

# WCCTV

## 10 Safety Hazards Facing Construction Jobsites (and How Tech Can Prevent Them)

# 10 Safety Hazards Facing Construction Jobsites

Construction jobsites are high-risk environments where a single accident can derail an entire project and destroy careers. Workers face dangers daily, from falls and electrical hazards to extreme weather conditions and heavy equipment accidents, all of which require constant attention and proactive management.

A 2025 industry study highlighted the concerning statistic that only 48% of construction leaders feel confident that their workplaces are consistently safe and compliant. Construction companies must understand the full range of project dangers they face so they can develop strong safety procedures to protect their sites and crews.

48%

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## The 10 hazards we cover are:

- 1 Falls From Heights
- 2 PPE Non-Compliance
- 3 Dangerous Driving
- 4 Electrical Dangers
- 5 Caught-in or Between
- 6 Unauthorized Access or Theft
- 7 Noise Harm
- 8 Fire Dangers
- 9 Airborne Hazards
- 10 Heat Exposure

# The Top 10 Safety Dangers Effecting Jobsites

The Bureau of Labor Statistics indicates that construction accounts for 20% of all US workplace fatalities, exceeding any other sector.



Back in 1994, OSHA (Occupational Safety and Health Administration) introduced "Focus Four", spotlighting the 4 leading causes of construction fatalities: falls, struck-by incidents, caught-in or between, and electrocutions. While these categories are still among the top dangers today, several other risks demand attention as well.

Falls	Struck-by
Caught-in	Electrical

Let's walk through the leading jobsite hazards and how technology minimizes risks and construction injuries.



# Falls From Height

Falls remain the leading cause of death for construction workers, accounting for over a third of all construction industry fatalities.

**39.2%**  
(or 421 out of 1075 deaths)

were due to  
falls, slips,  
and trips



## OSHA sets clear safety standards around fall prevention, including:

- Subpart M regulations cover safety practices and equipment when working at heights of 6 ft+ above a lower level. Fall protection equipment, such as guardrails, safety nets, and harnesses (fall arrest systems), is mandatory.
- 1926.1053 addresses the secure use of ladders on construction sites.
- 1926.451 covers the proper and safe erection of scaffolding.

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## How technology can help:

Modern risk assessment solutions include AI-driven visual monitoring and early warnings. These systems detect when crew members are working at heights without proper fall protection or harnesses and issue immediate alerts to trigger corrective actions.

# PPE Non-Compliance

Construction workers and leaders are widely aware of OSHA's PPE standards requiring the use of appropriate protective equipment, such as hard hats, high-visibility vests, safety footwear, eye protection, and face masks. That said, 54% of construction leaders say that inconsistent PPE wear remains a challenge on projects.

54%



Manual supervision and box ticking are not enough to achieve PPE compliance; this vital safety area demands continuous, proactive tracking and enforcement.



## Technology solutions:

- Our AI-driven PPE Monitoring system tracks site-wide compliance in real time, flagging any non-adherence so you can act fast.
- All incidents are logged in Stellifii, our secure cloud-based compliance platform, giving you verifiable evidence to address non-compliance and demonstrate robust safety practices.

# Struck-by and Dangerous Driving Accidents

Given the mix of operating equipment, heavy machinery, power tools, & overhead work on busy jobsites, it's unsurprising that struck-by accidents are a Focus Four danger.

Construction workers are routinely hit by heavy equipment or falling objects, while vehicles driving faster than they should add to the toll.

Safety measures to limit struck-by injuries include wearing personal protective equipment such as hard helmets & safety footwear.



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## Technology solutions:

- Our License Plate Recognition (LPR) tool is an automated system that tracks & logs all vehicles entering & exiting the jobsite. Accurate readings of speed & distance using AI-assisted imaging help to enforce safer driving across all work zones.
- PPE monitoring & detection can be employed to monitor & ensure worker safety through the use of personal protective equipment.
- Other advanced tech includes wearable sensors or vision-based AI that alert operators and workers to potential dangers.

# Electrocution and Electrical Hazards

Most modern developments involve complex electrical installations/connections. Electrical work is dangerous by nature, and even more so if contractors are untrained and housekeeping is poor (exposed wiring, faulty equipment, improper grounding).

High voltage incidents and electrical hazards cause approximately **400 deaths annually and around 30,000 injuries**, including severe burns.

A common electrical safety issue on construction sites is failures in lockout-tagout (LOTO) procedures, especially during the final stages of a project.



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## Technology solutions:

- Digital Permit-to-Work systems are a key LOTO (Lockout/Tagout) safety measure. This protocol requires a photo showing that LOTO has been performed before you can mark a task as “started” on the project dashboard.
- PPE compliance monitoring ensures that contractors wear the necessary safety boots (rubber-soled), insulated gloves, face shields, or arc-rated clothing when working with electrical equipment.

# Caught-in or Between

Caught-in or between incidents occur when body parts get caught in machinery or workers are crushed between equipment or collapsing structures, such as trenches.

Examples of caught-in/between casualties are:



**Trapped in a Trench Collapse**



**Caught by Rotating Equipment**



**Pinned by Collapsed Scaffolding**



**Hands, Limbs, and Clothing Caught in Machinery**



**Crushed Between the Counterweight of the Crane and Another Structure**

## Technology solutions:

- Smart monitoring systems and automated alerts are used to track equipment movement and site activity in real time. For example, systems can be taught to check that: proper machine guarding is in place, and workers aren't wearing over-loose clothing or jewelry that might get caught in moving parts.

# Unauthorized Access and Theft

Unauthorized personnel in hazardous areas or restricted zones are a danger to themselves and others. They're likely not trained to be in the sector and don't understand the risks on the ground.



Meanwhile, theft and vandalism cost the construction industry over \$1 billion annually. Protecting valuable equipment, metals, copper, materials, and tools is hard without proactive jobsite security. A weakly secured site with poorly controlled sectors inevitably suffers more losses, injuries, legal liabilities, and work disruption than a well-controlled environment.

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## Technology solutions:

- Our AI-driven Security Systems detect threats and protect your site 24/7, using Pole Cameras or Temporary Security units supported by live monitoring and instant voice challenges to deter intruders.
- Intrusion Detection with AI analytics linked to Stellifii delivers the actionable insights you need to make better, faster security decisions and responses.

# Excessive Noise Harm



Noise is a common construction site hazard that must be managed on a daily basis. Excessive noise exposure poses serious health risks to workers, including temporary deafness, tinnitus, and long-term hearing loss (which can lead to injury claims). Excessive construction noise is also considered a health hazard to the surrounding community.

OSHA safety regulations (1926.52) set noise limits that workers can legally be exposed to. For example:

- 90 Decibels averaged for 8 hours
- 100 dB averaged for no more than 2 hours
- 105 dB averaged for no more than 1 hour



In terms of health and safety standards, employers are expected to take appropriate engineering controls and provide hearing protection to safeguard workers from occupational noise hazards. Since manual spot checks are too irregular and flawed to monitor noise effectively, technology is the go-to answer.

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## Technology solutions:

- Our smart Noise Monitoring sensors track jobsite sound levels in real time, ensuring exposure limits aren't breached. Integrated with our Solar Surveillance Trailers and the Stellifii platform, they provide live readings and instant alerts while reducing site visits.

# Fire Dangers

Fires are an ongoing construction site safety concern. Negligent hot work, electrical faults, sparks from grinding, and unsafe handling of combustible materials can ignite site-wide fires in minutes.

Based on NFPA, US fire departments respond to **over 4,400 jobsite fires each year**. Uncontrolled blazes endanger the lives of all on-site and cause extensive property and equipment damage.



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## Technology solutions:

- Our specialized Smoke and Fire Detection cameras with AI video analytics spot heat signatures and the early traces of smoke near instantly. This smart detection and prevention solution is proven to react faster and pinpoint the flame source more accurately than traditional fire alarms.



- After identifying a threat, the system sends an immediate alert to your designated contact or responsible crew, enabling a rapid fire-fighting response. Stellifii retains a complete record of the incident for audit and insurance purposes.

# Airborne Hazards

Various airborne hazards cause workers short-term discomfort (headaches, fatigue) and long-term health complications, including lung damage. Air contaminants include:

- Silica dust
- Carbon dioxide (CO<sub>2</sub>)
- Fumes from hazardous materials
- Excessive dust and particulate matter
- Volatile organic compounds (VOCs) from industrial solvents



“ The National COSH reports that thousands of US workers die every year from prolonged exposure to hazardous substances. Many of these fatalities are preventable with the proper controls, like adjusting work methods, using PPEs, pausing work to shut down a hazard, and monitoring air quality proactively. ”

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## Technology solutions:

- IoT-enabled Air Quality Systems measure PM1, PM2, PM10, CO<sub>2</sub>, VOCs and other pollutants with precision. They detect issues faster and more accurately than manual methods.
- The system alerts managers before pollutants or chemical fumes near unsafe levels. All environmental, fire, intrusion, and PPE data feed into Stellifii’s central interface for clear remote oversight and action.

# Heat Exposure and Exhaustion

Rising summer temperatures increase the danger of heat-related illnesses, such as exhaustion, dehydration, and heat stroke.

Beyond the direct physical toll, heat stress compromises workers' judgment and abilities, leading to errors and accidents. Dropping tools/materials on crew members below or stumbling into a moving machine part are two prime examples.



Traditional safety plans often depend on forecast data or scheduled breaks, which may not reflect actual conditions.

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## Technology solutions:

- Our Weather Monitoring stations track extreme temperatures and humidity (and other dangerous conditions like winds, rainfall, storms). They monitor the risks in real-time and send automated alerts to supervisors.
- The system can trigger hydration breaks, rest periods, and work stoppages to protect your crew and jobsite, avoiding fatalities and penalties arising from heat hazards.

# Contact Us

Wireless CCTV LLC  
851 International Pkwy  
Suite 140  
Richardson, Texas  
75081

T: 877 805 9475  
E: sales@wcctv.com  
E: service@wcctv.com

