



# Liability & Property Pool Workers' Compensation Fund

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## RISK CONTROL SOLUTIONS

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A Service of the Michigan Municipal League Liability and Property Pool and  
the Michigan Municipal League Workers' Compensation Fund

### FALL PROTECTION PROGRAM

Municipal employees often slip, trip, and fall on the job, sustaining injuries as a result. Nationally, workplace falls injure more than 200,000 workers a year. Falls are second only to lifting and repetitive motion as a cause of occupational injuries requiring medical care, restricted duty work, or time off. Falls are also the third leading cause of occupational death, killing over 800 people annually.

Clearly, preventing employee injuries and deaths is a worthwhile value and goal on its own merit. That said, employers must also consider the financial consequences of workplace injuries, which can lead to direct costs, such as medical claims and payments for lost time (median: 12 work days), and indirect costs, such as administrative time and expenses and lost productivity. Nationally, the average *direct* outlay associated with slip, trip, or fall injuries is \$40,000 per incident. The *indirect* costs can be even higher.

During the three years ending 6/30/2020, slips, trips or falls were the cause of 21% of all claims reported to the Michigan Municipal League Workers' Compensation Fund, leading to \$11.8 million in claim costs – about 30% of the Fund's total claim expenditures.

While membership in the MML Workers' Compensation Fund enables municipal entities to pool resources to cover the direct costs, each member bears the entire indirect cost when their employee is injured.

For these reasons, both the Fund and its members stand to save if members work to reduce the likelihood of employee falls.

The purpose of this document is to:

- Provide education about the hazards of falls in general work settings, both from elevations and upon the same level.
- Provide guidance for people, including contractors and property managers, who supervise and perform work where falls may occur.
- Establish steps to prevent or minimize slips, trips, and falls resulting from work operations consistent with the following standards: OSHA 1910.252, and OSHA 1926.501, 1926.1053, 1926, and the Americans with Disabilities Act.
- This document does not address falls during construction, or use of portable ladders, manlifts, or scaffolding.

## **Definitions**

**Fall** – An unplanned descent to a walking surface, with or without injury. Falls result from an unrecoverable loss of balance due to an unintended and unexpected change in the contact between the feet and the walking surface. Falls can occur upon a single walking or working level, or between two levels of different heights.

**Slip** – When too little friction or traction is present between a foot and the walking surface, causing one or both supporting feet to move out from under the body’s center of gravity unexpectedly, resulting in an unrecoverable loss of balance.

**Trip** – When a foot that is moving forward suddenly contacts an unexpected obstacle or resistance/friction and results in an unrecoverable loss of balance.

**Jump** – Stepping off from an upper level to lower level, more than one step high, without use of a ladder, ramp, or steps (whether or not any of these were available). Jumps can be indoor or outdoor, including from vehicles to the ground.

**Near-fall** – An event in which a person slips, trips, or jumps and a fall is imminent, but the person avoids falling by compensatory action, such as grabbing a nearby object or shifting their center of gravity.

**Leading Edge** – The unprotected side and edge of a floor or roof, or formwork for a floor or other walking/working surface such as a deck, mezzanine, floor, or roof. In construction, leading edges change location as additional floor, roof, decking or formwork sections are constructed.

## **Walking 101**

All walking involves a coordinated effort of the hips, legs, knees, and feet. The cycle of how a person walks is called the gait and is divided into two phases for each leg/foot. The portion when the foot is on the ground is called the “stance phase;” the portion when the foot is off the ground is called the “swing phase.”

During the stance phase, the foot is involved in four actions:

- heel strikes the ground,
- entire foot is in contact with the ground,
- heel lifts, shifting weight toward the ball of the foot,
- big toe provides propulsion to lift the foot/leg off the ground and swing forward.

The swing phase has two elements: acceleration into the leg swing forward and deceleration into placement of the heel for the next step.

Meanwhile, the supporting leg lifts the body to provide ground clearance for the opposite leg and foot to swing forward.

Slips can occur at any point in the gait cycle if there is insufficient traction and a foot doesn't have firm contact with the walking surface, e.g. on ice or a loose rug. Slips can also occur if people are using canes, crutches, or walkers that don't achieve sufficient traction.

Trips can occur when there is insufficient ground clearance because the swing foot (or cane, crutch, walker) is not lifted sufficiently, for example if there is a shuffling gait or loose/damaged footwear. Insufficient clearance can also result when a portion of the walking surface is raised, for example if there is wrinkled carpet or broken pavement. Trips can also occur when the swing foot strikes a raised item lying on the walking surface, such as a hose or tools.

### **Hazard Control**

Multiple variables contribute to the frequency and severity of slips, trips, and falls. Human contributing factors such as haste, fatigue, and distraction are most common. Environmental factors include inadequate housekeeping and maintenance, poorly designed or constructed walking surfaces, and insufficient lighting. Footwear can be a factor when its design, materials, or state is inadequate for the working conditions.

Some of these variables are easier to control than others and it is unlikely that you can completely eliminate slips, trips, and falls. However, you can take steps to reduce the number of incidents as well as the severity of any injuries that do occur.

### **Human factors –**

A 2014 survey of safety professionals identifies human factors as responsible for 54% of all falls. Key contributing conditions include haste, fatigue, distraction, inattention, frustration, complacency, pre-existing injuries or physical conditioning, or disabilities. These can lead to critical employee decisions such as:

- walking too fast for conditions, distracted walking,
- failure to observe and avoid hazards,
- failure to follow established safety procedures or policies,
- attempting to perform tasks beyond current physical capacity,
- careless handling of tools or materials,
- wearing improper footwear,
- housekeeping errors, and
- inadequate response to identified hazards.

Behaviors to encourage include:

- maintain a clear line of sight; e.g. do not carry loads in such a way that they obstruct your view of the walking surface; make use of corner mirrors;
- make sure there is adequate lighting to see the walking surface and potential hazards;
- reduce the length of stride and avoid sudden pivot turns;
- avoid distractions while walking or in motion; stop walking when it becomes necessary to look at paperwork, phones, or have phone conversations;
- look before moving, particularly in the direction of travel;
- where surfaces might be slippery, or unsound, test footing before committing weight;
- use railings on stairs;
- wear appropriate footwear, in good repair, for expected and possible conditions;
- maintain 3-point contact when climbing up, or down, fixed ladders, equipment, or vehicles;
- report conditions that contradict safe behaviors, e.g. schedules that require haste, or employees taking short cuts or performing unsafe acts.

### **Employee engagement –**

Actively involve your employees in the ongoing process of reducing injuries. Hazard education and participation in worksite audits increase awareness. Sharing the results of incident investigations helps employees connect hazards with outcomes. Committees and recognition for safe behavior or safe accomplishments can result in stronger individual and community-wide interest in the problem and its solution.

- Encourage employees to report slip or trip incidents, and hazards.
- Focus on mutual goals rather than assigning blame.
- Make employees aware of what factors contribute to slips, trips, and falls. Identify any procedures or areas that need special attention.
- Instruct employees how to clean their work areas, and not to leave tools, hoses, cords, boxes, and other hazards lying on walkways. File cabinet drawers should be closed when not accessing materials.
- Have employees conduct regular, documented self-inspections.
- Review slip, trip, and fall prevention techniques with employees whose positions do not allow for discretion in walking surfaces. For example, a meter reader who must enter a structure to read a meter may not be able to identify or avoid the hazards encountered.

## General preventive measures –

- Municipal facilities should conform with MIOSHA standards and federal Americans with Disabilities Act Accessibility Guidelines specifications for indoor and outdoor walking and working surfaces, including ladders, stairs, and ramps.
- Implement regularly scheduled inspections of municipal buildings both inside and outside, including associated parking areas, to identify defects, deterioration and other slip, trip, and fall hazards.
- Once a hazard is identified, either correct it immediately or post warning signs and a barricade to reduce the possibility of injuries.
- If surface replacement is not possible, maintain areas in a manner that will reduce the hazard. A good source of information is a reputable building maintenance supplier.
- Install and maintain adequate lighting in both interior and exterior spaces.
- Develop a planned maintenance program. Determine your maintenance needs for cleaning and providing safe walking surfaces.
- Compile employee and visitor incident reports together to have the best picture of where incidents occur. The same hazard that caused a visitor slip may cause an employee fall and vice versa. Addressing the underlying issue can decrease the potential for both Workers' Compensation and Liability claims.
- Conduct a thorough investigation of all reported slips, trips, and falls. Investigations are usually the responsibility of the supervisor, but your Safety Committee may assume this responsibility. The purpose of the investigation is to determine all the contributing causes of the incident and to develop possible solutions. Once the causes of a reported slip, trip, or fall are determined, remedy them as soon as possible to prevent another incident.

## Slip prevention –

- Pay attention to and remedy common causes of slips such as:
  - wet or oily surfaces,
  - occasional spills,
  - weather hazards,
  - loose, unanchored rugs or mats,
  - flooring or other walking surfaces that do not have same degree of traction in all areas.
- Inspect and clear outdoor surfaces frequently, especially after rains and during colder months.
- Install gutters to deflect water run-off away from walking surfaces.
- Evaluate and address the need for mats or runners, especially inside entryways.

- Closely monitor and address issues in areas where water frequently collects, such as around drinking fountains and slop sinks.
- When remodeling or during new construction, avoid terrazzo, glazed ceramic tile, marble, and granite. These materials can be especially slippery when wet.
- When construction or renovation includes flooring, consult with an architect who is familiar with the coefficient of friction of walking surfaces under anticipated conditions. The architect should also be familiar with state and federal OSHA and ADA requirements, or involve consultants who are.

### **Trip prevention –**

Trips frequently occur when an object on the walking surface interrupts the swing phase of the gait, or when two significantly different walking surfaces require an abrupt change in a person's stride. As little as a ¼" differential can cause a trip and fall. Identify and eliminate or reduce differentials surface continuity as much as possible or post signs to warn people of the potential hazard.

Indoor trip hazards include:

- carpet to tile transitions,
- tile to carpet transitions,
- different types or levels of carpet,
- defects in construction or deterioration all contribute to this variable.

Outdoor trip hazards include:

- transitions from a ramp onto a regular walking surface,
- transitions from a parking lot to bumper stops,
- transitions from a street to a curb, and
- broken, settled, or heaved pavement.

### **Preventing falls from elevation –**

OSHA requires "fall protection" beginning at a height of 4' for General Industry (in construction, fall protection is required above 6'). Protection must also be provided any time an employee must work above hazardous equipment or machinery regardless of the distance.

Employers are responsible for determining the locations where fall protection is required, making sure proper protection systems are provided, and implementing employee training in their use.

First, identify work where employees are on roofs, mezzanines, balconies, ladders, or other areas where they might fall to a lower level, regardless of height. Do not neglect vehicles where employees climb into cabins or on chassis or mounted equipment. Employees are injured from jumping from truck cabs to the ground and in falls from truck-mounted equipment or platforms.

Next, identify appropriate control measures and install the proper protective equipment.

- When there is a break in elevation of 19” or more and no ramp, runway, embankment or personnel hoist is available, employers must provide a stairway or ladder at all worker points of access.
- Stairways should have adequate hand-rails, proper riser and tread depth, and proper tread friction to eliminate or reduce slips and falls. Some employers install aluminum tread edges on their stairways.
- Roof ladders, as well as other ladders that exceed 20’ in length, must have fall protection.
- Guard every floor hole into which a worker can accidentally walk, e.g. meter pits or lift stations, using a railing and toe-board or a floor hole cover.
- Leading edges above 4’ are required to have fall protection if persons might come within 6’ of the edge. Leading-edge fall protection may be:
  - guardrails,
  - safety net,
  - a personal fall arrest system, or
  - a travel restraint system.
- To reduce the hazards in vehicles and equipment:
  - install anti-slip coatings or tape on the steps of vehicles and equipment,
  - make sure dump trucks have secure steps and handles welded to the dump box body,
  - instruct employees to use the steps and handles, not jump to the ground.

Finally, implement a thorough and documented training process to educate employees, including newly-hired employees, in the use of the fall protection system.

### **Footwear –**

Any footwear can claim it is slip-resistant because there is no uniform global standard or rating for slip-resistance, so don’t rely on a label or marketing to evaluate employee footwear. Assess footwear relative to the expected the types and locations of work or activities, expected walking surfaces, likely hazards such as ice, water, oils, chemicals, and loose soil, and comfort. Assess both the outsole material and the tread. Some outsole materials are better for water, oil, or other chemicals. Some tread patterns are better for wet indoor surfaces while others are better for outdoor off-pavement conditions. A footwear supplier can assist identifying appropriate choices for the employee and job, but be sure to include the employees in the decision process as well.

To encourage a preferred footwear, some communities buy or contribute to their employees’ cost of purchasing footwear and replacing it when necessary. Consider this item’s impact on the possibility of fall-related injuries.

On an ongoing basis, pay attention to the condition and age of employee footwear. Some soles and tread may be good when new but wear down quickly. If shoes become excessively worn or damaged, they may lose their effectiveness, or become uncomfortable or painful, causing employees to stop wearing them.

## **Conclusion**

At first glance, it can be easy to underestimate the potential benefit of the above recommendations. However, acting on even a few of these preventive measures can reduce the likelihood and severity of slip, trip, and fall accidents, thus decreasing employee injuries, claims, medical expenses, lost workdays, administrative time and expenses, and lost productivity.

If you need help or more information about preventing slips, trips, and falls, contact MML Risk Management Services or the League's Loss Control Services.

## **Sources:**

Bureau of Labor Statistics 2018 reporting, US Department of Labor, 2020  
29 CFR 1910, OSHA, US Department of Labor  
29 CFR 1926, OSHA, US Department of Labor  
ADA Standards, United States Access Board  
"Don't Jump Down," IHSA Magazine, Infrastructure Health & Safety Association, 2013  
"Prevent same-level slips, trips and falls," Safety+Health, National Safety Council, 2019  
"3 Big Causes of Slips, Trips and Falls," SafeStart, 2016  
"Walking Really Is Just Falling and Catching Yourself," Discover Magazine, 2014  
"A Guide to Slip Resistance in Safety Footwear," Industrial Safety & Hygiene News, 2018

## **Additional Resources:**

Risk Control Solutions, Reducing Employee Slips, Trips and Fall,  
[http://www.mml.org/insurance/risk\\_resources/pdf/risk\\_solutions/sidewalk\\_liability.pdf](http://www.mml.org/insurance/risk_resources/pdf/risk_solutions/sidewalk_liability.pdf)  
Risk Control Solutions, Sidewalk Liability Improvement Program,  
[http://www.mml.org/insurance/risk\\_resources/pdf/risk\\_solutions/sidewalk\\_liability.pdf](http://www.mml.org/insurance/risk_resources/pdf/risk_solutions/sidewalk_liability.pdf)  
Risk Management is Good Management (RMGM), department specific self-inspection survey checklists,  
[http://www.mml.org/insurance/risk\\_resources/good\\_management.html](http://www.mml.org/insurance/risk_resources/good_management.html)  
Safety and Health Resource Manual, Chapter 3 – Safety Program/Safety Committees,  
[http://www.mml.org/insurance/risk\\_resources/safety\\_health.html](http://www.mml.org/insurance/risk_resources/safety_health.html)  
SafetySurance.com for posters, programs, employee handouts and training videos,  
<https://www.safetysurance.com>