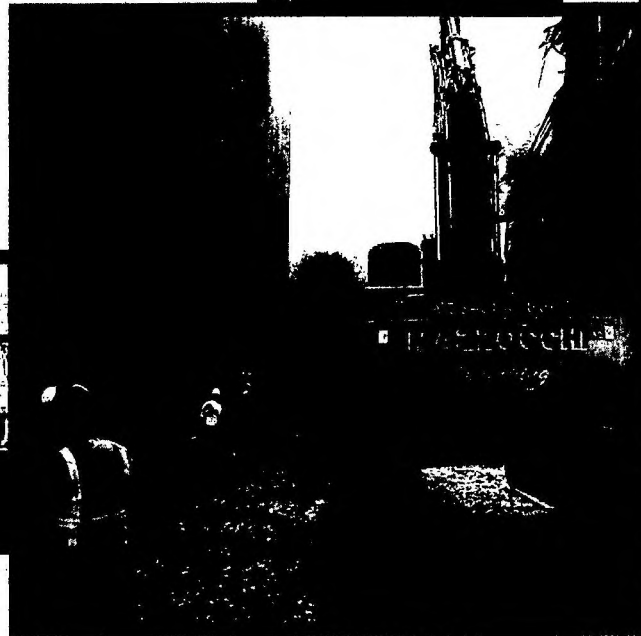
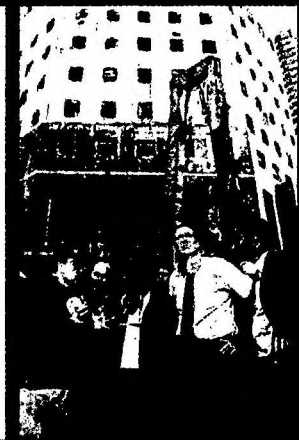


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WASHINGTON OBSERVER

Dems, GOP Brace for Fight Next Year over Energy Bill

Last spring, energy was on everyone's lips. California was grappling with an electric-power crisis. Natural gas and gasoline prices had shot up. The Bush administration produced a report that warned, "America in the year 2001 faces the most serious energy shortage since the oil embargoes of the 1970s." But since then, energy crisis talk has nearly vanished, prices have turned south and the White House has focused on the war against terrorists.

The House did pass an energy measure on Aug. 2. But in the Senate, partisanship has reigned. Alaska Sen. Frank Murkowski, the top GOP energy committee member, on Dec. 3 failed to attach an energy bill to a railroad retirement measure. Two days later, Majority Leader Thomas A. Daschle (D-S.D.) introduced his party's energy package, but was in no hurry to move on it. He did pledge to begin debate on the measure in early 2002.

The Democratic and Republican energy proposals cover a slew of topics, but when the bill hits the Senate floor the battle will center on whether to permit oil and gas drilling in part of Alaska's Arctic National Wildlife Refuge. Bush and most of the GOP want to open ANWR. Daschle and many Democrats don't. "I think in the broadest sense ANWR is the big issue to be resolved [though] certainly not the only one and arguably not the only one that's important to our company and our community," says Bill Birkhofer, Jacobs Engineering Group's vice president for government relations.

Senate majority leader has committed to begin the floor debate on broad-based energy legislation, but not until early next year.



DASCHLE

Senate energy committee Chairman Jeff Bingaman (D-N.M.) argues that the Democrats' new bill is stronger on renewable energy than the GOP plan. The Democrats would require retail power suppliers to boost the share of power from nonhydro renewables by 2.5 percentage points in 2005 and 10 percentage points in 2020. Nonhydro renewables now account for about 3% of U.S. electric power, a committee aide says. The bill also would hike alternative motor fuels, mainly ethanol, to 5 billion gallons a year in 2012. Current capacity is less than 2 billion gals. In addition, the measure has loan guarantees to help launch a new gas pipeline from Alaska to the lower 48 states. It mandates revised energy-efficiency standards for new federal buildings and extends the Price-Anderson Act and its indemnification for Dept. of Energy contractors.

The Edison Electric Institute is "pleased that the bill does include electricity provisions," such as repealing the Public Utility Holding Company Act, says spokesman Jim Owen. But EEI is concerned about other elements. Owen says the bill apparently would let the Federal Energy Regulatory Commission require utilities to divest capacity even when no market abuse is found. The Democrats' bill also doesn't give FERC eminent domain for siting transmission lines.

Murkowski says he is "absolutely dismayed at the partisanship that has gone into putting this [Democratic] bill together." He sees little difference between the Democrats' new bill and the one they proposed earlier. With no deal in sight on ANWR, comments like Murkowski's indicate energy legislation continues to face a tough Senate fight.

—By Tom Ichniowski

Highways Rep. Young blasts funding earmarks

Leaders of the House Transportation and Infrastructure Committee are upset at what appropriators did in the 2002 transportation spending bill that cleared Congress on Dec. 4. The bill has \$33 billion for highways, but appropriators took \$423 million that was to be divided among all states by formula and parceled it out to a variety of specific projects, says Transportation and Infrastructure Chairman Don Young (R-Alaska) and other key members of his authorizing panel. The flap is the latest round in the Capitol Hill turf fight over who controls highway aid.

Steel Panel proposes tariffs, quotas on imports

U.S. International Trade Commission members have called for big tariffs or quotas on steel imports to help domestic steelmakers. On Dec. 6, the six ITC members proposed a range of penal-

ties, including tariffs of up to 40%, but generally were lower than those sought by steelmakers and the United Steelworkers of America. President Bush will set final penalties. He isn't bound by the ITC proposals. On Oct. 22, the ITC said imports of 12 products, including rebar and plate, hurt the U.S. industry.

The steelworkers will be pushing for the high tariff levels, says Bill Klinefelter, legislative and political director. Jon Jenson, chair of a steel users' group, says, "For flat-rolled [items], the effect will be significant and negative for the economy and for steel-using consumers." Adds Emergency Committee for American Trade President Calman Cohen: "Traditionally these...high tariffs have not remedied the problems that the industry has presented." (ECAT's Chairman is Harold W. McGraw III, Chairman and CEO of The McGraw-Hill Cos., which publishes ENR.) U.S. Steel LLC announced Dec. 4 that it has had preliminary talks about consolidation with other domestic steelmakers.

Taxes Accounting rules eased for small firms

The Internal Revenue Service is changing its accounting regulations for certain small construction firms. On Dec. 10, the IRS said that firms with annual revenue below \$10 million can switch to the cash method of accounting from the more burdensome accrual method. The change will take place for tax years ending on or after Dec. 31, 2001.

This decision is important for small contractors, says Phil Thoden, the Associated General Contractors' director of tax and fiscal affairs. He says the cash method is practical because it recognizes income and expenses when cash is paid to a company or by a company. The accrual method is often problematic for small businesses because it requires taxes to be paid on money firms have not yet received. Larger firms are not affected by the rule.

—Compiled by Sherie Winston and Tom Ichniowski

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NEWS SITE DECEMBER 17, 2001

Tall Buildings

RAPID EVACUATION CONCEPTS AIRED

Tall buildings are not dead. That was the message from experts at a conference on the future of the skyscraper in London last week. While the post mortem triggered by the terrorist attack on the World Trade Center continues, the debate heats up over how much more security, if any, is needed to enhance high-rise survivability.

In a keynote delivered to more than 400 conference attendees three months to the day after the attack, Charles, Prince of Wales, said, "The destruction of the World Trade Center is unlikely to mark the end of tall buildings." An outspoken adversary of tall buildings, he added, "It has now become more important than ever to question how such buildings should be built. I suspect that the price of



GROWTH Although Prince Charles questioned the rationale of tall buildings, London's mayor says it may get 20 more over the next 15 years.

Livingstone's view was supported by architect Norman Foster, of Foster and Partners, London. "The tall building in a finite planet with less and less available space is a lifeline," he said.

Foster is among several design professionals investigating the emergency response of buildings, in the wake of the Sept. 11 attacks. A multidisciplinary team, assembled by the firm, is testing ideas for emergency evacuation on a conceptual 50-story building. Under review are skybridges to adjacent buildings, rooftop helipads, additional stairwells and other measures. The study, due for spring completion, is also borrowing from evacuation procedures from offshore oil rigs, aviation and other industries.

A full-scale trial on a 50-story London building by Arup Ltd., London, proved that properly protected elevators can "assist rapid evacuation," said Robert Em-

meeting the new [safety] demands...will place considerable strain on the rationale of the buildings themselves."

Speculating that additional security would add as much as 9% to the construction cost, "this is quite a small burden to put on a building," said Paul Morrell, senior partner of London-based real estate consultant Davis Langdon & Everest, at the Dec. 9-11 conference. Called Building for the 21st Century, it was organized by the Council on Tall Buildings and Urban Habitat, Bethlehem, Pa.

"Other than at the margin, the [cost] effect of Sept. 11 will be very, very limited," he predicted.

Underscoring the positive future of tall buildings, London Mayor Ken Livingstone forecasted that 20 new high-rise buildings would be constructed in the British capital over the next 15 years. One of his first moves after he became mayor in May 2000 was to reverse a policy against high-rise construction to accommodate the fast-paced growth London was having on brownfield sites.

PHOTO TOP RIGHT COURTESY OF CANARY WHARF GROUP PLC; CENTER LEFT COURTESY OF NEWSCAST

merson, chairman of the London-based consulting engineer. Using the elevators nearly halved the escape time compared to using stairs only. Arup also believes that building owners and tenants should be informed of relative risks from different sources (see chart).

Reconfiguring the core can provide cost-effective refuge areas and a dedicated elevator and stairwell for emergency egress without increasing core square footage, said Jeffrey Heller, president of Heller Manus Architects, San Francisco. The system bundles a service elevator for

use by firefighters, a lobby and a stairwell, in a pressurized shaft.

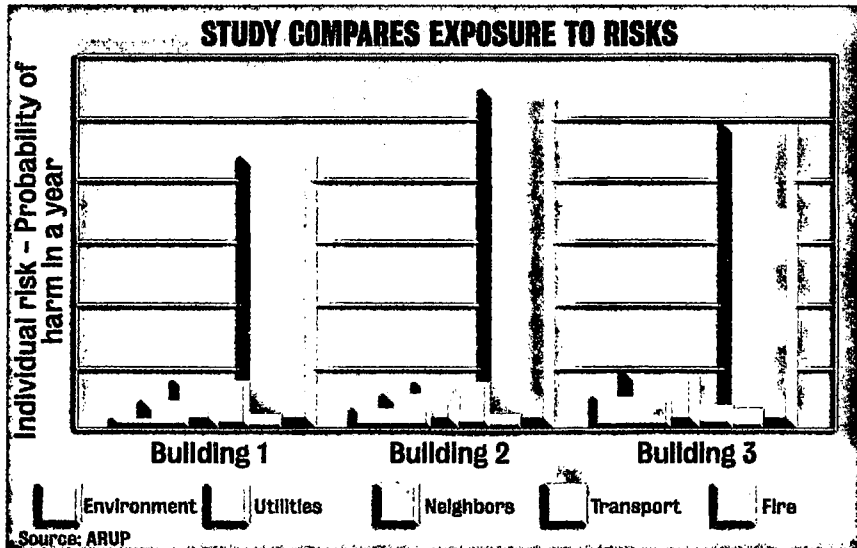
Hardened safety areas on each floor near the core have been mandatory in Israel since the Gulf War in 1991, said Eri Goshen of D. Eytan E. Goshen Architects Ltd., Tel Aviv, designer of a 70-story tower in Tel Aviv that is set to start construction next year.

Emmerson and others agreed that educating owners and tenants about emergency systems in buildings should go hand in hand with engineering. Toward that end, the council's task force on the

"The council's mission is to bring a condensed version of the guidelines for building safety to the public and to get the message out that buildings are still safe."



KLEMENCIC



future of tall buildings, which convened for the second time at the conference, voted to distill the results of the official post-Sept. 11 building studies for use by owners, tenants and occupants. The group's first meeting was in Chicago on Oct. 15 (ENR 10/22 p. 12). The guidelines for building safety will be presented at a conference in late May.

"The council's mission is to bring a *Reader's Digest* version of the technical papers to the public and to get the message out that buildings are still safe," said Ron Klemencic, chairman of the council and president of structural engineer Skilling Ward Magnusson Barkshire Inc., Seattle. □

By Nadine Post and Peter Reina in London

Companies

ENRON TOOK NEPCO'S CASH, FORCING CLIENTS TO FUND WORK

BANKRUPT ENRON TOOK THE CASH from its powerplant construction unit, the National Energy Production Co. (NEPCO), forcing the unit to seek funding from its customers. TECO Energy Inc. said Dec. 7 that NEPCO's cash was "swept" by Enron's centralized cash management system before it could be applied to pay project costs.

NEPCO is building several powerplants for TECO and its partners. Tampa-based TECO made the statements while disclosing to investors that its exposure in the Enron bankruptcy was not high.

The disclosure clarifies NEPCO's predicament and explains why the Bothell, Wash.-based unit has had to renegotiate all its contracts since Enron filed for bankruptcy. NEPCO's president, John H. Gillis, stated in an internal memo dated Dec. 2 that the company is negotiating with customers to amend contracts "to

fund NEPCO to complete our portfolio of projects." Gillis said that the changed contracts were awaiting approval from lenders and final results were "outside the control of NEPCO."

Enron was known to be seeking a buyer for NEPCO before the bankruptcy, but now any acquisition is "going to be much more complicated" and take more time to complete, says one industry veteran. Gillis also stated that NEPCO's staff was engaged "in a fight to save our company" (ENR 12/10 p. 16).

Neither Gillis nor other NEPCO officials would comment on the company's situation. NEPCO is not in bankruptcy, Gillis stressed in his memo. But Enron Engineering and Operational Services, formerly known as Enron Engineering and Construction Co., has subsequently filed for bankruptcy.

NEPCO is currently constructing four

merchant powerplants for TECO and its partners. Two of the projects, the Union Power Station in Arkansas and the Gila River Power Station in Arizona, have financing in place with a syndicate of banks, says TECO. Financing is being sought for the other two projects, although it has been delayed by the Enron bankruptcy because TECO was seeking multi-project financing.

All are ahead of schedule and on budget. Because of the "swept" cash, the four projects have a potential total capital cost overrun of \$61 million, well within contingency amounts provided in the original \$4.3 billion estimate for all four jobs.

Under an agreement reached with NEPCO and TECO's partner, Panda Energy International, TECO will make direct payments to subcontractors and suppliers, allow for no profit or markup to NEPCO and require 10% cash retainage on all future payments to NEPCO.

Lenders have the right to stop funding construction unless the contractual violation created by Enron's bankruptcy is waived. TECO and Panda are working with lenders to obtain necessary approvals to permit continued funding. □

By Richard Korman

Labor

FHWA DENIES MARYLAND RIGHT TO USE LABOR PACT ON WILSON BRIDGE

IN THE LATEST TWIST IN the battle over labor requirements for federally funded construction projects, the Federal Highway Administration has denied Maryland's request to mandate a union-supported project labor agreement on the biggest contract for the \$2.5-billion Woodrow Wilson bridge and interchange project, near Washington, D.C.

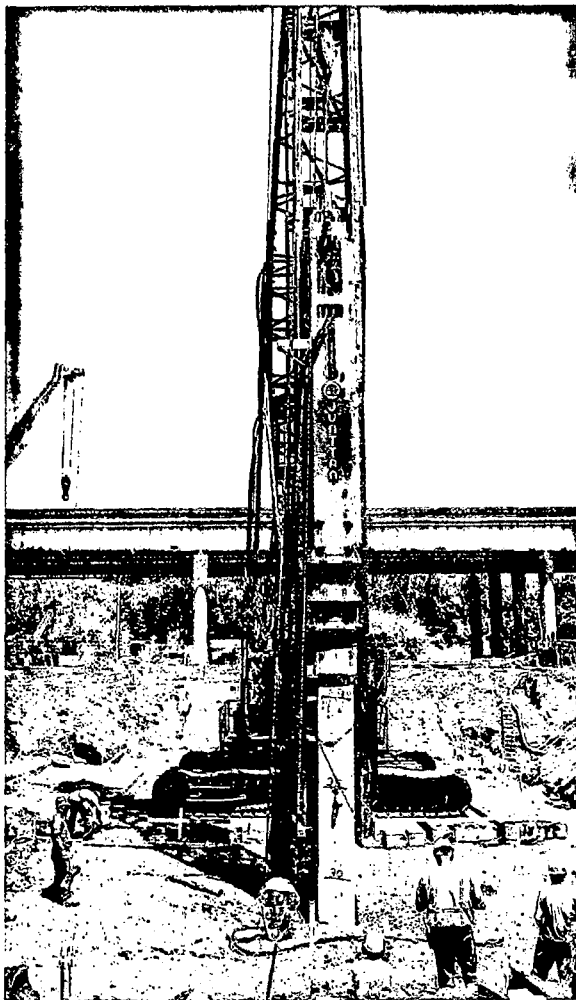
On Dec. 7 FHWA ruled that state officials did not prove that the labor pact "would provide the benefits claimed in Maryland's submissions." The government's action further clouds an already uncertain situation. On Nov. 7, a federal judge ruled President George W. Bush overstepped his authority in February when he issued an executive order prohibiting project labor agreements on federally funded construction work. The U.S. Justice Dept. says it will appeal.

Maryland officials are reviewing the 38-page FHWA opinion and assessing their options. "We're pretty much in a holding pattern," says a state DOT spokesman.

Congress has authorized \$1.6 billion in federal aid for the project, on which construction has begun. Maryland and Virginia have pledged \$200 million each and will cover additional costs incurred on their portions of the job. Maryland is responsible for contracts for the bridge itself, plus two major interchange upgrades on its side of the Potomac River. Virginia is in charge of contracts for two interchanges on its side of the river.

Even before FHWA's decision was issued, the superstructure contract's bid opening already had been rescheduled twice, from Oct. 18 to Nov. 29, and then to Dec. 13. At press time that deadline was still scheduled.

FHWA's ruling was welcomed by the



WORKING Foundations continue while labor pact stalls.

open-shop Associated Builders and Contractors. ABC President and CEO Kirk Pickerel contends that "Maryland's rationale was weak" and it was "aimed at pleasing labor unions."

But construction unions blasted the decision. It is "completely phony and politicized," says AFL-CIO Building and Construction Trades Dept. President Edward C. Sullivan. "The so-called 'review' of the agreement was driven by the administration's friends in the anti-labor construction community. We don't believe the Bush administration had any right to review the agreement in the first place." Sullivan says the unions are "looking at our legal and political options." □

By Sherie Winston and Tom Ichniowski

Labor

NO DECISION YET ON CARPENTERS

THE 24TH BIENNIAL AFL-CIO CONVENTION is over. The gathering in Las Vegas Dec. 3-6 may be remembered more for what didn't happen than for what did: The anticipated reconciliation with the carpenters' union did not occur.

As expected, the 1,000 delegates unanimously re-elected AFL-CIO President John J. Sweeney to another four-year term. Sweeney was first elected in 1995 and re-elected in 1997. The delegates also approved a resolution requiring each union to allocate 30% of its revenue to internal organizing efforts. Members also struck a new position on immigration, endorsing for the first time amnesty for millions of illegal immigrants. It was only last year that the labor federation started reaching out to immigrants in an effort to revitalize lagging membership rolls.

But months ago, AFL-CIO leaders said the December meeting was the deadline for a final decision on whether the 525,000-member carpenters' union would reaffiliate. In March, the carpenters withdrew from the federation, a move which also required the union to cease all activities with the AFL-CIO's Building and Construction Trades Dept. Carpenters President Douglas McCarron cited differences with federation leadership as a key reason for the union's departure.

The withdrawal was a blow to the AFL-CIO, particularly its treasury, which loses an estimated \$4 million in annual dues. In May, BCTD President Edward C. Sullivan held out an olive branch of sorts to McCarron, creating a task force to hold talks aimed at reuniting the carpenters with the labor federation. McCarron and Sweeney both said they would participate in the talks that were set to culminate at the December convention (ENR 5/14 p. 12).

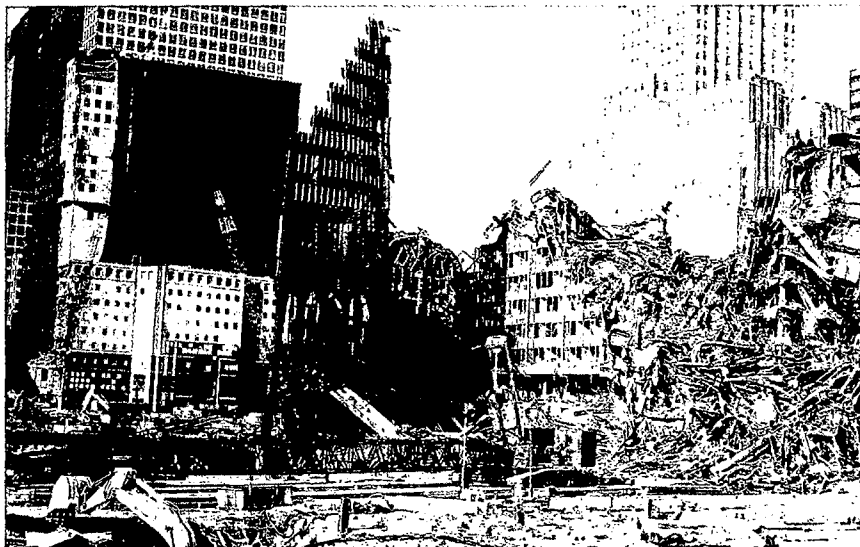
Instead, a decision has been put off until mid-January. Union sources say that Sweeney requested the delay after some scheduled meetings with McCarron never took place because of Sept. 11 events. Others say the carpenters are not expected to rejoin and Sweeney did not want to be embarrassed at a national convention.

Building trades leaders say they are encouraged that the discussions are continuing, but most say they don't expect the union to reaffiliate. A spokesman for the carpenters would only confirm that talks are still taking place. □

PHOTO COURTESY OF POTOMAC CROSSING CONSULTANTS

Project Management

BECHTEL WON'T RUN WTC CLEANUP BUT PROJECT CHANGES STILL LOOM



IN CHARGE New York City will run Ground Zero work, but contractor roles may shift.

BECHTEL GROUP INC. WILL NOT BE RUNNING cleanup of the World Trade Center. After soliciting a proposal last month from the San Francisco-based firm to manage the huge operation, Mayor Rudolph Giuliani has decided to keep the city's Dept. of Design and Construction in charge. However, cleanup officials say there may soon be a change in roles among the three existing site contractors.

"At this point, the city has decided to

continue managing the program as it has since Sept. 11," says Alexander Winslow, a Bechtel spokesman. He adds, however, that the company "will continue its current projects in the New York City area."

Sources say the Bechtel appointment may have been prompted by concerns over the cleanup's cost, particularly from the Federal Emergency Management Agency, which is funding parts of the project. There also was speculation about

Bechtel's political ties to the Bush White House and Congress. Giuliani administration officials also were apparently concerned that the number of DDC engineers and other staff on the cleanup might be affecting other agency projects.

But last month, the Army Corps of Engineers issued a report that praised DDC's management and noted that "continuity is the key at this juncture to retain corporate knowledge, lessons learned and strategic relationships." Bechtel's potential role also raised objections from the union that represents city-employed architects, engineers and other professionals. "The mayor made the right decision," says Claude Fort, president of Local 375 of the municipal employees' union.

Bovis Lend Lease, a prime WTC contractor, had submitted an official alternative proposal to Bechtel's. Site officials now say Bovis' role could increase as early as next month under a newly proposed pact that the other site contractors, AMEC and Tully Construction Co. Inc., reportedly support. All three would remain on site. Turner Construction Co. has completed its work as a quadrant contractor.

Cleanup officials also say they are reducing the number of contracts paid under a time-and-materials approach. Lump-sum contracts have been or will soon be awarded for such needs as demolition of the site's remaining structures, WTC 5 and 6, as well as tiebacks for the site "bathtub," and steel recycling. "We are gradually bidding out more work," says Paul Ashland, a top Bovis executive. "We're getting unit prices wherever we can." Officials also want more "competitive" prices for debris hauling that could save as much as \$750,000 per week. □

By Debra K. Rubin

Appropriations

SENATE CLEARS HOMELAND, N.Y. AID

THE SENATE HAS PASSED LEGISLATION that divides \$20 billion in already approved funds among homeland security, the Dept. of Defense and New York and other states hit by the Sept. 11 terrorist attacks.

Under the measure, approved Dec. 7, several agencies would get a total of \$8.5 billion for anti-bioterrorism and other homeland security purposes; DOD would receive \$2 billion, including hundreds of millions of dollars to rebuild the Pentagon; and \$9.5 billion would go to states affected directly by the terrorist attacks, with most of that sum going to New York.

Senate appropriators next will have to

work out a deal with the House, which splits up the \$20 billion differently.

Senate Appropriations Committee Chairman Robert Byrd (D-W.Va.) wanted to add the homeland and New York aid on top of the DOD appropriations bill for 2002. But President Bush opposed any funds beyond the \$40-billion emergency bill he signed Sept. 18. Led by GOP members, the Senate rejected Byrd's amendment on a procedural vote. Byrd then worked out a plan with panel Republicans to fund most of what he wanted within the \$20 billion that isn't yet allocated from the Sept. 18 measure.

The \$9.5 billion for New York and oth-

er Sept. 11 targets has \$5.8 billion in Federal Emergency Management Agency aid for removing World Trade Center site debris, repairs to transit lines and for non-construction uses. It also has \$2 billion in Community Development Block Grants for New York, \$100 million for Amtrak tunnels and \$100 million for transit security in the New York area.

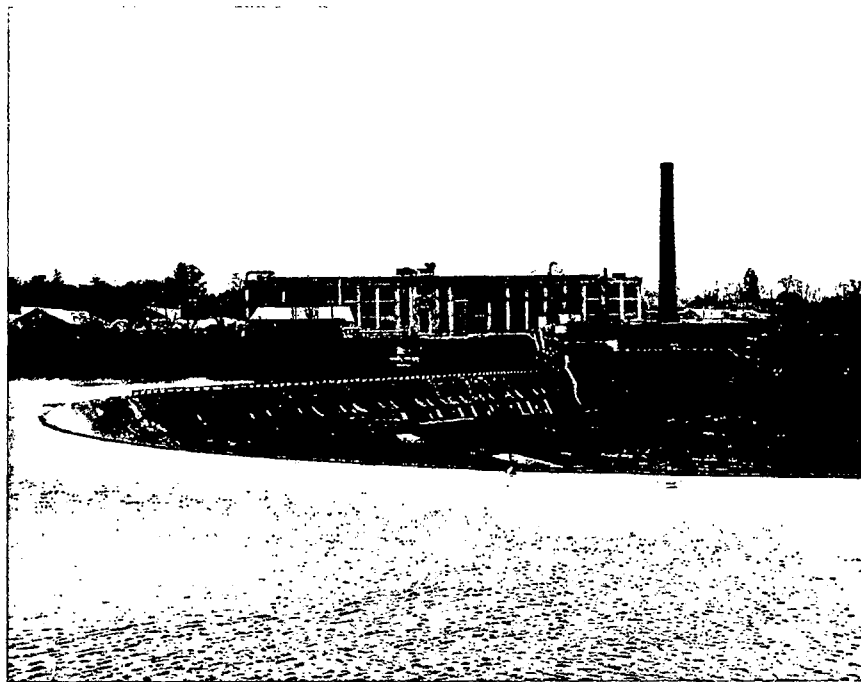
The \$8.5 billion for homeland security has \$3.1 billion to fight bioterrorism, including aid to finish a biocontainment building at Ames, Iowa. Other allotments include: \$139 million to the Corps of Engineers; \$30 million to the Bureau of Reclamation; \$131 million for the nuclear weapons complex; \$36 million to the Nuclear Regulatory Commission for nuclear powerplants; \$50 million for ports; and \$200 million in airport grants.

DOD's \$2-billion portion includes funds to repair the Pentagon. □

PHOTO BY DEBRA K. RUBIN FOR ENR

Hazardous Waste

EPA MOVES HUDSON PCB CLEANUP FORWARD WITH RECORD OF DECISION



REMEDiate Manufacturing site is source of Hudson River PCB contamination.

CLEANUP OF 35 YEARS OF POLYCHLORINATED biphenyl contamination in New York's Hudson River moved closer to reality Dec. 4 when the U.S. Environmental Protection Agency released its record of decision to a state agency for a three-week internal review. A final federal decision on the remediation plan could be issued in January—which will then start a three-year design phase for the estimated \$460-million project.

Still at issue are performance standards governing resuspension rates for the PCBs and dredging production rates. Air quality and noise standards have already been set in accordance with state and federal laws. EPA estimates that development of the project's design and performance standards, which are to be worked on concurrently, could take up to 36 months to finalize.

"There will be scientific peer review and public input for the standards, which could take a year," says Mary Mears, an EPA spokesperson in its New York City-based region. "The type of dredging and the locations of dewatering facilities and the final disposal site will be determined during the design phase." EPA has committed to transporting contaminated

material out of state.

One aspect of construction also included in the ROD could happen sooner. Fairfield, Conn.-based General Electric Corp., which discharged the PCBs into the Hudson from the 1940s to 1970s, has submitted plans to the state for a source control program at Hudson Falls, N.Y. The firm has opposed the EPA dredging mandate. The GE plan would involve a series of tunnels that would capture an estimated 3 oz. of PCBs leaching daily from bedrock. "It's a \$20-million program and we will seek proposals upon approval," says GE spokesman Mark L. Behan.

The ROD follows EPA Administrator Christine Todd Whitman's surprise decision last August to proceed with cleanup of a 40-mile stretch of the river below Hudson Falls and Fort Edward. Contractors will have to remove an estimated 2.65 million cu yd of spoils to clean about 150,000 lb of contaminants from the river bottom. The bottom will then be back-filled and spoils disposed of at the remote site. The lower 200 miles of the river was declared a Superfund site in 1984 because of PCB contamination. □

By William J. Angelo

Companies

ASBESTOS CLAIMS HIT HALLIBURTON

HALLIBURTON LOST UP TO \$3.8 BILLION in stock value Dec. 7 on news that a Baltimore jury awarded \$30 million in asbestos damages against its subsidiary, Dresser Industries. The Dallas-based oil services giant recovered about \$1 billion of the loss over the next trading days, but financial analysts do not expect it to regain much more.

"The market will take a wait-and-see approach unless Halliburton demonstrates great success in defending itself against these claims," says Joe Aguilar, oil services analyst for New Orleans-based Johnson Rice. The conglomerate's shares fell more than 40%, to \$12 from \$20.85. That climbed back to \$14.35 Dec. 10 after Halliburton executives convinced analysts that the market's response to the news was a "huge overreaction." The Baltimore award was the most recent of a string of judgments in recent months against Dresser. Juries in Texas have awarded \$100 million against the company, and juries in Mississippi have awarded \$21 million.

Halliburton Chairman and CEO David Lesar says the company will appeal each decision it has lost. "We are confident we will prevail," he says. Lesar adds that the 194,000 claims resolved so far have been settled for an average of \$800. According to Lesar, the company has \$2 billion in insurance to cover outstanding claims and does not expect firm liability to go beyond that. Halliburton also has a strong balance sheet and is profitable, he says, adding that it has been awarded two new liquid natural gas projects and expects to announce a third this week.

Halliburton's shares have been selling at a discount for some time, says Aguilar. The valuation is between \$6 billion and \$7 billion. "It would be more like \$16 billion or \$17 billion without asbestos liability," he says. But the liability is not nearly the amount of the difference, says Aguilar, who claims that much of the fear in the marketplace comes from the financial difficulties caused by asbestos claims on other smaller companies. "But Halliburton has the strength to withstand this," he says.

Other company stock values were also shaken by the judgment against Halliburton. ABB's shares were down more than 10%. The Swiss firm's liability stems from its now-defunct U.S. unit Combustion Engineering. □

By Mary Buckner Powers

PHOTO BY AP/WIDEWORLD

Airports

CHICAGO MAYOR, ILLINOIS GOVERNOR AGREE TO AVIATION EXPANSION PLAN

PLANS FOR BOTH A \$6-BILLION expansion of Chicago's O'Hare International Airport and a possible new suburban airport in Peotone, Ill., will go forward following an agreement by Illinois Gov. George Ryan (R) and Chicago Mayor Richard M. Daley (D) early this month.

Last June, Daley had unveiled the O'Hare expansion plan, which includes a new 7,500-ft runway. (ENR 7/9 p. 14). Three runways would be relocated, with the longest lengthened up to 10,800 ft. Two existing runways would be lengthened up to 11,500 ft and 13,000 ft. Together the runways would increase O'Hare's capacity for takeoffs and landings to 1.6 million a year from its current rate of 930,000. The Daley plan also includes a new west-



RUNWAY DEAL Mayor Daley shows \$6-billion plan for O'Hare.

ern terminal and rail extensions.

But it faced opposition from the governor and his suburban supporters over noise and environmental issues, as well as from those who favor building the

new third Chicago area airport. With the new agreement, however, both airport plans will apparently go forward. "I believe this is one of the most significant agreements ever reached between a Chicago mayor and an Illinois governor," Daley said Dec. 5.

Daley and Ryan will seek federal funds to build the Peotone airport, while O'Hare plans will now include an additional \$450 million for soundproofing homes and schools near the giant airport. The expansion plan will also involve acquiring more than 400 acres.

U.S. Sen. Richard Durbin (D) is looking for a vehicle bill in which to insert the agreement for legislation so it can be approved by Congress. He tried with a Dec. 7 defense appropriations bill but had to withdraw it.

"Chicago's needed those new runways for a long time," says Evan Futterman, vice president for aviation at HNTB, Kansas City, which does consulting work for O'Hare. He notes that the agreement will generate work for aviation industry firms, which have experienced a slowdown since Sept. 11. □

Industry Image

REPORT: LABOR IS LOSING GROUND

CONSTRUCTION'S DETERIORATING image is hurting recruitment, but deteriorating pay and working conditions in many countries show that the image is to a large extent deserved.

That was the message that emerged from a meeting in Geneva, Switzerland, starting Dec. 10 of government agencies, unions and employers called by the United Nations' labor agency. The Swiss-based International Labour Organisation (ILO) says that increased casual employment and subcontracting have led to erosion of working conditions, including safety practices.

"In developed countries, many gains we have made in the past for construction workers have been eroded," says Jill Wells, ILO's construction specialist, who wrote the report. "In developing countries, the problem is one of a race to the bottom in terms of labor standards," she adds.

For European craft unions, ILO's gritty depiction of construction is accurate. A "social dialogue" between govern-

ments, employers and unions must help cure the industry's image of being "badly paid, difficult, dirty and dangerous," says Marion F. Hellmann, Industrial Relations Secretary at the International Federation of Building and Wood Workers, Geneva.

Employers say the ILO's report is wrong because it lumps together countries that need to be considered separately. And that led it to make exaggerations, says the Paris-based Confederation of International Contractors' Associations. "There is a big difference between developing and developed countries," says Director General Claude Revel. "Contractors make a lot of effort to improve conditions of workers and do training," she adds.

ILO's 70-page report is built around the premise that "construction is regarded almost everywhere as a low-status job." A good example is Spain, where unemployment is about 12%. Nevertheless, contractors must recruit from North Africa and further afield, says ILO. "In

many other European countries the construction work force is aging and retirements are not being offset by new recruits," the report says. In the U.S., better than average pay, which previously maintained construction recruitment, has eroded over 20 years, leading to shortages, it says.

Construction's image seems poor in developing countries, too. Only 3.8 % of Indians surveyed in Delhi saw construction as suitable for their children. The industry scored no better in China, where it ranked lowest out of 69 occupations in a poll of young people. Kenyans enter construction "as a last resort," suggests ILO.

Short-term employment tended to raise pay differentials between core and casual workers in many countries.

Long working hours have become endemic, even in developed countries, such as the U.K., where "a 10- to 12-hour day, for six days per week, is the norm." And temporary workers tend not to benefit from employers' social security contributions. With spreading subcontracting and piecemeal work, health and safety practices are deteriorating, says ILO. For example, accident rates in Spain are up 50% in the seven years to 1999. □

By Peter Reina

PHOTO BY AP/WIDEWORLD

Energy Development

IN-SITU MOVES TO THE MAINSTREAM

A CANADIAN OIL COMPANY IS BIDDING TO become a major developer and refiner in northeast Alberta's oil sands. Petro-Canada, Calgary, has filed for permits for an 80,000-barrel-per-day in-situ bitumen-production project and a refinery conversion project. Total costs are estimated between \$3 billion and \$3.6 billion.

The development, estimated between \$444 million and \$500 million, would be located at Meadow Creek, Alberta, about 45 kilometers south of Fort McMurray. It would extract bitumen using a state-of-the-art steam-assisted gravity drainage (SAGD), which uses vertical pairs of horizontal wells driven into deep seams of oil sands. Steam injected into the upper well heats the bitumen, causing it to flow into the lower well, from which it can be pumped to the surface.

An alliance of Petro-Canada, Calgary-based Colt Engineering Corp. and Flint Energy Services Ltd., Edmonton, is constructing a similar 30,000-bpd SAGD project at MacKay River, 60 km northwest of Fort McMurray. That will be only the second commercial application of SAGD technology, says Chris Dawson, Petro-Canada spokesman. The first, Calgary-based Alberta Energy Co. Ltd.'s 20,000-bpd project at Foster Creek, Alberta, began production last month, says an AEC spokesman. Production at MacKay River is scheduled for late 2002.

Dawson says the Meadow Creek project probably will have features comparable to MacKay River's. These would include 60 well pairs on concrete pads, a steam line to the wellheads and a return line for bitumen, holding tanks, a pipeline to market or to a refinery and a cogeneration plant to provide steam and electricity. "It's reasonable to assume that there will be an alliance of some sort. It's working very well at MacKay River," he adds. Petro-Canada owns 75% of the Meadow Creek project, with Nexen Inc., Calgary, owning the rest.

Petro-Canada also is evaluating a conversion of its Edmonton refinery at a cost estimated between \$2.6 billion and \$3.1 billion. The two-phase program would convert the facility from refining 80,000 bpd of light crude feedstock to processing 85,000 bpd of bitumen in the first phase, with a subsequent possible expansion to 170,000 bpd.

Production at Meadow Creek and operation of the converted refinery both are anticipated in 2007. □

PHOTO BY STEVE DANIELS FOR ENR

Infrastructure

LIGHT RAIL, BUILDINGS AND BRIDGE WILL SHAPE TACOMA'S NEW IMAGE



GLASS BRIDGE Span of sculptures will link areas that are undergoing construction.

TRACK-LAYING HAS BEGUN FOR A 1.6-mile light-rail segment in Tacoma, Wash., the latest in millions of dollars worth of new construction that the city hopes will augment its new image.

By early 2003, the first operational segment of Sound Transit's \$2.1-billion system will open in Tacoma, making it the first city in Washington state to have light rail. The segment will link the Tacoma Dome arena and the city's downtown, and eventually would be linked to a 14-mile system into Seattle.

Construction of five Tacoma light-rail stations will begin when the roadway is in place, says Martin L. Strong, project manager for Sound Transit's consultant, URS Construction Services. A contract for installation of catenary wires and poles is likely to be let in January. Overall, Sound Transit now has 45 separate capital projects under way, says spokesperson Lee Somerstein.

The system will wind into a downtown waterfront that is the focus of a major revival. Projects under way include a \$90-million, 240,000-sq-ft convention center, a \$54-million, 75,000-sq-ft glass museum, a \$25-million relocated art museum, and a \$100-million apartment and townhouse project. There are 1,300 residential units under construction or in planning in downtown Tacoma, says Eric Steinmeyer, commercial account manager for the local Rainier Title Co.

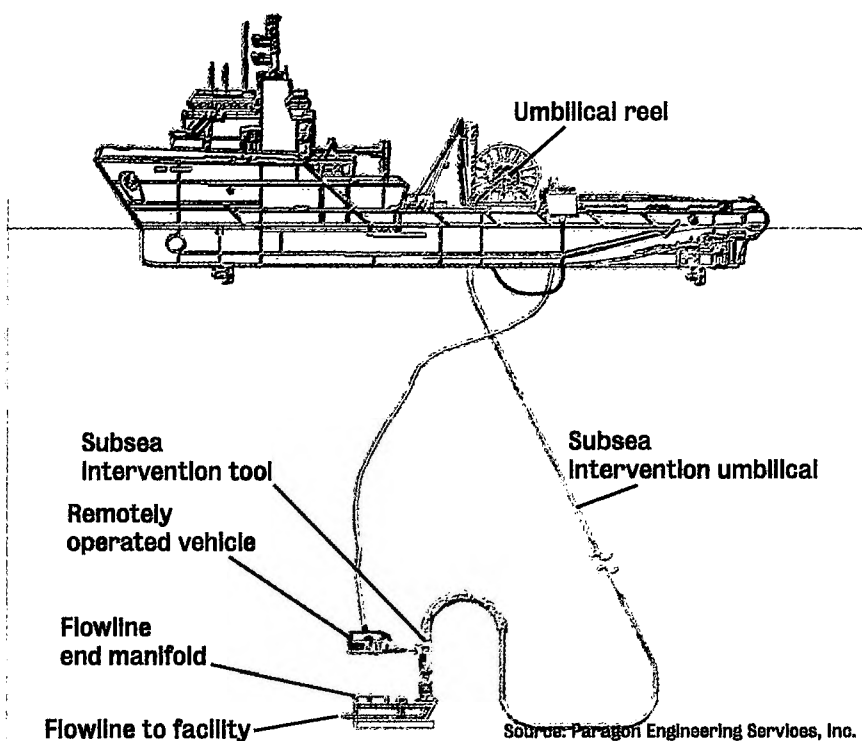
The University of Washington, which opened a Tacoma branch campus in 1990, has invested heavily in the port neighborhood, spending \$100 million on new construction and conversion of 120-year-old warehouses into campus facilities. The district will link to the waterfront by a \$16-million "Bridge of Glass" across State Rte. 507 that will be adorned with glass works. In addition, Simpson Timber Co. has invested nearly \$300 million in its packaging plant at the Port of Tacoma to minimize sulfurous discharges that generated what residents call the "Tacoma Aroma."

Tacoma officials also hope that a \$100-million investment by city-owned Tacoma Power in a city-wide fiber-optic system will lure high-tech firms out of higher-rent spaces in Seattle. The spark began several years ago when Tacoma Power automated control systems linking eight hydroplants and installed computer-read meters through its 180-sq-mile service area. By 1998, nearly 800 miles of self-healing fiber had been installed and the utility invested heavily in cable and phone systems. More than 125 businesses have tied into the fiber network, and Qwest and AT&T, prodded by competition, have invested nearly \$200 million in new infrastructure. The city is now eyeing the voiceover Internet protocol phone market. □

By Steve Daniels in Tacoma

Operations & Maintenance

SUBSEA INTERVENTION TOOL SAVES BY REPLACING COSTLY SOLVENT LINE



ONE-SHOT WONDER Tool is good for one or two interventions in emergencies.

BY MODIFYING A TOOL TO ASSURE PRODUCTION flow from deepwater subsea oil and gas wells, a major Gulf of Mexico producer has saved money on design of a system entering production this month. Standardizing wellhead design to use the new tool will allow the savings to be repeated on future wells.

The subsea intervention tool was designed by Paragon Engineering Services Inc., Houston, for Shell Exploration & Production Co., New Orleans, to remediate flowline blockages at Shell's Serrano and Oregano fields. Blockages can form under certain temperature and pressure conditions. An earlier version was installed on Shell's Mensa production system in the mid-1990s. But where the Mensa system's tool remediated only hydrate blockages, the Serrano-Oregano tool also can remediate asphaltene and paraffin blockages.

A flowline blockage can defer production for several months, says Sean Salter, Shell's Serrano-Oregano project execution team leader. Primary defenses against blockages, including the type of

flowline, insulation and others, are designed into a production system, he says. He describes the flow-assurance tool as "a prudent insurance policy," somewhat like having a fire extinguisher available.

The 10-ft-tall, 8,000-lb tool normally will be stowed on a service vessel and lowered to the sea floor and connected to the flowline manifold when needed. Actuated by a remotely operated vehicle, it will allow process fluids and chemicals to be fed through the umbilical to restore the line's flow. The tool then will be disconnected and retrieved to the vessel.

Salter declines to give the cost of the tool but calls it an insignificant part of the combined capital cost of more than \$250 million for both fields. Having it available allows the system to be designed without a separate 2-in. line or umbilical from the production platform eight miles away that would be required for solvent injection to dissolve asphaltene depositions. Because Shell has standardized wellhead design to accommodate the tool, all future subsea wells will have the same capability. □

Water Supply

DESALINATION GETS NEW RESPECT

ONCE CONSIDERED A COSTLY WHITE ELEPHANT, seawater desalination is getting a vote of confidence from water officials in Southern California. Two major agencies this month are taking strides toward bringing plants on line by mid-decade.

The Metropolitan Water District of Southern California, a cooperative serving 17 million people in six counties, announced Dec. 4 that it is seeking proposals to produce up to 50,000 acre-ft of desalinated ocean water per year—effectively 45 million gallons per day—at one or more plants. Public-private partnerships must include at least one of Los Angeles-based MWD's 26 member agencies. MWD says it will subsidize up to \$250 per acre-ft of potable water. The agency now supplies about 4 million acre-ft annually, paying \$431 per acre-ft for the half of the total imported from northern California and the Colorado River.

On Dec. 6, the San Diego County Water Authority approved a feasibility study by PB Water, a unit of New York City-based Parsons Brinckerhoff Inc., for a 50-mgd desalination plant in Carlsbad. This facility would be the largest of its kind in the western hemisphere, says Walter Winrow, executive vice president in the San Diego office of Poseidon Resources Corp., the project's developer. Winrow declines to speculate on the cost, but this year Poseidon awarded a \$75-million turnkey contract to Ogden Water Systems Inc., Fairfield, N.J., for a 25-mgd desalination plant in Tampa Bay, Fla. (ENR 10/16/00 p. 46).

Lower costs linked to the refinement of reverse-osmosis technology are making seawater desalination more attractive, water officials say. Although costs once hovered near \$2,000 per acre-ft, "Talk out there is along the lines of the \$1,000 range and lower," says Anatole Falagan, assistant manager of MWD's water resource management group and manager of the desalination RFP program. Water costs for the Carlsbad plant are estimated at \$794 per acre-ft, says Ken Weinberg, SDCWA's director of water resources.

SDCWA staff plan to make a recommendation on the Carlsbad proposal in January. Initial letters of intent to respond to MWD's request for proposals are due by Feb. 14 and the agency will make a decision in June, says Falagan. Teams would be required to start construction within two years of being awarded the contract, he says. □

LEGAL

Insurer Had Duty to Defend in Lead Paint Lawsuit

An insurance company had the duty to defend an insured property owner in a lawsuit involving alleged injuries suffered by a child from lead paint in a rental apartment, the Pennsylvania Supreme Court has ruled. The court said that the pollution exclusion clause in the policy did not apply to slow degradation that allows paint to be ingested, even though lead paint can be considered a pollutant.

Steven Brown, a minor, lived in a residential rental property owned by Clifford and Barbara Steely from 1988 to 1993, and then lived two years in a rental property owned by Jack and Shirley Yeager. In 1996, Steven's mother, Ethel Brown, sued the Steelys and Yeagers alleging negligence, breach of implied warranty of habitability and misrepresentation. She alleged that Steven was injured by lead poisoning and suffered from neurodevelopmental delay.

The Steelys were insured under commercial general liability policies issued by the Lititz Mutual Insurance Co. and the insurer sought a declaratory judgment from a state court as to whether the policy's pollution exclusion relieved it of responsibility. The exclusion covered "bodily injury or property damage arising out of the actual, alleged or threatened discharge, dispersal, release or escape of pollutants." It defined pollutants as "any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals and waste."

Pollution exclusion did not encompass the slow deterioration of lead paint in housing.

The trial court denied Lititz's motion for summary judgment, saying that the definition of pollutants and the transmission of them were ambiguous in this case. It said that terms such as "discharge" and "dispersal" were terms denoting environmental pollution. The court said that Lititz had a duty to defend. Both parties appealed.

The state's Superior Court reversed, saying the insurer had no duty to defend because lead-based paint was a pollutant and the language in the exclusion encompassed "all types and degrees of movement."

"We conclude that the definition of pollutant...unambiguously encompasses lead-based paint," said the state's Supreme Court in another reversal. It endorsed a plain-meaning approach, but said it is necessary to focus on the particular materials when determining whether there has been a discharge, dispersal, release or escape. "The critical question is whether the process by which lead-based paint becomes available for human ingestion/inhalation involves a type of motion" under the exclusion, said the court. "One would not ordinarily describe the continual, imperceptible and inevitable deterioration of paint...as a discharge, a release or an escape....We conclude, therefore, that the pollution exclusion clause does not preclude coverage." *Lititz Mutual Insurance Co. v. Clifford Steely*, 761-2001 (Sup. Ct. Pa. Mid. Dist., Nov. 30, 2001).

City Could Rebid Job With Reduced Scope

A contractor whose low bid exceeded a city's budget did not have a right to be the only contractor to submit a reduced bid after the city's reduced the scope of work, a Georgia appeals court ruled.

The City of Alpharetta, Ga., advertised for bids for the construction of a softball field and parking lot. The city had allotted \$225,000 for the project. The solicitation stated that the city reserved the

right to reject all bids and waive any formalities.

Five companies bid on the project. Each of the bids was more than \$100,000 over the city's budget. The lowest bid was submitted by Sims Asphalt Co. Inc. for \$339,225. The city then reduced the scope of the project and asked the companies to revise their bids. Lewis Construction & Consulting Inc. submitted the lowest revised bid of \$223,685 and the city awarded the contract to Lewis.

Sims sued the city, arguing that the city should not have rebid the project to all the bidders, but should have allowed

only Sims to revise its bid based on the reduced scope. The trial court denied the city's request to deny Sims' claims before trial.

The city appealed to the Georgia Court of Appeals and won. "While the city might have chosen to adjust the scope of the project only with Sims after it submitted the initial lowest bid, the city was not obligated to do that given the city's clear right established in the advertisement for bids to reject all of the bids and waive any formalities in the bidding process." *Letchas v. Sims Asphalt Co.*, 550 S.E.2d (Ga. App. 2001).

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PEOPLE

Roy L. Burkett has been promoted to vice president of operations of S.I. Goldman Co. Inc., a Longwood, Fla. mechanical contracting firm owned by Houston-based Comfort Systems USA. He has been with the firm since 1989 and has



BURKETT

worked in design, estimating and project administration. In his new position, Burkett will be responsible for overseeing the operations of the company, including a fabrication facility and projects throughout Florida.

Mosley Construction Inc., a St. Louis-based firm offering general contracting and construction management services with design-build capabilities, has named **Ronald B. Glaser** vice president of preconstruction services. Formerly, he held managerial positions at Fru-Con Construction Corp. and Tarlton Corp.

Charleston, S.C.-based LS3P Associates Ltd., an engineering and architectural firm, has hired **Barbara Price** as vice president and director of federal programs. Prior to joining LS3P, she served as chief operating officer at Odell Associates. She also is a former employee of HOK Architects.



PRICE

Maser Consulting PA, an engineer headquartered in Matawan, N.J., has named **Glenn E. Falcey** as director of operations. He will oversee all day-to-day operational functions of the firm. Most recently, he was project manager with the New Jersey Dept. of Transportation. He has over 31 years of experience in transportation planning, design and construction, and capital program management.



FALCEY

Ronald E. Thompson has been promoted to senior vice president of STV Inc., a subsidiary of Douglasville, Pa.-based STV Group Inc. He joined the architectural, engineering, planning, environmental and construction management firm in January as vice president

and manager of STV's South Atlantic region.

St. Louis-based architect-engineer HOK Group Inc., has hired **Paul DeCelles** to serve as group vice president and architectural practice leader in its Chicago office. Previously, he spent 20 years with Skidmore, Owings & Merrill, where he led professional planning and architectural teams on a variety of large-scale projects such as the reconstruction of Chicago's State Street.



DECELLES

Robert G. Egge has been named president and CEO of Minneapolis-based architectural firm Setter Leach & Lindstrom. He succeeds **George Theodore**, who will remain chairman until his retirement at the end of 2002. Egge is an 18-year veteran of the firm and heads its government business team. He will also continue to serve as principal-in-charge

for military projects. The firm has also named **Howard Goltz** and **Jerome Ritter** as senior vice presidents.

John Treichel, a 20-year veteran of Maguire Group Inc., an architect, engineer and planner in Foxborough, Mass., has been promoted to manager of the



TREICHEL

company's new Military Projects Group. Based in the New Britain, Conn., office, he will head the new business group formed by Maguire due to a large percentage of public sector work coming from a variety of military organizations. He

was chief engineer of construction management in the Connecticut Transportation Group.

Please mail press releases of executive appointments or promotions only to People Editor **Barbara Nathaniel**. These also can be e-mailed to her at nathaniel@mcgraw-hill.com. Please include color photographs where possible.

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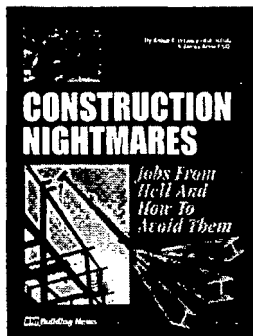
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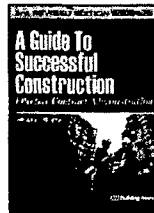
Arthur F. O'Leary, FAIA, MRAI, a 40 year construction project veteran, relates actual jobs gone bad from the world of construction, dealing with plans, extras, delay, interference, scheduling, extra work, change orders, defective construction, inadequate supervision, incompetent contractors, and just about every other problem that happens on a construction job. James Acret provides a legal analysis and the probable outcome of the potential arbitration or lawsuit. The analysis deals with contracts, cancellation of contracts, walking off the job, removing a contractor from the job, responsibility of the bonding company, mechanics liens, insurance coverage, arbitration, mediation, lawsuits, important provisions in construction contracts, responsibilities of the architect and the owner, liability for construction defects and much more.



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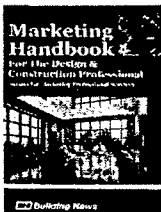
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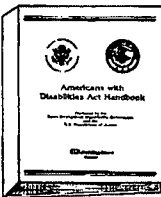


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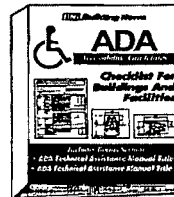
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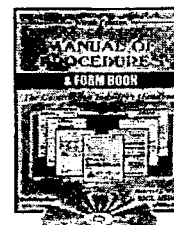


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EQUIPMENT TRACKS & TRENDS

COMPACT RUBBER-TRACKED LOADER GOES WHERE SKID STEERS FEAR TO TREAD

Caterpillar Inc.'s line of compact loaders just became more versatile with the addition of two new rubber-tracked Multi Terrain Loaders that can work in soft wet conditions and on slopes as steep as 3:1.

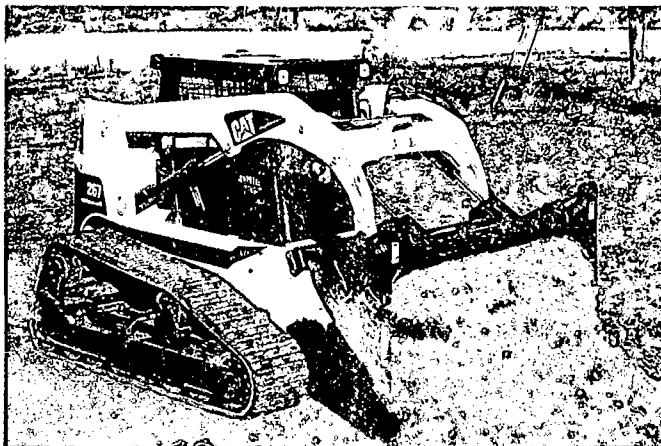
"The MTL will do some jobs that a skid steer cannot do at all and others that would have to wait for the weather to clear up and the ground to dry up," said product manager Reid Walitt at the launch at Cat's Peoria demonstration center on Dec. 5.

The new loaders are an offshoot of Cat's alliance with undercarriage expert ASV Inc., Grand Rapids, Minn. They have updated the "maximum traction and support system" undercarriage developed by ASV and combined it with the upper portion of similar-sized Cat skid steer loaders.

The MTLs exert ground pressure of only 3.1 psi. "They won't walk on water, but they are the closest thing to a machine that will," said Kevin Ingall, manager of compact products. "In places where a person would walk and sink, this machine will stay on top." The high traction and low ground pressure also help the loaders

minimize damage on sensitive surfaces such as turf.

There will eventually be five sizes of Cat MTLs. The 267 and 277 models, which have operating capacities in the 2,000 to 3,000-lb range, are now in production. The 277 has a larger, 74-hp Cat diesel engine. A third model will be in production next spring and two more later in 2002.



SMOOTH RIDE Multiple levels of suspension assure comfort.

ASV offers MTLs that range down and also up in size from these.

Ingall cautioned that the rubber-tracked machines are not appropriate for hard improved surfaces or rocky terrain. He also pointed out that MTLs are not intended to replace skid steers. "If a skid steer can do the task, it will have a lower overall acquisition and operating cost," Ingall said.

A significant advantage is that the MTL has multiple levels of suspension. Each track assembly is mounted to the chassis through a set of flexible torsion axles, and each assembly can flex independently of the other. The tracks can crawl over obstacles and uneven ground without losing traction and with minimal shock to the operator.

By Janice L. Tuchman in Peoria

EQUIPMENT SALES HAVE FALLEN 21.4% BEHIND LAST YEAR'S PACE BUT EQUAL 1999'S LEVEL

Construction equipment manufacturers are struggling with a sharp downturn in sales. Through the first three quarters of this year, unit sales were down 21.4% from the same period a year ago, according to the latest survey conducted by Milwaukee-based Construction

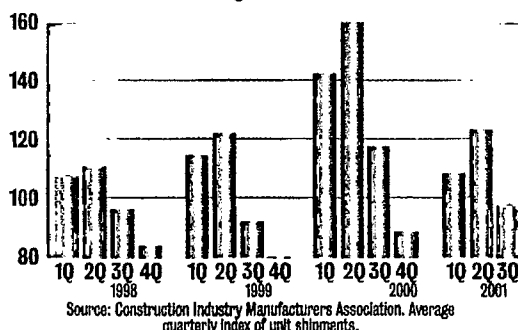
Industry Manufacturers Association. However, sales may just be returning to normal levels after a very strong 2000. This year, unit sales are even with 1999's volume and up 4.6% from 1998.

"Our survey results indicate that a recession continues in the construction equipment industry," says CIMA

President Dennis Slater. He points to cuts in the capital spending plans, excess inventories and the aftermath of the Sept. 11 terrorist attacks as contributing to the downturn. CIMA members expect sales to remain slow through at least the next few quarters, says Slater.

On the positive side, Slater hopes that next March's CONEXPO-CON/AGG equipment exposition in Las Vegas will provide its traditional boost to equipment sales. "We already have hit a record for exhibit space reserved, so we're hopeful this will signal the beginning of an upswing for our industry," he notes.

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CONSTRUCTION ECONOMICS

COST INDEXES



CONSTRUCTION COST INDEX
The CCI ended 2001 with a 1.7% gain. This is down from year-end increases of 2.6% for 2000 and 2.3% for 1999.

20-CITY 1913=100	DEC. 2001 INDEX VALUE	% CHG. MONTH	% CHG. YEAR
CONSTRUCTION COST	6390.21	-0.3	+1.7
COMMON LABOR	13461.32	0.0	+3.1
WAGE \$/HR.	25.58	0.0	+3.1

BUILDING COST INDEX

The recent collapse in lumber prices slashed the BCI's annual inflation rate from 1.5% last month to just 0.8%.



20-CITY 1913=100	DEC. 2001 INDEX VALUE	% CHG. MONTH	% CHG. YEAR
BUILDING COST	3577.30	-0.5	+0.8
SKILLED LABOR	8066.76	0.0	+3.3
WAGE \$/HR.	33.67	0.0	+3.3



MATERIALS COST INDEX
Lumber prices have fallen 6.7% in the last two months, dragging the MCI 3.3% below 2000.

20-CITY 1913=100	DEC. 2001 INDEX VALUE	% CHG. MONTH	% CHG. YEAR
MATERIALS	2056.31	-1.5	-3.3
CEMENT \$/TON	81.83	0.0	+1.9
STEEL \$/CWT	27.58	+0.3	-1.4
LUMBER \$/MBF	453.22	-5.3	-6.8

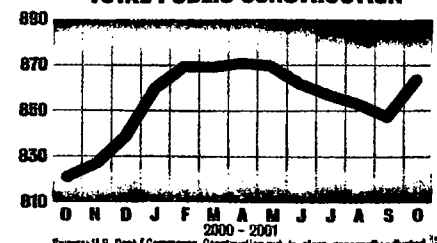
Strong October Checks Slowdown in Growth

Construction markets posted a strong rebound in October, after five consecutive months of slowing activity. Between April and September, the seasonally adjusted annual rate of construction fell 2.7% from a peak of \$870 billion to \$847 billion, according to the U.S. Dept. of Commerce. This dropped the industry's annual growth rate to 4%. During October, total construction activity bounced back 1.9%, bringing the annual growth rate to 5.2% (see chart).

All sectors of the industry joined in the rebound. Public construction increased 3.4% during the month and residential work was up 1.3%, including a 2.5% increase for apartment building construction. Private nonresidential building work increased 1.8% during October but remained about 7% behind last year's pace.

The strong private educational building market flexed its muscles again in October when it hit an annual pace of \$14.7 billion. This was 10.5% above the level of the previous month and 21.1% ahead of October 2000's pace. Office building construction reversed a six-month long decline by jumping 4.4% in October. Despite the increase, the office market was still 13% below a year ago.

TOTAL PUBLIC CONSTRUCTION



PRIVATE CONSTRUCTION

MARKET: ANNUAL VALUE \$/BL.	2001 OCT.	2001 SEP.	% CHG. MO.	% CHG. YEAR
Total Private Construction ¹	658.30	648.79	+1.5	+2.1
Residential Buildings ²	398.62	393.58	+1.3	+7.7
New housing units	281.64	280.21	+0.5	+8.4
1 unit	249.02	248.36	+0.1	+8.1
2 units or more	32.63	31.85	+2.5	+20.4
Nonresidential Buildings	199.64	196.05	+1.8	-7.4
Industrial	27.69	30.50	-8.2	-13.8
Office	51.26	48.11	+4.4	-13.1
Hotels, motels	13.68	14.09	-2.9	-14.5
Other commercial	60.41	57.95	+4.3	-3.8
Religious	7.98	8.23	-3.0	-2.3
Educational	14.68	13.28	+10.5	+21.1
Hospital and institutional	15.07	14.28	+5.5	-1.0
Miscellaneous buildings	6.88	8.60	+3.3	-12.4
Telecommunications	NA	21.15	NA	NA
All Other Private	2.44	2.62	-6.8	-21.8

SOURCE: Dept. of Commerce. Construction put-in-place. 1 Includes railroads, electric power, gas, petroleum pipelines and farm buildings not shown separately. 2 Includes improvements.

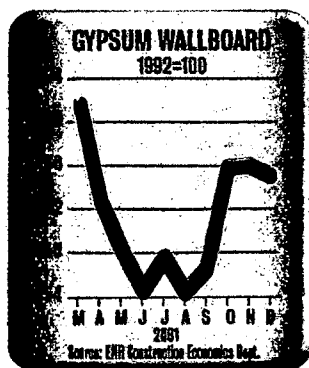
For a complete history of cost indexes, visit our Website, enr.com.

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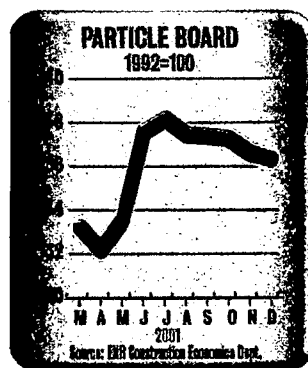
ITEM	UNIT	ATLANTA	BALTIMORE	BIRMINGHAM	BOSTON	CHICAGO	CINCINNATI	CLEVELAND	DALLAS	DENVER	DETROIT	KANSAS CITY
2" X 4", s4s, pine	mbf	448.00	+400.00	-242.00	-305.00s	510.00	---	-475.00s	404.00	---	-434.00s	---
fir/mbf	mbf	---	---	+488.00	---	580.00	405.00	---	---	446.00	474.00	540.00
common	mbf	430.00	430.00	-242.00	-305.00s	405.00	335.00	-495.00s	400.00	425.00	+525.00s	540.00
2" X 6", s4s, common	mbf	450.00	+390.00p	-347.00p	-295.00s	405.00c	320.00p	-445.00c	412.00p	443.00h	+525.00s	520.00f
2" X 8", s4s, common	mbf	460.00	-375.00p	-318.00p	-305.00s	425.00c	335.00p	-450.00c	385.00p	441.00h	+525.00s	510.00f
2" X 10", s4s, common	mbf	480.00	+445.00p	+344.00p	685.00s	465.00h	395.00p	-483.00p	682.00p	473.00h	+605.00s	828.00f
4" X 6", s4s, common	mbf	940.00	385.00p	520.00p	1275.00s	730.00f	-800.00	-790.00	920.00	925.00	-690.00p	---
4" X 12", s4s, common	mbf	---	650.00p	460.00p	---	-760.00	890.00	---	---	1210.00	-715.00p	1680.00
PLYWOOD, 5/8" thick	msf	425.00s	+365.00	+343.00p	-489.00	470.00f	322.00	+480.00p	340.00	490.00	+709.00r	450.00
PLYFORM, 3/4" thick	msf	812.75s	810.00	584.00	955.00	650.00p	-680.00	900.00	530.00	815.00	875.00	690.00
PARTICLE BOARD, underlayment, 5/8"	msf	320.00	-185.25	250.00	505.00	340.00	149.00	475.00	300.00	458.00	-315.00	230.00
GYPSUM BOARD, regular, 1/2"	msf	185.00	-180.00	+180.00	249.00	170.00	238.00	168.00	117.00	267.00	205.00	235.00
5/8"	msf	190.00	-210.00	170.00	205.00	185.00	245.00	---	127.00	334.00	---	235.00
type-X, 1/2"	msf	210.00	-180.00	+190.00	+249.00	190.00	238.00	183.00	120.00	310.00	225.00	235.00
5/8"	msf	132.00	-210.00	+190.00	280.00	215.00	245.00	189.00	140.00	320.00	225.00	223.00
ROOFING INSULATION, unfaced	sf	4.85	2.95	4.40	6.20	6.00	4.65	7.76	3.25	3.16	6.95	7.60
WALL INSULATION, unfaced	sf	3.26	3.40	4.40	3.70	4.50	2.00	5.22	2.90	2.85	4.02	6.60
PIPE INSULATION, fiberglass	sf	5.70	-8.39	+4.35	6.62	5.00	3.40	---	4.20	7.50	6.09	6.28

+ or - denotes price has risen or fallen since previous report. c=soft, d=douglas, f=fir, h=hemfir, p=pine, s=spruce. Monthly market quotations by ENR field reports Dec. 17, 2001. All prices are spot prices quoted from a single source. Common lumber prices are those quoted for the most popular species in the area. Quotes are delivered prices. Some prices may include taxes or discounts for prompt payment, etc. Product specification may vary.

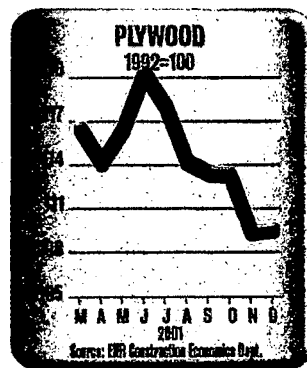
ENR'S MATERIAL PRICE INDEXES



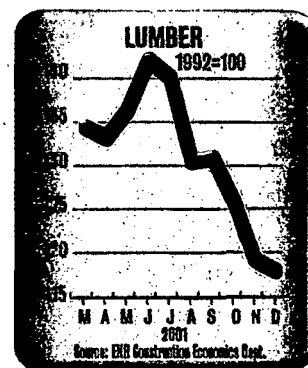
A price rally stalled in the last two months of the year.



Prices have gradually eroded from last July's peak.



Prices leveled off after five months of declines.



December's 1% decline left prices 15% below 2000.

Collapse in Lumber Prices Continues

The lumber market is still seeking a bottom as prices fell again during December. This month's 1% price cut for ENR's composite price of the most commonly used species of 2 x 4s follows declines of 5% during November and 4% in October. The year-end price collapse left the composite 2 x 4 lumber price 15% below a year ago. Prices are down 9% from a year ago for 2 x 4 pine and 4% for 2 x 4 fir.

Plywood prices leveled off in December after falling 4% during November, ending the year 7% below a year ago. Gypsum wallboard prices never recovered from last year's collapse, finishing 2001 more than 2% lower than the previous year.



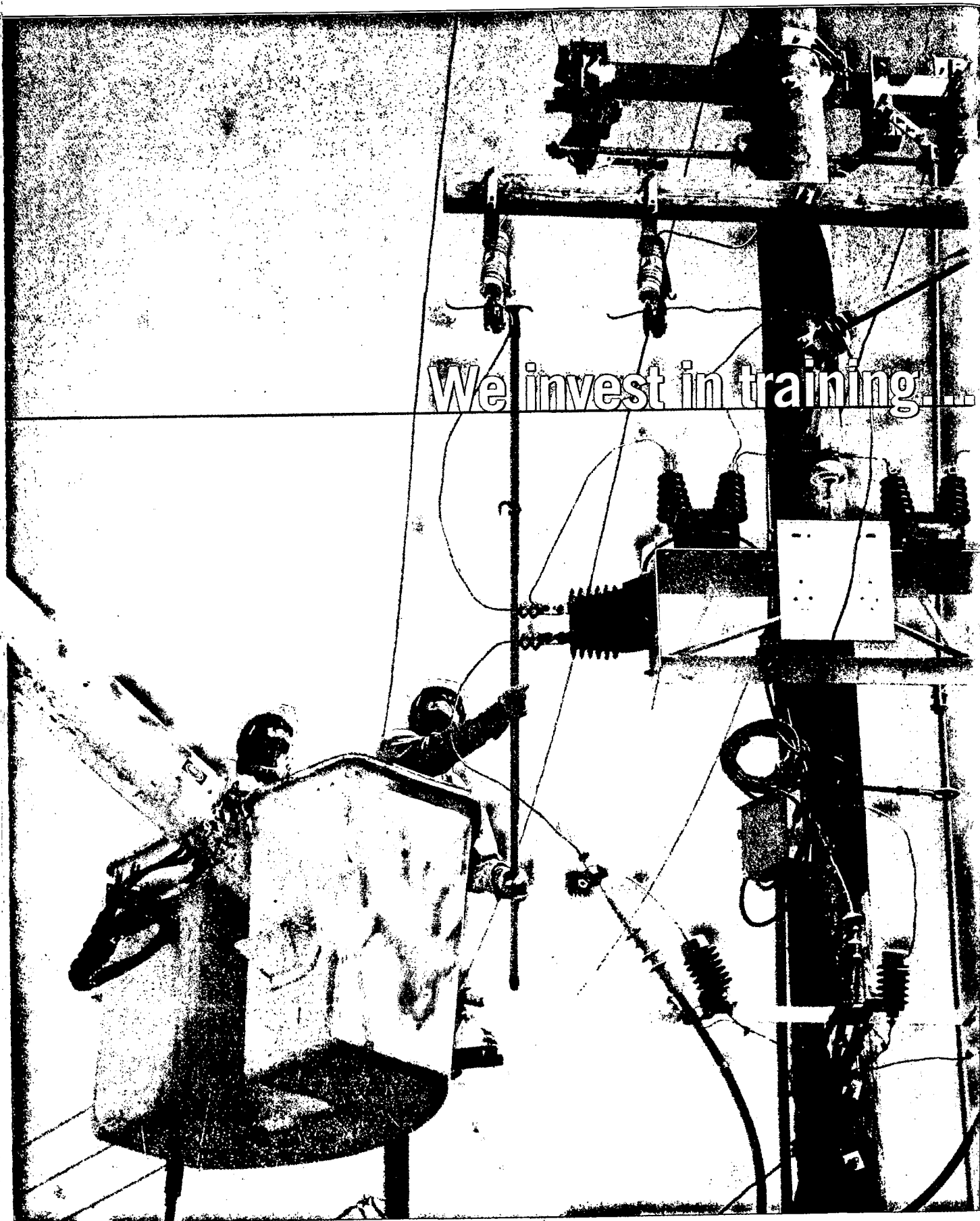
20-CITY AVERAGE

ITEM	UNIT	PRICE	% CHG. MO.	% CHG. YEAR
2 X 4", s4s, pine	mbf	413.74	-1.3	-9.2
fir	mbf	489.40	-0.4	-4.1
common	mbf	414.92	-1.1	-14.6
2" X 6", s4s, common	mbf	413.05	-0.5	-18.1
2" X 8", s4s, common	mbf	407.97	-2.1	-18.7
2" X 10", s4s, common	mbf	480.29	-0.3	-16.8
4" X 6", s4s, common	mbf	892.34	-0.7	-1.6
4" X 12", s4s, common	mbf	1058.37	-1.0	-3.6
PLYWOOD, 5/8" thick	msf	487.05	+0.1	-6.8
PLYFORM, 3/4" thick	msf	822.51	-0.1	-7.0
PARTICLE BOARD, underlayment, 5/8"	msf	332.97	-0.2	+1.6
GYPSUM BOARD, regular, 1/2"	msf	198.77	-0.6	-2.2
5/8"	msf	215.44	-0.4	+3.4
type-X, 1/2"	msf	219.68	0.0	+0.3
5/8"	msf	223.76	+0.1	-1.3
ROOFING INSULATION, unfaced	sf	5.18	+0.1	+0.3
WALL INSULATION, unfaced	sf	3.88	+0.3	+4.5
PIPE INSULATION, fiberglass	sf	5.48	+0.3	+2.9

CANADA

ITEM	UNIT	LOS ANGELES	MINNEAPOLIS	NEW ORLEANS	NEW YORK	PHILADELPHIA	PITTSBURGH	ST. LOUIS	SAN FRANCISCO	SEATTLE	MONTREAL	TORONTO
2" X 4", s4s, pine	mbf	453.26	440.00s	405.00	---	---	424.00	329.00	459.81	477.00h	580.75s	392.00
fir	mbf	511.78	---	---	442.00f	675.00f	415.00	395.00	518.42	482.00	---	---
common	mbf	489.33	440.00f	405.00	447.00	323.00	355.00	329.00p	501.11s	477.00	350.75s	487.00
2" X 6", s4s, common	mbf	495.83	430.00s	400.00p	482.00h	308.00	306.00s	310.00p	500.20f	477.00	546.25p	487.00s
2" X 8", s4s, common	mbf	502.42f	480.00s	306.00p	393.00h	323.00	344.00s	287.00p	506.40f	490.50f	638.25p	523.00s
2" X 10", s4s, common	mbf	590.29f	480.00f	340.00p	503.00h	338.00	354.00s	384.00p	591.58f	483.00f	---	523.00s
4" X 6", s4s, common	mbf	874.20	2200.00	707.00	1275.00h	1240.00	545.00	450.00p	888.32	800.00	---	---
4" X 12", s4s, common	mbf	1000.67	2200.00	---	1300.00h	1240.00	---	450.00f	1001.48	1242.00	---	---
PLYWOOD, 5/8" thick	msf	507.78	540.00	385.00	472.00	650.00	368.00	495.00f	510.19	520.00	887.00	685.00
PLYFORM, 3/4" thick	msf	861.20	1050.00	718.00	909.00	1402.00	885.00	918.00	878.26	852.00	1128.15	1315.00
PARTICLE BOARD, underlayment, 5/8"	msf	308.76	387.00	320.00	435.00	476.00	289.00	315.00	311.45	390.00	644.00	580.00
GYPSUM BOARD, regular, 1/2"	msf	207.48	215.00	220.00	155.00	280.00	167.00	170.00	208.98	178.00	289.00	396.00
5/8"	msf	199.62	---	219.00	---	280.00	---	---	201.48	235.00	---	---
type-X, 1/2"	msf	217.81	---	220.00	190.00	300.00	250.00	200.00	220.82	235.00	339.25	503.00
5/8"	msf	228.40	240.00	249.00	195.00	305.00	183.00	230.00	230.76	235.00	339.25	---
ROOFING INSULATION, unfaced	sf	5.09	3.87	5.10	4.59	6.25	4.30	5.60	5.15	6.20	6.44	6.00
WALL INSULATION, unfaced	sf	3.45	6.32	3.94	3.24	3.40	3.30	3.43	3.56	4.20	4.26	5.50
PIPE INSULATION, fiberglass	sf	5.30	5.47	4.88	6.33	6.33	3.81	---	5.33	5.80	11.83	10.74

depending on what is most commonly used or most accessible in a city. All quantities are truckloads unless noted. Quotes for Montreal and Toronto are in Canadian dollars and metric units. Montreal prices do not include 18% sales tax. The above prices are not intended to represent the prevailing or average price in a city but are designed to track price movement from a single source for a given quantity and specification over time.



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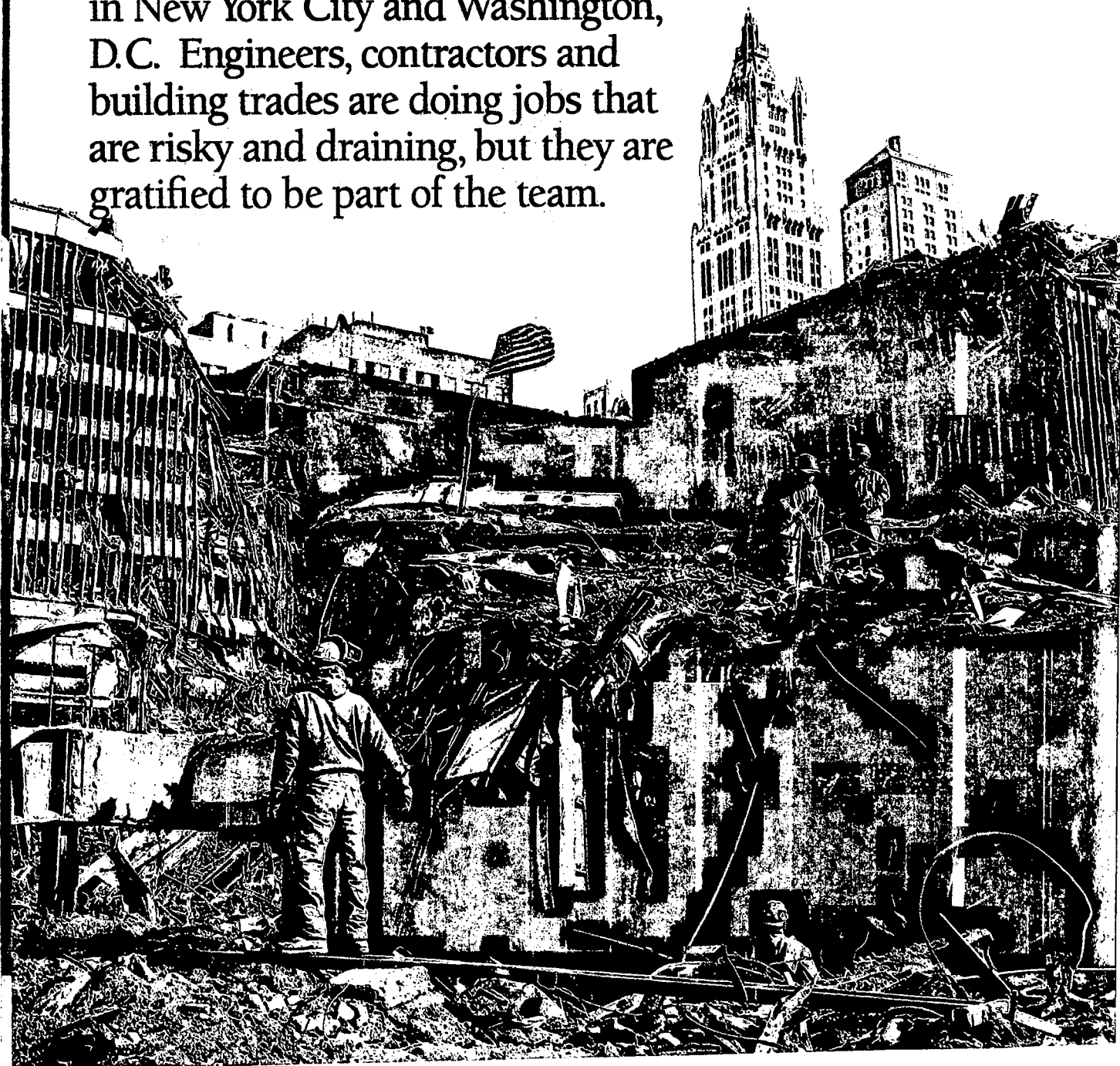
Hire the NECA-IBEW team for your next job. Hire skilled managers and a well-trained workforce—put our investment to work for you.

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Going Behind the Barricades

As the world watches from behind secured perimeters, construction forces are working to clean up at Ground Zero in New York City and Washington, D.C. Engineers, contractors and building trades are doing jobs that are risky and draining, but they are gratified to be part of the team.



COVER STORY PEOPLE

Engineers Shared Danger, Made Difficult Decisions on Safety

It is night, on the first week after Sept. 11. Wreckage is everywhere. Twin tower remains groan and teeter, and sometimes, fall. Fire smolders. Danger lurks. Emotions are raw. Exhausted and clinging to thin threads of hope, rescue workers, often on dubious footing, comb the carnage searching for survivors.

Along the south side of the site, everyone has cleared out. Everyone except two men, who stand alone on the edge of a giant crater, where steel from Two World Trade Center had gouged a 70-ft deep hole in the seven-level basement surrounding the south tower. Looming overhead is the immediate threat—a 240-ft-tall jagged but upstanding remnant of the tower's south wall, as tall as most 20-story buildings.

Looking back on his single most unsettling experience since two hijacked planes attacked the twin 110-story towers, structural engineer David B. Peraza says, "There was concern about the wall. Rescuers had heard noises. They wanted engineers to take a look at it."

Peraza, an LZA/Thornton-Tomasetti vice president, had been at Ground Zero since Day One, as part of the LZA/TT team providing structural services to New York City's Dept. of Design and Construction. "Joe and I got as close as we could," says Peraza, referring to Joseph Deluca, DDC's senior construction manager. "There we were, two humans on the edge. We stood listening. We would hear a noise. Debris was clinking down." The dialogue-on-the-precipice went something like this:

"Did you hear that?"

"Yes."

"Are you scared?"

"Yes."

With a crater in front of them and a debris field behind, it was clear that even if the wall came toppling down "slowly," the two would not be able to run from it, says Peraza. "So Joe turned to me and said, 'If that starts coming down, line yourself up with a window opening.' I laughed and said, 'Yeah, and turn sideways' as if that was going to save us. At that moment, we bonded," says Peraza, of their shared terror.



THREE VOLUNTEERS PLUS ONE SEAONY's Mahoney, DePaola, Gilsanz connect with Eschenasy.



LINE-UP Lopez, Peraza, Rinaldi, Tamaro and Burton bonded.

Peraza's on-the-spot assessment was that there was reason for concern, and the area was kept clear. Whatever happened to the leaning wall? "It eventually got pulled down with great difficulty," says Peraza.

CALL TO THE TRENCHES. Fear. "Snap" engineering. Decisions that, if wrong, could have dire consequences. That was the situation for the advance teams of engineers at Ground Zero, who were dedicated to the safety of rescue, recovery and construction workers. They garnered the respect of contractors, who sometimes chided—half jokingly—their document-drawing, squeaky clean, risk-averse ways.

Not so Pablo Lopez, the Jacques Cousteau at Ground Zero for geotechnical engineer Mueser Rutledge Consulting Engineers, New York City. On Day Five, as DDC's Executive Deputy Commissioner Michael Burton tells it, Lopez emerged from his team's explorations down under covered in soot. "Pablo, you said you would only go in safe areas!" Burton exclaimed.

But the structural integrity of the slurry wall foundation, which was keeping the Hudson River at bay, was up in the air. Someone had to go inspect. "We inflated rafts and paddled east to the PATH station, then south," says Lopez, making structural assessments along the way.

As a result of the Mueser Rutledge-led expeditions, George J. Tamaro, a principal of the firm, eventually pronounced the



slurry wall conditionally stable but supported by compacted debris in some areas. Tamaro says each time he issued a conclusion about the integrity of the slurry wall, he would worry, "What if I am wrong?" The responsibility bears down on him like a huge weight.

Then, in early October, the south wall, along the crater—a known area of potential instability—did start moving. That was the most nerve-wracking

PHOTO OPPOSITE PAGE COURTESY OF SKANSKA AB; PHOTOS THIS PAGE BY NADINE M. POST FOR ENR

COVER STORY PEOPLE



SCOPING Garlock and Andrew Pontecorvo peer onto site.

time for Peter Rinaldi, engineering program manager for the Port Authority of New York and New Jersey, which owns the land and developed the complex. "One morning at 7:30, we were walking the perimeter" and noticed a 1.5-in. x 35-ft fissure along Liberty Street, just outside the site. "The wall had started to move," says Rinaldi, though the lean-in was not visible.

The wall continued to move for two days, for a total of about 9 in. before it stabilized. "We caught it in time," says Rinaldi, by bringing in 50,000 cu yd of fill on an emergency basis. The ever-changing stability of the bathtub and its contents keep all the engineers on edge. On a given day, one can find engineers pressed up against the window of DDC's temporary offices on the 30th floor of the American Express Building, peering through binoculars at the site, looking for trouble spots.

For Richard B. Garlock, an associate with Leslie E. Robertson Associates, a successor firm to the original structural engineer for the World Trade Center and structural consultant to the port authority since its completion, the most chilling moment since he first arrived at Ground Zero was when he and firefighter-sidekick Sam Melisi returned to the basement chiller plant a week after their initial entry. It had been intact, but they discovered it had since collapsed.

Garlock and Melisi have grown close since September. "He looks where no man has gone before," says Melisi, who calls the 33-year-old engineer the Wanderer. Responds Garlock: "During the rescue operation, our number one priority was to give the firemen everything they needed."

That attitude is common among structural engineers at Ground Zero. And there are hundreds, evidenced by the efforts of the 300-member Structural Engineers Association of New York. On Day One, SEAoNY's three musketeers—then-president W. Richard Mahoney, Edward DePaola, current president, and Ramon Gilsanz, former president—began marshalling the association's forces to volunteer for the cause. How? Gilsanz says about 10 days before the attack, he bumped into Dan Eschenasy, a structural engineer he worked with in the 1980s, while riding his bike on Manhattan's upper west side. On Sept. 12, Gilsanz, a principal of Gilsanz.Murray.Steficek, New York City, was at the makeshift command center of the city's Office of Emergency Management

and DDC, with the owner of some buildings adjacent to Ground Zero. He spotted Eschenasy, who is DDC's chief structural engineer. A light bulb went off. "I started peddling engineers," says Gilsanz. It was clear the 24/7 operation was too big for one engineering firm—or even four or five—to handle. Eschenasy says he decided Gilsanz's idea was worth trying. "I knew he would deliver," says Eschenasy. And he did. Eschenasy calls the SEAoNY presence "extraordinary," practically like having an academy at his disposal. The consensus created a standard, a feeling of confidence that was reassuring.

SEAoNY members, as principals of their own firms, were eventually required to sign contracts because DDC had insurance and liability issues associated with volunteerism. But many of the engineers who have been part of the vigil that continues at Ground Zero plan to pass along their compensation. For them, says DePaola, it was all about volunteering—being able to help.

Gilsanz says his most frustrating moment at Ground Zero was on Day Two. He was in the street, having just determined for his client that One Liberty Plaza was structurally stable, when the emergency alarm sounded. "Everybody starts running," he says, "so I started running. Then I asked, 'Why are we running?'" After some investigation, Gilsanz tracked down a National Guardsman with a machine gun mounted on a jeep, who identified himself as the originator of the bulging building cry. He had decided the building had moved between morning and afternoon sightings of his gun, using a laser beam. He was wrong, but no one knew that until later.

Throughout the grueling hours, the uncertainty, the shock and the grieving, how do the engineers keep on going? They are fueled by adrenaline, faith, a unified spirit and the common though devastating experience. They use humor to let off steam. And sometimes, they just lose it for a moment or two. But they never want to give up.

Engineer Richard Zottola, a LERA partner who was involved with the reconstruction of the basement after the 1993 terrorist bombing, says, "Ninety-three was incredibly horrible. But spirits were high" because although the terrorists had caused major damage, they had failed to bring down the towers.

Many Ground Zero engineers use the word "dispiriting" to describe the work. "It's tough for us to work," says Zottola softly, "but we're down there helping as best as we can." □

By Nadine M. Post



IN THE ACTION Engineers have had to make "snap" judgments about safety.

PHOTOS BY NADINE M. POST FOR ENR

COVER STORY PEOPLE

Contractors Manage Big Unknowns of WTC and Pentagon Cleanups

Walking through the rail tunnels and corridors below the World Trade Center was nothing unusual for Bill McGuinness, vice president of operations for contractor Slattery Skanska. The firm has been intimately involved with the complex's subterranean world for decades. But investigating underground damage in the wake of the twin towers' collapse was "scary and eerie" even for veteran McGuinness, he says. That same feeling may also apply to other contractors and their executives who entered the world of the unknown in tackling the WTC cleanup, and the Pentagon as well.

Even the most seasoned contractors on New York City's emergency list were overwhelmed by the task at hand: marshalling labor, subcontractors and equipment; carving work zones and paths from the mountain of debris; and setting schedules and chains of command where chaos reigned. "There was no time for writing a scope of work," says Michael Burton, executive deputy commissioner of the New York City Dept. of Design and Construction, the city's lead cleanup agency. "We had to allow contractors to set up their own operations." While contractors speak privately of concerns over costs and liability, they mobilized quickly. "Because of the events that brought us all here, you really want to do what you can," says Bill Matre, project superintendent for Koch Skanska, a cleanup sub.

Responding to immediate rescue needs was the obvious first priority. "We had to clear paths, get fire department hoses in, put out fires and help find victims," says Charlie Vitchers, general superintendent for Bovis Lend Lease, one of four cleanup prime contractors. "I've worked in the area for years, but everything was out of place." It was a long first week for the 44-year-old. "I don't think I slept for the first 72 hours," he says. In fact, the Poconos resident has been home only occasionally since Sept. 11. But with cell phones constantly attached to all ears at Ground



ASSESSMENT Slattery Skanska's McGuinness (left) and Koch Skanska's Matre review damage.

Zero, "even though you leave the job, you never leave it," he says.

As the quadrant guy in charge, Vitchers has had to spread himself pretty thin. There are the nonstop meetings with subs and city officials, countless trips down into the debris pile, even counseling sessions with workers stressed out over victim recovery. "You just have to constantly talk about it," he says.

Dan Fraunfelter, a 24-year-old project engineer with AMEC, could hardly believe that his job inspecting ongoing renovation work at the Pentagon would turn into a life-and-death operation. He had gotten to know the building "extremely well," so when Fraunfelter heard the crash and felt a shudder as an American Airlines jet flew into the structure two floors beneath him, he imagined the generator in front of the building had exploded.

It wasn't until almost an hour later, when he was told to get out of the building, that Fraunfelter began to realize what happened. By then, people were calling for help. "The lights were out, there was a heavy smoke starting to fill the corridors," he says. Joined by other rescuers, Fraunfelter began to search in the direction of the junction between the newly renovated Wedge 1 and Wedge 5. "It was real dark and it was starting to get hot," he says. Fraunfelter wasn't aware of it, but the plane had penetrated the building directly below that point. It was also an area that collapsed about 45 minutes later.

The group made masks from wet cloth to help them breathe. Fraunfelter gave away his two shirts to others. "I wound up with a sleeve from an Army guy's shirt," he says. Fraunfelter soon reached "a



RESCUE Fraunfelter helped Pentagon victims.

PHOTO TOP: COURTESY OF SKANSKA AB; BOTTOM: COURTESY OF AMEC

COVER STORY PEOPLE



YOUNG GUN Casale, 29, manages fleet of Mazzochi equipment digging at WTC.

pretty large crack in the terazzo floor. I climbed in there a little bit farther. The whole time I was screaming, 'Can anyone see this light? Can anyone hear me? Does anyone need help?' He and other rescuers eventually encountered about 40 or 50 people, 'very disoriented, choked by smoke, who needed hurrying in the right direction,' he says.

After exiting, Fraunfelder began to brief rescue crews. 'I ran to our office and brought drawings of the areas that had been hit and explained how the Pentagon is laid out, what was occupied and unoccupied space, and where I had searched,' he says. 'Being a construction worker was really helpful.'

In lower Manhattan, the unique cleanup demands have attracted a collection of skilled niche contractors. Mazzochi Wrecking, based in East Hanover, N.J., was already on New York City's emergency contractor list but joined a host of other Jersey firms in donating equipment. Now the firm is a sub to prime contractor AMEC and its bright orange excavators pepper the site. Managing the fleet falls to Michael Casale, a 29-year-old former laborer. 'Work is hard because there's no plan here,' he says. 'You don't know what's underneath each beam.'

Casale notes the progress since Sept. 11 but also the politics. 'They're pushing us for more productivity, which I understand,' he says, but concerns about the site's slurry wall and removal of freon in underground chillers still delay work day to day. 'We do large jobs, but this is bigger,' Casale says.

Steven Quinn, a real estate agent in New Jersey, was awed when he saw Mazzochi President Nick Mazzochi, a business friend, on television soon after Sept. 11. He called the firm immediately to volunteer on site. Three weeks later, Mazzochi hired him to handle the mountain of paperwork WTC firms must process. 'I'm very

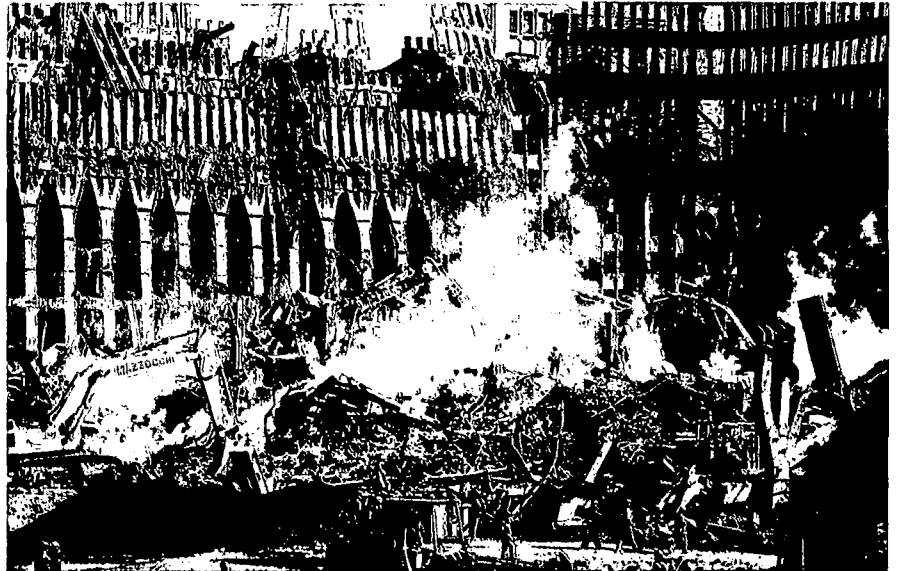
proud to be here,' says Quinn, despite the cut in pay and 12-hour days.

Also relishing the professional and personal opportunity is David Griffin Jr., vice president of D.H. Griffin Wrecking Co., a Greensboro, N.C., firm making its debut in New York. The contractor, founded by Griffin's father, started in September as a sub to Bovis but was hired by the city in October as its sitewide demolition consultant. The 33-year-old Griffin started working for his father at 16 but this job is different from anything he ever encountered. Challenges included bringing down unstable tower facades, one that was 26 stories high. 'Cutting structures down was tough because they were already damaged,' he says. 'This is the largest demolition job that's ever been done.'

Just north of Ground Zero, along the Hudson River, Joe Ruff serves as an assistant project manager of the cleanup's offsite debris disposal operation run by Weeks Marine, a Cranford, N.J., marine contractor. Thousands of tons of heavy steel girders and other wreckage have been processed by four huge cranes at that site and its sister operation near Battery Park. Most of the time, the 24-hour-a-day work is routine. But sometimes, the disaster hits home. 'Guys have found scrapbooks, awards, and photos,' he says. 'It reaffirms our resolve and makes you feel you're doing something good.' And just last month, remains were found on a delivery truck that had to be sorted at the disposal site. 'It put a hush over our site for awhile,' says Ruff. 'But maybe it will help some family find closure.'

Peter Tully, president of WTC prime contractor Tully Construction Co. Inc., sees other benefits in the work. At least 80% of his 700 employees have participated at Ground Zero. 'It's actually brought the company together,' he says. 'Everyone is touching the job, and we've never had a job like this.'

By Debra K. Rubin and Thomas Sawyer



LOADING Weeks' Ruff hauls out steel.



PRIME Bovis' Vitchers directs work.

PHOTOS TOP LEFT AND BOTTOM BY DEBRA K. RUBIN FOR ENR, UPPER RIGHT BY MICHAEL GOODMAN FOR ENR

COVER STORY PEOPLE

Building Trades Lend Hand and Heart to WTC Site Recovery and Cleanup

Almost as soon as the first plane struck the World Trade Center towers on Sept. 11, they came running—from up-town high-rise projects, Kennedy Airport's rail job, a bridge in Staten Island. As word spread about the disaster in lower Manhattan, construction sites all over New York City and beyond began to empty fast. Three months later, many of the building trades who raced to volunteer at the stricken site have never left. They're getting paid now, but for many, it can hardly



DREAM Geary reflects.

compensate for an around-the-clock pace that is as risky and emotionally draining as anything that even the veterans have experienced. Even so, there are few complaints.

Bobby Gray, master mechanic with Operating Engineers' union Local 14, remembers seeing one of the hijacked planes flying directly over his 50-story-high tower crane at a midtown hotel site that morning. He quickly climbed down and made his way downtown, but even the 20-year veteran was shocked to see WTC refugees covered in dust and the site in "absolute chaos." Adds Danny Doyle, ironworkers' Local 40 general foreman: "When I first saw all that steel on the ground, I thought we'd be here a year." For Gerard Geary, a 36-year-old Local 14 operating engineer, "the first day was unbelievable, like a dream," he says. "But every day

since, you're still in the same dream."

Gray, Doyle, Geary and other workers scurried to assemble crews, set up equipment and "find people with drawings" so machines could avoid dangerous voids in the debris field. But even with the mass confusion and deafening noise, all would stop when a Fire Dept. victim rescue might be imminent. "You could hear a pin drop in just a few minutes," Gray says. Bill Ripetti, another Local 14 operator, remembers visiting the site as a child with his construction worker father. Now, the 42-year-old is in command of the WTC centerpiece, a 1,000-ton crane needed to lift heavy debris and ferry ironworkers closer to steel for cutting. Setting it up took 36 hours. "It was an ordeal to erect," he says.

Even as the worst of the wreckage is nearly gone, hundreds of operating engineers, ironworkers, laborers, teamsters and other trades pepper the WTC site. There are 200 operators still there, although that is down from more than 300, says Gregg Nolan, Local 15 foreman. Workers display pride in union and country with an array of pins and stickers on overalls, hardhats, tools and jeeps. Flag-painted hardhats are all the rage at Ground Zero, and workers proudly display models autographed by visit-



JOB Demolition contractor, Ironworkers will remove facades.

ing Hollywood celebrities—Arnold Schwarzenegger, Jack Nicholson, Brooke Shields and Susan Sarandon.

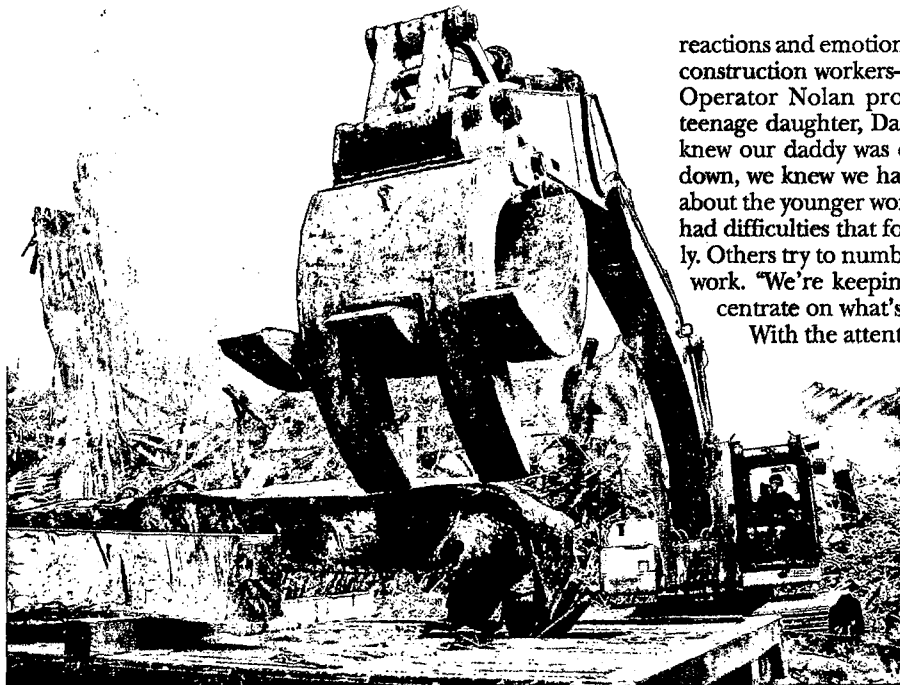
Workers say these are the little things that help them relieve the stress of long hours and victim recovery. Even among the demolition veterans here, few have ever dealt with such Ground Zero realities as finding dead firemen and body parts of WTC civilians. Doyle had assisted firemen trying to remove steel cov-



FOCUSED Operator Ripetti positions 1,000-ton crane for lift.

PHOTO LEFT BY DEBRA K. RUBIN FOR ENR; PHOTOS TOP AND BOTTOM RIGHT BY MICHAEL GOODMAN FOR ENR

COVER STORY PEOPLE

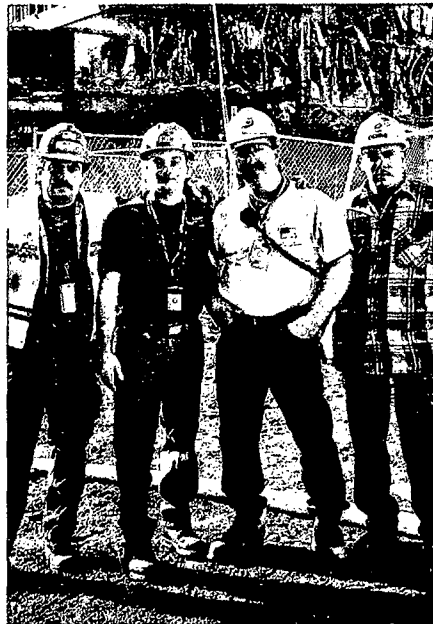


BIG LIFT Grappler picks up steel debris that will be driven to pier sites for disposal.

ering the bodies of two comrades immediately after the towers' collapse. One of them turned out to be a high-ranking fire department captain.

Some construction workers grouse about not getting the same limelight afforded police and fire rescuers, but most sympathize with their emotional task and find intense satisfaction in helping to bring up remains. "If you could see the faces of the firemen when we find a body, the uplift is phenomenal," says John Kirby, another Local 40 ironworker foreman. Geary relishes the "closure" for victims' families.

For some, the work gets very personal. Regional building trades officials estimate that as many as 60 union workers died on Sept. 11 as they repaired the towers or worked for private tenants.



CREW Laborers assist in demolition work.

Glenn Catanzaro, a Laborers' Local 66 foreman, says four laborers died. Other workers cite friends among uniformed and civilian casualties. Crane operator Tom Kelly of Staten Island says he knew nine firemen who died. Others with family histories in a craft note the irony of picking up pieces of the World Trade Center so carefully placed by fathers and grandfathers decades before.

The difficult mission at Ground Zero has generated

reactions and emotions that few would ever associate with tough construction workers—sleepless nights, flashbacks, crying jags. Operator Nolan proudly shows off a poem written by his teenage daughter, Danielle: "Ever since we were little girls, we knew our daddy was our hero, but when the tall towers came down, we knew we had to share our dearest hero." He worries about the younger workers, but even the Vietnam veterans have had difficulties that forced them off the site, at least temporarily. Others try to numb the pain by throwing themselves into the work. "We're keeping busy with everything so we don't concentrate on what's here," says Catanzaro.

With the attention of myriad federal, state and city agencies on site work, safety has been a key focus. Workers joke about the site's enforcement legions, particularly the federal safety agency they dubbed "OSHA bin Laden." Workers used to cheating a bit on safety rules now find zero tolerance at Ground Zero. While government monitors claim air quality in most areas of the site is relatively normal, risks grow for those digging deeper into the towers' basement levels. Respirators are a must. And despite engineers' guidance on excavation paths, even they can't predict everything. Debris is constantly shifting. "The machine's always bouncing around," says Geary. Even with the best-trained operators on site, he recalls an incident last month when a machine fell 27 ft. Fortunately, the driver was not injured but was "shaken up," says Geary.

Workers seem amazed at how much progress has been made since Sept. 11, with debris mountains reduced to grade, haul roads crisscrossing the site, and structures nearly demolished. Unusually warm, sunny weather has helped, but last weekend brought a blast of frigid December air that jolted workers into remembering the approaching Manhattan winter.

Even so, ironworkers Mike Emerson and Chris Kazimir are part of a small crew laboring 22 floors up on a chilly Sunday, repairing a multistory gouge in the nearby American Express building caused by flying debris. The crew is fast-tracking repairs under orders from state and city officials to keep AmEx in New York City. Emerson and Kazimir perch precariously on the edge of steel girders used to brace each damaged floor, wearing respirators and tied off, but with little else on which to hold. Crew members coordinate movements to prevent getting caught in each other's harnesses. And the work at Ground Zero goes on.



ON EDGE Emerson (left) and Kazimir fix damaged American Express building.

By Debra K. Rubin

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PRODUCTS

EXCAVATOR UPGRADE On-board Information Controller

Improved features such as fundamental performance specs, low noise design and emissions controls, a new cab design and the incorporation of an on-board ICX information controller on the Zaxis 450LC excavator help make the machine more productive than the previous EX series of excavators, says the manufacturer. The Zaxis 450 is available in backhoe and front shovel configurations and offers a cleaner and more

powerful Tier II-compliant Isuzu AA-6WG1TQA engine. HITACHI CONSTRUCTION MACHINERY; 800/858-0885; www.hcmacorp.com

ANGLE DRILLS

Trigger Handles With Rubberized Grip

Two new high-powered ½-in. Sidewinder angle drills are designed for heavy-duty close quarter applications. Models DA4030 and DA4031 both feature a rear trigger handle that rotates 90° either side with the push of a button. The speed-selecting switch on the DA4031 allows the operator to select the appropriate speed and torque for any job. At the low speed of 300 rpm, the model can generate 1,200 in.-lb of torque. With the flip of a switch, the tool changes gear from 300 to 1,200 rpm for high-speed drilling. MAKITA USA INC.; 800/482-5482; www.makitatools.com

ARTICULATED DUMP TRUCK Two and Four-Wheel Drive Modes



The 14-ton capacity 714 is a small articulated dump truck that is suitable for hauling applications where low ground bearing pressure is required. It features a Cummins B-Series engine with 129-net hp and a ZF Smoothshift transmission that provides six-speed forward automatic operation and three-speed reverse for a max-

imum travel speed of 24 mph. Switchable two- and four-wheel drive modes can be adjusted on-the-move for lower fuel consumption and less tire wear. JCB INC., A SUBSIDIARY OF JCB BAMFORD EXCAVATORS LTD.; 888/742-5522; www.jcbna.com

HYDRAULIC SHORING SYSTEM High-Yield Aluminum Alloy

Manufacturer introduces a line of hydraulic shores that can be installed and removed by one person from above ground quickly and easily. They are constructed of high-yield aluminum alloy, making them light in weight as well as extra strong. Cylinder pads mount flush, pro-



viding even load distribution on side rails, and hinged design allows for fast knock-down and transport, says the maker. The line includes four sizes of standard-duty and seven sizes of heavy-duty rails. PRO-TEC EQUIPMENT INC.; 800/292-1225; www.protecequip.com

ALUMINUM SCAFFOLDING SYSTEM Alternative to Steel Towers

A national rental chain company introduces the BOSS scaffolding to its line of equipment. The product's aluminum construction tower offers a lighter, more maneuverable alternative to traditional steel towers and makes it easier to reposition. It has four basic tower configurations that can be assembled separately or as a complete scaffold. Safety features such as integral ladders, nonslip ribbed tubing and platform decking, rugged stabilizers and a patented "snap-shut" claw for a secure grip are included as well. HSS RENTX C/O BALBONI ASSOCIATES INC.; 413/757-0399; lpeterson@balboniassociates.com



CONCRETE CUT-OFF SAW Creates Square Corners

This all-new concrete saw, called the 613GC, offers twice the cutting depth of a circular blade cut-off saw, according to the manufacturer. Weighing 21 lb complete with bar and chain, the concrete saw is capable of plunge cutting to 12 in. and will cut a square opening with no over-cuts in material as thick as 10 in. Power for the saw is provided by a new 80cc, 5.7-hp, two-cycle gas engine. Model 613GC will be available in January 2002. ICS, A DIVISION OF BLOUNT INC.; 603/853-4487; www.icsbestway.com

WALL CLIP ATTACHMENT Supports Pipe, Conduit and Cable

Designed for electrical and mechanical contractors, the new Caddy WC812 wall clip provides fast attachment of various pipe, conduit, cable and tube to wall or stud surfaces. Services can be snapped into the clip without tools. The WC812 can be secured to wall surfaces with powder-actuated tools, self-tapping concrete anchors or screw guns. The standoff design helps eliminate conduit bending and provides automatic alignment with electrical box knockouts. ERIGO INC.; 800/252-2338; www.erigo.com

SCANNER LOCATES EMBEDDED METAL Oversized LCD Display

The MT6 is a major upgrade to the manufacturer's MetalliScanner. It allows contractors to scan through up to 6 in. of nonmetallic construction materials, finding rebar, conduit and junction boxes that are hidden behind walls or embedded in materials such as concrete, tile or marble. A large plus-minus icon indicates proximity to the target. Depth bars, featured in the center of the LCD screen, make it easier to see the depth of the target, the maker says. The product can be used by concrete, electrical, plumbers and masonry contractors. ZIRCON CORP.; 800/245-8285; www.zircon.com

FOR MORE INFORMATION:

Select the product information you want and contact the manufacturer at either the Website or phone number provided.

CALIFORNIA Foster Wheeler Ltd. was awarded a contract valued at approximately \$50 million by Bechtel Power Corp. to supply four **heat recovery steam generators** with selective catalytic reduction systems for the Mountainview Power Project in Redlands. The project is a new 1,000-Mw natural gas-fired combined-cycle plant being built by Mountainview Power Co. LLC, a subsidiary of AES Corp. Construction completion is scheduled for summer 2003. *Foster Wheeler Energy Corp., a subsidiary of Foster Wheeler Ltd., Perryville Corporate Park, Clinton, N.J. 08809; Bechtel Power Corp., a subsidiary of Bechtel Group Inc., P.O. Box 193965, San Francisco 94119.*

CALIFORNIA The California Sierra Express **distribution center** is being built by Clark & Sullivan Builders. Located in West Sacramento, the estimated \$2.3-million, 55,000-sq-ft building will be a tilt-up distribution center. Completion is scheduled for January. *Clark & Sullivan Builders, 3600 Madison Ave., Suite 62, North Highlands, Calif. 95660.*

DISTRICT OF COLUMBIA An expansion of the existing Mount Vernon Square Metro Station is well under way by Clark Foundations for the Washington Metro Area Transit Authority. The station will connect to the new Washington, D.C., Convention Center. The \$13.8-million project will include an 80-ft-high glass entryway that faces Mount Vernon Place. Completion of this project is anticipated for early 2003. *Clark Foundations, a subsidiary of The Clark Construction Group Inc., 7500 Old Georgetown Rd., Bethesda, Md. 20814.*

FLORIDA The City of Naples has awarded a contract to Severn Trent Services to supply desalination equipment via reverse osmosis membrane filtration technology for the 8-mgd expansion of the Collier County **south regional waste treatment plant**. United Engineering, the main contractor commissioned to oversee this expansion project, selected Severn Trent Services' Universal Aqua line of reverse osmosis products as the preferred provider. The project utilizes four, 2-mgd desalination units, which use reverse osmosis membrane technology to filter seawater into fresh drinking water without the use of chemicals. Work is expected to start mid-2002 and the projected completion date is February 2003. *Severn Trent Services, The Founders Building, Suite 300, 580 Virginia Dr., Fort Washington, Pa. 19034-2707.*

GEORGIA The Georgia Dept. of Natural Resources has awarded a \$3,177,000 contract to Anderson Construction Co. for

improvements to George T. Bagby State Park in Fort Gaines. The project includes the construction of a new exposed timber, Swiss chalet-style restaurant, 26 new lodging rooms and the addition of four rooms to the existing lodge. Work is expected to start in December and be completed before February 2003. *Anderson Construction Co., P.O. Box 220, Fort Gaines 31751.*

ILLINOIS Harold O'Shea Builders has been awarded a contract by P.C. Hotel Ventures for construction of the new **Staybridge Hotel** located in the Prairie Crossing Development in Springfield. The three-story, 83-room facility will be constructed with wood framing with wood roof trusses and a shingle roof. Other features include a sorts court and an enclosed pool. Harold O'Shea Builders also has been awarded a design-build contract by Eagle Foods Inc. to renovate an existing store in Jacksonville. The project will include a new exterior facade, renovation of the liquor and produce departments and installation of all new interior decor. *Harold O'Shea Builders, 1941 S. 10th St., Springfield 62703.*

INDIANA Vectren Power Supply, a subsidiary of Vectren Corp. of Evansville, awarded Black & Veatch an engineering and construction contract for three **selective catalytic reduction (SCR) unit additions** to two plants in Indiana. The first SCR unit, located at the Culley Power Station in Newburgh, is scheduled for construction in May 2002. The subsequent units will be installed at AB Brown Power Station in Mount Vernon and construction will begin in fall 2002. These units will reduce NOx emissions as mandated by the Environmental Protection Agency's Clean Air Act Standards. *Black & Veatch, 8400 Ward Parkway, Kansas City, Mo. 64114.*

MARYLAND-VIRGINIA Coakley & Williams Construction Inc. has been awarded contracts for several projects located in the above-mentioned states. A contract awarded by OxBridge Development calls for the construction of **Century South at Cloverleaf** in Germantown, Md. This project involves construction of a 21,000-sq-ft flex building with a block and glass facade, an EPDM roof, a parking lot and landscaping. A new media and performing arts center at **The Connelly School of the Holy Child** is being built in Potomac, Md. The new 38,000-sq-ft facility will feature a stone and brick veneer and contain a performing arts center, library, media center and classrooms with support facilities. Completion is scheduled for August

2002. Coakley & Williams Construction Inc. and joint venture partner Barclay White Skanska have been awarded contracts for two projects. One contract calls for **repairs to Garage M055** located at the National Naval Medical Center in Bethesda, Md. The work includes selective demolition and reconstruction of concrete floors, ceilings and other areas of the existing seven-story garage. The project also includes related drainage, plumbing and electrical systems, as well as traffic management. The other contract is a design-build contract which calls for the construction of the new **National Innovative Technology and Mission Assurance Center** in Dahlgren, Va. This project consists of a two-story, 70,000-sq-ft facility to house classified Naval activities in an office environment. The high-tech facility features several laboratories and offices, and the work includes SCIF requirements and interior finishes. The building is steel-framed on spread footings with a built-up roof and a masonry-on-stud veneer. *Coakley & Williams Construction Inc., 16 S. Summit Ave., Suite 300, Gaithersburg, Md. 20877.*

MASSACHUSETTS Konover Construction Co. is construction manager for the **expansion** of Jordan's Furniture Co. store along with the construction of an IMAX theater to be accessible via the retail store in Natick. This unique retail-theater project consists of a 36,000-sq-ft addition where customers will walk down "Bourbon Street," complete with a riverboat, full-scale French building facades and a nine-minute multimedia Mardi Gras f/x show. Renovation work is under way and is scheduled for completion in spring 2002. *Konover Construction Corp., P.O. Box 4054, Farmington, Conn. 06034-4054.*

MISSISSIPPI Willbros Engineers Inc. was awarded a contract by Caledonia Generating LLC, a wholly owned subsidiary of Cogentrix Energy Inc. of Charlotte, N.C., to provide engineering, procurement and construction service for approximately 17 miles of dual **water pipeline** for an 810-Mw natural gas-fueled power generating station to be built near Columbus. Work is under way and is scheduled to be completed by September 2002. *Willbros Engineers Inc., a subsidiary of Willbros Group Inc., 2087 E. 71st St., Tulsa, Okla. 74136-5423.*

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PULSE

PLANNING

CALIFORNIA Parsons Brinckerhoff has been selected by the Bay Area Rapid Transit District (BART) to provide general engineering services for the Warm Springs extension project in southern Alameda County. The \$650-million project includes a 5.4-mile double trackway extending southward from the existing Fremont Station to a new passenger station at Warm Springs in southern Fremont. Additional project elements include parking facilities and tail tracks to support train operations. Parsons Brinckerhoff will also provide technical assistance to BART on an as-needed basis in support of future extensions. *Parsons Brinckerhoff, 303 Second St., San Francisco 94107.*

CALIFORNIA Schematic design is under way by Rauschenbach Marvelli Becker & Associates for the Skyway shopping center, consisting of 10 single-story buildings with total floor area of 300,000 sq ft at Skyway Crossroads in Paradise. Further action on this project, owned by FHK Investment Co., is awaiting city approvals. *Rauschenbach Marvelli Becker & Associates, 2277 Watt Ave., Second Floor, Sacramento 95825-0507; FHK Investment Co., 640 Watt Ave., Suite 100, Sacramento 95864-5064. DR #01-854847.*

FLORIDA Design is under way on the Osceola International Crossroads, a 1,000-room hotel on Osceola Parkway and International Dr. in Orlando. Owned by Gaylord Entertainment, the project also calls for a 25,000-sq-ft luxury spa and 150,000 sq ft of convention-exhibit space. Construction start possible by the end of 2002. *Gaylord Entertainment, One Gaylord Dr., Nashville, Tenn. 37214. DR #01-859376.*

KENTUCKY A.M. Kinney Inc., architect of record, Venturi Scott Brown and Associates Inc., design architect, and programming consultant Health, Education + Research Associates completed the programming and schematic design for the new six-story Biomedical Biological Sciences research building with total floor area of approximately 195,000 sq ft, and a connecting bridge over S. Limestone St. Located at the University of Kentucky in Lexington, the estimated \$65-million facility will include basic research, support and containment labs, an animal facility, and associated facilities, such as computational laboratories, environmental rooms and tissue and cell culture areas. The project also includes site development and a central utility plant to sup-

port the laboratory building with planned future expansion for additional site development. Construction is scheduled to start in 2002, with occupancy planned for 2004. *A.M. Kinney Inc., 150 E. Fourth St., Sixth Floor, Cincinnati, Ohio 45202-4131; Venturi Scott Brown and Associates Inc., 4236 Main St., Philadelphia, Pa. 19127-1603.*

NEW YORK Perkins Eastman Architects has been selected by Saint Ignatius School to design a new multistory school building of approximately 18,000 sq ft in the Hunts Point section of the Bronx. It will include general classrooms for 60 students in 5th through 8th grade, science and art rooms, faculty and administration areas, small gymnasium, chapel and gathering area. *Perkins Eastman Architects, 115 Fifth Ave., Third Floor, New York City 10003.*

NORTH CAROLINA The North Carolina Dept. of Transportation is in final planning stages for two sections of the Greensboro Western Loop, a new six-lane controlled access highway. HNTB Cos. is the civil engineer for 4.7 kilometers from Interstate 40 to Friendly Ave., estimated to cost \$68 million; HDR Engineering Inc. is the engineer for the section from north of SR 2147 (West Friendly Ave.) to north of Bryan Blvd., estimated to cost \$45 million. Both sections are expected to be released for bids in May 2002. *The HNTB Cos., Architects Engineers Planners, 343 E. Six Forks Rd., Suite 200, Raleigh 27609-7888; HDR Engineering Inc., 3725 National Dr., Suite 103, Raleigh 27612-4879; North Carolina Dept. of Transportation, Design Services Unit, 1020 Birch Ridge Dr., Raleigh 27610-4328. DR #'s 01-856432 and 01-856461.*

OREGON Preliminary planning is under way by Perkins & Will Architects Inc. and Soderstrom Architects P.C. for a new patient care building on the campus of Oregon Health Sciences University in Portland. The south hospital expansion project consists of a patient care building, between 12 to 15 stories, with two or three levels of underground parking. Construction start possible in 2003-04. *Perkins & Will Architects Inc., 1382 Peachtree St. N.E., Atlanta, Ga. 30309; Soderstrom Architects P.C., 1200 N.W. Naito Parkway, Portland 97209; Oregon Health Sciences University, Design & Construction Services, Campus Services Building, Room 210, 3505 S.W. U.S. Veterans Hospital Rd., Portland 97201. DR #01-859169.*

PENNSYLVANIA The Oxford Area School District has awarded a contract to Reynolds Construction Management to

provide construction management services for a new high school in Oxford. Hayes Large Architects is the architect for the new \$43-million school. Construction is scheduled to start in August 2002 and be completed by March 2004. *Reynolds Construction Management Inc., 3300 N. Harrisburg 17110; Hayes Large Architects, 321 N. Front St., Harrisburg 17101.*

VIRGINIA Schematic design is under way for two office buildings and a parking garage with total floor area of 700,000 sq ft in the Reston Town Center in Reston. Boston Properties selected Davis Carter Scott and Evans Heintges Architects to provide architectural services for this estimated \$65-million project. The project will advance to design development upon lease agreement. *Boston Properties, 401 Ninth St. N.W., Washington, D.C. 20004; Davis Carter Scott, 1676 International Dr., McLean 22102; Evans Heintges Architects, 122 Hudson St., New York City 10013. DR #01-856848.*

CONTRACTS/BIDS/PROPOSALS

ARIZONA The City of Phoenix, along with the cities of Glendale, Mesa, Scottsdale and Tempe, have chosen Earth Tech to provide preconstruction and construction services for plant upgrades and improvements at the 91st Ave. Wastewater Treatment Plant which services the five municipalities under the Sub-Regional Operating Group Partnership. The project consists of expanding plant from an influent of 179 million gal per day to an influent of 204 mgd. Design services for this project, valued at approximately \$100 million, are scheduled for completion by late-2002 followed by a 30-month construction period. *Earth Tech, 100 W. Broadway, Suite 5000, Long Beach, Calif. 90802.*

CALIFORNIA A multimillion-dollar contract to build the Marriott Grand Residence Club, Lake Tahoe, was awarded to Perini Building Co. by Marriott Vacation Club International, a division of Marriott International Inc. Located adjacent to the Heavenly Ski Resort in South Lake Tahoe, the 199-unit resort features restaurants, a fitness club, retail shops, a heated outdoor swimming pool, ski equipment checkroom and an owner's library. Each unit includes a kitchen and fireplace designed with custom millwork. The 400,168-sq-ft facility is targeted to open November 2002. *Perini Building Co., a division of Perini Corp., 73 Mt. Wayte Ave., Framingham, Mass. 01701-9160 and 360 E. Coronado Rd., Phoenix, Ariz. 85004-1524.*

PULSE

NEW YORK Joint venture of Slattery Skanska and Edwards and Kelcey successfully negotiated a contract valued at \$76 million with Metro-North Railroad to provide design and construction services for a **maintenance facility** for commuter trains. Located near Yankee Stadium in the Bronx, the new Highbridge Yard Rail Maintenance Facility includes a 62,000-sq-ft maintenance building with space for 20 cars on two tracks. An office and employee area will be built above the maintenance shop with an overpass connecting to station platforms. Work at the site is under way. *Slattery Skanska, a subsidiary of Skanska USA Inc., 16-16 Whitestone Expressway, Whitestone 11357; Edwards and Kelcey Inc., 299 Madison Ave., Morristown, N.J. 07962.*

NORTH CAROLINA Construction is well under way by Rentenbach Constructors Inc. for the **renovation and expansion** of the Elliott University Center at the University of North Carolina at Greensboro. The existing three-story, 100,000-sq-ft building is being completely remodeled and an additional 30,000 sq ft is being constructed to accommodate administrative offices and a new 481-seat auditorium. An adjacent courtyard will also be reconstructed with new landscaping and sidewalks. The \$7-million project is expected to be completed in late 2002. *Rentenbach Constructors Inc., P.O. Box 11087, Knoxville, Tenn. 37939.*

OKLAHOMA InterGen completed financing and has held a groundbreaking ceremony for the **Redbud Energy Project**, a 1,100-Mw natural gas-fired, combined-cycle powerplant located near Luther. Bechtel Power will build the plant under a turnkey contract. With an estimated cost of approximately \$740 million, Redbud is expected to begin commercial operation by mid-2003. *InterGen, One Bowdoin Square, Boston, Mass. 02114-2927; Bechtel Power Corp., a subsidiary of Bechtel Group Inc., P.O. Box 193965, San Francisco, Calif. 94119.*

TEXAS A \$38-million contract has been awarded to Turner Construction Co. by the Frisco Independent School District to build two **middle schools** in Frisco. The project is comprised of two, 133,000-sq-ft middle schools, including associated site-work, athletic fields, tennis courts and running tracks. Both projects are expected to be completed by the start of the 2002-03 school year. *Turner Construction Co., a wholly owned subsidiary of The Turner Corp., 13601 Preston Rd., Dallas 75240-4911.*

VERMONT Groundbreaking ceremonies were recently held and Granger Northern

Inc. has begun construction on the \$28-million, 350-bed **Southern State Correction Facility** located off Rte. 11 in Springfield. Granger will utilize precast modular cell units which come fully finished with the bunk or double bunk, desk, chair and toilet/sink already installed. The three, two-story housing buildings, each self-contained with the exception of dining, will be constructed in a "T" pattern. Designed by SMRT, the state-of-the-art medium-security facility also will include a core building and maintenance building. The central building will house a courtroom and judge's chamber for on-site hearings and trials. Other features include classrooms, two libraries, an 8,500-sq-ft gymnasium and a well-equipped medical area. The prison grounds will include a basketball court and four horseshoe pits along with a large softball field. This 170,000-sq-ft design-build project is scheduled for completion in August 2003. *Granger Northern Inc., 84 Middle St., Portland, Me. 04101.*

VIRGINIA A \$29-million contract was awarded to W.M. Jordan Co. for the construction of a new **high school** for Powhatan County Public Schools. The 243,500-sq-ft building will accommodate 1,500 students and contain a two-story academic wing with classrooms, labs and computer learning centers. Common areas include an auditorium with seating for more than 800 people, a gymnasium, cafeteria and library, as well as several athletic fields, including a track and field area and a football field. Construction is under way and will be complete by May 2003. *W.J. Jordan Co., 11010 Jefferson Ave., P.O. Box 1337, Newport News 23601-0337.*

VIRGINIA InfraCor of Virginia has received a contract, valued at \$2.8 million, from Henrico County to **replace** 8,500 lin ft of existing **sewer pipe** at Gillie's Creek in eastern Henrico County. *InfraCor of Virginia, a wholly owned subsidiary of InfraCor Inc., 22110 E. Belt Blvd., Richmond 23224.*

BID/PROPOSAL DATES

NEW JERSEY 12/28 (prequalified design-build general contractors)—New Jersey Transit, Procurement Dept., Attn. Ms. Hope, One Penn Plaza E., Procurement Dept., Sixth Floor, Newark 07105-2245, regional rail **park and ride facility** on Island Rd. at Rte. 17 in Ramsey. The project includes construction of two 710-ft-long high-level passenger train platforms and canopies. Platforms will be heated enclosures with lighting, passenger communications equipment and other amenities. Site improvements include passenger

pickup and drop-off lot, drainage, lighting, landscaping, sidewalks and signage. *Statile Associates, project manager, 11 E. Oak St., Oakland 07436. DR #01-676299.*

KENTUCKY 1/8 Commonwealth of Kentucky, Finance & Administration, Dept. of Facilities Management, Room 158, 702 Capitol Annex Building, Frankfort 40601, Transportation Cabinet **office building**, including two parking garages for 1,362 cars, located on Mero St. between Ann and St. Clair in Frankfort. The six-story, 446,000-sq-ft building is estimated to cost \$83 million. *Ekhoff, Ochenski and Polk Architects, 201 W. Short St., Suite 700, Lexington 40507. DR #97-303661.*

OREGON 1/8 (construction manager-general contractor proposals)—Centennial School District 28JT, 18135 S.E. Brooklyn St., Portland 97236-1049, major **renovation and expansion** of Centennial High School at 3505 S.E. 182nd St. in Gresham. \$14.5 million. The project includes new construction, infrastructure code upgrades, remodeling, and HVAC, and new wiring to increase electrical capacity and access to technology, updated science labs, new library, and media-tech center. *LSW Architects, 1953 N.W. Kearney St., Portland 97209; Heery International, 319 S.W. Washington, Suite 400, Portland 97204, is construction manager. DR #97-251609.*

CALIFORNIA 1/9 Orange County Board of the Supervisors, Clerk of the Board, 10 Civic Center Plaza, Suite 465, Santa Ana 92701-4017, phase 3, building B of the Theo Lacy Jail **expansion project** at 501 The City Dr. S. in Orange. The three-story, 126,400-sq-ft building is estimated to cost \$32 million. *HDR Engineering Inc., architect, one City Blvd. W., Suite 900, Orange. 92868-3610. DR #97-237677.*

IDAHO 1/9 State of Idaho, Division of Public Works, Design & Construction, at Williams Conference Center, Selway Room, Lewis-Clark State College, Lewiston 83501, phase 2 of **campus activity center** at Lewis-Clark State College in Lewiston. The estimated \$13-million project includes construction of a two-story, 105,000-sq-ft college-owned physical education wellness center with a 5,000-seat auditorium and gymnasium. *CSHQA A.P.A., architect, 250 S. Fifth St., Boise 83702-7227. DR #97-093886.*

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Construction Placement

Over 35 years experience servicing the construction industry. If you are an Estimator, PM, Supt., Proj Eng. or Surveyor (all levels) and have a GC background, send us your "confidential" resume immediately and let us help inform you of the advantages in this Hot market. P.O. Box 3161B, Greenwood, MA 01880

ConcreteCareers.com

(Formerly Construction Products Recruiters, Inc.) PO Box 900, Bremen, GA 30110-0900. Tel: 877-5 WIN WIN (877-594-6946); Fax: 770-437-9512. Integrity@ConcreteCareers.com, <http://www.concretecareers.com>

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D-B/Commercial/Hospital/Industrial/ Hotel/ Retail/WWT/Top \$\$\$/Confidential/ Various Locations. Send your resume to CRS Ltd., St. Louis, MO, Fax (314) 426-0447 or Panama City, FL, Fax (850) 233-0905 or e-mail to CHARLEYCRS@aol.com

Isalah 40:31

Executive confidential search recruiting services: Mike Ketchum-Construction, 136 Beaver Ridge Cr, Macon, GA 31220, T: 800-843-6290, Fx: 888-624-3557, miketchum@mindspring.com Jeff Gallaway-Electrical, Mechanical, 1065 Ashford Chase Ct., Macon, GA 31210, T: 478-474-2056, Fx: 478-474-4650, gallaway@mindspring.com Meredith Ketchum-Structural Steel, 504 Indian Trail, Taylors, SC 29687, Ph: 888-477-1070, Fx: 864-292-5504, mlketchum@msn.com Web: www.constructionrecruiting.com

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Careers in Construction

Website: www.kaiserjobs.com. Email Kaiser123@cybertours.com. Snail Mail PO Box 365 Wells, Me 04090

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Superintendent

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Substation Estimator/Proj. Mgr.

Immediate opening for an individual with specific and demonstrated experience in electrical high voltage substation estimating and construction. Cache Valley Electric is a top ENR ranked electrical contractor based in northern Utah with current projects across the nation. Contact Steve Chilton or Rick Stock at 801-908-6666 or fax resume to 801-908-6677.

ASSOCIATE RESEARCH ENGINEER (Industrial Engineering)

United Technologies Research Center has an immediate opening in its East Hartford, Connecticut office for an Associate Research Engineer (Industrial Engineering).

Use operations research technologies and software tools to improve manufacturing and supply chain metrics. Identify problems, define requirements, develop models, generate software solutions, and deploy solutions into value-adding usage to achieve improvement in factory and supply chain metrics.

Must possess a Ph.D. or its equivalent in Industrial Engineering, Operations Research or a related field and relevant experience, including author/co-authorship of journal articles in the use of operations research technologies or the use of software tools to improve manufacturing and supply chain metrics, software programming, database design, optimization software (such as ILOG or CPLEX) and discrete event simulation.

Resume and/or cover letter must reflect each requirement above and specify reference code AREIE or it will be rejected.

Forward resume to:

Donna Juttner
United Technologies Research Center
411 Silver Lane
East Hartford, CT 06108

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Project Managers and Estimators

Misener Marine, headquartered in Tampa, Florida specializes in the construction of heavy civil marine and engineering projects. We are currently looking for Project Managers and Estimators. We are searching for construction professionals who have a bachelor's degree from a four-year college or university in civil engineering. Marine construction required. Salary commensurate with experience. Excellent benefits package includes company provided health insurance, employer sponsored 401k plan and a first-class working environment.

Please e-mail your resume to:

gshuster@hbgconstructors.com
or fax to 720-494-8019 att: Human Resources



Construction Coordinator

CON-WAY Transportation Services, Inc., a \$2 billion transportation company, is seeking a Construction Coordinator in the Property Development Department at its corporate headquarters in Ann Arbor, MI, to help facilitate our continued growth. Other Midwest offices may be available. Duties consist of project oversight of general contractors resulting in award of contracts, project start-up, on-site inspections, detection and resolution of project-related issues. Such issues may consist of quality, conflicts, directing architects and engineers, processing change orders and project closeout for multiple projects in several states. Design experience is preferred and development experience is a plus. Candidate will possess a minimum of 5 years of demonstrated construction management experience in facilitating, administering and managing construction contracts for diversified projects consisting of civil site work and commercial building projects. Candidate will also possess a Bachelor's Degree in Construction Management, Engineering or equivalent. Experience and proficiency in the use of PC with Windows 98 and Microsoft Office applications (Word, Excel, Project, etc.) Internet collaboration and AutoCAD experience is preferred. Become a member of our successful team. CON-WAY offers a competitive compensation and excellent benefits package in an energized environment where team performance is rewarded. For immediate consideration send your resume, complete with salary requirements, to: CON-WAY Transportation Services, Inc., Attn: Human Resources CC1201, 110 Parkland Plaza, Ann Arbor MI 48103. Fax: (734) 214-5651. E-mail: cummins.sherry@con-way.com. Visit our web site at www.con-way.com. EOE

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Chief Estimator

Arizona location. Run dept. Salary commensurate with experience. Phone 501-932-0040 Fax 501-932-0042

RECRUITMENT

Engineers

Montgomery Watson Harza, a leading international consulting engineering firm, has the following position available in its Chicago, IL, Utica, NY, Oakland, CA, Bellevue, WA and Milwaukee, WI offices. Qualified candidates will possess an engineering degree in all disciplines including civil, structural, mechanical, electrical, and environmental. For more information about Harza, visit our website at www.harza.com. Qualified candidates should submit resume with salary requirements (including AD#) to hr@harza.com or send the same to: Montgomery Watson Harza, Attn: Human Resources, Ad#16, 175 W. Jackson, Chicago, IL 60604. Fax: 312-831-3961. EOE M/F/D/V

Superintendent & Project Manager

S.E. hospital project, Salary \$100k. Healthcare exp. req'd. Fax resume to 770-632-2815, or phone 770-632-6585.

Automation Group Service Manager

TRUMPF Inc. has an immediate opening in its Farmington, Connecticut office for an Automation Group Service Manager. Manages the activities of all Field Service and Technical Support Engineers to ensure customer satisfaction and overall quality assurance of products and services by coordinating the Automation Group's product installations, repairs and programming of software for CNC machines. Must possess at least a two-year technical degree in Engineering and relevant experience, including an electrical/mechanical background, knowledge of the metric system and experience programming software for CNC machines. Resume and/or cover letter must reflect each requirement above and specify reference code AGSM or it will be rejected. Forward resume to Heather Dufrey, TRUMPF Inc., Farmington Industrial Park, 111 Hyde Road, Farmington, CT 06032.

Industrial Engineer

Req: Bachelor Degree in Industrial Eng. or Mgmt. Eng. Must be able to read construction working drawing, and able to conduct on-spot measurement, survey and mapping. Duties include: Assess the cultured marble production process techniques and equipment to determine a more efficient operation; determine quality and quantity of production according to client's specification in the construction working drawing; conduct on-spot measurement, survey and mapping to determine the actual need of equipment and material for production; assist products and facilities development and renovation; responsible for daily production, material inventory control and production workers' efficiency. 40hrs/wk, 9-5, \$43k/yr. Send resume to Curtis Cochran at 188 Industrial Park Cir., Lawrenceville, GA 30045, or fax it to 770-963-5933, Job Code: ZY-01.

Structural Engineers

Weidlinger Associates has immediate openings for entry and experienced level Structural Engineers at our Cambridge office. Please send resume to Stephen Lew, Principal, Weidlinger Associates Inc., One Broadway, 11th Floor, Cambridge, MA 02142.

Project/Field Engineer

Granite Construction

Granite Construction, an ENR top 10 heavy/civil contractor, seeks proven professionals to be part of our success story. The ideal candidate will be a team leader and demonstrate a take charge attitude towards the building of some of the most challenging heavy civil projects being built in this country. This position requires 3+ years experience with a heavy/civil contracting firm. CE/CM degree preferred. Must have strong interpersonal skills and a solid understanding of computerized job costing and estimating programs. Granite offers a competitive salary, ESOP, profit sharing, 401(k), and other valuable benefits. Candidates meeting or exceeding these requirements should submit resume to: Granite Construction, Attn: Brian Fox, PO Box 50085, Watsonville, CA 95077 or Fax (831) 761-7871. E-mail: bfox@granite-net.com

Project Managers, Project Engineers, Superintendents

Large building & heavy civil/plant general contractor is seeking qualified personnel for the above referenced positions. Self-starters looking for growth & opportunity with progressive organization should apply. Highly competitive salaries, health benefits, and company 401k. Please send resume to: Prismatic Dev. Corp., 60 Rt. 46, Fairfield, NJ 07004 or Fax to 973-882-1132.

Project Manager, Scheduler, Superintendent

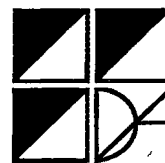
National General Contractor specializing in Heavy Steel and Pre-engineered Metal Buildings currently seeking qualified candidates. Scheduler needs Project and/or Primavera exp. Project Manager and Superintendent must be willing to travel. Fax resume attn: BSD at 865-691-7606 or e-mail at resumes@blaineconstruction.com.

Engineer/Supply Management Specialist

Design & draw assembly products w/ their parts. Manage & control engineering/marketing drawings; perform & review any engin. changes for vendors or customers; manage product improvement process; control material flow. B.S. in ME or rel. & ability to use AutoCAD, Visual Basic, Tool Design, Autodesk Animation, and Pro-E. 40 hr/wk, 8-5. Send resume to: Mr. Jungkuei Lee, VP, Maxxis Wheel Company, 215 Walt Sanders Blvd., Newnan, GA 30265.

Quantity Surveyors Construction Cost Engineers

Currie & Brown, Inc. seeks Quantity Surveyors and Construction Cost Engineers at all levels for its Hillsboro, Oregon location. Experience to include negotiating construction contracts, cost estimates, and evaluation of bids. Send resumes to: Kori Shikina at 5285 NE Elam Young Parkway, #A300, Hillsboro, OR 97124; fax (503) 547-0317 or email kori.shikina@currieb-usa.com



Associate Manager, Cost Control

Location: Albany, NY

The Dormitory Authority, a multi-billion dollar public financing & construction authority headquartered in Albany seeks innovative individual to oversee Cost Control activities & supervise staff. Responsibilities include: implementing long-term strategy to develop Cost Control activities, develop cost & estimating negotiating capacity, ensures compliance with all federal, state & Authority regulations, statutes, policies & procedures, & documentation maintenance.

Comprehensive knowledge of management principles, extensive knowledge of the building design & construction process, cost estimating. Strong communication & negotiating skills. Ability to work in fast paced environment.

Bachelors degree in Business Administration, Construction Technology, Engineering, Architecture or related field. Masters degree preferred. At least eight years progressively responsible experience reviewing construction documents, developing cost estimates, reviewing and analyzing change orders & negotiating construction claims on behalf of a significant public entity or private organization. At least six years progressively responsible experience supervising professional level employees, including performance evaluations. Excellent benefits available.

Submit credentials and salary requirements to:

Dormitory Authority - State of New York

Attn: Brigid Hayes, Human Resources

515 Broadway

Albany, NY 12207-2964 or e-mail to: JobOpps2@dasny.org

EEO/AA

GEOTECHNICAL ENGINEERS

MONTANA DEPARTMENT OF TRANSPORTATION, Engineering Division has immediate opportunities for Engineers in the Geotechnical Section. Position #40001, 40005 and 40066. Salary range is \$36,519 - \$45,649 depending on qualifications. Positions perform geotechnical engineering for bridge projects, roadways, slope stability investigations, and other transportation related issues. Positions serve as geotechnical project managers and duties include supervision of subsurface exploration, analytical work, and report writing.

Helena is a city of about 30,000 and is located on the eastern slope of the Rocky Mountains. Montanans enjoy a high quality of life, abundant recreational opportunities, and wholesome, family centered communities.

To get a copy of the job posting notice and the State of Montana Employment Application, visit the MDT website at www.state.mt.us. Submit the completed application, a copy of your college transcript and responses to the supplemental questions to Human Resources, 2701 Prospect Avenue, Helena, MT 59620. For additional information call 406-444-6042.

The position is open until filled.

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Senior Development Engineer

Senior Development Engineer who can provide design and optical characterization of the many elements of the company's products, including the grating structures, waveguides and laser chips. Individual will be involved in the design of the manufacturing processes critical to the development of the company's first product, a robust, high-yield, manufacturable tunable DWDM laser. Candidates must have a Ph.D in optical instrument engineering or equivalent. Contact us by email at recruiting@sparkolor.com and refer to job code 2165. Sparkolor Corporation, 2230 Martin Avenue, Santa Clara, CA 95050.

BUSINESS OPPORTUNITIES

Looking for Acquisitions

Growing civil engineering firm in northern New Jersey with an office in MA is looking to acquire/merge with other small civil firms. Area of interest NY/NJ/CT Tri State and New England states. Reply to Ernest Ward, 732-786-7211 or fax 732-786-9871. Serious inquiries only.

POSITION WANTED

International PM, 40, Large Projects and MEP. Office towers, Hotel, Institutional, and Retail experience. Presently in Asia and seeking a large project with a professional team. intpm@hotmail.com

UPS Systems

UPS systems are 3 or 4 750kVA/600kW multi-modules systems rated at 1800 and 2400 kW non-redundant. Two systems can be configured for full capacity 2N redundancy. Each system contains 3 or 4 750 kVA/600 kW UPS modules, system bypass switchboard, static switch, transfer controls, maintenance bypass, load bank circuit breaker, system output distribution switchboards, system battery with disconnect and system battery monitoring. Manufacturer: Powerware Corporation.

2000 kW Generator Sets

Generators are Caterpillar packaged electric generator set, Caterpillar model 3516B standby rated 2000 kW, 2500 kVA, 15 kV, 3 phase, 4 wire, 1800 rpm, 60 Hz at 0.8 power factor. Features and accessories for each unit include lo BSFC engine, Kato generator, load share module, NFPA110 alarm module, customer communication module, customer interface module, 15 kV vacuum circuit breaker, Silix isolator, Battery Charger, nicad batteries and Duplex Filters. Generator set is housed in a sound attenuated exterior enclosure, sound attenuated to a level of 70dba @ 15 meters. Enclosure contains a 500 gallon base fuel tank with lead/lag pump system.

Generator Paralleling Switchgear

Generator Paralleling Switchgear is designed to parallel and distribute six or seven 2000 kW 15 kV generator sets. Two are available for six generator paralleling, configured at 12.47 kV, and one is available for seven generator paralleling, configured at 13.8 kV. Each system also contains eight 1200 amp frame, vacuum circuit breakers for distribution to loads. The equipment is housed in two line-ups, one control and one distribution. Control is (PLC) based with Redundant PLC. Manufacturer: Russelectric, Inc.

GE/Russelectric Automatic Transfer Switch

The GE/Russelectric Automatic Transfer Switch is a two section, 15 kV, 100 millisecond closed transition switchgear. This ATS utilizes two 15 kV, 1,200 ampere vacuum circuit breakers in 1,200 ampere metal clad switchgear, 3 phase. The two vacuum circuit breakers are vertically mounted in a single vertical section. The second section contains the ATS control circuitry and the potential transformers. The control system is a microprocessor based transfer control system.

5,000 Ampere Substation

A 5,000 ampere substation, secondary unit substation, across the aisle double ended with 3750 kVA transformers, 12.47 KV or 13.8 kV primary, 480V secondary and automatic main-tie-main switching, switchboard construction with copper bus, 3 phase 3 wire. The line-up per side consists of 1200 ampere 15 kV Load Interrupter Switch, 3750AA, 4312AA, 5750FA kVA Transformer, 5,000 ampere Powerbreak indoor switchboard with 5,000 ampere main CB, 5,000 ampere tie CB, 5,000 ampere feeder CB, 4,000 ampere feeder CB, 800 ampere feeder CB, and 9-1,600 ampere feeder CB's. This double ended substation is designed for use with two 4 module (600 kW per module), 2,400 kW with static bypass, maintenance bypass and output bypass configured for 2N distribution. Manufacturer: General Electric.

4,000 Ampere Substation

A 4,000 ampere, secondary unit substation, across the aisle double ended 3000kVA transformers, 12.47 kV or 13.8 kV primary, 480V secondary and automatic main-tie-main switching, with copper bus, 3 phase 3 wire. The line-up per side consists of 1200 ampere 15 kV Load Interrupter Switch, 3000AA, 3450AA, 4600FA kVA Transformer, 4,000 ampere Powerbreak indoor switchboard with 4,000 ampere main CB, 4,000 ampere tie CB, 4,000 ampere feeder CB, 2,000 ampere feeder CB, and 8-1,600 ampere feeder CB's. This double ended substation is designed for use with two 3 module (600 kW per module), 1,800 kW with static bypass, maintenance bypass and output bypass configured for 2N distribution or is designed for building mechanical loads, depending upon the application. Manufacturer: General Electric.

Primary Switchgear

Indoor Metal Enclosed Switchgear and one outdoor system available. Power-operated auto-transfer type rated 13.8 kV nominal, 15.5 kV Maximum, Fault Fiter® Electronic Fuses in mains and SM-40 Power Fuses in feeder bays. Feeder bays are power operated and include Overcurrent Relays and sensing. Main bus continuous ampere rating is 1,200 amperes. Main switches rated at 1,200 amperes, feeder maximum fuse size is 400 amperes. Equipment is configured for a main-tie-main arrangement. Manufacturer: S & C Electric Company.

225 kVA Static Transfer Switch / Power Distribution Units

Dual source static transfer switches with dual transformers and 20-100Ampere circuit breakers for distribution. Static transfer switches are Type 3, ambient temperature 0 to 40° C forced air. Equipment includes a manual maintenance bypass. Transformers are 225 kVA, K-20, 480V, 3 W, 3PH, primary, 208/120, 4W, 3PH secondary. Distribution section consists of two-800 ampere Panel Boards with 200% neutral bar, equipment Ground Bar and ten 100 ampere 3 pole circuit breakers in each. Manufacturer: Cyberex

600 Ton Refrigeration Chillers

Carrier Corporation Model 19XR5150 "EVERGREEN" hermetic centrifugal refrigeration machine, 460 Volt 3 phase utilizing refrigerant R134a and rated 600 tons at 337 kW input power. Chilled water side flow at 1,439 GPM condenser water side flow at 1,800. Condenser and Chilled water connections are flanged, 10 inch for condenser water, 8 inch for chilled water. A unit mounted solid state starter is included.

600 Ton Cooling Towers

Cooling towers are Model NCB2A1 induced draft crossflow cooling tower manufactured by The Marley Cooling Tower Company. The towers are rated to cool 1,800 GPM from 93.14°F HW to 83.14°F CW at 77°F wet bulb temperature. The towers are constructed of heavy gauge galvanized steel, the cold water collection basin and distribution basins are constructed of heavy gauge bolted 304 stainless steel with a 14 inch bottom outlet connection. The 144 inch Marley fan assembly is driven through a right angle 5-year maintenance free gear reducer. The fan is driven by a 25 HP 3 phase, 460 volt, high efficiency motor. A basin heater package with controls is also provided with each cooling tower.

Plate and Frame Heat Exchanger

One plate and frame heat exchanger is available. Heat Exchanger is Accu-Therm Model AT 80. Cold side (condenser water) specifications are 43°F entering water temperature, 51°F leaving water temperature, 1,972 GPM. Hot side (chilled water) specifications are 55°F entering water temperature, 45°F leaving water temperature, 1,530 GPM.

30 Ton Nominal Computer Room Air Conditioning Units

Computer room air-conditioning unit (CRAC) manufactured by the Airflow Company. The unit is model number CCT-40C designed for a chilled water system. Downflow unit and the total cooling capacity is 353.2 MBH (30 tons nominal). Capacity ratings are based upon 45°F entering water temperature, 55.1°F leaving water temperature with coil chilled water flow of 70 GPM. The unit has 2 blowers rated for total of 14,000 CFM driven by one 10 HP motor at 460 volts, 3 phase. Unit dimensions are approximately 96 inch wide by 33 inches deep by 72 inches high. Included are a smoke detector, firestat, 30 inch high floor stand and main power circuit breaker.

The above equipment descriptions are prepared summaries based on a review of documentation furnished by the equipment manufacturers, and are provided solely for information purposes. This advertisement makes no representations or warranties as to the accuracy of such descriptions, which are provided solely for information purposes.

REQUEST FOR LETTERS OF INTEREST: DEADLINE 15 JANUARY 2002

This is a request for seriously interested buyers to submit a single-page letter on letterhead stating interest in the listed equipment. No quotes please. Submissions will be reviewed for consideration for an upcoming request for quotes. Only serious responses on single page letters will be considered. Please include all contact information *including email address* in letter. Equipment is scheduled for sale in January 2002. All equipment is unused.

REPLY TO: Box# EO-8617, ENR, P.O. Box 900, New York, NY 10108 or Email: ENR BoxReply@McGraw-Hill.com

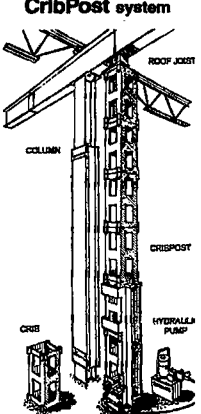
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OFFICIAL PROPOSALS**New York State
Department of Transportation**

Sealed bids for the following projects will be received in an envelope annotated with project name and number until 10:30 a.m. on January 10, 2002 at the Contract Management Bureau, NYS Dept. of Transportation, Bldg. 5, 1st Floor, 1220 Washington Avenue, Albany, N.Y. 12232 and will then be publicly read. A certified or cashier's check payable to the NYS Dept. of Transportation for the sum specified in the proposal or a bid bond, Form CONR 391, representing "25% of the bid total" as specified in the contract proposal, must accompany each bid. Plans and proposals can be obtained from the Sale of Plans Unit, Rm. 109A, at the above address; the Department of Transportation, One Hunters Point Plaza, 47-40 21st St., Long Island City, N.Y. 11101; and the Regional Offices noted below. The right is reserved to reject all bids.

Reg. 10, C. Siracusa, Reg. Dir., NYS Office Bldg., Veterans Memorial Hwy., Hauppauge, NY 11788

D258703, Nassau Co., F.A. Proj. Q24-0804-233, 6.5 Kilometers of Asphalt Concrete Reconstruction on Route 25B in the Town of

PUBLIC NOTICE

The Virginia Department of Transportation (VDOT) has received an unsolicited proposal from Hampton Roads Constructors (HRC), pursuant to the Public-Private Transportation Act (the Act), for the design, construction and financing of the Third Hampton Roads Crossing. The revised Implementation Guidelines, dated April 2001, adopted by VDOT under the Act provide that upon receipt of any unsolicited proposal a notice be posted for 45 days.

Notice is hereby given that VDOT has received the above referenced unsolicited proposal subject to the Act, that VDOT intends to evaluate the proposal, that it may negotiate a comprehensive agreement with the proposer, and that it will accept for simultaneous consideration any competing proposals VDOT receives in accordance with the Implementation Guidelines within 45 days of the initial posting and publication of this notice.

By: Charles D. Nottingham
Commonwealth Transportation Commissioner

North Hempstead and Villages of Williston Park and Old Westbury, PIN 0804.33, Bid Deposit \$1,500,000., Plans \$49., plus \$6. Postage. This Contract requires nighttime work. This Contract contains special A+B provisions for completion of work. See Proposal for details. A pre-bid meeting is scheduled. See Proposal for details. Bidders are strongly advised to attend.

**The Port Authority of New York
and New Jersey**

Sealed proposals for the following contract will be received by the Chief Engineer, Room 230, 241 Erie Street, Jersey City, NJ 07310, until 2:30 P.M. on the date indicated and will then be opened and read in Conference Room B. Contract documents may be seen in Room 230 and may be obtained upon receipt of a non-refundable payment of \$100.00 per set. Only company checks or money orders payable to the order of The Port Authority of New York and New Jersey will be accepted. If checks or money orders for documents are mailed, they should be addressed to The Port Authority of New York and New Jersey, Room 230 - Contract Desk, 241 Erie Street, Jersey City, NJ 07310. For availability of contract documents, call (201)216-2746. Questions by prospective bidders concerning the contract should be directed only to the person whose name and phone number is listed.

Contract LGA-124.055 - La Guardia Airport - 102nd Street Bridge Water Main. Estimate Range: \$500K - \$1M. Bids Due Tuesday, January 8, 2002. The work under this contract consists generally of construction of a DIP water main through existing sleeves in 102nd Street Bridge diaphragm to a tee and construction of a DIP water main to east end and to west end of La Guardia Airport. For questions, call Norman Price at 201-216-2919.

Contract LGA-124.055 was previously advertised on September 17, 2001. At present we are not sure we have been able to identify everyone who requested contract documents at the World Trade Center address. Contractors who requested documents in response to the September 17, 2001 advertisement and are interested in receiving updated information on this contract should contact Mr. Norman Price at 201-216-2919.

**New York State
Department of Transportation**

Sealed bids for the following projects will be received in an envelope annotated with project name and number until 10:30 a.m. on January 10, 2002 at the Contract Management Bureau, NYS Dept. of Transportation, Bldg. 5, 1st Floor, 1220 Washington Avenue, Albany, N.Y. 12232 and will then be publicly read. A certified or cashier's check payable to the NYS Dept. of Transportation for the sum specified in the proposal or a bid bond, Form CONR 391, representing "25% of the bid total" as specified in the contract proposal, must accompany each bid. Plans and proposals can be obtained from the Sale of Plans Unit, Rm. 109A, at the above address; the Department of Transportation, One Hunters Point Plaza, 47-40 21st St., Long Island City, N.Y. 11101; and the Regional Offices noted below. The right is reserved to reject all bids.

Reg. 2, F. Gerace, Reg. Dir., 207 Genesee St., Utica, NY 13501

D258860, Oneida Co., F.A. Proj. Q92-2230-216, 1 Kilometer of Asphalt Concrete Reconstruction on Route 5A in the Town of New Hartford, PIN 2230.16, Bid Deposit \$750,000., Plans \$49., plus \$6. Postage. This Contract contains special A+B provisions for completion of work. See Proposal for details. Bids must be based on the plans and proposals issued for this letting.

Reg. 8, R. Dennison, Reg. Dir., 4 Burnett Blvd., Poughkeepsie, NY 12603

D258517, Putnam Co., F.A. Proj. Q40-8755-280, 9 Kilometers of New Bikeway Construction on Route 6 in the Town of Carmel and Village of Mahopac, PIN 8755.80, Bid Deposit \$750,000., Plans \$49., plus \$6. Postage. A pre-bid meeting is scheduled. See Proposal for details. Bidders are strongly advised to attend. Bids must be based on the plans and proposals issued for this letting.

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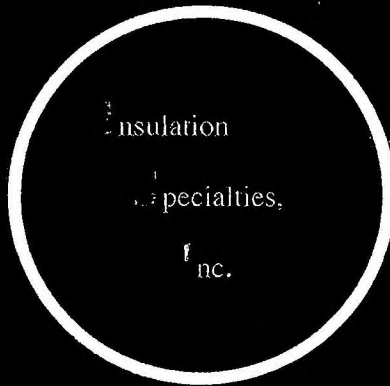
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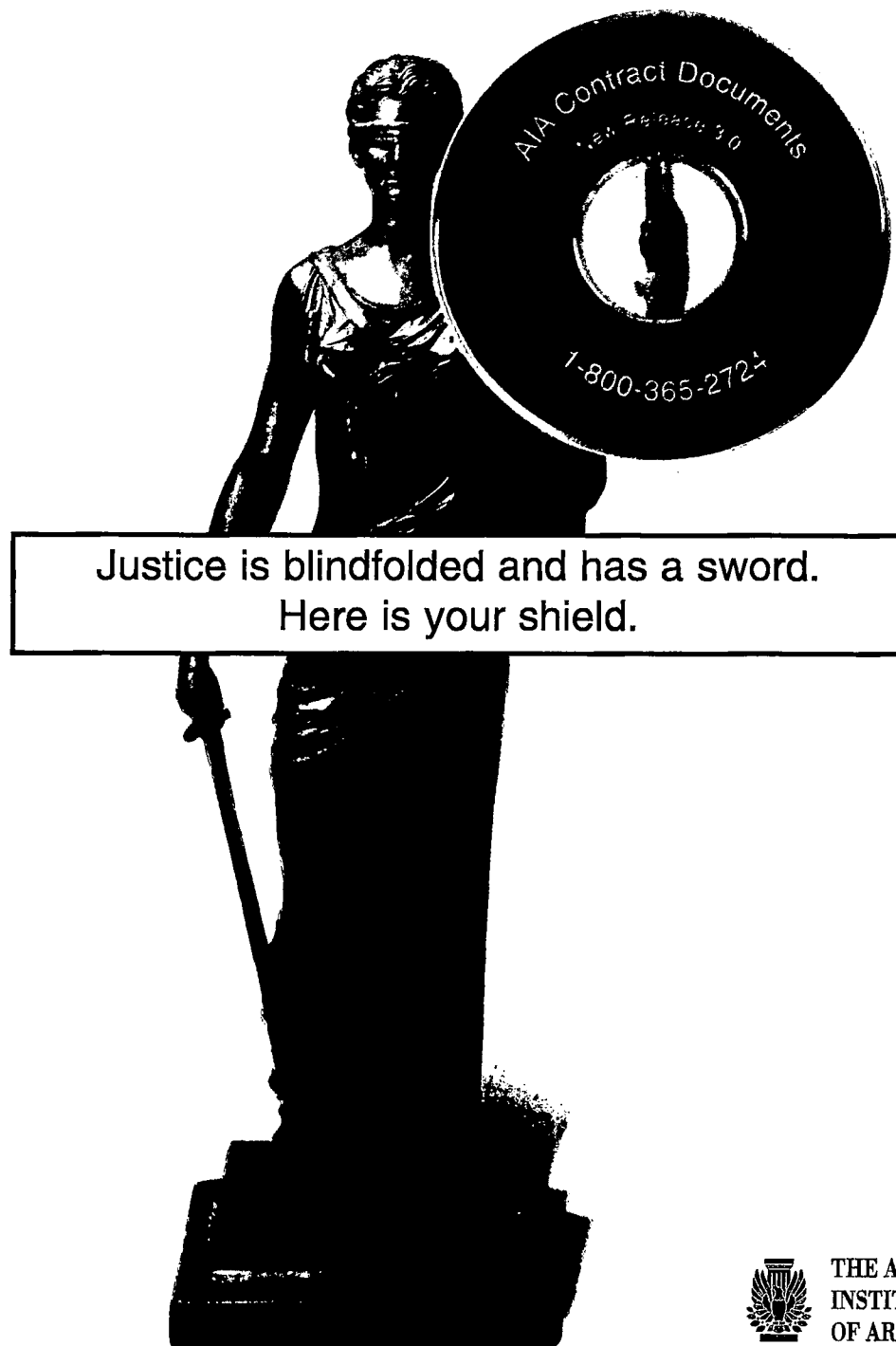
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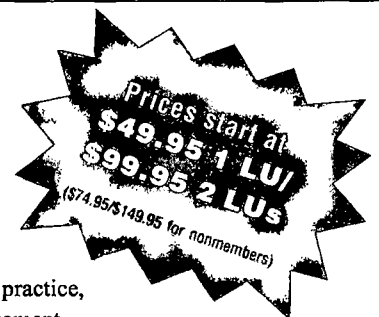
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POLLS

SECURITY

National I.D. is Not a Panacea

EFFORTS BY SOME MEMBERS OF Congress and the private sector to improve tracking of suspected terrorists in the U.S. have focused new attention on development of a national identification card for all citizens and resident aliens.

Despite the support in Washington, the plan is opposed by President Bush and others. And, according to this week's Web poll at *enr.com*, construction industry members are equally skeptical. Of 544 voters at ENR's Website, almost 50% object to the idea. Even so, the remainder do support the national ID fully or partially (see chart).

Opponents who fear that such a step would be an invasion of privacy were the most vocal respondents.

"Law-abiding citizens have everything to fear when their rights are being limited by gov-

ernment passing restrictive laws," says Tim Parker, engineering manager at L&H Airco, Sacramento. "We are a nation founded upon the rights of individuals. Any attempt to take those rights away for the so-called 'common good,'

especially in the emotional aftermath of Sept. 11, should be suspect."

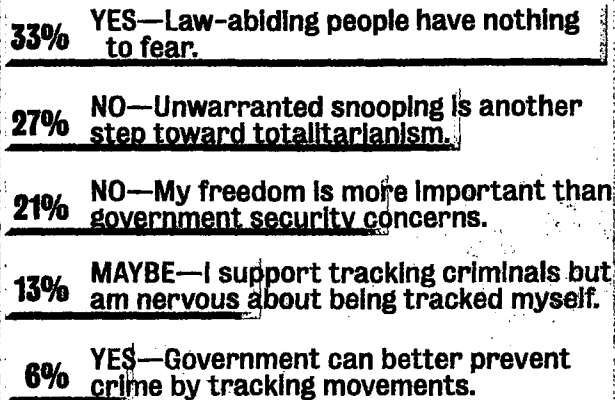
Echoing that opinion is Paul St. Jean, an estimator for Pike Industries Inc., in Lewiston, Maine. "Because of its scope and the constant traffic in and out of our country, a national ID card would take forever to implement, and would be impossible to manage," he contends.

St. Jean adds that "we are already being ID'd to death with our driver's license and social security numbers. These are already used, sometimes I think illegally, for identification."

He also points out that when "it comes to privacy versus security I say thanks, Uncle Sam, but no thanks on this one. Anyone who thinks 'law-abiding citizens have nothing to fear' is out of touch with life's realities."

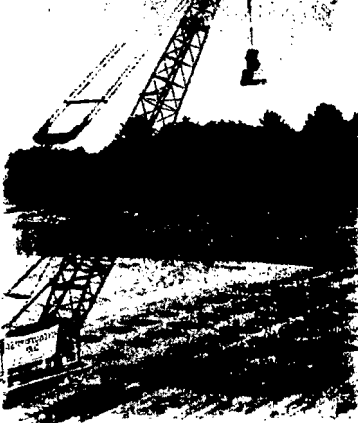
By William J. Angelo

IN THE WAKE OF 9/11, SHOULD CONSTRUCTION SUPPORT A 'SMART' NATIONAL I.D. CARD FOR EVERY U.S. CITIZEN AND RESIDENT ALIEN?



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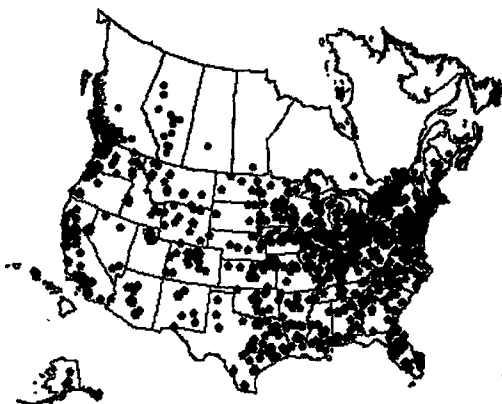
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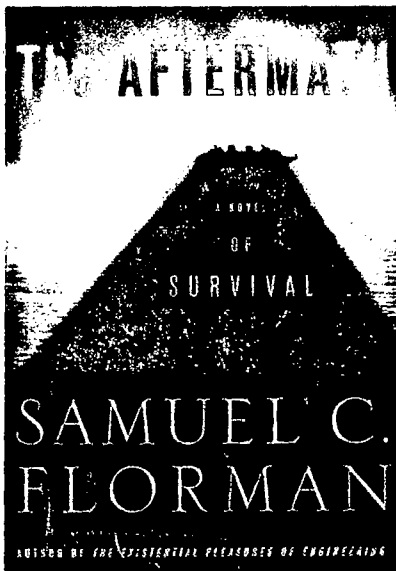
The industry's anguish over its public image and lack of respect is largely caused by the fact that it has not made sufficient effort to build a foundation of knowledge in the public to generate any excitement over the work it does.

Those efforts can take many forms. Some associations like the Associated General Contractors have launched successful efforts to get construction industry activities into classrooms. And there even have been some well-done television programs, such as the Building Big series on public television. Those types of things tend to take a lot of money and support from large organizations. But there are activities that individuals can do, like writing books that showcase engineering and construction themes and their value to society. One good example is a new work of fiction by engineer and author Samuel C. Florman called *The Aftermath*, published by St. Martin's Press, New York City.

Florman, co-chairman of Kreisler Borg Florman General Construction Co., Scarsdale, N.Y., creates a scenario in which most of the world is destroyed by a comet strike on Christmas Eve 2009. Spared from the impact, firestorms and tidal waves is a cruise ship off the coast of Africa with 600 leading engineers attending a seminar dedicated to finding solutions to the world's shelter, food, energy and environmental issues. Along with about 25,000 survivors on land, the engineers are thrown back to the Stone Age in terms of resources but they remain intellectually at the peak of their profession. They now are in a position to practice what they preach and the survival of modern society depends on their success.

While the book tends to dwell on the evolution of technology and doesn't take full advantage of the excitement and horror of a very plausible and possible event, it shows how fragile our world is and the things we tend to take for granted. It also demonstrates the essential value of knowledge, education and skills in building and preserving what we have.

The Aftermath is a thought-provoking book that puts the industry and particularly the engineering profession on center stage, where it belongs. We hope that there are more authors out there with good ideas like this one. It is a slow process, but there is hope in generating public enthusiasm for construction and its professions.



Best Industry Skills Needed For Leading Trade Center Job

It does not look like Bechtel Group Inc. or any other private firm will be heading up the cleanup of the World Trade Center site, at least for the time being. New York City had been in talks with Bechtel to assume the role of program manager for the site, one that the city's Dept. of Design and Construction had been performing since Sept. 11 (see p. 13). Cost concerns over the cleanup may have been the reason, but safety also is critical, despite a good record so far. The potential deal may have been smothered because of protests from some members of the city council and the union that represents the city's engineers, technicians and surveyors.

This is a very special project that raises a lot of emotions in many people. But the site remains an extremely dangerous place that requires the very best skills that the industry can offer, whether in a private firm or city agency. There are emergency conditions, but site conditions have stabilized to the point that now is the time to seriously assess management skills on the project, costs and accountability. The fact that DDC has managed the site since the attacks does not mean that it is the very best organization for the job. It also does not mean that it is unqualified. The answer lies in a qualifications-based selection analysis typically used to select firms for program management positions. Qualifications and technical skills are assessed first, and price secondarily.

The municipal union's political lobbying is especially troubling. The same issues were raised in California in the long and bitter fight between the Professional Engineers in California Government union and a private sector coalition led by the Consulting Engineers and Land Surveyors of California over contracting out of government work performed by state employees. In 2000, voters in the state approved a Proposition 35, which allowed contracting out using QBS when it was deemed appropriate.

It is hard to compare public agencies and private firms, but that does not mean that it is impossible. Private contracts have a beginning, end, cost and result. Public agencies tend to have hidden costs. But performance is what counts.



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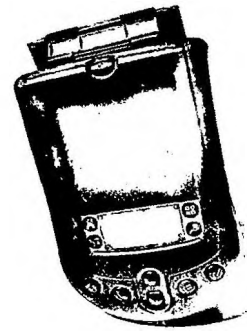
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