

How Balfour Beatty Reduced High-Risk Events by 64% in 14 Days, Setting the Global Standard for AI Safety in Construction

A six-year journey from pilot to industry mandate

4,621

RED ZONE INCURSIONS CAPTURED

64%

DROP IN CRITICAL EVENTS IN 2 WEEKS

99%

POSITIVE OPERATOR FEEDBACK

100%

DETECTION IN ALL TRIAL SCENARIOS

THE PROBLEM

A Persistent, High-Consequence Risk

Struck-by incidents remain one of the leading causes of serious injuries and fatalities in construction. Despite defined exclusion zones, the problem was not defining safe zones — it was ensuring they were consistently respected across workers, sites, and subcontractors at scale. Operators face blind spots and limited visibility, and safe jobsites cannot depend on human awareness alone.

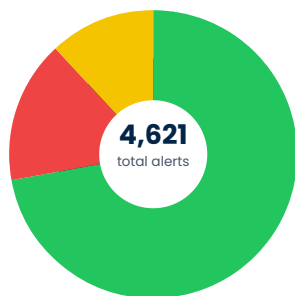
THE SOLUTION

AI-Powered Safety at the Point of Risk

Balfour Beatty partnered with Safety Shield Global to test and develop Human Form Recognition (HFR) technology across its heavy equipment fleet. The machine mounted systems detect human presence in real time — no tags or wearables — triggering immediate in-cab alerts and external pedestrian warnings, with every event captured on video with GPS and timestamp. In 2024 Balfour Beatty mandated HFR systems across their entire fleet and in 2025 extended this to their full supply chain.

THE RESULTS

EVERY ALERT REVIEWED & CLASSIFIED



72% No Action 16% Critical 12% Action Req.

TRIAL STATISTICS

330/day

Avg alerts · 44 per machine

45 → 16

Critical alerts in 2 weeks

+25%

No-action alerts (safer zones)

6 yrs

Live testing & validation

BEHAVIOURAL CHANGE OBSERVED

- Pedestrians actively avoided detection zones
- Improved operator-to-ground communication
- Near misses captured and used in toolbox talks
- Camera presence created a lasting culture shift

Safety Shield has given Highways the ability to scrutinise our PPI risks and see what's actually happening when no one's looking. The video capture enables clear visibility of individuals' culture, their perception to risk at the workplace.

Chris English · Head of HSES, Highways · Balfour Beatty

Available in the U.S. through HSE Americas · hseamericas.com