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## Efforts Lag at Making Highway Work Zones Safer

By **MIKE McINTIRE**

By the time Bryan Lee headed to work along Highway 51 in Texas on Sept. 15, 2005, the road-building industry and its government overseers were painfully aware of a deadly, though easily corrected, construction hazard: pavement-edge drop-offs.

Accidents involving dangerous drop-offs kill about 160 people and injure 11,000 each year. Numerous studies have shown that the steeper the drop-off, the greater the danger.

In Texas in 2002, seven people were killed when a car slipped off a sharp edge of roadway and onto the shoulder, causing the driver to overcorrect into the path of a minivan. Four years before, six people died in a succession of accidents in another Texas work zone, where contractors had failed to smooth out the edge of a newly paved lane.

Yet when the contractors repaving Highway 51 west of Fort Worth discovered that they lacked sufficient equipment, they decided to pave only part of the roadway and finish the rest days later, leaving a sharp drop-off that ran for miles within the travel lane. A state inspector warned that it was dangerous, but no one — not his superiors, not the contractor — listened.

Two days after that warning, Mr. Lee, a 26-year-old oil field worker with a wife and two young sons, rounded a curve in the early-morning darkness, and the wheels of his Suzuki motorcycle slid off the asphalt edge. He tumbled from the bike and was run over by a pickup truck.

The deadly accident was one of thousands in highway work zones across the country that have killed at least 4,700 people — more than two a day — and injured 200,000 in the last five years alone. Ubiquitous annoyances of on-the-go American life, work zones are sometimes death traps, too.

Behind this human toll is a litany of mundane hazards: concrete barriers in the wrong position, obsolete lane markings left in place, warning signs never deployed.

Yet there are virtually no laws or regulations mandating safety measures in work zones. There are standards, but they are loosely enforced and differ from state to state. As a result, there are few penalties levied against contractors when, because of ignorance, carelessness or a desire to save money, guidelines are violated.

Problem contractors often just keep on getting hired, and dangerous practices remain uncorrected, sometimes for years.

Ultimately, the hazards persist through a kind of collective indifference, a presumption that, given the crush of traffic and the vagaries of driver behavior, accidents happen.

But interviews and internal government documents, along with a review of more than 100 legal cases involving work zone crashes around the country, illuminate a more complex calculus of blame — one that often encompasses the actions of the construction industry and its regulators as well.

“A lot of work-zone crashes are entirely preventable,” said David Holstein, Ohio’s chief traffic engineer. “It’s not explainable by just driver error or inattention. We can intervene to keep them from happening.”

After transportation officials in Ohio created a system to monitor work-zone crashes in real time, they were startled to discover that the presence of construction caused accident rates to jump as much as 70 percent, Mr. Holstein said.

“We were seeing that crashes were happening day after day after day, and nothing was being done about it,” he said. “Sometimes there were hundreds of crashes over the life of a project.”

Now the stakes are increasing, as \$27 billion from [President Obama](#)’s economic stimulus package is prompting a nationwide boom in highway construction. Federal transportation officials are concerned that work-zone fatalities, after declining in recent years along with traffic deaths in general, could rise again.

“The number of people killed as a result of crashes in work zones remains significant,” the Federal Highway Administration says on its [Web site](#). “Safety and mobility impacts from work zones will likely be magnified with

the infusion of a large number of new projects.”

Transportation officials are responding pretty much as they always have: by focusing primarily on drivers. States have raised fines for speeding in work zones, cracked down on drunken or distracted drivers and stiffened penalties for killing or injuring highway workers, even though roughly 85 percent of those killed in work zones are motorists.

In an interview, the federal highway administrator, Victor M. Mendez, endorsed that emphasis. Distracted or impaired driving and speeding, he said, are the major known factors in work-zone accidents. For its part, the road-building industry insists that it is doing everything possible to prevent crashes.

“Any contractor would think it’s morally wrong to put a worker or motorist in a dangerous situation,” said Brad Sant, vice president for safety and education at the [American Road & Transportation Builders Association](#).

Yet while federal regulators carefully track the ways motorists cause accidents, they do not make the same attempt to determine when contractors and state highway planners are at fault, and as a result, work-zone crashes are often under-reported or inaccurately reported. That task is left mostly to the imperfect forum of civil courts, where cases are often settled in secret and where important revelations about unsafe construction practices remain unseen and unheeded.

“Somebody has to be held accountable, and right now that’s not happening,” said John S. Hassell Jr., a former federal highway administrator. “The system doesn’t provide a lot of consequences for those who could change the situation.”

Jesse Sepeda knows the system well. He is a safety director for a major highway contractor in Texas. He also lost his 18-year-old son, Anthony, in a work-zone crash last year.

There were no warning signs or barricades, but a utility contractor digging a trench had parked a backhoe less than two feet from the travel lane on Wells Branch Parkway in Pflugerville, where the speed limit is 50 miles an hour. Construction industry standards say unused equipment should be at least 30 feet from the roadway.

Anthony’s motorcycle drifted too close and hit the backhoe. After the accident, the backhoe was moved and

barricades went up. But the police found fault only with the victim, concluding that he had probably been driving too fast.

“I’m in this business, and I can tell you that these things happen all the time and there is nothing to hold a contractor accountable,” his father said. “In most cases you can’t do anything except go to court, and meanwhile the contractor just goes on doing his work and killing people.”

### A Roadblock With No Signs

Two months ago, officials in Florida awarded a bridge-repair contract, financed with \$744,000 in federal stimulus money, to Zep Construction of Fort Myers. Zep has a long history of working on Florida highways — a history that includes a case study of work-zone safety done wrong.

Repairing a bridge on Interstate 75 in Sarasota two years ago, Zep had decided to employ what is known as a “rolling roadblock.” In a properly run rolling roadblock, police cruisers, lights flashing, position themselves side by side across the highway, briefly slowing traffic to about 20 miles an hour while workers and equipment are shifted around in the construction zone.

But as the roadblock took shape on I-75 shortly after midnight on Oct. 1, 2007, traffic did not simply slow down. It came to a complete halt in a blind spot on an overpass where the speed limit was 70 miles an hour.

Some drivers slammed on their brakes to keep from crashing. At the back of the line were James Brashear and his 11-year-old son, Tyler. The boy remembers the last thing he said to his father, as they waited for the backup to clear: “What’s going on?” Then the car was awash in the headlights of an 18-wheel tractor trailer roaring over the hill behind them.

The big rig knocked cars aside like bowling pins before jackknifing 100 yards down the highway. Inside his crushed Acura, Mr. Brashear, 42, was dead, his body wedged against his son’s lap. Tyler, his face bloody, pleaded with a stranger for help.

“I asked him if he could get me out of the car,” recalled Tyler, now 13. “He took me out, and then the fireman came over. They took off my shirt to make sure I was fine, and then they put me in the helicopter.”

Nearby, another motorist, Manuel Ramirez, was dead in his demolished car. At least 10 people were hurt.

Not long afterward, the lone off-duty state trooper hired by Zep to work the roadblock, Richard Moore, walked to the top of the overpass. Looking down the other side, he realized there were no signs warning approaching drivers of the roadblock ahead. "I was shocked," he later testified.

Florida's Transportation Department has detailed procedures for rolling roadblocks. Zep and its subcontractors had followed virtually none of them, records show, and a state consultant inspecting the project had apparently never noticed.

Electronic warning signs had not been placed at least a half-mile ahead; while two were available, they were on the wrong side of the overpass. Instead of having a police cruiser out front in all three lanes, Zep had hired just one, driven by Trooper Moore. There were no flaggers at a nearby on-ramp and no car in the rear to monitor traffic.

Responsibility for the roadblock had fallen to Anthony Kelly, 46, a laborer appointed by Zep as a traffic control supervisor for the project. Mr. Kelly, who never graduated from high school, had taken a three-day course to qualify for the job. His driving record, by his own account, included "23 or 24" charges of driving with a suspended license.

In an interview, Mr. Kelly said he thought Trooper Moore was responsible for overseeing the roadblock. "That's why I hired Richard Moore, because he has authority over things on the highway," he said.

But Trooper Moore, testifying in a suit brought by Tyler Brashear's mother, said he simply did what Mr. Kelly had asked him to do.

"It's my understanding that Tony has all these D.O.T. certifications," he said. Police officers, he added, "don't know where signage is supposed to be posted or how far from a construction zone."

In its accident report, the Florida Highway Patrol zeroed in on the absence of warning signs on the approach. A sergeant told a local newspaper that the highway patrol decided not to pursue criminal charges against the

truck driver, Pablo Merlos, because “a normal prudent person would have difficulty anticipating traffic stopped at the other side of an overpass.”

Mr. Merlos, 33, who was delivering equipment to Alabama, testified that he had crested the overpass with his cruise control at about the speed limit. “That’s when I saw that the traffic had stopped,” he said. “Since there weren’t any signs on the interstate, I didn’t know what was happening.”

Nevertheless, authorities concluded that Mr. Merlos should have been able to stop in time because another tractor-trailer, traveling roughly parallel, was able to. He was ticketed for careless driving and had his license revoked after a traffic court hearing in which he defended himself.

Without linking the accident and the botched roadblock, the State Transportation Department cited Zep and issued a warning to Mr. Kelly, for conducting the roadblock without prior authorization and for failing to follow state procedures.

In response to the state’s citation, Zep’s owner, Jovan Zepcevski, called the decision “absurd,” pointing out that the state’s inspection consultant had been on site at the time and never objected. Mr. Zepcevski did not respond to messages left by The New York Times, and his lawyers declined to comment.

A State Transportation Department spokesman, [Dick Kane](#), declined to discuss the agency’s handling of the project, citing the Brashears’ lawsuit against Zep. The insurance company for Mr. Merlos’s employer paid \$500,000 each to the two victims’ families.

Mitchel Chusid, the lawyer for Tyler’s mother, said he believed that the financial incentives for contractors to work quickly, to earn a bonus or to move on to the next project undermined safety.

“The Obama administration is dumping more money into highway construction, but safety is being treated like a secondary issue,” he said.

The I-75 project ended in January 2008. When the state graded Zep’s performance, it gave the company 98 points out of 110 — roughly an A-.

## Deferring Safety to States

When it comes to dictating safety practices on the projects it finances, the Federal Highway Administration generally defers to the states. But last year, as part of a revision to its highway safety standards, it made a rare foray into work-zone regulation, proposing stricter rules for, among other things, signaling procedures for flaggers and the use of electronic warning signs.

In recent years, the states had largely succeeded in fending off efforts to strengthen the few federal rules that do exist. Now, a group of states pushed back again, hard. Officials in Arizona sent a letter accusing highway officials of micromanaging safety “from their positions in distant Washington” with standards that would impose “financial hardship or unneeded litigation.”

The letter’s author was [Victor Mendez](#), then Arizona’s transportation director and the president of [Aashto](#), the state transportation officials’ lobbying group. In July, Mr. Obama appointed him the federal highway administrator. (When the agency acted on the proposed revisions just last week, it amended some to reflect concerns expressed in Mr. Mendez’s letter.)

The federal government’s hands-off approach to work-zone safety took hold in the 1970s, after a brief period in which Washington moved aggressively to enhance traffic safety by improving automobile technology and highway design. Some officials from that era said one thing left undone in the broad shift away from federal activism was improving safety in work zones.

“The feds could have, and I believe should have, issued some minimal state standards for work-zone safety,” said [Joan Claybrook](#), administrator of the [National Highway Traffic Safety Administration](#) from 1977 to 1981 and president emeritus of [Public Citizen](#), the consumer advocacy group founded by [Ralph Nader](#). “They are definitely a huge hazard on the highway.”

In the absence of laws or firm regulations, the states rely primarily on a set of guidelines and standards, many of them codified in the federal highway agency’s Manual on Uniform Traffic Control Devices — the bible of traffic safety for road builders. States are required to adopt it, or their own comparable manual, for all federally financed projects.

But most of what the manual says about work-zone safety is neither mandatory nor specific. For example, it dictates the shape and content of warning signs, but leaves the decision on when and where to place them to project planners. The same is true for deciding how to close lanes, when to use different types of barricades and how to train workers responsible for traffic control.

The states, acting through the American Association of State Highway and Transportation Officials, have worked to keep it that way. Hard and fast requirements, they argue, would raise costs and increase liability. Highway engineers also say that because no two zones are the same, a cookie-cutter approach would never work.

“We have judgment and expertise, and given some guidelines to follow, we will adopt those that are necessary in our state,” said Ken Kobetsky, a highway engineering expert with Aashto.

In an interview, Mr. Mendez said his agency had seen no evidence that work-zone safety was such a systemic issue that it required federal intervention.

“People at the state level are out there every day, they understand how to implement projects,” he said. “And incidents will happen, it’s unfortunate, not anything that any of us want. But I think at the end of the day, you have to be looking at the assumption that, like any professional, whether it’s your doctor or your attorney or an engineer, that they’re exercising their best professional judgment when it comes to safety.”

Asked how many crashes were attributable to deficiencies in work-zone traffic control, Mr. Mendez could not say and deferred to an aide, who also did not have an answer. They acknowledged that almost no pertinent information was being collected, although they did cite statistics showing that speeding was a factor in about a third of work-zone deaths, while impaired driving was a factor in about a quarter.

Mr. Mendez also pointed to federal data showing an overall decline in work-zone fatalities — 32 percent over the last five years, after climbing 20 percent in the previous five — as evidence that “something is happening” to make them safer.

There are reasons to question that statistic.

A search of news accounts from 2007 and 2008 found at least 50 work-zone-related deaths nationwide — including those of Anthony Sepeda, James Brashear and Manuel Ramirez — not reported as such in the federal data. In about a third of the states, accident reports lack a separate section to note the presence of a work zone, and most allow for little or no interpretation of whether it contributed to the crash. Experts say that the police are generally not trained to recognize work-zone problems.

Even some safety specialists at the Federal Highway Administration have questioned the value of the federal work-zone fatality statistics. Internal e-mail messages from 2004 show one specialist telling a colleague that “the numbers have gone up and down, sometimes significantly ... with no real indication of why.” The data, he said, “does not tell us a thing about work-zone performance.”

### An Informational Black Hole

The states and their contractors have a close and complicated relationship — a constant struggle to balance safety with pressures to work quickly, inexpensively and with as little traffic interruption as possible. Mr. Hassell, a former state highway official who ran the Federal Highway Administration from 1980 to 1981, said states “have to have a partnership arrangement that gets the day-to-day work done.”

“But,” he said, “that can quickly run afoul of the regulatory component.”

That component involves sending in inspectors — increasingly outside consultants — to ensure that road builders comply with the safety standards in their contracts. But The Times’s review of court cases found that inspectors often overlooked deficiencies, or were unable to get problems fixed when they did find them. The states’ main enforcement tool is to withhold payment, but that, contractors say, is rarely done. (Federal officials, too, could not cite any instances in which they had withheld payment or debarred contractors for poor safety records.)

“I’m not aware of it happening very often,” said Mr. Sant, the industry official, adding that he believed there was little need to do so because contractors were generally vigilant about keeping work zones safe. Fear of lawsuits, he said, is also a major safety incentive.

But some states have tried to blunt motorists’ ability to sue, passing laws protecting contractors from liability if

they were following state-approved plans. It is also not uncommon for state highway officials to testify on behalf of contractors in wrongful death lawsuits — or to help them in other ways.

In 2003, Analee Rupp was left a quadriplegic by one of 35 accidents in a work zone on Interstate 15 in Utah. Her lawyer, David Olsen, thought he had strong evidence of negligence: police testimony that driving through a poorly designed lane closure was like playing “Russian roulette.” But the contractor, Granite Construction, produced photographs that it said were taken before Ms. Rupp’s crash that showed the lane closure laid out perfectly.

However, a patrolman pointed out skid marks from Ms. Rupp’s vehicle in the photos, and Mr. Olsen said he discovered that the images had actually been shot by a state highway worker — after the accident had been cleared and the lane closure corrected. Another state worker gave the photos and negatives to Granite to defend itself in court.

In a statement, Granite said any accusation that it had backdated the photos was “completely without merit” and that the company “prides itself in going above and beyond the minimum standards required by the Federal Highway Administration and our project owners.”

The case ended in a multimillion-dollar settlement.

The Federal Highway Administration does require states to assess their own oversight, through periodic reviews of work-zone safety procedures. But that process was criticized in a 2004 report by the [National Transportation Safety Board](#). The report, after a fatal school bus crash in a Nebraska work zone, pointed out that the state’s contention that its work zones were safe was based on a review supposedly carried out by an inspection team that traveled 2,000 miles in four days.

“Assuming 12-hour workdays, with no breaks, would leave only 15 hours to inspect 50 projects, about 18 minutes per project,” the report said, adding that such figures call into question the thoroughness of inspections required by the Federal Highway Administration and “the accuracy of the resulting statistics.”

The report recommended that the administration “participate in the states’ work-zone safety inspections and

diligently monitor” the results. Since then, however, the highway agency has reduced the reviews’ frequency — to once every two years, from annually — and stopped requiring that states share their findings. The resulting black hole of information was apparent when The Times asked for the most recent reviews: after a “thorough search” over several months, the agency could produce reviews from only 20 states.

They revealed numerous problems, large and small. In 13 states, inspectors observed flaggers not paying attention, loafing or giving misleading signals. In 10 states, pavement markings were obsolete, missing or defective, and sometimes guided drivers into concrete walls or other lanes of traffic. In six states, there were poorly designed lane closures. Almost every state had inadequate or defective warning signs.

Ultimately, the federal agency’s role is limited largely to dispensing guidance and directing money to industry groups that sponsor safety courses for workers. These courses, typically lasting a day or two, are often the only formal instruction workers — many of them laborers like Anthony Kelly in the Zep case — receive before being put in charge of traffic control in a work zone.

The transportation safety board’s 2004 report assessed the classes’ limitations. The courses, it said, “did not include the depth of traffic operations and safety engineering training necessary to manage and make traffic engineering control decisions for a large construction project.”

### A Deadly Stretch of Road

As far back as 1986, the Federal Highway Administration urged states to deal with pavement-edge drop-offs. It did so again last year, encouraging states to adopt an inexpensive fix — a slight change in the paving equipment to smooth the edge.

But the agency has never required states to do this or sought to impose a uniform standard. Instead, there is a crazy quilt of policies: a study by the [Center for Transportation Research and Education at Iowa State University](#) found, for example, that while one state requires barriers for drop-offs of more than two inches, another mandates them only if a drop-off exceeds five feet.

Prosaic danger and unheeded warnings — perhaps nothing better crystallizes this dynamic than the string of accidents involving dangerous pavement edges in Texas.

In less than three months in 1998, six people died in nine car accidents linked to drop-offs on a five-mile stretch of Interstate 35 being repaved in Tarrant County. Lawsuits later revealed that as the accidents were unfolding, state workers and the contractors recognized the hazard, but bickered over the cost of smoothing the drop-offs. An employee of the contractor had voiced concerns before the crashes began but was overruled, according to court records. The lawsuits were eventually settled for about \$25 million.

On a July afternoon four years after the I-35 crashes, Kyong Leingang, 54, was heading home on Interstate 20 near Dallas, where the speed limit was 70, when the left wheels of her Ford Explorer dipped off a pavement edge in a work zone. Witnesses said she struggled to steer back onto the roadway, lost control and careered head-on into a minivan, killing herself and six members of an extended family in the minivan.

The police concluded that Ms. Leingang had been speeding. Still, lawyers for the victims argued that the accident could have been avoided had the drop-off been mitigated. They obtained documents showing that three days before the crash, a state inspector complained to the contractor about untreated drop-offs; nothing was done. The case was settled for an undisclosed amount.

Then, in 2005, a company called Peachtree Construction won a \$1.4 million repaving job on Highway 51, a farm-to-market road that curves through part of North Texas. At a planning session, a state engineer warned that steps should be taken to “minimize the drop-off,” according to the meeting minutes.

The travel lane and shoulder were about 20 feet across, too wide for the blade of Peachtree’s asphalt-spreader. Because the roadway sloped toward the shoulder, a blade extender would not work, so Peachtree decided to pave the lane and shoulder separately.

Peachtree still could have paved the shoulder promptly to avoid leaving a drop-off inside the travel lane. Instead, it chose to leave the drop-off in place for days, unprotected by barricades, while it focused on completing the travel lanes. Peachtree later contended that a state worker — it was never clear exactly whom — had told the company to do it that way, but no one from the state ever acknowledged doing so. At least one property owner on Highway 51 complained to the state, but the lane stayed open, with a speed limit of 65.

Observing the work was a relatively inexperienced state inspector, Daniel Pennell, who explained later that he had not realized anything was amiss. But when a veteran inspector, Randall Grard, arrived, he immediately told the Peachtree supervisor, Raymond Taylor, that the drop-off was dangerous. Later, in a deposition, Mr. Grard recounted the conversation:

Q: So on Sept. 13, you and Raymond from Peachtree — TxDOT and Peachtree — are standing out there on this road going, “This isn’t good to have all these straight line edge drop-offs on the travel lane.” Is that what — you all had that discussion?

A: Yes, we did.

Q: What did you do about it?

A: I went to my supervisors.

Q: What did Mr. — what did Raymond do about it?

A: Said that’s what he was — the way he was going to do it.

Mr. Taylor testified that while he recalled having “a little dispute” with Mr. Grard, he did not believe the drop-offs were dangerous. He said that the plan was always to pave the lanes and shoulders separately, and that state officials were aware of it.

Mr. Grard said he complained to his supervisors on Sept. 13 and 14, but was told not to worry. Early the next morning, Bryan Lee’s motorcycle slipped off the edge, which the police determined was about three inches deep — enough to have called for a buffer, though none was put up. Mr. Lee, who was not wearing a helmet (Texas law does not require it), died at the scene.

Mr. Lee’s widow, Kari, sued Peachtree. The contractor received supportive testimony from a state highway engineer and blamed Mr. Lee for causing his own death. Peachtree, which declined to comment for this article, eventually settled for about \$1.6 million, without admitting wrongdoing. The company continued getting Texas repaving contracts, and has received at least one project financed with federal stimulus money.

Shaken by the accident, Mr. Pennell, the inspector, later quit the Transportation Department. Reached by phone in Oklahoma, where he was working as a welder, he said that the department's inspectors were woefully underpaid, and that some were not prepared "to be responsible for the driving public."

A department spokesman, Jim Cotton, declined to comment on the case. But he said that generally, the agency's lead engineer on the project "works with the inspector to make sure that the contractor follows all the requirements of the construction contract."

"If we were aware of a problem," he said, "we would want the contractor to fix it immediately."

In May, a group of Texas state inspectors went to do the work-zone safety review required by the federal government. Among the problems they discovered were pavement edge drop-offs.

*Matthew M. Orr contributed reporting.*

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