

In harm's way

Hi-viz clothing now mandatory

for highway & road construction workers

By DAVE JOHNSON, Editor

On October 20, OSHA made public a new letter of interpretation that has a significant impact on the use of high-visibility warning garments for highway and road construction workers — hi-viz attire is now a mandatory requirement for workers in these danger zones.

Echoing an increasing concern of safety experts, acting OSHA boss Jordan Barab declared in a prepared statement: "Highway construction workers should not suffer serious or fatal injuries simply because they could not be seen. Requiring the use of reflective vests is essential to help prevent workers from being injured or killed."

An evolving concern

How did this de facto standard come about?

In 2004, OSHA issued a letter of interpretation about the use of high-visibility apparel in highway construction. The letter emphasized that section 5(a)(1) of the Occupational Safety and Health Act — the all-encompassing General Duty Clause requiring employers to provide a safe and healthful workplace in the absence of any specific standards — requires workers in highway work zones to wear high-visibility apparel.

But the Occupational Safety and Health Review Commission ruled that OSHA's letter indicated a more limited position. High-visibility garments were to be required only where the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) mandated their use, stated the OSHR Commission.

Now OSHA has issued a new letter, in response to a query from the field, stating that all highway and road construction workers must wear high-visibility apparel — regardless of whether the MUTCD requires them.

A well-recognized hazard

What has changed since 2004?

The key is this: OSHA now considers road and construction traffic a well-recognized hazard to highway/road construction workers. The Bureau of Labor Statistics reinforced the need for using safety apparel when data from 2003 to 2007 showed there were 425 road construction work zone fatalities, according to the agency.

More statistics: During the 1995 to 2002 period, 844 workers were killed while working at a road construction site, according to NIOSH. During this same period there were 9,325 deaths in the construction industry. The 844 worker deaths in road construction represent 9 percent of all deaths in construction. More than half of these fatalities were attributable to a worker being struck by a vehicle or mobile equipment. Workplace fatalities that occur at a road construction site typically account for 1.5 percent to 2.0 percent of all workplace fatalities annually.

The specific question raised to OSHA asked if the use of high-visibility warning garments by construction workers in highway work zones is required. To quote the question word for word: "Construction employees working on highway/road construction work zones often risk being struck by traffic. Do the OSHA standards require high-visibility apparel for these construction workers?"

OSHA's interpretation

Here is the agency's reply, as signed by Richard Fairfax, acting head of the Directorate of Construction:

"Road and construction traffic poses an obvious and well-recognized hazard to highway/road construction work zone employees. OSHA standards require such employees to wear high-visibility garments in two specific circumstances: when they work as flaggers and when they are exposed to public vehicular traffic in the vicinity of excavations. However, other construction workers in highway/road construction work zones are also exposed to the danger of being struck by the vehicles operating near them. For such workers, section 5(a)(1) of the OSH Act, 29 U.S.C. §654(a)(1), also known as the General Duty Clause, requires similar protection.

"The Federal Highway Administration's (FHWA) recent issuance of a final rule (Worker Visibility, 23 CFR Part 634) demonstrates the need for all workers who are exposed either to public traffic or to construction vehicles and equipment to wear high-visibility apparel on the job. Section 634.3 of the Worker Visibility Rule states:

'All workers within the right-of-way of a Federal-aid highway who are exposed either to traffic (vehicles using the highway for purposes of travel)

or to construction equipment within the work area shall wear high-visibility safety apparel.'

"The purpose of this requirement, as stated in section 634.1, is 'to decrease the likelihood of worker fatalities or injuries caused by motor vehicles and construction vehicles and equipment...' In the preamble to the Worker Visibility rule (Volume 71 of the Federal Register, page 67792), the FHWA stated:

"High visibility is one of the most prominent needs for workers who must perform tasks near moving vehicles or equipment. The need to be seen by those who drive or operate vehicles or equipment is recognized as a critical issue for worker safety. The sooner a worker in or near the path of travel is seen, the more time the operator has to avoid an accident.' The FHWA recognized this fact and included language in the 2000 Edition of the Manual on Uniform Traffic Control Devices (MUTCD) to address this issue.

"The FHWA's rationale underlying the rule well illustrates that the industry recognizes that construction workers in highway/road construction work zones need protection against the hazard posed by moving traffic. The FHWA's recent mandatory standard for workers on federal-aid highways shows that struck-by hazards in highway/road construction work zones are well-recognized by the construction industry. Furthermore, the standard indicates that a feasible means of addressing that hazard is the wearing of high-visibility apparel.

"Accordingly, high-visibility apparel is required under the (OSHA) General Duty Clause to protect employees exposed to the danger of being struck by public and construction traffic while working in highway/road construction work zones. Typically, workers in a highway/road work zone are exposed to that hazard most of the time."

Sudden impact

Every motorist at some time has whizzed past a highway construction crew at speeds likely exceeding 50 miles per hour. At such speeds, driver reaction time — and workers' reaction times — are perilously slow. In the dark of night, the danger is that much greater. Consider these tragedies:

▲ This past June, a woman, aged 43, driving her Toyota Solara on Florida's Alternate A1A, plowed into a construction crew working on road resurfacing. Two workers were killed and a third hospitalized. The driver, who was not injured, was reported to have a history of speeding incidents.



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△ Just last month, a 48-year-old New York State Department of Transportation worker was struck and killed by a truck on a Monday morning. The victim was standing holding a Stop Sign for traffic when a 63-year-old woman driving a GMC pickup truck smashed into him. The worker died at the scene; the woman driver was not injured.

△ An 18-year-old flagger, outfitted in full reflective vest, pants, and hard hat, was directing traffic at one end of a bridge approach during a night milling operation. The work zone was correctly marked with cones and signs, and the entire bridge was illuminated with street lights. The flagger was standing under portable flood lights in the opposing traffic lane close to the center line, facing oncoming traffic. A pickup truck traveling in the wrong lane at an estimated 55 to 60 miles per hour struck the flagger head on and carried him approximately 200 feet. He died at the scene of multiple traumatic injuries, according to a NIOSH investigation.

△ On October 30, 2000, a 47-year-old male state department of transportation (DOT) maintenance worker died after he was struck by a car that intruded into a work zone where he and a coworker were installing reflectors on a guardrail located along the median of an interstate highway. Shortly before the incident, the victim and his coworker placed "WORK AREA AHEAD" signs 1,000 feet in advance of their work area on both the south and north shoulders of the westbound lanes,

according to a NIOSH investigation.

△ On May 11, 2005, a 52-year-old male traffic control supervisor was backed over in a roadway work zone by a dump truck haul-

ing asphalt. The victim was part of a sub-contracted crew providing traffic control on a city street while paving was being done. The traffic control crew had re-arranged the work zone for a new paving operation, and the victim was picking up some extra cones in the work zone. The victim was facing away from an asphalt dump truck that was traveling in reverse toward the paver. The driver felt a "bump" and saw some cones tumbling into the road. He stopped, pulled forward and parked the truck. The driver and a traffic control worker found the victim lying face down on the ground moaning while clutching some traffic cones. They yelled for someone to call 911, according to a NIOSH investigation.

Approximately four minutes later, Emergency Medical Services (EMS) arrived on scene, assessed the victim and found he had multiple injuries. The victim was transported via ambulance to an area hospital, where he was later pronounced dead.

According to the National Work Zone Safety Information Clearinghouse (which has a website billed as "the world's largest Internet resource" at www.workzonesafety.org), each year more than 100 workers are killed and more than 20,000 injured in the highway and street construction industry. This data comes from another valuable resource: "Building Safer Highway Work Zones: Measures to Prevent Worker Injuries From Vehicles and Equipment," published by NIOSH.

The need to be seen

The hazards faced by highway construction crews will increase in the future. As the Federal Highway Administration (another excellent safety resource at www.safety.fhwa.dot.gov) explains: "As our highway infrastructure ages, many highway agencies are focusing on rebuilding existing roadways instead of building new ones. Highway improvement projects being performed on roadways that are open to traffic are increasing. At the same time, traffic continues to grow and creates more congestion. This combination of more work zones, heavier traffic, and greater reliance on night work results in increased risk for highway workers. The following methods can be used to minimize and control risks for workers:

- △ High-visibility apparel
- △ Worker training

- △ Activity area planning
- △ Speed control
- △ Positive separation
- △ Lighting
- △ Worker safety planning
- △ Special devices

Specifically regarding hi-viz apparel, the FHWA states:

- △ All workers should wear high-visibility apparel.
- △ Worker visibility during dawn or dusk conditions may be enhanced by the use of fluorescent colored high-visibility apparel.

△ The use of colors such as yellow-green for the worker apparel may help to differentiate the worker from the orange colored work vehicles, signs, drums, etc.



A wide variety of hi-viz clothing was on display last month at the A+A safety fair in Düsseldorf, Germany.

A perilous "perfect storm"

The perilous "perfect storm" of increased nationwide highway infrastructure repair work, more work zones, heavier

volumes of traffic, greater reliance on night work, and greater opportunities for distracted driving by the public due to cell phones, text messaging, and use of global positioning systems, has brought about not only the recent hi-viz apparel mandate from OSHA, but numerous federal and state government safety efforts, and educational efforts by groups such as the National Work Zone Safety Information Clearinghouse, the International Safety Equipment Association (which has a specific hi-viz apparel product standards group consisting of 31 companies, making it ISEA's largest product group), and the Associated General Contractors of America, Inc.

For example, OSHA partnered with several construction organizations to support a struck by accident "safety stand down" on Wednesday, November 4, from 7 to 8 a.m. at construction sites throughout Georgia.

The Georgia Struck By Alliance Safety Stand Down stopped work at construction sites in Georgia and conducted work zone safety training focused on the prevention of struck by accidents. An informational flyer and toolbox talks (in both English and Spanish) are available on the Associated General Contractors of America Inc. Georgia Branch Web site at <http://www.agcga.org>.

"This alliance has taken the initiative and shown leadership with organizing and conducting this safety stand down industry-wide as well as throughout Georgia to emphasize the importance of employees' safety in work zones. The stand down will heighten employees' awareness and their ability to identify and eliminate work-related hazards in the construction community," said Cindy Coe, OSHA's regional administrator for the Southeast.

The Georgia Struck By Alliance consists of OSHA, the Georgia branch of the Associated General Contractors of America, 3M Visibility & Insulations Solutions, the Georgia Department of Transportation, the Federal Highways Administration Georgia Division, the Georgia Highways Contractors Association, the Georgia Utility Contractors Association, Association County Commissioners of Georgia, Georgia Tech Research Institute, Lamar Signs, Surveying and Mapping Society of Georgia, and Georgia Power.

Reducing risk while rebuilding roads

Today, states the FHWA, the U.S. is primarily rehabilitating and reconstructing existing infrastructure while maintaining a very high volume of traffic on the very facilities being working on. It is estimated

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that more than 20 percent of the National Highway System (NHS) is under construction during the peak construction season. More than 3,000 work zones are expected to be present on the NHS during the peak construction season.

An estimated 12 billion vehicle miles of travel a year will be through active work zones. Motorists can expect to encounter an active work zone one out of every 100 miles driven on the NHS.

In the American Recovery and Reinvestment Act of 2009, as of September 3, a total of \$1,015,524,987 Recovery Act funds had been obligated in the category "Safety/Traffic Management."

Many safety improvements strategies to accompany this massive roadway rebuilding effort can be "easily and cost effectively incorporated in existing 'ready to go' projects without changing the scope or delaying the project," according to the FHWA. Beyond the use of hi-viz clothing, one example is the use of rumble strips incorporated into a resurfacing project that cost as little as \$600 per mile.

Another way to achieve safety benefits is through "programmatic" or "system-wide" projects that may focus on addressing safety issues in a particular area or corridor, according to FHWA. Examples include projects that systemically install proven safety countermeasures such as guardrails, warning signs, striping, rumble strips, safety edge and median barriers.

Strategic Highway Safety Plans are a good starting point for identifying stand-alone safety projects or enhancements to "ready to go" projects that can be imple-

mented, constructed and advanced quickly, according to FHWA. "The sooner these safety features can be put in place, the sooner they will save lives," states FHWA.

Hi-viz apparel options

Highway construction workers have no lack of options when it comes to choosing hi-viz clothing. Summaries of available clothing are offered on the National Work Zone Safety Information Clearinghouse website. They include: raincoats, lime elastic waist pants, lime bib overall pants, lime rain jackets, lime vests, T-shirts, workshirts, tri-color vests, short-sleeved vests, mesh vests, adjustable mesh vests, short- and long-sleeve T-shirts.

The International Safety Equipment Association (ISEA) is the lead organization for manufacturers of high-visibility safety products, including apparel and headwear.

As explained on ISEA's website: On September 15, 2004, the American National Standards Institute (ANSI) approved a revised edition of the standard, ANSI/ISEA 107-2004. The standard provides a uniform guide for the design, performance specifications, and use of high-visibility and reflective apparel including vests, jackets, bib/jumpsuit coveralls, trousers and harnesses.

Garments that meet this standard can be worn 24 hours a day to provide users with a high level of conspicuity through the use of combined fluorescent and retroreflective materials.

The revised version of the standard expands the product coverage to include high-visibility headwear. It also contains additional testing procedures for knitted fabrics used as background material. User guidance has been expanded to provide occupational scenarios and recommended Performance Classes and additional examples of garment design, and the appendixes now include standard test reports and a compliance certificate.

To comply with ANSI/ISEA 107-2004, a garment's background material, and retroreflective or combined-performance material, must be tested and certified by an independent, accredited third-party laboratory. The manufacturer of the finished item then verifies that the garment or headwear meets all the requirements of the standard, and provides a certificate of compliance for each model.

The standard emphasizes that garment selection should be based on the color and

complexity of the work environment, the task load of the worker, separation of the worker from moving equipment and vehicles, and other work environment variables. Occupational scenarios in an appendix to the standard provide guidance for users.

Three classes determine the appropriate reflectivity level of a garment for the environment the worker is in. The performance classes are as follows:

Class 1 Garments are intended to be used in activities in which the worker has full and undivided attention to approaching traffic. There should be a separation of the worker from the traffic and the traffic

should not be traveling more than 25 miles per hour.

Class 2 Garments are intended to be used where greater visibility is required during poor weather conditions or in work environments with risks that exceed Class 1 environments. Class 2 garments should also be used when the workers' attention may be diverted from traffic or they are in close proximity to vehicles traveling 25 miles per hour or higher.

Class 3 Garments have the highest level of visibility. They are used in situations where workers face serious hazards and often have high task loads

that require attention away from their work. Class 3 garments should provide enhanced body visibility, especially in the arms and legs.

Class 1 and Class 2 garments include vests and T-shirts. Class 3 garments include vest with pant ensembles, coveralls, outerwear and rainwear.

Class 1 calls for a minimum of 217 square inches (in²) of background material; Class 2 requires 775 in², and Class 3 garments have a minimum of 1240 in² background material.

Minimum requirements for retro-reflective or combined performance material used in conjunction with background are: Class 3 - 310 in²; Class 2 - 201 in²; and Class 1 - 155 in².

Two states, Minnesota and Washington, have adopted the standard into law. Federal OSHA recognizes ANSI standards in general as voluntary guidance documents and advocated their use.

A copy of ANSI/ISEA Standard 107-2004 can be ordered from ISEA's website at www.safetysystem.org.

ANSI Update

The American National Standards Institute (ANSI) and the International Safety Equipment Association (ISEA) passed the ANSI/ISEA 207-2006 Standard for High-Visibility Public Safety Vests, which took effect November 24, 2008.

ANSI 207-2006 was created in response to the need for higher visibility and tactical design for public safety employees working along federal highways. This new ANSI regulation includes those in public service jobs and who work in the right of way of federally-funded highways.

ANSI 207-2006 does not apply to construction and utility workers.

ANSI/ISEA 207-2006 safety vests are shorter in length and feature a breakaway design to prevent entanglement. ANSI/ISEA 207-2006 recognizes the need for these agencies to identify with a specific color during a multi-agency event: Red for Fire Officials, Blue for Law Enforcement, Green for Emergency Responders, and Orange for DOT Officials.

ANSI 207 is not intended to replace, or be interchangeable with ANSI 107 Class 2 apparel. Law enforcement officers performing traffic control duties are still encouraged to follow ANSI 107 Class 2 or Class 3 guidelines whenever possible. **ISHN**



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