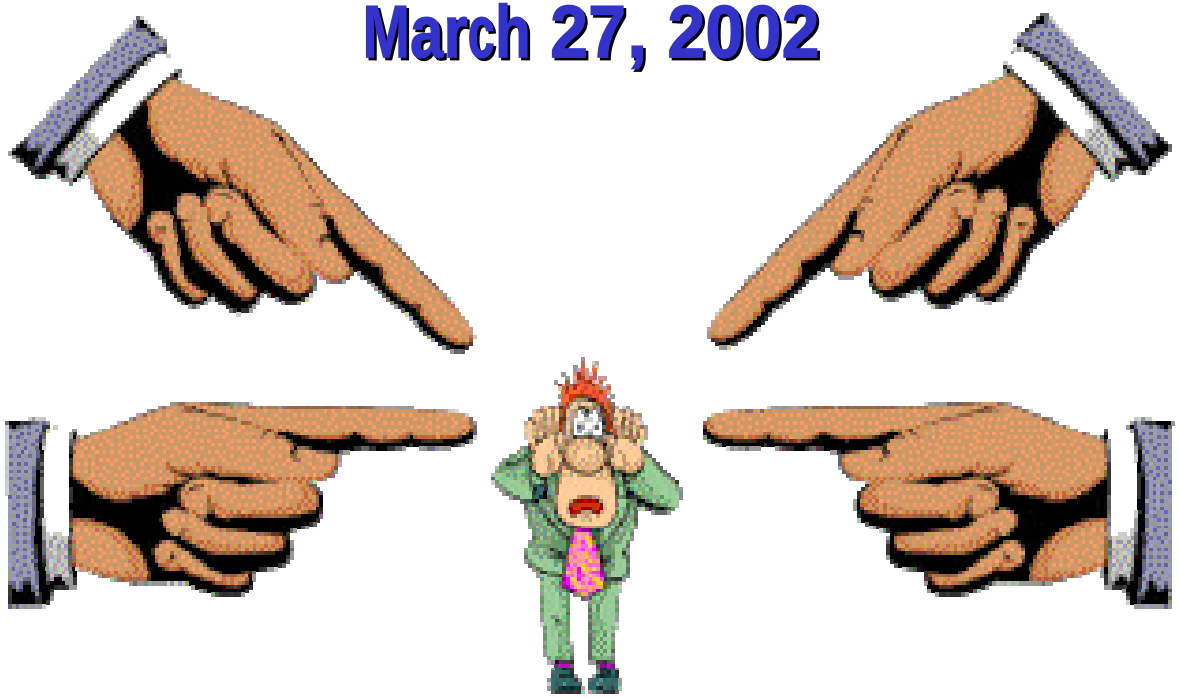
THE BLAME GAME

CONSTRUCTION DEFECTS:

Prevention, Resolution, And Risk

March 27, 2002



Northwest Construction Consumer Council

Sponsored By: PINNELL BUSCH, INC. &

AGC Oregon Columbia Chapter
ASSOCIATED GENERAL CONTRACTORS

ASSOCIATES COUNCIL

THE PRESENTERS

JEFF BUSCH — Pinnell♦Busch, Inc.

Sr. Consultant & Principal - with 25 years experience he specializes in project & construction management, partnering facilitation, dispute management programs, mediation and management training.

DARIEN S. LOISELLE — Schwabe, Williamson & Wyatt

Lawyer - experience includes commercial, insurance, and construction issues, including construction lien and defect litigation, insurance coverage and surety litigation, and BOLI and prevailing wage compliance.

DICK PORTERFIELD — Maxson Young Assoc. Inc.

Executive General Adjuster / Vice President - began his adjusting career in 1959. He specializes in the handling of complex commercial losses, including construction defect and builder's risk.

BRUCE McDONALD — Maxson Young Assoc. Inc.

General Adjuster/Branch Manager - began his adjusting career in 1977. He currently serves as Treasurer for the Oregon Chapter of CPCU and is an instructor for the Insurance Educational Association.

BRUCE FONG — Kaiser Permanente

Senior Project Manager of Design & Construction, NW Region - over 20 years experience in strategic planning, campus planning, life cycle cost analysis, building standards development and project management.

AGENDA

The "Blame Game" has now taken root in the construction and capital projects industry. Many experts believe that what we have seen is the onset of what will become an avalanche of trouble for facilities owners and their construction service providers.

8:45 Introduction: Case Study Examples
- Jeff Busch, Pinnell♦Busch, Inc.

9:15 How Contracts Determine Responsibility
- Darien Loiselle, Schwabe, Williamson & Wyatt

9:45 Break

10:00 Trends In Insurance Coverage & Claims
- Dick Porterfield & Bruce McDonald, Maxson Young Assoc.

10:45 How Owners Can Reduce or Eliminate Construction Defects
- Bruce Fong, Kaiser Permanente

11:15 The Ten Keys You Need to Know - to Know About Construction Defect's Potential Impacts
- All Speaker Panel moderated by Jeff Busch

12:00 Close & Lunch

CASE STUDY EXAMPLES

Jeff Busch

PINNELL♦BUSCH, INC.

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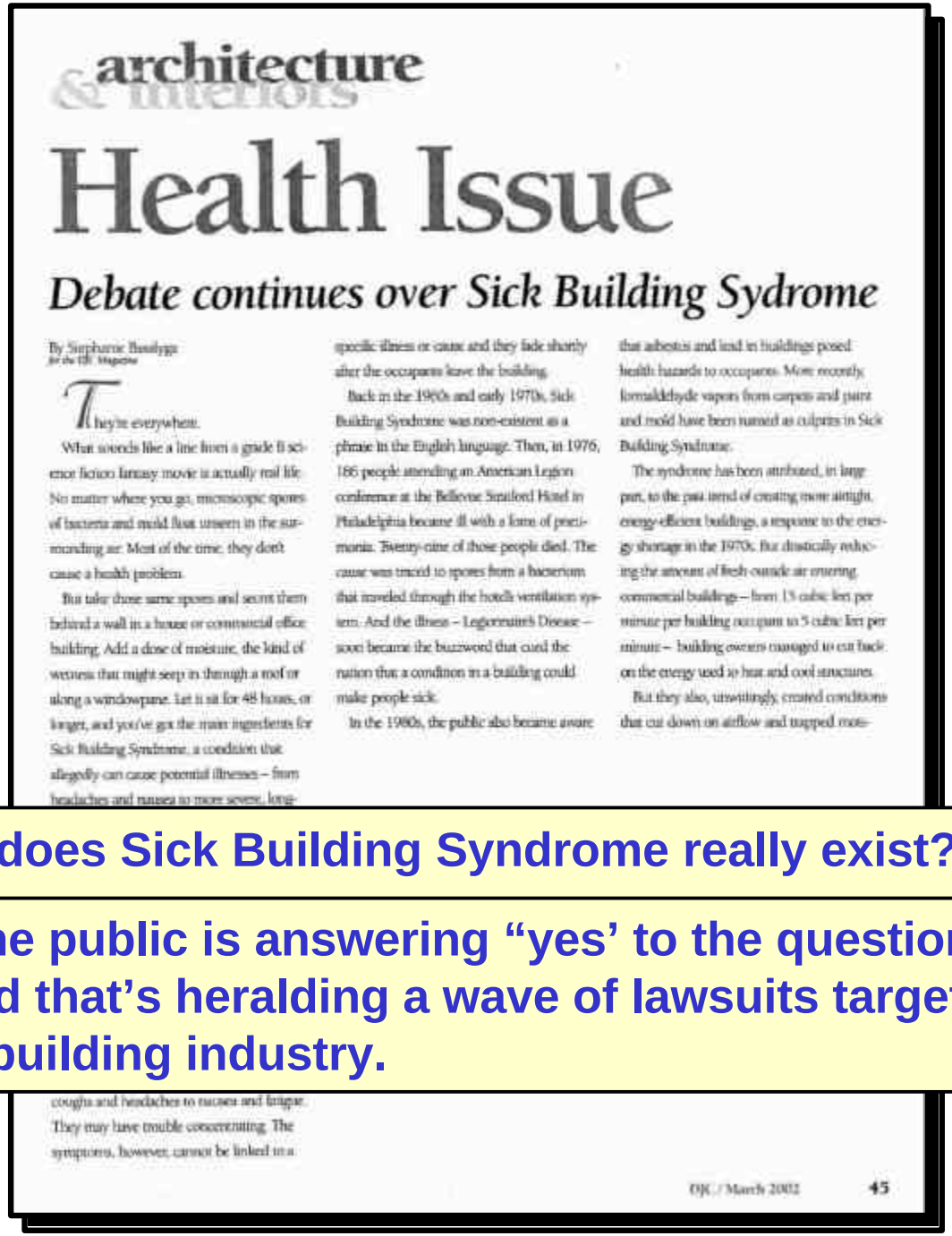

architecture & interiors

Health Issue

Debate continues over Sick Building Sydrome

By Stephanie Bastiyga
for the UH Magazine

They're everywhere.

What sounds like a line from a grade B science fiction fantasy movie is actually real life. No matter where you go, microscopic spores of bacteria and mold float unseen in the surrounding air. Most of the time, they don't cause a health problem.

But take those same spores and secret them behind a wall in a house or commercial office building. Add a dose of moisture, the kind of wetness that might seep in through a roof or along a windowpane. Let it sit for 48 hours, or longer, and you've got the main ingredients for Sick Building Syndrome, a condition that allegedly can cause potential illnesses – from headaches and nausea to more severe, long-

coughs and headaches to nausea and fatigue. They may have trouble concentrating. The symptoms, however, cannot be linked to a specific illness or cause and they fade shortly after the occupants leave the building.

Back in the 1960s and early 1970s, Sick Building Syndrome was non-existent as a phrase in the English language. Then, in 1976, 166 people attending an American Legion conference at the Bellevue Stratford Hotel in Philadelphia became ill with a form of pneumonia. Twenty-nine of those people died. The cause was traced to spores from a bacterium that traveled through the hotel's ventilation system. And the illness – Legionnaire's Disease – soon became the buzzword that cued the nation that a condition in a building could make people sick.

In the 1980s, the public also became aware that asbestos and lead in buildings posed health hazards to occupants. More recently, formaldehyde vapors from carpets and paint and mold have been named as culprits in Sick Building Syndrome.

The syndrome has been attributed, in large part, to the past trend of creating more airtight, energy-efficient buildings, a response to the energy shortage in the 1970s. But drastically reducing the amount of fresh outside air entering commercial buildings – from 15 cubic feet per minute per building occupant to 5 cubic feet per minute – building owners managed to cut back on the energy used to heat and cool structures.

But they also, unwittingly, created conditions that cut down on airflow and trapped mois-

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But does Sick Building Syndrome really exist?

… the public is answering "yes' to the question, a trend that's heralding a wave of lawsuits targeting the building industry.

Bridges

OUTDATED JOINT DESIGN WAS KEY TO MILWAUKEE SPAN'S FAILURE

A TRIPLE WHAMMY OF obsolete standard design techniques, traffic stress and cold Wisconsin weather snapped structural steel in a Milwaukee highway bridge last December, the state Dept. of Transportation says in a report released April 10. Repairs to the Hoan Bridge, to be completed by next winter, will be cheaper than had been anticipated at $16 million.

BUCKLED Girder failure caused 4-ft dip in bridge, says state.

On Dec. 13, a crack in a bridge girder started at the joint assembly. "It traveled the length of a vertical 10-ft steel I girder, at the speed, and with the sound, of a gunshot," says DOT spokesman Les Falard. Made brittle by the cold temperatures, three horizontal girders supporting the bridge buckled. On Dec. 28, using sequential explosions to avoid damage to a nearby bridge pier and utility building, crews brought down the failed approach span (ENR 1/15, p. 17) so that a team could study why two main girders cracked and created a 4-ft dip in the roadway.

"In all my years of investigating bridge failures, I have never seen one like this," says Lehigh University's John Fisher, one of the investigating engineers. In the final report, investigators exonerated the quality of steel and workmanship used to build the bridge in 1971.

But the team, which also includes the Federal Highway Administration and New York City-based Lichtenstein Consulting Engineers, says a lower lateral connection joint assembly on the bridge triggered the Dec. 13 failure. "The joint assembly at this point was den, catastrophic failure" caused them, not long-term fatigue. The FHWA engineers, using a computer model to study the failed connection joints, concluded that the use of overlapping welds may have contributed to the failure. But the bridge materials and construction methods "conformed to quality standards at the time the bridge was built," they said. December's unusually heavy snows and colder temperatures also played a role.

State officials had earlier pegged the repair costs at $19 million to $41 million, assuming that the bridge's three girders would have to be completely replaced. But now the work will entail replacing demolished bridge parts and replacing about 300 joints similar to ones that failed with newer, tougher design standards and reinforcing.

Bids on the project will be let in May. President George W. Bush and Transportation Secretary Norman Mineta assured the state they would seek federal funds for the work.

DOT officials say the failure, the first of its kind encountered in the U.S., could have "a national and potentially

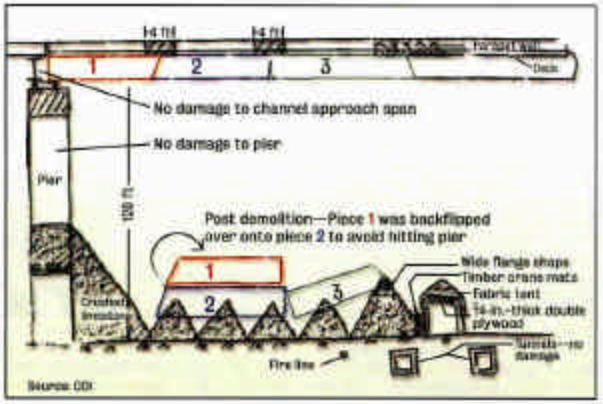
posed south side freeway that never happened. After years of being called "the bridge to nowhere," it saw increased traffic thanks to the opening last year of a new parkway cutting through the south side of the city. But DOT officials don't believe the actual change in vehicle volume played a significant role in the failure. ❑

By Erik Gunn

"This type of joint assembly, . . . was a typical design practice when the bridge was built 30 years ago."

Bridges

FATIGUE, BRITTLE FRACTURE LIKELY CAUSED MILWAUKEE SPAN FAILURE



EXPLOSIVE BACKFLIPS Failed span removal scheme avoided damage to bridge pier.

PROMPTED BY THE FAILURE OF AN approach span of Milwaukee's Daniel Webster Hoan Bridge, the state's Dept. of Transportation is reviewing more than 20 other "fracture-critical" steel bridges with two and three-girder designs. No significant problems have been found so far, reports Finn Hubbard, WisDOT's structural design supervisor in Madison.

On Dec. 28, using sequential explosions to avoid damage to a nearby bridge pier and utility building, crews brought down the failed approach span. The demolition opens the door for forensic experts, assembled by WisDOT, to determine why two main girders cracked and created a 4-ft dip in the roadway. Sections of the felled span are on their way to Lehigh University, Bethlehem, Pa., and the Federal Highway Administration's Turner-Fairbank Research Center, McLean, Va., for detailed analysis.

Investigators will scrutinize material and welding integrity, along with design elements such as lateral bracing details, says Hubbard. The lateral bracing, which forms a series of K-shaped networks in plan view, is unique for bridges of this type, he adds, noting that X-bracing is more common.

K-bracing, along with a gusset plate attached at the bottom of the girder, may have produced out-of-plane bending, says Bala Sivakumar, chief engineer in Lichtenstein Consulting Engineers, New York City, an investigator. "It was probably a combination of fatigue and brittle fracture," with sub-zero temperatures a contributing factor, says Sivakumar.

Repair costs are still unknown, but sources say the sum could reach several million dollars. The span in question carries traffic northbound. WisDOT may open southbound lanes, on a separate structure, to two-way traffic this spring, says Hubbard, and reconstruct the northbound bridge in one-to-two years.

Controlled Demolition Inc., Phoenix, Md., dropped 130 ft of the 217-ft-long span in three segments delineated by the original failure point and additional slots cut in the deck. Crews used over 600 lb of shaped charges, detonated milliseconds apart, to bring down 500-plus tons of steel and concrete. The scheme "backflipped" one segment onto another to avoid damaging the pier. "None of our projects goes exactly as planned, but this was as close to a 10 as we're going to get," says Mark Loizeaux, CDI president.

A Milwaukee Metropolitan Sewerage District building beneath the damaged span was also spared. Contractors Lunda Construction Co., Black River Falls, Wis., and Zenith Tech Inc., Waukesha, Wis., surrounded the building with crushed limestone and protected the roof with a plywood and geotextile cover.

SEQUENCED FALL Bridge span was dropped in three segments.

Damage was minimal, other than debris that landed in clarifier tanks, potentially clogging tanks, pipes and pumps, says Mark Kuss, MMSD spokesman. "There is going to be a lot of maintenance in the next few months," he says.

The span failure occurred Dec. 13 in a southerly approach of the bridge, which carries Interstate 794 traffic over the Milwaukee Harbor near Lake Michigan (ENR 1/13-8 p. 15). After finding full-depth cracks in two of three, 10-ft-deep main girders, WisDOT abandoned repair plans.

The 3-mile-long bridge, designed by HNTB Corp., was completed in 1974, says W. Scott Rutter, officer in charge of HNTB's Milwaukee office. Declining to speculate on failure causes, he notes: "The structure has been in service for decades." ❑

By Andrew G. Rice

Bridges

WORK BEGINS TO HALT SWAYING OF LONDON'S PEDESTRIAN CROSSING

. . . officials say that the structure meets design codes, but an unpredicted live loading type caught them unaware.

reduction," says Roger Ridsdill Smith, an Arup director. The firm is negotiating with Taylor Devices Inc., North Tonawanda, N.Y., to supply the viscous dampers, while a German firm is expected to provide the tuned units. A short list of firms has formed to bid for installation work, due to start next month.

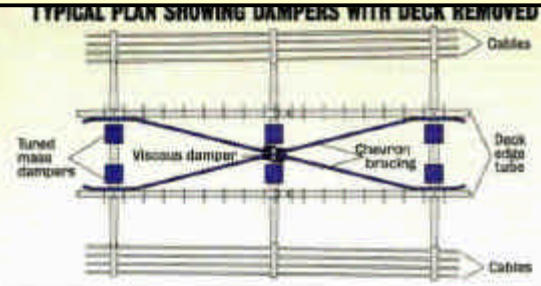
Neither the bridge owner, Southwark Borough Council, nor its co-financier, the Millennium Bridge Trust, will help fund the project. "We are not going to reveal who will pay," says a trust spokeswoman. The other project players are Arup, City of London

months of investigations, including full-scale load tests, Arup engineers believe the swaying is triggered by chance footfall correlation that was amplified by synchronizing footsteps with the deck movement.

"As the amplitude of the motion increases, the lateral force imparted by individuals increases, as does the degree of correlation between individuals," said the engineers in a note to U.K. and French structural groups last fall. "This frequency 'lock-in' and positive force feedback caused the excessive motions observed at the Millennium Bridge." Engineers urge revision in design codes to account for the swaying phenomenon. U.K. codes "do not adequately cover synchronous vertical excitation arising from groups or crowds of pedestrians under normal usage," they claim. "Such loading

The British Standards Institution is expected to decide . . . if code changes are needed.

TYPICAL PLAN SHOWING DAMPERS WITH DECK REMOVED



Stadiums

SEATTLE MARINERS WANT MONEY FROM DESIGNER AND CONTRACTOR

THE SEATTLE MARiners say they are dropping their attempt to

SAFECO FIELD

were more than $33 million in change orders. A $32 million

tive Howard Lincoln says the team will pursue claims against the designers and the contracting joint venture. "Our fans were saying to us, 'If you want to go after the contractors have at it, but don't go after the taxpayers,'" says Lincoln. "We cer-

GAME PLAN Team changed mind about cost overrun strategy.

is the nature of run-and-gun projects like this one that design is always trying to catch up to construction," says now-retired NBBJ Principal Dave Hodemaker, at the time of Safeco Field's completion.

NBBJ Principle-in-Charge Dennis

$100 million in cost overruns at two-year-old Safeco Field and will pursue legal claims against the construction team.

The Public Facilities District, the stadium owner, says redesigns and plan errors and omissions caused more than $81 million in unanticipated costs.

The 45,600-seat ballpark was rushed through 27 months of construction and opened on time in July 1999,

CONSTRUCTION DEFECTS: THE NEW RULES OF THE GAME

The construction industry has finally come of age — it has its own malpractice attorneys and self-appointed "experts" who earn a living finding fault with the work of builders.

In the two previous issues of *NW Builder*, Phil Fanker explored the question of Construction Defects (CDs) from the perspective of the insurance industry. Fanker used "The Gathering Storm" as a metaphor for the CD phenomenon. Attorney Paul Gary now tackles the same issue with a new metaphor: evolution.

By their nature, storms build and then unleash their energy. Storms ultimately dissipate. The rise in the level of CD claims, certainly as compared with 10 years ago, does reflect a growth of energy, much like a storm. However, Gary asserts that, unlike a storm, CD claims will never dissipate. CD claims are now permanent fixtures in the landscape, and as a builder, you confront a stark choice: evolve, or die.

By Paul R. Gary

WHY DO YOU THINK YOU ARE SPECIAL?

American manufacturers, transportation companies, software companies, doctors, accountants, and lawyers have all seen a dramatic rise in lawsuits over the last 15 to 20 years. The filing and results of lawsuits apparently are now as newsworthy as international events. If you have never heard of the woman who sued McDonalds because her coffee was too hot, I'll buy you a cup myself — provided you sign an injury waiver first. Americans know all about using lawsuits to seek the relief to which they believe they are entitled. Elected officials are never going to deny their constituents the opportunity to do so.

Over this same time, residential construction has come into its own as a major American industry. The sale price for individual homes has increased dramatically. Americans have been told for years that their home is the largest investment they will ever make and that their neighbors all report selling their home for big profits.

To meet demand, homes now must incorporate more diversified designs and components than ever before. The increased use of subcontractors and constant introduction of new, often synthetic, building materials has tradespeople working with unfamiliar materials in challenging designs. Stringent energy codes have sealed homes, trapping water. Houses cost more, but at the same time it is more difficult to insure quality, coordinated construction throughout the structure.

Buyer expectations are high and, like the rest of us, they are more willing to sue. Builders have become more financially substantial targets. The atmosphere supporting the storm had been here for some time.

The infrastructure of an entire construction defect litigation industry has been built.

Then a series of catalysts appeared, turning this potential into reality. Naming but a few, defective plastic pipe, composite siding, and now EIFS have caused many millions of dollars to change hands.

CONSTRUCTION DEFECT CLAIMS ARE HERE TO STAY

Even with all this, I suggest the most serious danger for individual builders is to think that the industry will work its way through the latest chain crisis and that the era of frequent construction claims will pass — a return to a "sane" time.

That won't happen.

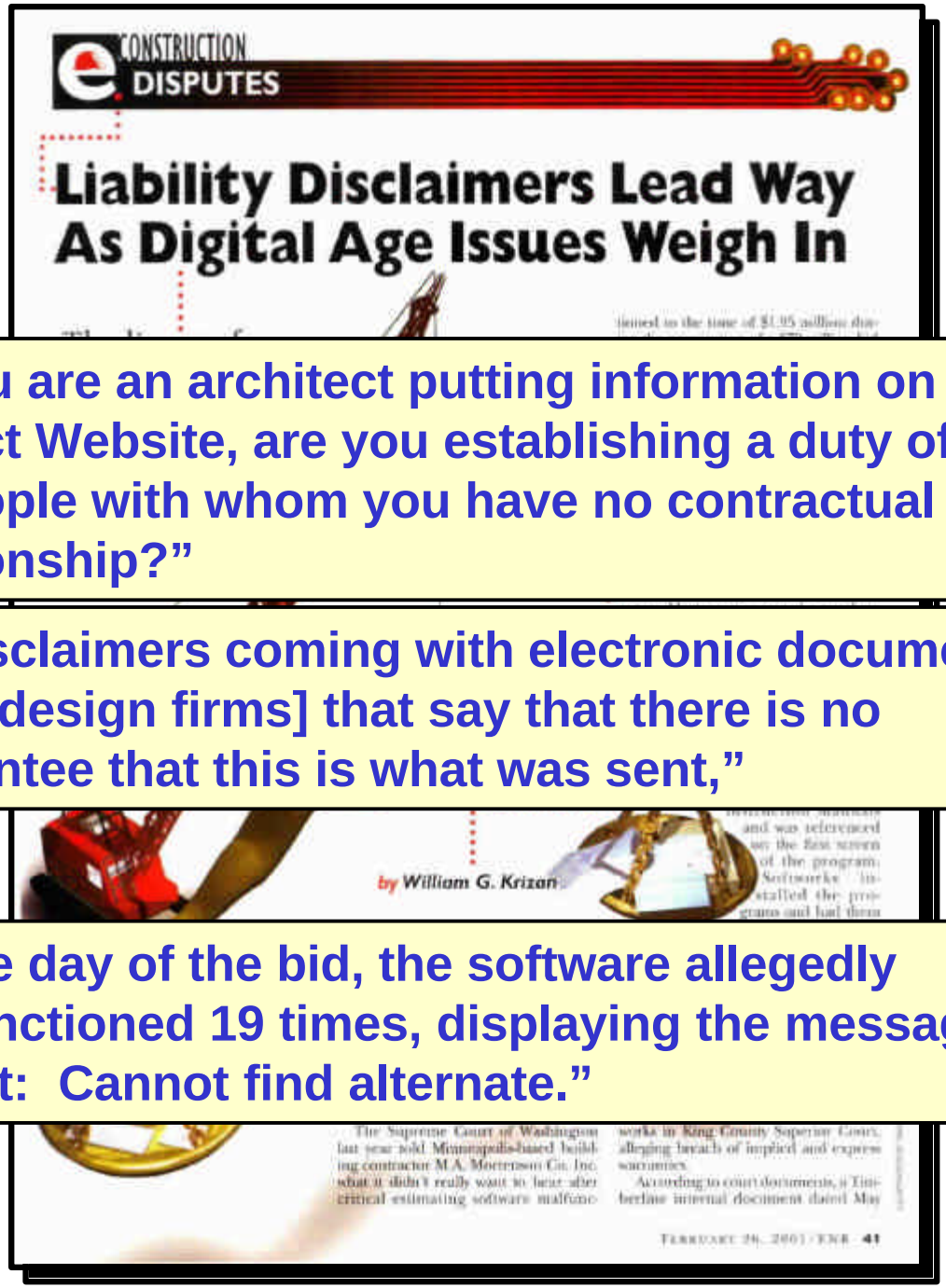
The volume of construction defect (CD) activity has created specialists that have come to depend on CDs for their living. I can tap into a pool of dozens of CD consultants, "experts" if need be, in Oregon alone. The number of attorneys emphasizing CD has multiplied. Flyers are being flung on doors of EIFS homes by inspection services. Plaintiffs' attorneys are sending out direct mailings, soliciting CD cases. The "infrastructure" of an entire CD industry has been built.

As each of these individuals invests more time in CD litigation, he/she invests less in other businesses. These are people with mortgages, children, and all the other things that represent needs in American life. Right now, there is an EIFS "emergency bowl." It is the current attraction and is satisfying much of those needs for construction attorneys and experts. But, every expert and attorney engaged by a homeowner to investigate and prosecute the relevant EIFS claims will also inquire after and investigate any other "problems." There are at least two reasons for this: to serve the homeowner client, all existing claims must be brought — and, of course — to make the case bigger.

It is possible that EIFS litigation will substantially conclude within the next five years, assuming the dramatic systems works. But, do you think the attorneys and experts will happily go out of business? Not a chance. The individual's economic motivation will be matched by the growth in his/her CD expertise. That energy is already being channeled into other construction issues, surging anywhere from drainage to roofing to indoor air quality (IAQ).

DEFINING CONSTRUCTION DEFECTS AND "THE VINCE LOMBARDI EFFECT"

Part of the problem is the elusive nature of a "construction defect." What is a CD, anyway? In California, which is further down the same road, a CD is something that an expert identifies as a CD. The only way to counter such an allegation is to hire defense attorneys and defense consultants who will say that the same detail is not a CD. Currently, in Oregon, most claims are focused on assigning responsibility for things that have caused actual damage. In California, this limitation has been left behind and plaintiffs are litigating things



"if you are an architect putting information on a project Website, are you establishing a duty of care to people with whom you have no contractual relationship?"

. . . disclaimers coming with electronic documents [from design firms] that say that there is no guarantee that this is what was sent,"

On the day of the bid, the software allegedly malfunctioned 19 times, displaying the message: "Abort: Cannot find alternate."

real

Liability Issue

EIFS suits trigger insurance challenges for builders

By Stephanie Basalygo
for the OJC Magazine

...ries -- are becoming rarer than available land in the Portland metropolitan area.

For starters, some home builders around the ...

When EIFS first came out on the market, it was heralded as an innovative invention, an environmentally friendly, visibly attractive and ...

...owners and the bane of contractors, both residential and commercial.

And the very weapon that builders rely on to ...

...houses. At the heart of the legal battle was the use of synthetic stucco, more formally known as External Insulation and Finishing Systems. ...

...tems.

Manufacturers blamed residential builders, saying the systems had been installed incorrectly. Builders blamed manufacturers, alleging the ...

The first rash of lawsuits sent insurance companies digging deep into their pocketbooks to cover claims for residential contractor policies. Fearing the worst was still to come, most national companies began stepping away from contractors who had worked with synthetic stucco, even though many of those contractors weren't facing actual lawsuits.

"It tends to make insurance companies wary," said Lisa Vincent, a Tualatin-based agent for American Family Insurance, one of the few national general insurance companies still willing to write liability policies for residential

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But contractors who have handled projects using synthetic stucco are finding their liability insurance is being cancelled,

"Almost any contract we see carries an exclusion for synthetic stucco,"

LEGAL

Engineer Did Not Illegally Practice Architecture

An engineer who placed his seal on plans for the renovation of a building for offices did not engage in the practice of architecture and should not have been fined by the state architects' board, a Pennsylvania court ruled.

Charles Bowser, a Philadelphia lawyer, hired Harold Murray, of Murray Drafting Services, to survey a building

engaged in the practice of architecture without a license. The board concluded that Rosen and Murray had engaged in the unauthorized practice of architecture, and imposed a civil penalty of $1,000 against Rosen and $300 against Murray. They appealed to the Pennsylvania Commonwealth Court, arguing that the services they rendered on the project

The court agreed, holding that the architects' law and the engineers' law should be read in tandem,

. . . there is indeed an overlapping of the professions, and neither one establishes a clear, mutually exclusive, delineation between the two."

building permits. Architect Charles Lomax agreed to manage the project, but Bowser decided Lomax's fee was too high. Instead, he hired Robert R. Rosen, a professional engineer, who applied his seal to the plans.

When Lomax learned that an engineer had sealed the design documents, he filed a complaint with the Architects Licensure Board, asserting that Rosen and Murray had

engineering.

design buildings and engage in construction planning and management. The fact that the practice of architecture encompasses the same activities does not diminish the sphere of the practice of engineering." As Rosen never held himself out to be an architect, the court concluded that the services he provided were within the practice of engineering. *Rosen v. Bureau of Professional and Occupational Affairs, 763 A.2d 962 (Pa. Cmwlth. 2000).*

LEGAL

Contractor that Met Specs May Have Duty to Warn

The fact that a highway contractor used specified materials would not protect it from liability for a motorist's death if the contractor knew that the specified materials were dangerous before it signed the contract, a federal court has ruled.

On Dec. 21, 1998, Deborah Engelhardt was killed in a car accident while driving on U.S. Highway 65 in Faulkner County, Ark., when another vehicle hydroplaned and collided with her car. The stretch of highway where the accident occurred was part of a 6.3-mile section that had been resurfaced by Rogers Group Inc. under a contract with the Arkansas State Highway and Transportation Dept.

The administrators of Engelhardt's estate sued Rogers, charging it with negligence in using the wrong type of asphalt mix to resurface the highway, and in failing to warn the driving public and the Highway Dept. of the dangerous road conditions it created. They also argued that Rogers was strictly liable for supplying an unreasonably dangerous product, the road.

Rogers asked the federal trial court to grant judgment for it before trial. Rogers asserted that it was protected by the "acquired immunity doctrine," because it used the type of asphalt mix—Type III—that was specified by the highway department. The doctrine states that a contractor for a governmental body that performs its work according to the contract is not liable for injuries caused by the work unless the contractor is negligent or guilty of a wrongful act.

Type III asphalt sometimes causes hydroplaning in heavy rains and is designed for potholes, parking lots, low-volume roads and overlays, according to the U.S. District Court for the Eastern District of Arkansas. It ruled that Rogers had no duty to warn the public of the potential danger created by the resurfaced highway because Rogers' contract did not require it to do anything after it completed the resurfacing. The court also ruled that the resurfaced highway was not a product, and so was not covered by product liability law.

> The "acquired immunity doctrine" would not protect Rogers if it knew there was a danger.

However, the court allowed the Engelhardt estate to proceed with its negligence claim against Rogers. Even though Rogers used the asphalt that was specified, the court held that the "acquired immunity doctrine" would not protect Rogers if, as the estate claimed, Rogers knew before it signed the contract that Type III sometimes causes hydroplaning when used on heavily traveled highways. The court ruled that the estate had the right to try to prove its allegation against Rogers. *Engelhardt v. Rogers Group Inc., 132 F. Supp.2d 757 (E.D. Ark. 2001).*

The responsibility for errors and omissions in construction contract documents traditionally has been tied to the party that drafted the documents.

The owner or the owner's architect/engineer usually prepares the contract documents, including contract language, draw-

these options for mitigation not only lessens the likelihood of disputes but also increases the chances for a financially successful project.

accepts the responsibility for the substitutions.

- Read the entire contract and specifications as a whole and in detail. Include a review by the project manager, technical specialists and the cost/schedule control manager who will perform the work. Identify and evaluate all referenced specifications and draw-

but disclaims the warranty of the accuracy of such information. Document all findings of the site investigation and rely on these findings in preparing the bid.

- Document the basis for bid including all assumptions, bid clarifications, reservations and pre-award meetings with the owner. Preserve a copy of

- Provide letters of timely notice for all cost increases and schedule delays resulting from problems with the drawings and specifications.
- Do not deviate from the drawings and specifications without a written change order.
- Obtain design approvals from the owner before purchasing and installing

The owner impliedly warrants to the contractor the accuracy and suitability of the documents.

An experienced contractor cannot, however, consciously overlook patent defects or rely on this implied warranty when it knows or should know that such documents could not produce the desired end result.

quately define the work to be performed. There exists, however, a critical and costly difference between a normal incidence of errors and serious design flaws causing substantial delays and cost increases.

Contractors have opportunities to mitigate the problems resulting from defective and deficient contract documents. Awareness of

the work. Failure to seek clarification for an obvious problem may make the contractor liable for its erroneous interpretations and may prevent the contractor from recovery of its damages for a subsequent requested change.

- Do not volunteer to replace defective specifications except on the condition that the owner

caveat language or disclaimers insisted on by the owner are general. If unsuccessful, provide sufficient contingency for specific disclaimers in the bid. Elect not to bid the project if the risks are unreasonably high.

- Conduct independent site investigations of conditions that the owner provides as information

tive specifications until remedying problems.

Contract Performance

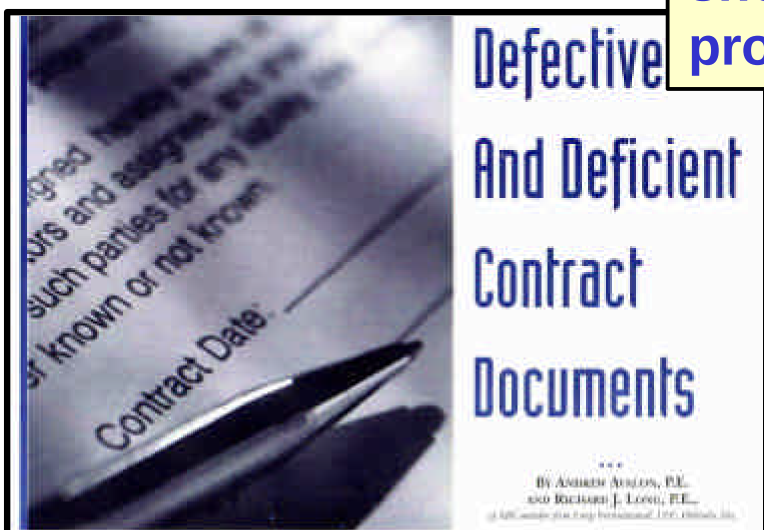
Problems will develop during contract performance. The following guidelines should be followed to assure equitable recovery of the contractor's damage.

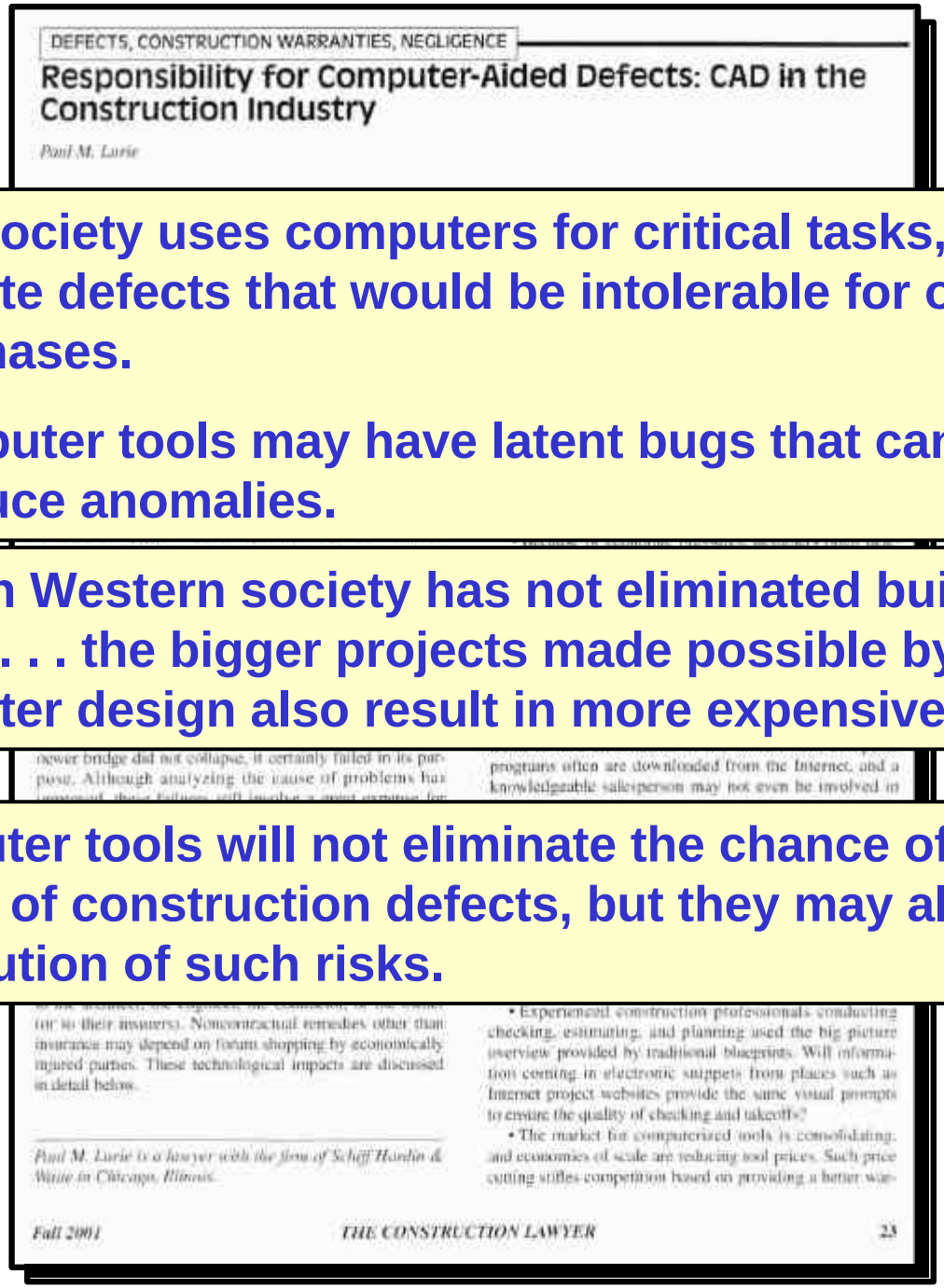
- Seek clarification as soon as the need becomes apparent.

problems will occur.

A clearer understanding of the contractor's requirements and risks, however, will result from careful consideration of these options for mitigation and may prevent the project from being completed in the courtroom.

For more information, contact Avalon, (407) 859-0201 or aa@ljf.rr.com.





DEFECTS, CONSTRUCTION WARRANTIES, NEGLIGENCE

Responsibility for Computer-Aided Defects: CAD in the Construction Industry

Paul M. Lurie

- **Our society uses computers for critical tasks, despite defects that would be intolerable for other purchases.**
- **Computer tools may have latent bugs that can produce anomalies.**

Modern Western society has not eliminated building failure . . . the bigger projects made possible by computer design also result in more expensive fixes.

Computer tools will not eliminate the chance of design of construction defects, but they may alter the distribution of such risks.

newer bridge did not collapse, it certainly failed in its purpose. Although analyzing the cause of problems has

programs often are downloaded from the Internet, and a knowledgeable salesperson may not even be involved in

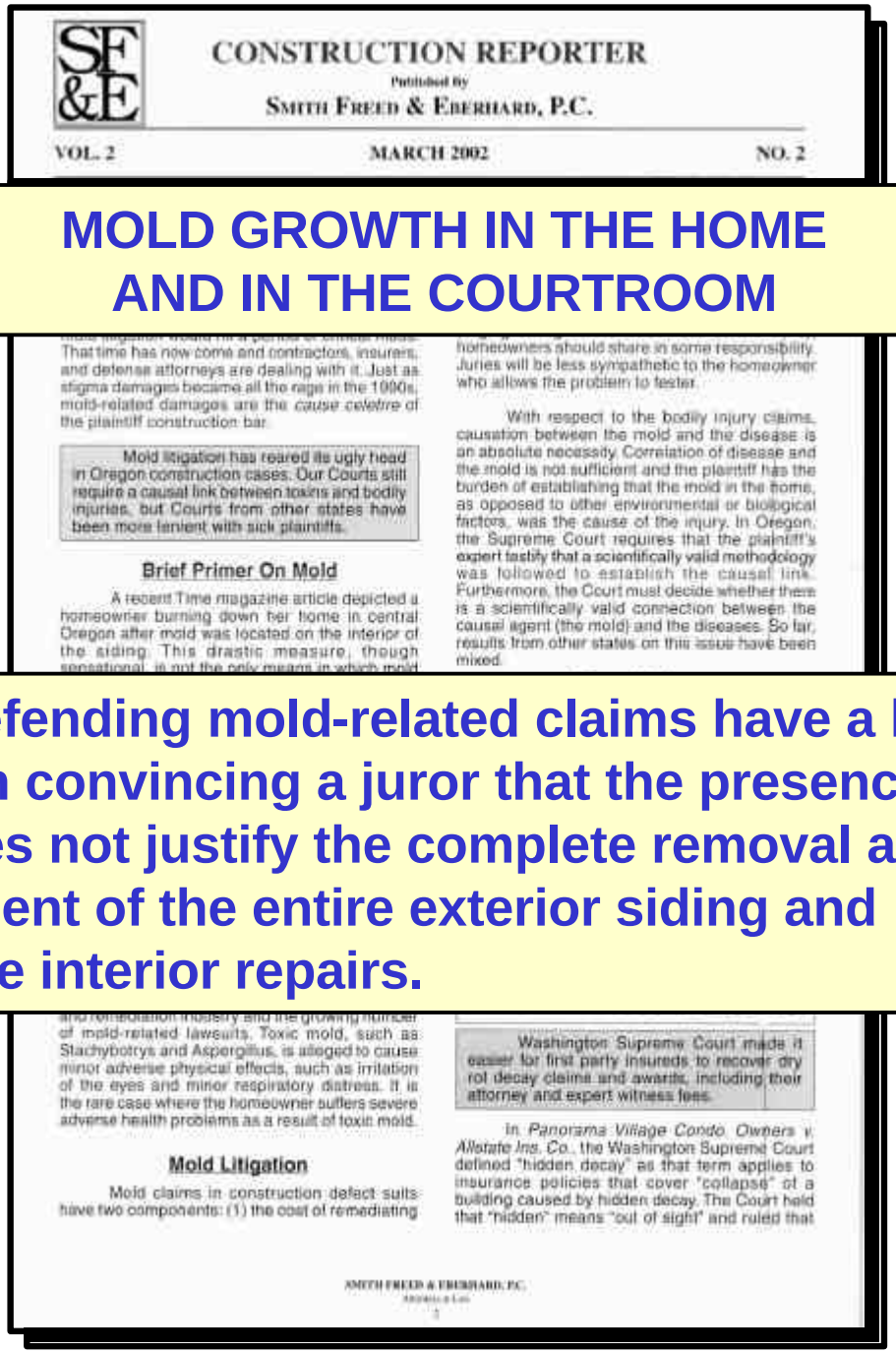
(or to their insurers). Noncontractual remedies other than insurance may depend on forum shopping by economically injured parties. These technological impacts are discussed in detail below.

Paul M. Lurie is a lawyer with the firm of Schiff Hardin & Waite in Chicago, Illinois.

• Experienced construction professionals conducting checking, estimating, and planning used the big picture overview provided by traditional blueprints. Will information coming in electronic snippets from places such as Internet project websites provide the same visual prompts to ensure the quality of checking and takeoffs?

• The market for computerized tools is consolidating, and economies of scale are reducing tool prices. Such price cutting stifles competition based on providing a better way-

MOLD GROWTH IN THE HOME AND IN THE COURTROOM



SF&E

CONSTRUCTION REPORTER

Published By

SMITH FREED & EBERHARD, P.C.

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That time has now come and contractors, insurers, and defense attorneys are dealing with it. Just as stigma damages became all the rage in the 1990s, mold-related damages are the *cause celebre* of the plaintiff construction bar.

Mold litigation has reared its ugly head in Oregon construction cases. Our Courts still require a causal link between toxins and bodily injuries, but Courts from other states have been more lenient with sick plaintiffs.

Brief Primer On Mold

A recent Time magazine article depicted a homeowner burning down her home in central Oregon after mold was located on the interior of the siding. This drastic measure, though sensational, is not the only means in which mold

homeowners should share in some responsibility. Juries will be less sympathetic to the homeowner who allows the problem to fester.

With respect to the bodily injury claims, causation between the mold and the disease is an absolute necessity. Correlation of disease and the mold is not sufficient and the plaintiff has the burden of establishing that the mold in the home, as opposed to other environmental or biological factors, was the cause of the injury. In Oregon, the Supreme Court requires that the plaintiff's expert testify that a scientifically valid methodology was followed to establish the causal link. Furthermore, the Court must decide whether there is a scientifically valid connection between the causal agent (the mold) and the diseases. So far, results from other states on this issue have been mixed.

Those defending mold-related claims have a heavy burden in convincing a juror that the presence of mold does not justify the complete removal and replacement of the entire exterior siding and expensive interior repairs.

and remediation industry and the growing number of mold-related lawsuits. Toxic mold, such as Stachybotrys and Aspergillus, is alleged to cause minor adverse physical effects, such as irritation of the eyes and minor respiratory distress. It is the rare case where the homeowner suffers severe adverse health problems as a result of toxin mold.

Mold Litigation

Mold claims in construction defect suits have two components: (1) the cost of remediating

Washington Supreme Court made it easier for first party insureds to recover dry rot decay claims and awards, including their attorney and expert witness fees.

In *Panorama Village Condo. Owners v. Allstate Ins. Co.*, the Washington Supreme Court defined "hidden decay" as that term applies to insurance policies that cover "collapse" of a building caused by hidden decay. The Court held that "hidden" means "out of sight" and ruled that

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SPECIAL REPORT QUALITY

Bumpier Road to Finish Line

Constructing buildings has gotten more difficult in 20 years since the Hyatt walkway collapse

On July 17, 1981, two suspended walkways spanning the atrium lobby of the Hyatt Regency Hotel in Kansas City, Mo., collapsed abruptly onto an unsuspecting crowd of more than 1,000 attending a "tea" dance. The walkway failure killed 111 people, injured 118, shattered the lives of hundreds more and sent shock waves through the nation and especially the building community. The hotel tragedy has become the late 20th Century's low watermark against which all other botched buildings are compared.

TROUP

Consultant Emile W.J. Troup: "Do you think the quality in building construction is improving?" Design professional: "Yes."

Troup: "Really?" Design professional: "Of course. It has to be improving. It can't get any worse."

The 20th anniversary of the Hyatt misfortune is an appropriate time to take stock of the current state of building construction in the U.S. What has changed, for better or worse, since the devastating failure? Is building quality in the ascendant or not, and why? What needs to be fixed?

Engineer Emile W. J. Troup, a steel design and construction consultant based in Canton, Mass., thinks the quality of "routine" buildings has eroded over the past 20 years. He blames the owner-developer as much as anyone.

"You cannot get a quality construction project if no one has ample time to do it right the first time," says Troup. "The routine building construction project today is quick and cheap. If we don't change the owner's mindset about building its Rome in a day, construction quality will continue to suffer."

E-MAILS, ROUNDTABLE SHAPE REPORT

This special report on building quality is based on a combination of e-mailed responses to ENR's request for industry comment on enr.com, traditional reporting and information gathered at an in-person roundtable held April 20.

Owners are not sympathetic. "Time is money and there is less time available to do anything," says John Pierce, principal in charge of space and infrastructure for owner Morgan Stanley Dean Witter, New York City. "Our users work in Internet time," says Pierce, and "construction is a bricks-and-mortar

From James H. Pressley, PPOC Inc. Consulting Engineers, Anchorage

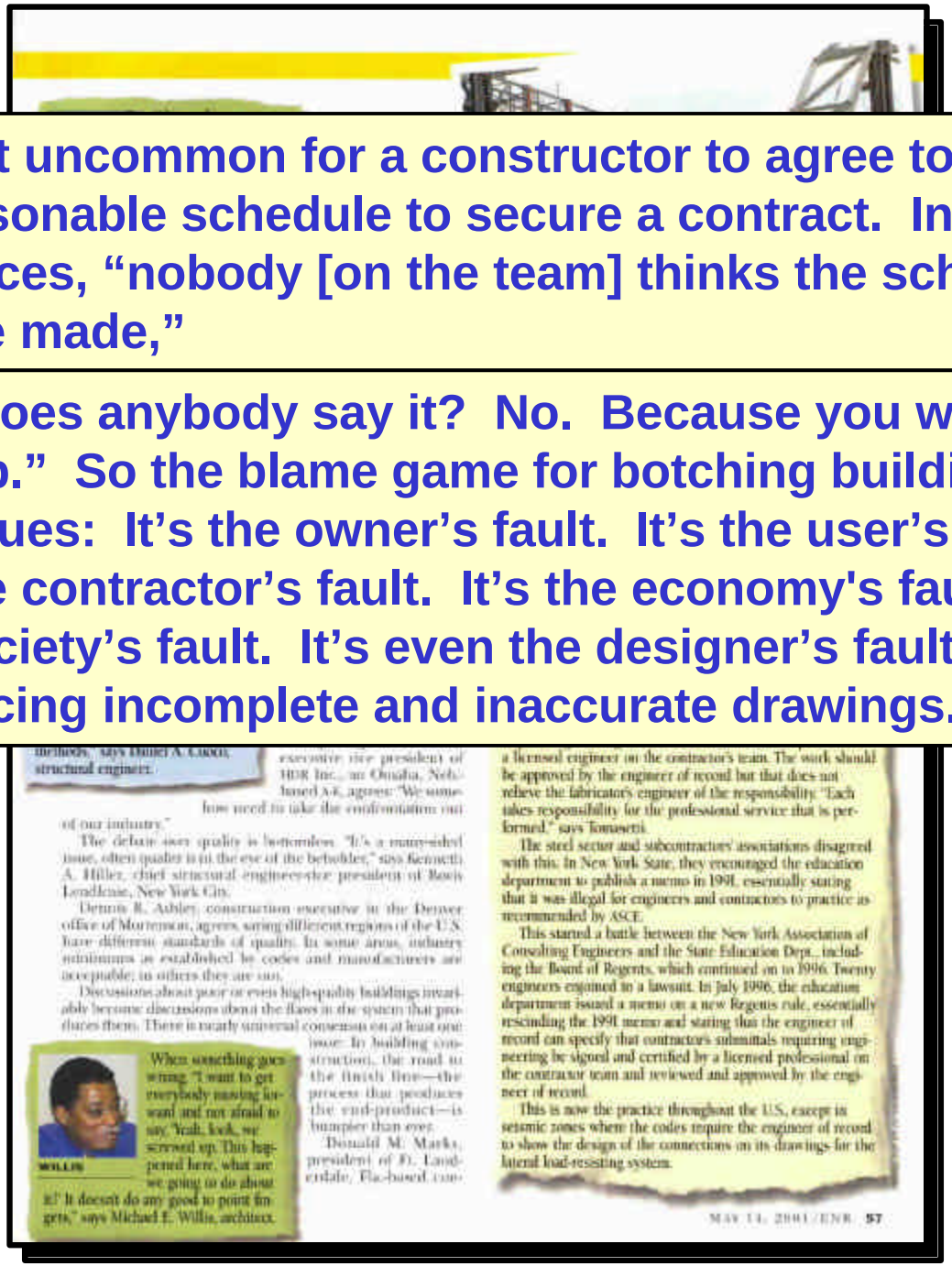
I was the subject of a conversation I had with a contractor over dinner last night. It was his opinion the construction landscape shifted dramatically with the introduction of the design clarification/verification request, also known as a request for information. He went on to explain the introduction of this formal written process automatically created an adversarial atmosphere among all parties responsible for project construction. It slowed the process by imposing a circuitous route to clarify issues in place of direct voice-to-voice or face-to-face questions and answers between parties needing the information and those able to provide it.

The contractor even went so far as to admit it offered him an avenue to increase his contract amount. All he had to do was submit a sufficient number of RFIs and that would lay groundwork for claiming the design documents were deficient. If he used this process to swamp the management team, he could achieve successful claims for delay as the process bogged down in paperwork. In short, he used the bureaucracy as a way to shift risk back to the owner, contract management company and the design team.

As a design engineer, project manager and now engineering principal regularly designing facilities and processes, I tend to agree with his assessment. It seems the administration of construction has changed from focusing on how to provide the best project for the owner and/or builder to providing the most detailed written documentation possible so the lawyers have it available later when disputes begin.

I am still a believer that better designers, better documents and better projects will be produced when the issues that starts a project works along with all the other team members until the project is completely finished. If that traditional approach were still in place today, there would be many "buy-in" and the search for ways to eliminate or shift risk would not play such an important role.

I believe the quality of construction suffers whenever the object of the process becomes something other than providing the best project achievable. It is our responsibility, through perseverance by all, to construct a quality project—one one that has been "papered" from top to bottom. It seems a lot unproductive for owners and/or builders to demand faster and faster designs and construction schedules while instituting a process with inherent opportunities for delay.



It's not uncommon for a constructor to agree to an unreasonable schedule to secure a contract. In many instances, "nobody [on the team] thinks the schedule can be made,"

"But does anybody say it? No. Because you want the job." So the blame game for botching buildings continues: It's the owner's fault. It's the user's fault. It's the contractor's fault. It's the economy's fault. It's society's fault. It's even the designer's fault for producing incomplete and inaccurate drawings.

SPECIAL REPORT QUALITY

Universities still do not understand Marketing 101. If they would apply the very marketing principles that we have to apply to stay in business, they would find students to feed into their schools, says James H. Suttle, engineer.

SUTTLE

effort and human resources required by developers and owners to obtain a quality product is increasing."

At the U.S. General Services Administration, which has $7 billion to $8 billion in public projects ongoing at any time, the concern is about the means to the end. "We have a process that's generating problems of scheduling and budget," says Robert G. Hixon Jr., director of GSA's Center of Construction and Project Management, Office of the Chief Architect, Washington, D.C.

Joe D. Magnusson, chairman-CEO of structural engineer Skilling Ward Magnusson Barkshire, Seattle, says, "Eventually, the contractor gets [the primary structure] right or we don't sign off on it. But how linear is the process to get to the acceptable structure?" he asks. "It's not a quality issue," he says.

OUT OF WHACK Nursing home addition dismantled in Brooklyn.

Most contractors have become obsessed with winning the game rather than building the job, charge designers. The reasons are manifold. Fast-tracking, which was making its debut in the late 70s, is rapidly losing out to super-fast-tracking or "warp-speed" schedules. Budgets are tighter than ever. Claims and fear of litigation are more pervasive than a generation back, so record-keeping rules. "Ten years ago, I didn't know what a request for information was," says Hiller. "Now it is a plague."

Project delivery systems, such as construction management-at-risk and various forms of

"Document coordination is often poor or nonexis-

Material advances improve constructibility, performance

The quality of most concrete used in building construction has greatly improved over the past 20 years, says James M. Shilstone of The Shilstone Cos. Inc., Dallas. This is largely a result of industry-led research by the high-ly competitive concrete admixture and cementitious additive industries.

Shortly before 1980, strength was limited to 5,000 psi but the industry now routinely produces 16,000 psi. Concrete shrinkage and permeability

. . . more complex and sophisticated buildings — packed with computerized building management systems, computers and telecommunications equipment, back-up power and heftier HVAC . . .

"Twenty-five years ago, we had more rectangles; we had consistency,"

50 and 65, which allow for better control over the specified strength and ductility of the steel as well as the ability to specify higher yield strengths, such as 65 ksi.

Much of this knowledge was gained from Federal Emergency Management Agency-sponsored research, as a result of Los Angeles' 1994 Northridge quake. The FEMA-sponsored research, prepared by the SAC Joint Venture, provides recommendations for new steel moment-frame buildings. This will result in improved reliability of these structures to resist earthquake ground-shaking, says Hooper.

at [even] five years ago. They are stretching the envelope all over the place."

And the building team is still grappling with the best ways to utilize technological tools only dreamed about 20 years ago.

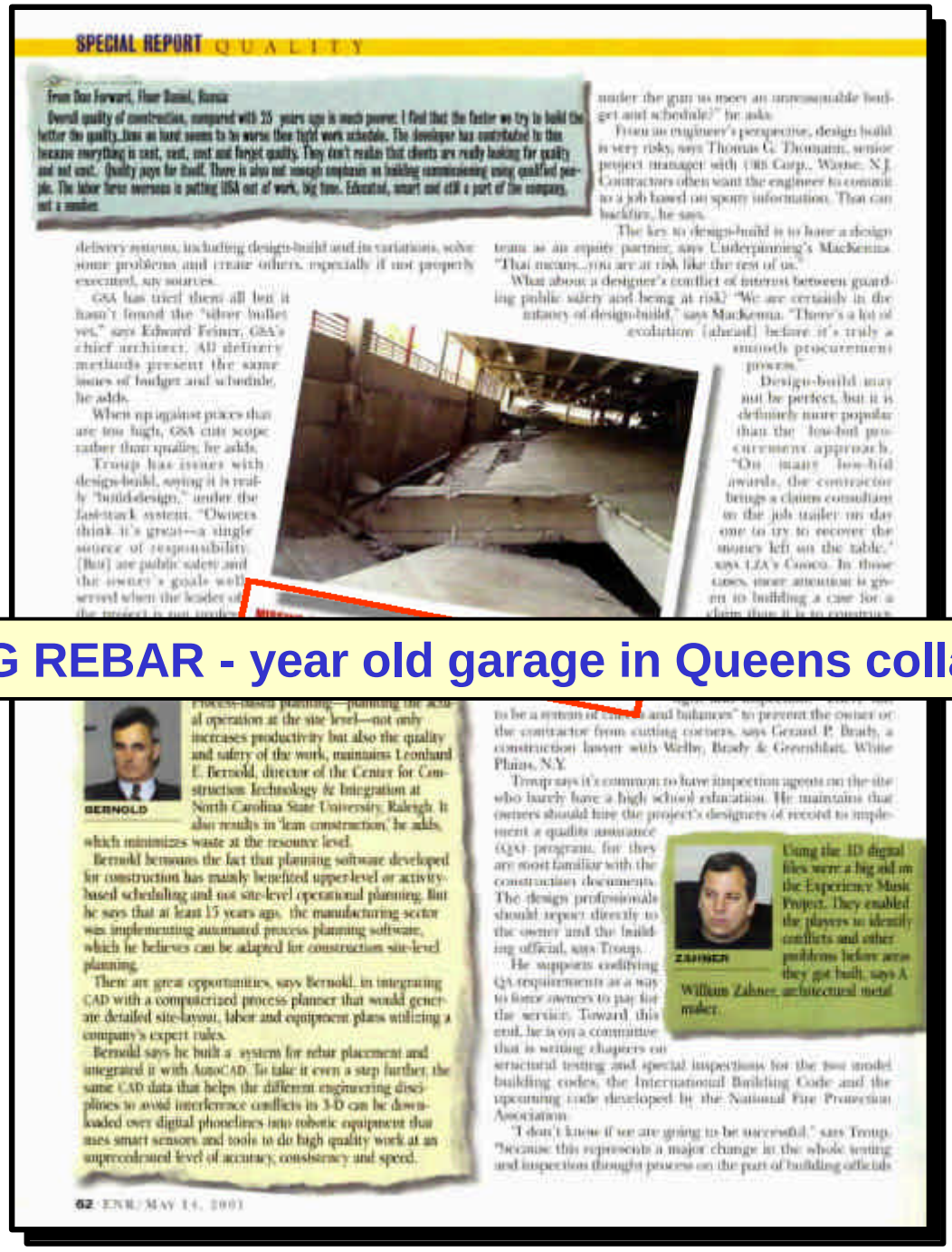
ASHLEY

"We do not consciously say we're going to have poor quality, but due to our fast-paced society, we want [things] now, and have programmed ourselves to accept less" as long as we can justify a lower cost or faster time frame, says Dennis R. Ashley, contractor.

PINNELL BUSCH, INC.

“That’s a very huge problem in the industry because there is time to do only 90% of the work instead of 100%.

The General Services Administration’s three-year-old Construction Excellence Program is a direct descendant of its widely applauded Design Excellence Program, which involves selecting outstanding A-Es to design . . .



SPECIAL REPORT QUALITY

From Our Forward, Floor Daniel, Russia

Overall quality of construction, compared with 25 years ago is much poorer. I find that the faster we try to build the better the quality...Even on hard seems to be worse than tight work schedule. The developer has contributed to this because everything is cost, cost, cost and forget quality. They don't realize that clients are really looking for quality and not cost. Quality pays for itself. There is also not enough emphasis on building commissioning using qualified people. The labor force overseas is putting USA out of work, big time. Educated, smart and still a part of the company, not a number.

delivery systems, including design-build and its variations, solve some problems and create others, especially if not properly executed, say sources.

GSA has tried them all but it hasn't found the "silver bullet yet," says Edward Feiner, GSA's chief architect. All delivery methods present the same issues of budget and schedule, he adds.

When up against prices that are too high, GSA cuts scope rather than quality, he adds.

Tromp has issues with design-build, saying it is really "build-design," under the fast-track system. "Owners think it's great—a single source of responsibility. [But] are public safety and the owner's goals well served when the leader of the project is not under

under the gun to meet an unreasonable budget and schedule?" he asks.

From an engineer's perspective, design-build is very risky, says Thomas G. Thomann, senior project manager with URS Corp., Wayne, N.J. Contractors often want the engineer to commit to a job based on spotty information. That can backfire, he says.

The key to design-build is to have a design team as an equity partner, says Underpinning's Mackenna. "That means...you are at risk like the rest of us."

What about a designer's conflict of interest between guarding public safety and being at risk? "We are certainly in the infancy of design-build," says Mackenna. "There's a lot of evolution [ahead] before it's truly a smooth procurement process."

Design-build may not be perfect, but it is definitely more popular than the low-bid procurement approach. "On many low-bid awards, the contractor brings a claims consultant on the job trailer on day one to try to recover the money left on the table," says LZA's Cosco. In those cases, more attention is given to building a case for a claim than it is to construct

MISSING REBAR - year old garage in Queens collapsed.

BERNOLD

Process-based planning—planning the actual operation at the site level—not only increases productivity but also the quality and safety of the work, maintains Leonhard E. Bernold, director of the Center for Construction Technology & Integration at North Carolina State University, Raleigh. It also results in "lean construction," he adds, which minimizes waste at the resource level.

Bernold bemoans the fact that planning software developed for construction has mainly benefited upper-level or activity-based scheduling and not site-level operational planning. But he says that at least 15 years ago, the manufacturing sector was implementing automated process planning software, which he believes can be adapted for construction site-level planning.

There are great opportunities, says Bernold, in integrating CAD with a computerized process planner that would generate detailed site-layout, labor and equipment plans utilizing a company's expert rules.

Bernold says he built a system for rebar placement and integrated it with AutoCAD. To take it even a step further, the same CAD data that helps the different engineering disciplines to avoid interference conflicts in 3-D can be downloaded over digital phonelines into robotic equipment that uses smart sensors and tools to do high quality work at an unprecedented level of accuracy, consistency and speed.

to be a system of checks and balances" to prevent the owner or the contractor from cutting corners, says Gerard P. Brady, a construction lawyer with Wolby, Brady & Greenblatt, White Plains, N.Y.

Tromp says it's common to have inspection agents on the site who barely have a high school education. He maintains that owners should hire the project's designers of record to implement a quality assurance (QA) program, for they are most familiar with the construction documents. The design professionals should report directly to the owner and the building official, says Tromp.

He supports codifying QA requirements as a way to force owners to pay for the service. Toward this end, he is on a committee that is writing chapters on structural testing and special inspections for the two model building codes, the International Building Code and the upcoming code developed by the National Fire Protection Association.

"I don't know if we are going to be successful," says Tromp, "because this represents a major change in the whole testing and inspection thought process on the part of building officials

ZAHNER

Using the 3D digital files were a big aid on the Experience Music Project. They enabled the players to identify conflicts and other problems before areas they got built, says A. William Zahner, architectural metal maker.

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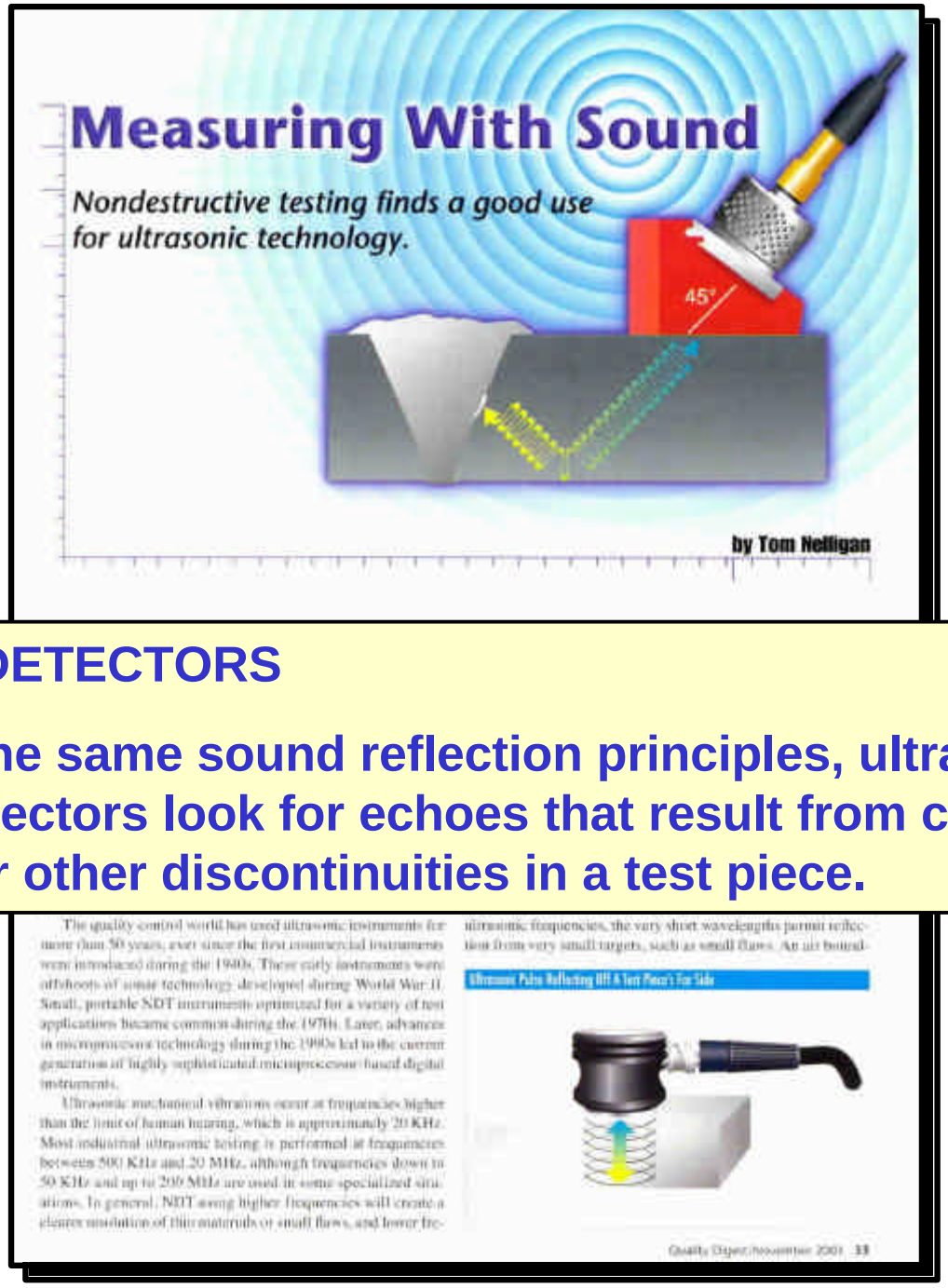
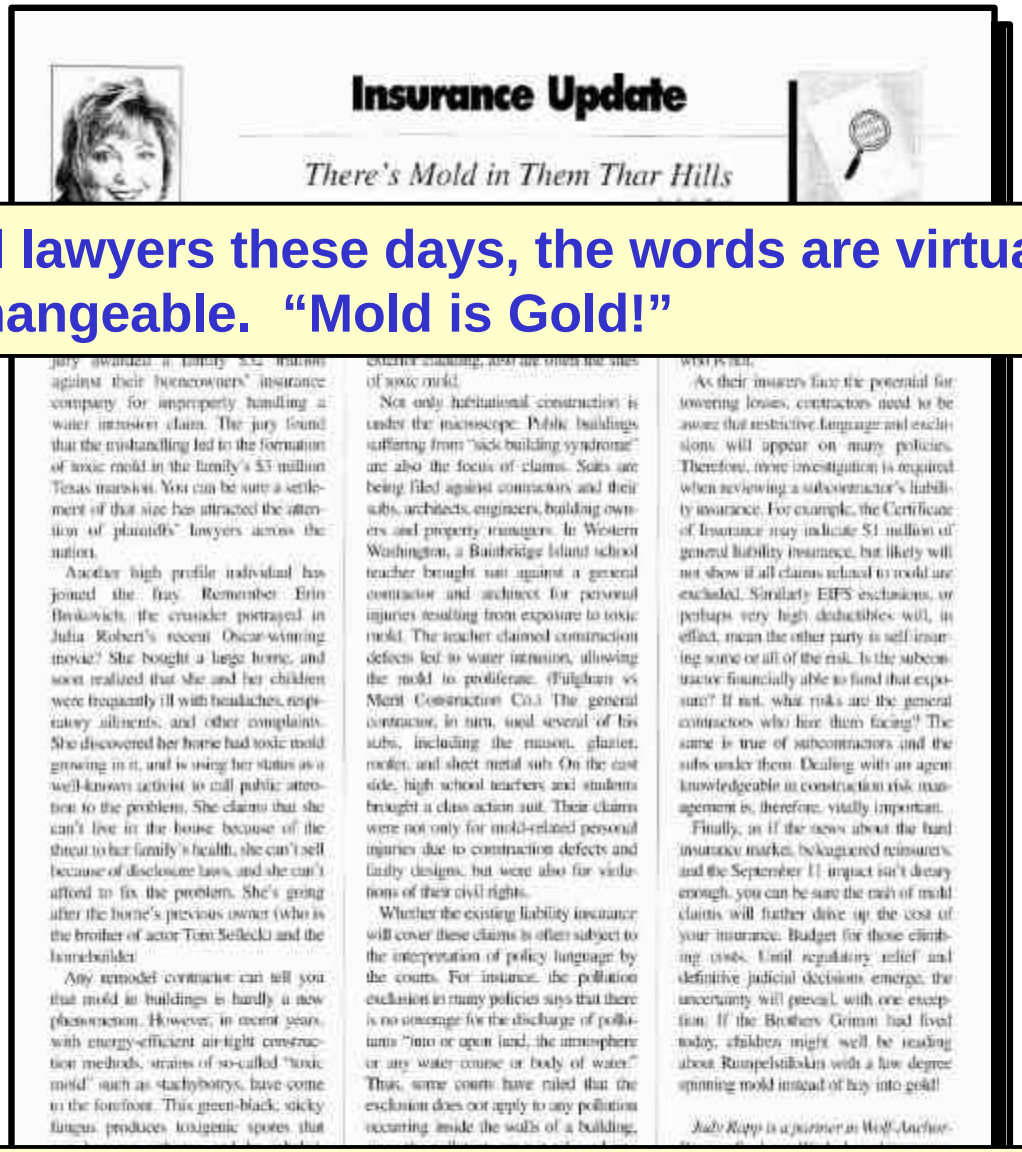


FLAW DETECTORS

Using the same sound reflection principles, ultrasonic flaw detectors look for echoes that result from cracks, voids or other discontinuities in a test piece.

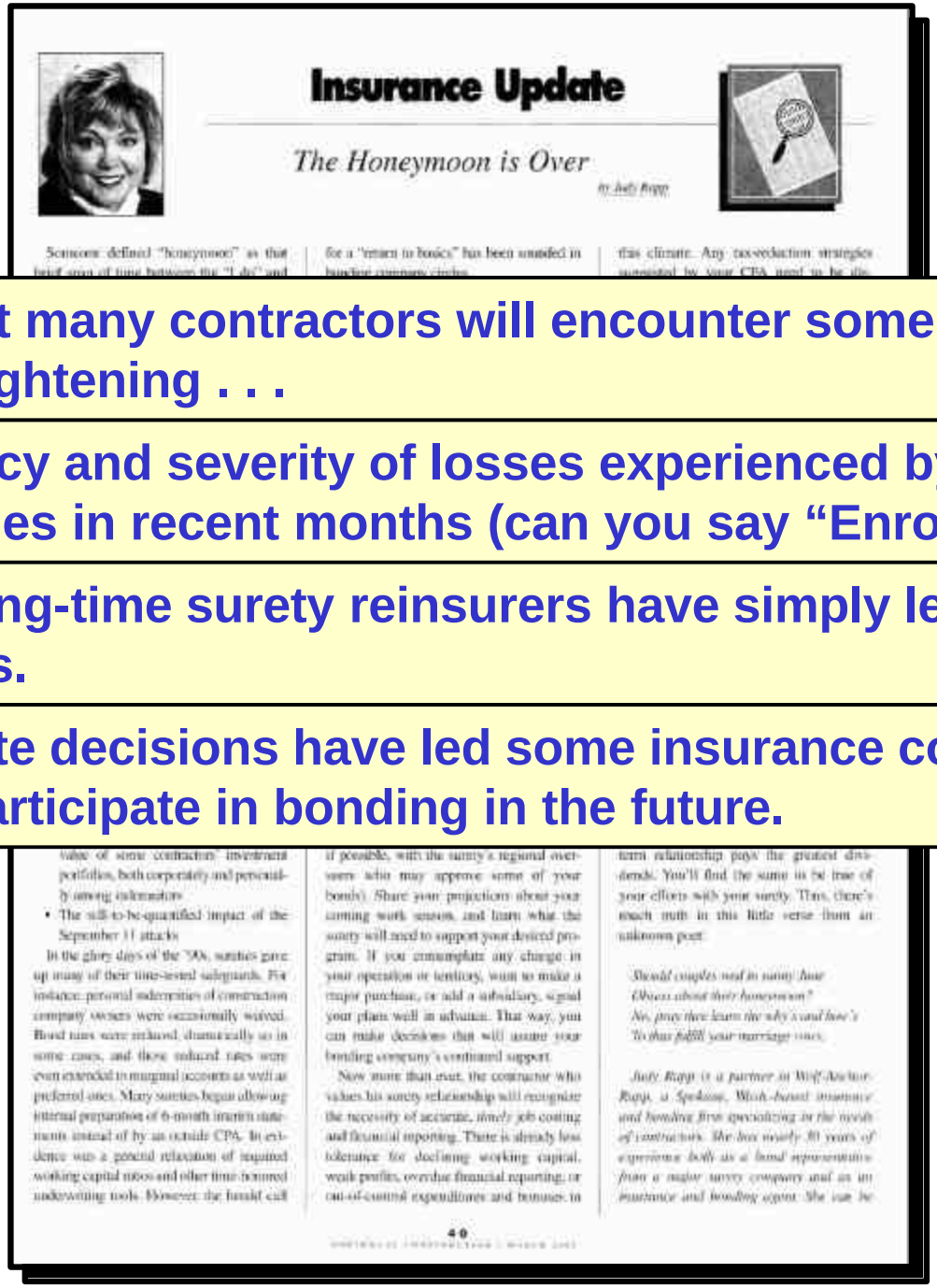


Insurance Update

There's Mold in Them Thar Hills

To trial lawyers these days, the words are virtually interchangeable. "Mold is Gold!"

The same factors that led to the staggering numbers of construction defect suits for property damage are at work in the bodily injury mold claims.



Insurance Update

The Honeymoon is Over

. . . a great many contractors will encounter some overall surety tightening . . .

- Frequency and severity of losses experienced by bonding companies in recent months (can you say “Enron?”)
- Some long-time surety reinsurers have simply left the business.
- Corporate decisions have led some insurance companies not to participate in bonding in the future.

Bonding

TIGHTENING UP SURETY BOND TERMS

The days of easy-going surety bond terms are coming to an end as underwriters and their reinsurers book losses with increasing frequency and severity. As insurers and reinsurers tighten up, small and medium-sized contractors accustomed to waiving the personal indemnity clause in surety agreements once again literally may be betting the house by pledging to cover any losses with their own money.

Competition led many underwriters to waive the personal guarantee through which contractors pledged their primary residence as security.

"We had gotten away from personal guarantees," says J. William Ernstrom, a Rochester-based attorney who works with contractors and sureties. "That could be coming back."

Surety underwriters had enjoyed a decade of unparalleled success during the economic boom. But it now appears to be coming to an end as underwriters are seeing losses from $10 million to $40 million that cut into healthy profits. Preliminary net losses in 2000 have spiked to $767 million, up from $675 million in 1999, while total premiums written on all forms of surety have fallen to $5.11 billion from $5.4 billion, according to the Surety Association of America, a trade group. "We are able to see that the loss ratio is creeping up," says Robert Duke, director of underwriting. About 60% of all surety business is construction-related.

The changes in the surety market come at a time when financial institutions of all types are re-evaluating their construction customers. In the surety business, the change involves a return to basics that is more of an adjustment than an upheaval. "For the most part, successful contractors won't notice a change," says Mark C. Vonnahme, president of CNA Surety, Chicago. It collected premiums on contract surety of $161.5 million last year.

According to another insurance executive, tougher underwriting standards will frame new limits for contractors. Companies that had been able to bond $50 million worth of work may find that they can only bond $30 million or $40 million and that it will be more expensive.

Small contractors are defaulting at a rapidly rising rate, says Ernstrom. In the portion of his law firm's practice that represents sureties, contractor defaults in 2000 were up 30% over 1999 and are likely to jump another 30% in 2001. Most involve employers of 100 or fewer. "They hand in the keys and say, 'I can't do it; I can't make payroll,'" he says.

Surety bonds are written on a different basis than property and casualty insurance policies, where premiums are based on an anticipated level of loss. Surety, in contrast, is based solely on the contractor's credit and reliability. The fees that insurers charge are based on the idea that the insurer never will have to go into its own pocket to cover losses.

But losses have been picking up and the ranks of eager, volume-oriented insurers have been thinning. Frontier Insurance Group Inc., Rock Hill, N.Y., stopped writing new surety bonds last August as it slipped into financial disarray and its rating was downgraded, says a spokesman. Agents are working to replace Frontier's continuous bond forms, which the company will honor. Frontier has not yet filed an annual report for 2000, and it reported a net loss on its surety operations of $13.6 million in the first nine months of 2000, compared to a $20-million profit for the same period of 1999. "It's been a good business up until recently," says a spokesman, and the claims aren't astronomical, he adds. Another company, Amwest Insurance Group Inc., recently restructured its surety operations and put a new executive in charge of contract surety to improve profitability. Says President John Savage: "Our financial performance over the past 12 months has not been acceptable."

Reinsurers have been seeing tougher terms for renewing their agreements with sureties. At least two reinsurers have withdrawn completely from contract surety, say industry sources.

Contractors won't be able to shop around for the best bargain as much as they had been. Instead, this year should be devoted to nurturing existing relationships, says CNA's Vonnahme. "If you're getting support from a bank or insurance company, this is the time to build on it," he says. ☐

By Richard Korman

BETTING THE HOUSE Higher losses could result in more personal guarantees.

HOW CONTRACTS DETERMINE RESPONSIBILITY

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Panel Discussion

THE TEN KEYS

- Hire quality and experience - prime contractors and subcontractors, vendors, insurance, and legal.
- Think ahead and identify exposures and plan how to handle them.
- Policy holder needs to fully understand insurance coverage, and contract to identify insurance needs and additional named insured.
- Clear and accurate, high quality specifications, by spending a bit more time up front.
- Be extremely cautious with new building systems.
- Document the execution of the project - including early identified defects/fixes and errors/omissions.
- Follow contract protocol.
- Keep open lines of communication between all parties to avoid and solve problems.
- Consider not only the facility initial construction costs but also its life cycle costs when making decisions.
- Stay educated - be aware of new trends.