

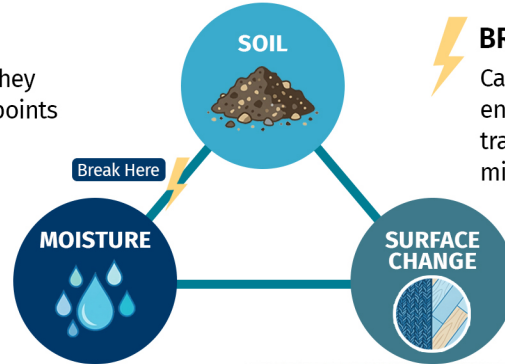
1 THE INJURY TRIANGLE

Worker injuries are not random events. They concentrate at predictable convergence points where three hazard elements interact:

Soil: Abrasive particulate — reduces surface friction coefficient

Moisture: Activation agent — suspends soil, spreads hazard zone

Surface Change: Transition trigger — where slip events concentrate



BREAK THE TRIANGLE

Capture soil and moisture at the point of entry. Engineered matting systems placed at transition zones interrupt the hazard before it migrates onto uncontrolled surfaces.

2 TRANSITION ZONE RISK POINTS

OSHA's walking-working surfaces standards (29 CFR 1910 Subpart D) identify slips, trips, and falls as among the most preventable injury categories across all industries. According to the National Safety Council, 885 workers died in falls in 2023 — and hundreds of thousands were injured badly enough to require days away from work. The highest-risk points are predictable, not random.

Note: Risk tiers below reflect the application of OSHA's hierarchy of controls and ANSI/NFSI B101 frameworks to documented hazard conditions at each zone type. Zone-specific incidence-rate data is not available in published public literature; these designations are based on known hazard mechanism severity, not facility-specific injury counts.



ZONE	HAZARD MECHANISM	RISK LEVEL	TIMING
Entry Threshold (first 10-20 ft)	Maximum soil + moisture load. Continuous re-introduction with every entrance event.	Critical	Every entrance event
Vestibule / Airlock Transition	Second-zone tracking. Soil migrates beyond primary mat if capture insufficient.	High	Peak traffic hours
Elevator Lobby	Stop-and-turn traffic compresses soil into surface at pivot points.	High	Throughout day
Stairwell Landing	Tracking from stairs concentrates at landing surface — often no matting present.	Moderate-high	AM / PM peaks
Carpet-to-Hard Floor Edge	Surface friction changes abruptly. Moisture migrates from soft to hard surface.	Moderate-high	Wet weather events
Restroom Threshold	Water tracking onto hard corridor surface. High frequency, repeated exposure.	Moderate	Throughout day
Loading Dock / Service Entry	Heavy soil load. Grease, grit, and moisture compound friction loss.	High (often uncontrolled)	Delivery windows

3 SOIL + MOISTURE INTERACTION

Surface friction reduction follows a pathway. Understanding each stage identifies where to interrupt it.

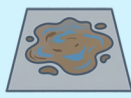


Instant

STEP 1

Moisture contacts soil or salt at entry surface.

Control Point: Mat placement



Seconds

STEP 2

Soil suspends — surface becomes lubricating film.

Control Point: Mat capacity



Minutes

STEP 3

Film tracks onto uncontrolled hard surface beyond mat edge.

Control Point: Mat length / zone depth



Every Step

STEP 4

Foot traffic spreads and presses film — friction coefficient drops.

Control Point: Zone cleaning frequency



Unpredictable

STEP 5

Slip event. Floor appears clean — hazard is invisible.

Control Point: Too late

You cannot chemically dry a surface that is being continuously re-wetted.

Mechanical capture at the source is the only reliable interruption.

4 PREVENTATIVE CONTROL LOCATIONS



SCRAPER MAT

Exterior entry — before door threshold
Remove bulk soil and moisture before entry.

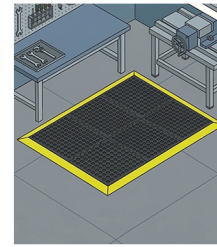
PRIORITY: CRITICAL



WIPER-SCRAPER MAT

Interior entry — first 10–15 ft beyond threshold
Secondary soil capture; moisture absorption.

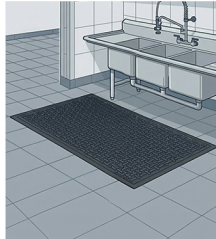
PRIORITY: CRITICAL



ANTI-FATIGUE / SLIP-RESISTANT MAT

Elevator lobbies, service counters, workstations
Friction maintenance in stop-and-turn zones.

PRIORITY: HIGH



DRAINAGE MAT

Restroom thresholds, wet service areas
Lift foot traffic off wet surface; drain moisture below

PRIORITY: HIGH



TRANSITION EDGE MAT

Carpet-to-hard floor edges, stairwell landings
Manage surface change; reduce tripping and moisture migration.

PRIORITY: MODERATE-HIGH

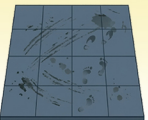
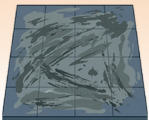
Reactive controls (wet floor signs, incident reports) address the symptom after a failure event. Preventative controls interrupt the hazard before it reaches uncontrolled surfaces.

5 RECOVERY & COMPLIANCE PROTOCOL

CHALLENGE	PREVENTATIVE CONTROL	REACTIVE CONTROL	PRIORITY ZONE
High moisture tracking at entry	Wiper-scraper mat — minimum 15 ft depth	Increase mopping frequency in first 20 ft	Entry threshold
Elevator lobby wear / soil accumulation	Anti-slip mat at lobby approach — replaced on schedule	Add wet floor signage; spot-mop after peak hours	Lobby / elevators
Carpet-to-hard floor moisture migration	Transition mat at edge; verify mat moisture capacity	Place absorbent mat at edge; monitor and replace	Transition edges
Restroom water tracking	Drainage mat at threshold; corridor mat inside exit	Monitor frequency; increase corridor dry-down passes	Restroom exits
Stairwell landing soil accumulation	Wiper mat at landing; scraper at stair base	Add to daily inspection route; monitor visually	Stairwells

6 HAZARD PROGRESSION — EARLY DETECTION PROTOCOL

Walk your highest-risk zones daily in wet-weather seasons. Compare against these stages — early detection at Stage 1 prevents injury at Stage 4.

STAGE 1 Light moisture film at entry transition. Surface appears clean under normal light. Response: Verify mat placement and capacity. Check mat replacement schedule.	STAGE 2 Visible soil tracking 10+ ft beyond mat edge. Damp surface under angled light. Response: Extend mat zone or add secondary mat. Increase entry cleaning frequency.	STAGE 3 Soil film on hard surface. Surface feels slightly tacky or slick in spots. Response: Immediate wet floor signage + spot clean. Review full mat system placement.	STAGE 4 Visible slick surface, soil migration into corridor. Near-miss or incident reported. Response: Close zone. Document. Full mat system overhaul + incident review.
 Low Risk: Monitor	 Moderate Risk: Intervene	 High Risk: Act Now	 Critical Risk: System Failure

Scientific References

OSHA — Slips, Trips & Falls (1910 Subpart D) · Walking/Working Surfaces · Slip-and-Fall Risk Factor Guidelines | ANSI/NFSI B101.6 — Standard Guide for Commercial Entrance Matting in Reducing Slips, Trips and Falls | NFSI — Hierarchy of Controls & Walkway Auditing Standards (B101 Series) | NSC Injury Facts 2023 — Workplace Falls Data | Liberty Mutual 2024 Workplace Safety Index — Slip, Trip & Fall Cost Analysis | CDC/NIOSH — Hierarchy of Controls | ISSA — Facility Safety Best Practices