Slips, Trips & Falls

Construction & Design Risk Management Guidelines

5 June 2015

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Aon Risk Solutions™

Agenda

- Introduction
- Slips, Trips and Falls
- Statistics
- Risk Management Guidelines for Design of:
  - Entranceways
  - Entrance Mats
  - Sidewalks
  - Wet Floor Signs
  - Sweep Logs
  - Snow Plans & Logs
- Aon - Who we are
- Questions

STF – Introduction

- A slip or trip that leads to a fall is one of the most common causes of municipal liability claims
- A properly designed entrance combined with good housekeeping practices can prevent many of these accidents from occurring in the first place and equally important, accurate sweeping and cleaning maintenance records can be your municipality's best defence for liability claims
- And remember, these types of incidents/claims can occur anywhere on your property - inside or outside - from your car parks, sidewalks, lobby, stairs, escalators, elevators, cafeterias and other floor surfaces

Slip and Fall Statistics - Canada

- Anyone can slip-and-fall, at anytime, anywhere, no matter what precautions are taken. And when people fall, they call their lawyers first to sue before calling their doctors!

- Annually, more than 36,000 Canadian workers were injured from slips & falls - which is an estimated one-third of all industrial injuries.

- One in every 6 loss time injuries is caused by a fall
- It is estimated that 40% of all injuries are due to slips, trips and falls
- STF are vastly under-reported (misclassified)
- Consider demographics – aging population, weaker bodies (bone density), poor eye sight, etc.
- Injuries are generally more severe to the elderly
- Often lead to other health complications

Injury by Cause: Canada 2004

CANADA

Injury by cause

Table 3

Number of injury deaths, hospitalizations, non-hospitalizations and related disability cases by cause, Canada, 2004

Description	Deaths	Hospitalizations	Non-hospital-izations	Permanent partial disability	Permanent total disability
Transport Incidents	3,067	30,932	286,086	7,738	760
Falls	2,225	105,565	883,676	29,576	2,500
Drowning	245	238	865	34	< 5
Fire/Burns	233	2,002	44,778	996	51
Unintentional Poisoning	944	7,060	54,741	1,677	106
Struck by/against Sports Equipment	< 5	1,223	66,037	607	48
Other Unintentional Injuries	2,220	34,948	1,641,051	15,341	1,105
Suicide/Self-Harm	3,616	18,210	41,930	3,879	199
Violence	507	8,050	90,463	1,899	201
Undetermined Intent/Other	620	3,540	22,398	815	50
Total	13,667	211,768	3,132,025	62,562	5,024

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Total Costs: Canada 2004

Costs of injury by cause

Falls were the leading cause of overall injury costs in Canada in 2004, accounting for $6.2 billion or 31% of total costs, followed by other unintentional injuries at $4.8 billion (24%), transport incidents at $3.7 billion (19%), and suicide/self-harm at $2.4 billion (12%).

Table 4

Total, direct, and indirect costs of injury by cause, Canada, 2004

Description	Total costs ($ Millions)	Direct costs ($ Millions)	Indirect costs ($ Millions)
Transport Incidents	$3,699	$1,603	$2,096
Falls	$6,155	$4,457	$1,698
Drowning	$ 106	$ 8	$ 98
Fire/Burns	$ 290	$ 118	$ 172
Unintentional Poisoning	$ 771	$ 281	$ 490
Struck by/against Sports Equipment	$ 188	$ 97	$ 91
Other Unintentional Injuries	$4,801	$2,918	$1,882
Suicide/Self-Harm	$2,442	$ 707	$1,735
Violence	$ 871	$ 381	$ 490
Undetermined Intent/Other	$ 456	$ 145	$ 311
Total	$19,781	$10,716	$9,065

Injury by Cause: Saskatchewan 2004

SKATCHEWAN

Injury by cause

Table 81

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Saskatchewan, 2004

Description	Deaths	Hospital-izations	Non-hospital-izations	Permanent partial disability	Permanent total disability
Transport Incidents					
Pedestrian	17	96	480	22	< 5
Pedal Cycle	< 5	115	2,007	35	< 5
Motor Vehicle	56	703	4,929	160	17
ATV, Snowmobile	7	208	570	46	< 5
Other	45	194	719	44	< 5
Falls					
On the same level	6	1,624	8,979	436	33
From skates, skis, boards, blades	< 5	130	2,227	44	< 5
From furniture	< 5	316	1,681	80	7
In playgrounds	< 5	121	701	34	< 5
On stairs	10	480	3,357	125	12
From ladders/scaffolding	< 5	142	647	36	< 5
Diving	< 5	7	75	< 5	< 5
Other	54	2,090	11,046	536	49
Drowning	8	14	29	< 5	< 5
Fire/Burns	18	121	1,366	39	< 5
Unintentional Poisoning	35	473	1,546	95	5
Struck by/against Sports Equipment	< 5	63	2,104	24	< 5
Other Unintentional Injuries	134	1,683	50,852	589	43
Suicide/Self-Harm - Poisoning	38	590	959	125	5
Suicide/Self-Harm - Other	73	91	322	15	< 5
Violence	32	630	2,622	122	14
Undetermined Intent/Other	12	230	708	48	< 5
Total	554	10,121	97,929	2,659	217

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Mortality Rates: Saskatchewan 2004

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Saskatchewan, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Transport incidents	128	12.9	$147 million	$148
Falls	76	7.6	$234 million	$235
Suicide/self-harm	111	11.2	$87 million	$88
Violence	32	3.2	$54 million	$54

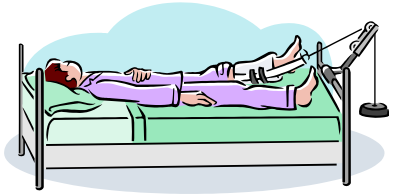
Slips, Trips & Falls Incidents

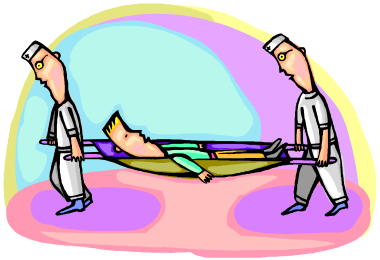
- Spills and splashes of liquids
- Wet floors
- Inclement weather
- Foreign material on floors
- Loose or unsecured mats
- Change from a wet to a dry surface
- Unsuitable floor surface/covering
- Dusty floors
- Sloping surfaces
- Protrusions or upheaval on surfaces
- Settled, depressed or gaps in surfaces
- Unsuitable footwear

Injuries from Slips, Trips and Falls

Common types of injuries:

- Sprains, strains
- Bruises, contusions
- Fractures
- Abrasions, lacerations





Commonly affected body parts:

- Knee, Ankle, Foot
- Wrist, Elbow
- Back
- Shoulder
- Hip
- Head

Definitions

Slip

When there is too little friction or traction between your feet (footwear) and the walking or working surface, and you lose your balance..

Friction: The resistance encountered when an object (foot) is moved in contact with another (ground). Friction is necessary in order to walk without slipping.

Trip

When your foot (or lower leg) hits an object and your upper body continues moving, throwing you off balance.

Can lead to:

Fall

Occurs when you are too far off your center of balance.

When you step down unexpectedly to a lower surface (**Misstep**) and lose your balance, e.g., stepping off a curb.

Real Causes of Slips & Falls

- Floor type (inherent properties)
- Surface Transitions
  (from outside to inside, or one type of surface to another,
  or from dry to wet, or wet to dry)
- Contaminants on the floor surface
- Inadequate or improper floor maintenance

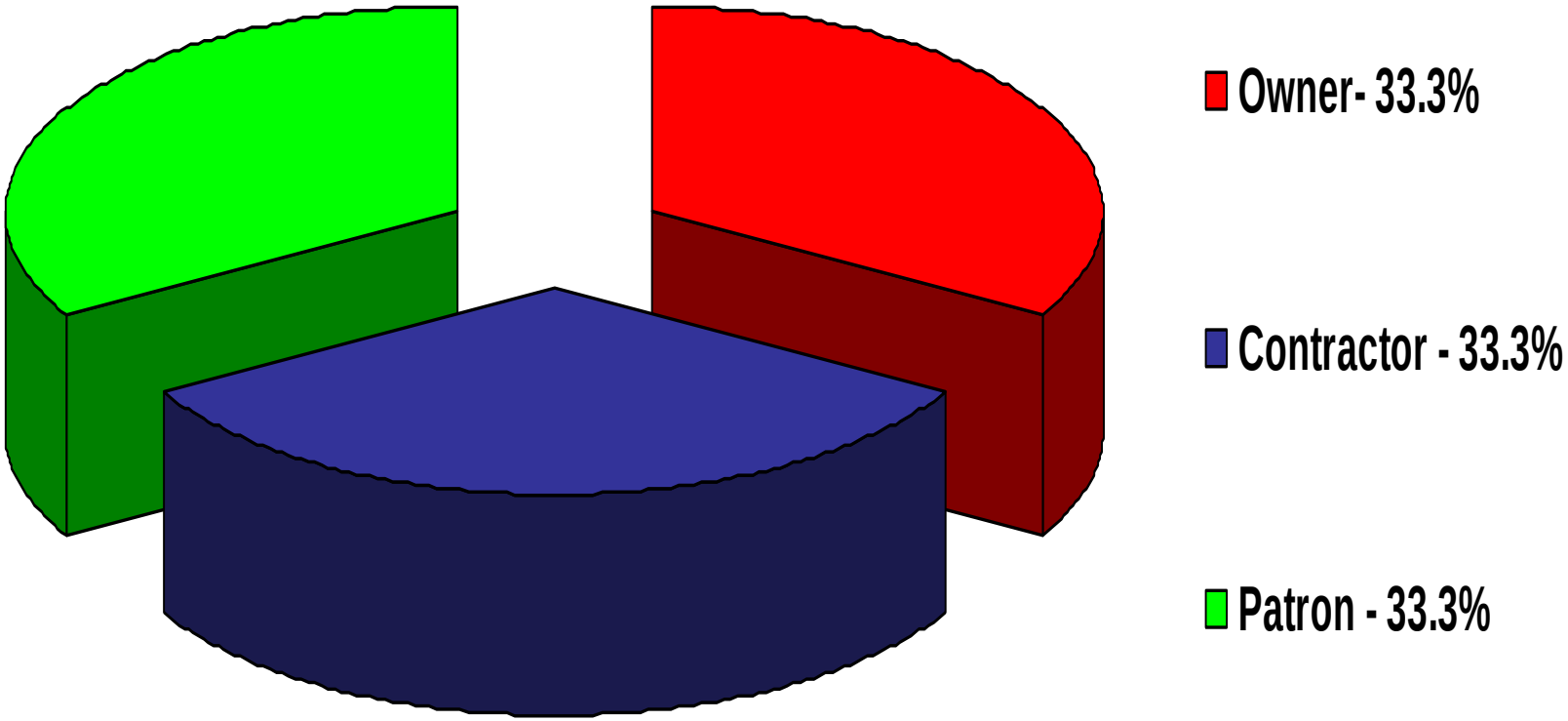
Personal causes:

- Inappropriate footwear
- Inattentiveness / distracted
- Gait / activity
- Running or walking too fast
- Physical limitations:
  (vision, walking impairment,
  medication, intoxication, etc.)

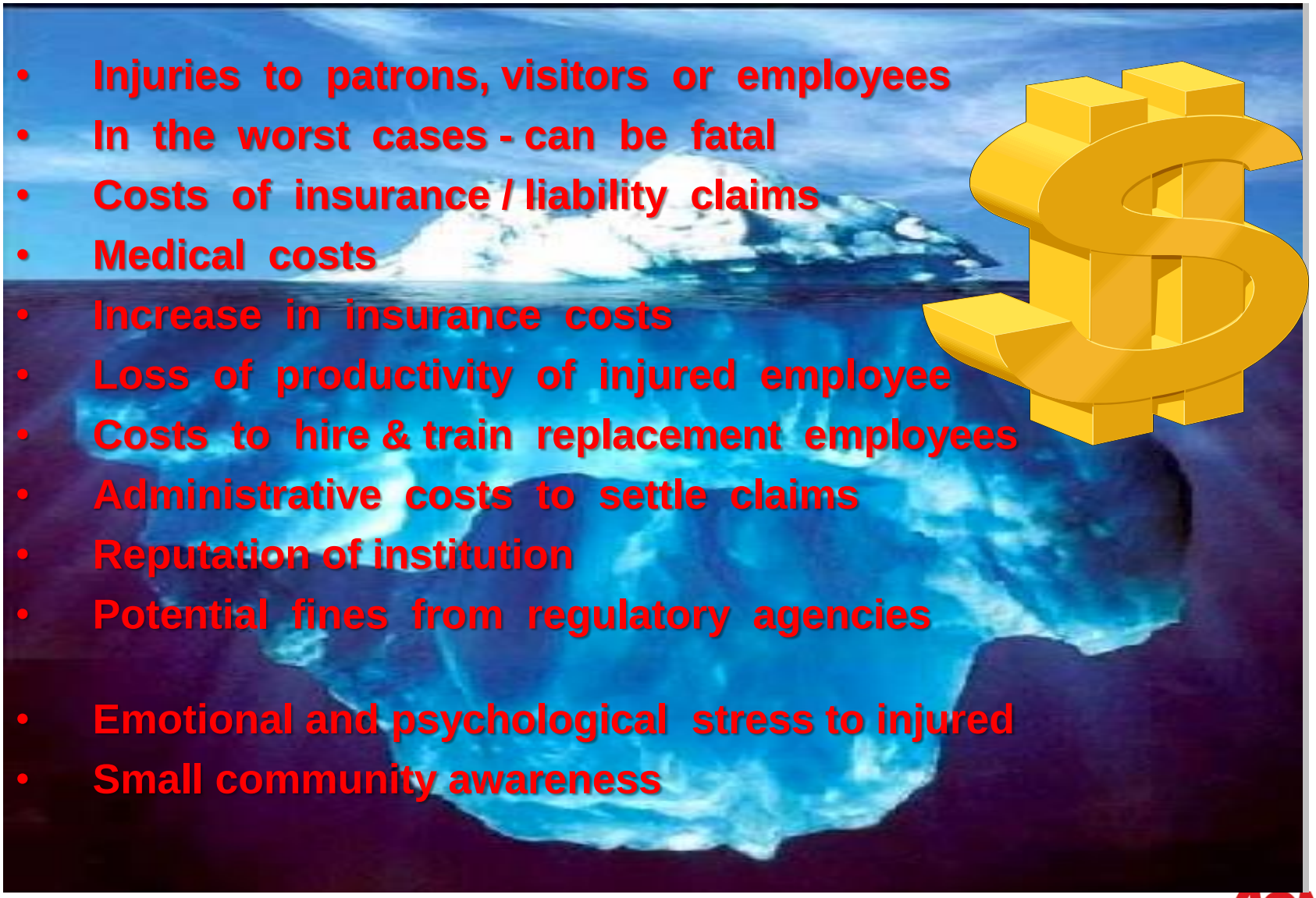
Control of Loss Factors

LOSS FACTOR	EMPLOYEE	PATRON
Floor Materials & Design	Yes	Yes
Floor Slip-resistance	Yes	Yes
Footware	Some	None
Contamination (maintenance & cleaning)	Some	Some
Tasks	Some	None
Gait Dynamics	Limited	None
Environment	Limited	Limited

STF Liabilities – 3 Parties Involved



Losses due to Slips, Trips & Falls



The Law & Your Legal Obligations

- Responsibilities are laid out in various occupiers' liability legislation adopted by most Canadian provinces, including Saskatchewan

- Case law has developed through judicial decisions that further define responsibility as an owner or occupier of your premises

- Under law, owners and occupiers owe visitors a duty to take care "that is reasonable in the circumstances" to ensure that visitors are reasonably safe while on their premises and that you maintain your premises to keep them safe

Your Defense

- Identifying the STF hazards on your premises
- Remedy the identified or potential hazards
- To inspect your premises at regular intervals
- To maintain floor safety
- To warn others of hazards
- To investigate and document any incidents that may occur
- Provide adequate and regular training of staff for STF prevention
- Supporting your procedures with reliable and accurate record-keeping including inspections, incident tracking, investigations, sweep logs, corrective actions taken, training records, etc.
- Adequate insurance coverage
- Signed agreements with contractors

- Commonly known as a “Loss Prevention Program"

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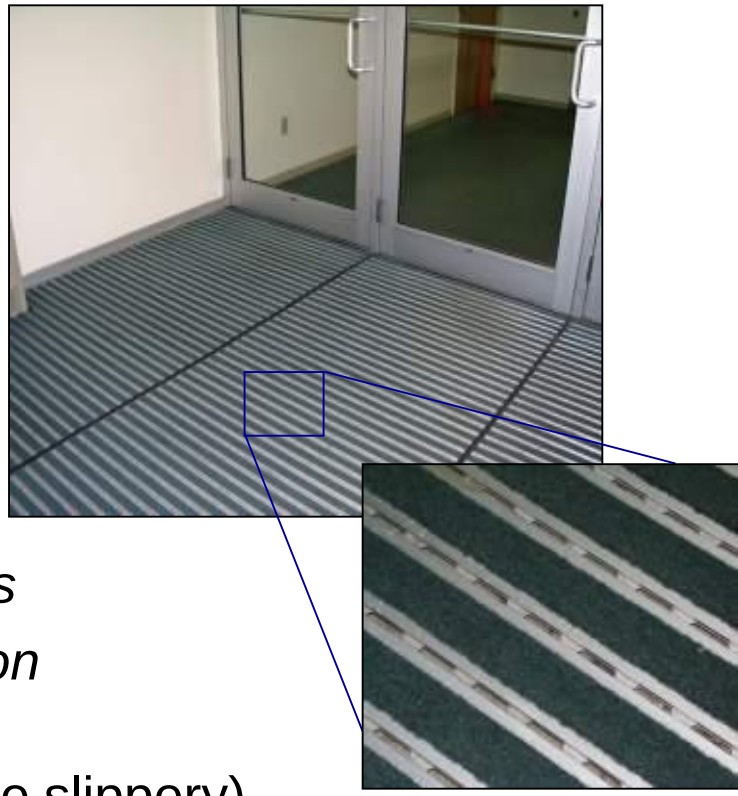
Design of Entranceways

- ANSI A1264.2-2006
  Provision of Slip Resistance on Walking/Working Surfaces

- **Grate system with drainage** used in entry foyers to remove moisture and contaminants from footwear
- Gratings aggressively scrape off dirt, debris, soil & snow & moisture and trap them
- A 5 ft (1.5 m) long grating can trap 50% of contaminants off shoes



Other benefits:

- *Reduces dampness off shoes*
- *Also retains dirt & dust*
- *Less abrasion & damage to the floor surfaces*
- *Deeper wells mean better and longer retention*

Only risk: Use correct type of grating (otherwise slippery)

Entrances – Best Design

Inside (Vestibules):

- Gratings – best

✓> 8ft (2.4 m) in length

✓Heavy-duty gratings (steel)

✓Gratings should be grooved

Entrances – Best Design

Inside (Vestibules):

- Heavy Duty mattings – next best

✓> 8ft (2.4 m) in length

✓Mattings should be heavy

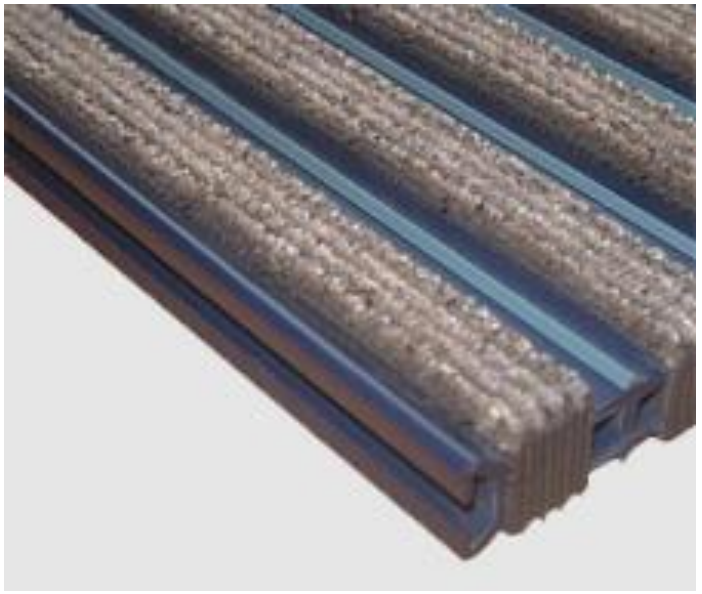
Entrances – Poor Design

Inside (Vestibules):

- Gratings/Mats – poor practices

- ✘ Inadequate length
- ✘ Not placed in centre
- ✘ No mats on gratings
- ✘ Still track in wetness

What Others Are Doing!!



- ✓ High mat bristles and gaps allow for the effective removal of wetness, snow, ice and mud off shoes
- ✓ Debris collects in bottom of pit

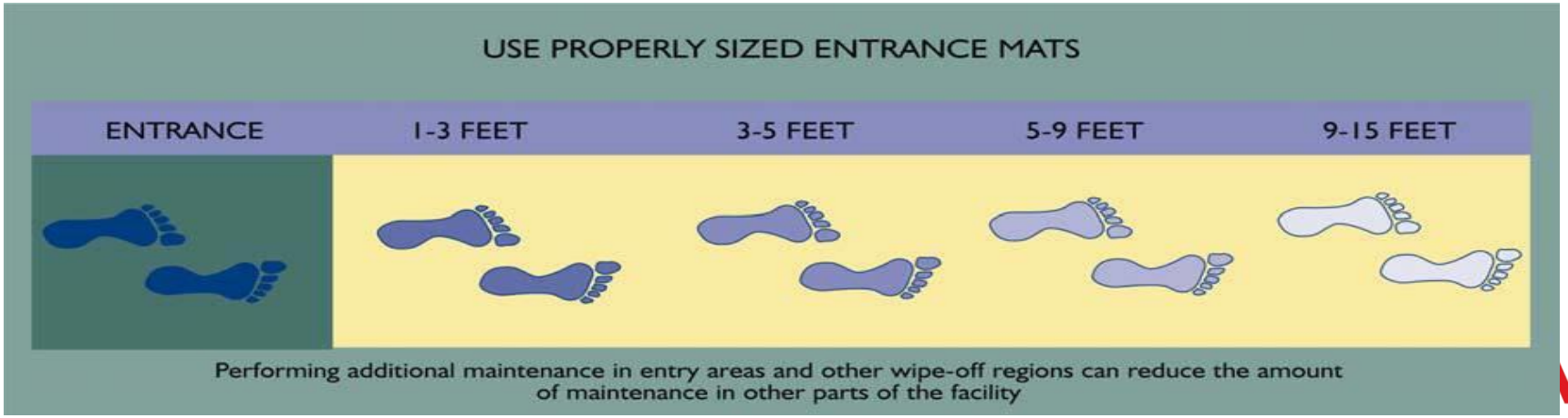
- ✘ Carpet mats quickly become water logged, which allows water to be taken into property
- ✘ More cleaning time is spent wet-vacuuming the carpet mats

Entrance Mats

- The Carpet and Rug Institute (CRI) Commercial Carpet Maintenance Manual generally defines an entrance (or soil wipe-off) area as the 90 square feet (6 feet x 15 feet or 2 m x 4.7 m) at building exterior entrances, where most tracked-in soil is deposited
- CRI research shows that 80% of the soil brought into a building is trapped within the first 15 feet (4.7 m) on a carpeted surface

Guidelines: **Length of runner mats**

- *Dry conditions = 6-8 strides (up to 10 ft or 3 m)*
- *Rain/wet = 8-10 strides (up to 15 ft or 4.7 m)*
- *Snow = 10-12 strides (> 15 ft or 4.7 m)*



Entrance Mats

- Mats should be secured and not slide
- Should not overlap
- Should not have gaps – should form a continuous walkway
- Not curled, worn or torn
- If thicker mats are used, ensure they have bevelled edges
- When waterlogged, either (wet) vacuum or replace
- Ideal mat length is when there are no water prints after the last mat

Notes

- *1 sq. yd (0.86 m^2) carpet can remove 1-lb. (0.45 kg) dirt/week, or more in inclement weather (which otherwise costs ≈ $600 in cleaning time to remove)*
- *CRI: High Performance Mats*
  - HP mats are highly absorbent mats holding 1.5 gal water/sq. yd.
- *Long-life High Performance mats can last 3-6 years*
- *Green carpets also available*

Entrances – Best Design

Inside (Store): Mats

- ✓Adequate length
- ✓Secured to floor
- ✓No overlapping
- ✓Continuous
- ✓Built-in gritty or concrete surface

Entrances – Good Design

Inside (Store): Mats

- ✓Adequate length
- ✓Secured to floor
- ✓No overlapping
- ✘Avoid gaps

Entrances – Poor Practices

Inside (Entrance):

- Poor setup of mats
- Inadequate length
- Mats tend to slide
- Curled mats at corners

Stairs & Steps

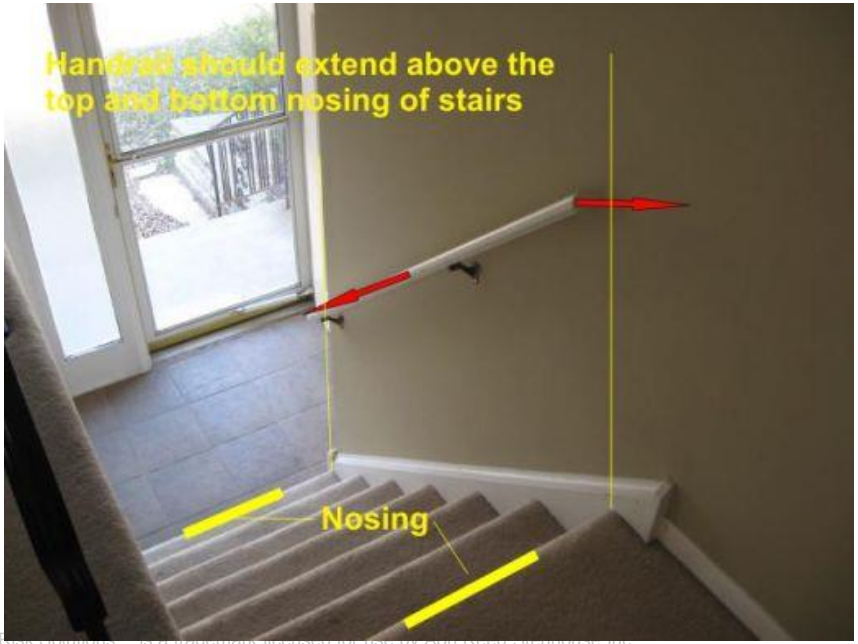
- Nose markings
- Appropriate profile
- Colour contrast (depth perception)
- Tactile non-slip strips
- Not damaged
- Not worn or sagging in centre
- Snow/ice covered

Stair Handrails

- *Missing handrail*
- *Handrail too wide to grasp properly*
- *Too steep*

Hand Rails

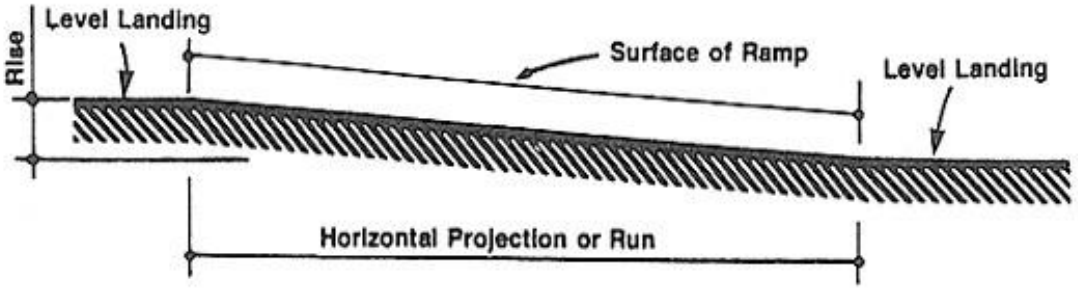
- Are hand rails provided for all stairs & ramps?
- Right-handed power grip, smooth & semicircular?
- No finger "caught" hazards?
- Handrails start before first step?
- Handrails extend 30 cm (1 ft) beyond top step?



Ramps

- Ramp > 1:8 slope (= steep)
- Ramp between 1:8 & 1:12 slope
- Ramp between 1:12 & 1:20 slope

- Handrails?
- Non-slip treads?



Slope	Maximum Rise in	Maximum Rise mm	Maximum Horizontal Projection ft	Maximum Horizontal Projection m
1:12 to < 1:16	30	760	30	9
1:16 to < 1:20	30	760	40	12

Outside

- Provide covered entrances
- Mark walkways (paint)
  - provides direction and keeps people walking in the safe areas)
- Be consistent with markings
- Identify crosswalks, ramps, etc.
- Remove or level protrusions
- Correct upheavals and gaps
- Provide adequate lighting along paths and in parking lots

- In winter, clear entrances and have a salt (or sand) box near
- Keep shovel or broom in entranceway

Parking Lot Hazards

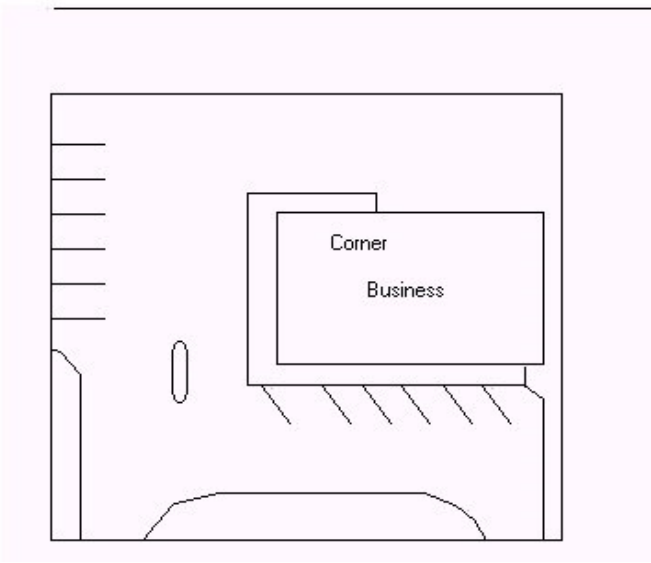
- Parking lot trip & fall hazards:

- *Depressions, drains, etc.*
- *Potholes, large cracks, etc.*
- *Raised drain/sewer covers*
- *Wet leaves, debris, etc.*

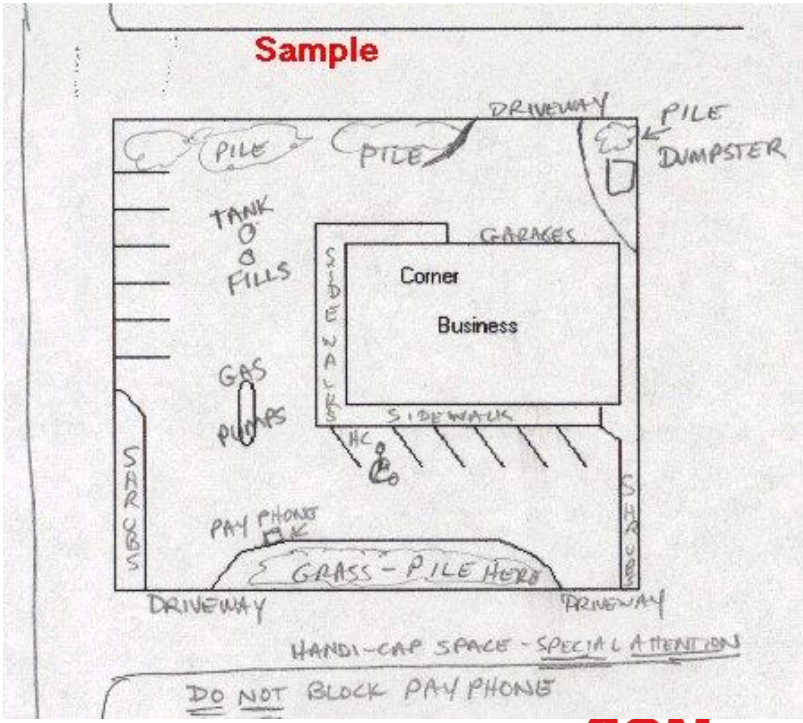
- *Snow, ice, etc.*
- *Puddles*
- *Loose gravel*
- *High curbs*

Snow Plan

- Develop a snow removal plan (in the fall)
- Assign priorities to which roads & paths are to be cleared first
- Identify locations of drains in parking lots
- Have contractor push and pile snow near the drains (or better remove snow off site)



- Have a written agreement with snow removal contractor
- Define snow amount or accumulation threshold for when contractor is to come on site
- Keep snow log include time, snow height, amount salt used, etc.



Snow Piling

- ✘ *Drains too far from piles 30 m or more (100 ft +)*
- ✘ *Ice will form every night causing slip incidents*

- ✓ Drains near snow piles
- ✓ Melt waters do not form large ice patches
- ✓ Much safer situations

Sidewalks

- Sidewalks are level with no upheaval or trip hazards?
- No gaps or large cracks in sidewalks?
- No large areas of water ponding on sidewalks?

Sidewalks

- Roof drains directed away from sidewalks?

Wet Floor Signs

- Post wet floor signs in inclement weather
- Have handy at entrances, cafeterias, washrooms, etc.
- Post wet floor signs for spills

- Most importantly remove signs after hazard has passed (otherwise signs just become background and ineffective – they are always there!)

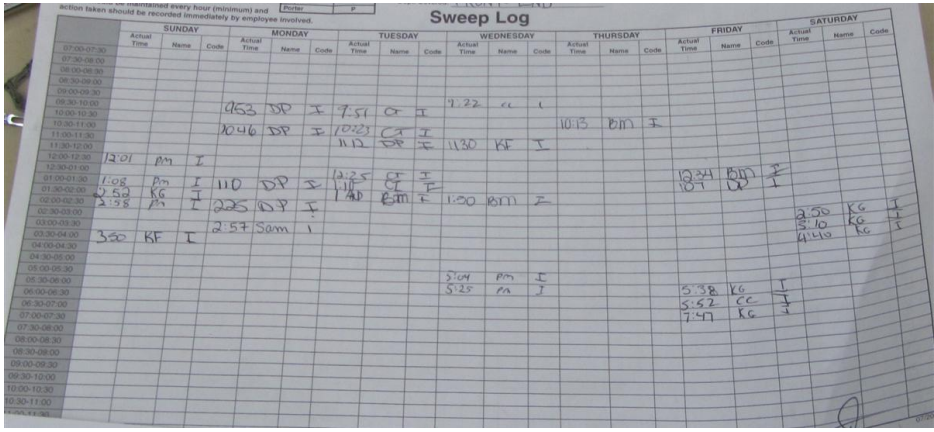
- Best to use cone-shaped signs
  - stable, do not collapse
  - can be seen from all 4 directions
  - are higher and more visible
  - can be used to cover other hazards

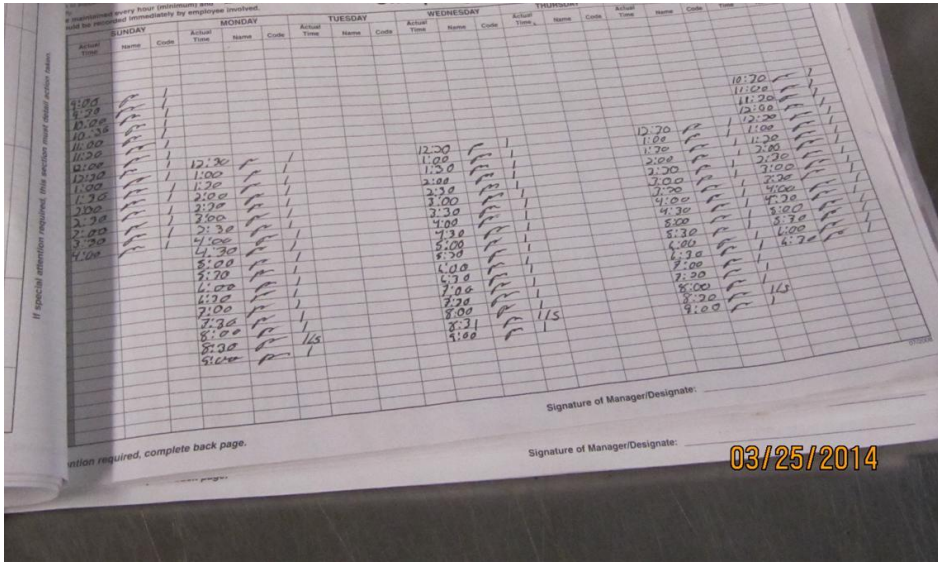
Wet Floor Signs

- Latest type of signs
- *Hurri-Cone* pylon sign
  (blower motor on wheels – guaranteed to dry a 3 x 3 m (10’ x10’) area within 5 minutes)
- Pop-up signs for emergencies

Sweep Logs

- Are all sweep logs current and up-to-date?
- Are entries made hourly for high-risk areas?
- Every 2 hours for other areas?
- Properly coded?
- Employees signing off on each entry separately?
- Do supervisors/managers review and sign-off weekly?
- Are logs properly archived?





Contractors

- Transfer your responsibility for all or a portion of the maintenance of your premises to an independent contractor through a written contract.
- Ensure the independent contractor is competent to do the job.
- Be definite, via written instructions, on what needs to be done and how often. For example, specify in writing that the contractor will clean the floor at least daily but more frequently in bad weather.
- To ensure that the contractor is legally considered to be "independent," you can only tell them what to do – not how to do it.
- Ask to be added to the contractor's insurance policy as an additional insured and include indemnity or hold harmless clauses.
- Only do business with contractors and subcontractors who are insured
- Obtain certificates of insurance to confirm insurance coverage & limits
- Implement a system to track and verify these certificates
- Set minimum standards for coverages and limits carried by these certificate providers.
- Check and audit contractors

Inspections

- Conduct frequent regular inspections throughout each business day to identify:

- Spills, debris, slippery surfaces, obstacles, etc.
- Observe the condition of floor surfaces, worker habits
- The effectiveness of the floor care program or other dangerous conditions such as "trip" dangers: loose carpeting/stair treads, blocked/cluttered areas, poor lighting, wrinkled/curled mats, none or misuse of signs, etc. that might arise during the day so that they can be remedied immediately

- **All inspections should be documented**

Documentation

- **Important in reducing liability – "due diligence" - it is your best defense in the event of a claim**

- Cleaning activities recorded in writing: with forms & schedules that show who performed the job and when (sweep/mop sheets, snow logs, etc.)
- Daily incidents (spills) log – record time notified, where spill occurred, who performed the cleaning, what time – is it within benchmark time?
- Log weather conditions daily
- Maintenance log – activities performed, where, when, and by whom
- Written procedural guidelines (SOP), which all staff use
- Develop a training manual & document all training
- Use specific-to-your-site Inspection checklists

- **Managers must review logs for completeness, improper recordings, trends analysis, etc.**

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Investigation & Incident Reports

- **Help the victim** – express concern for well-being, provide medical attention, if needed call 911
- Keep crowds/on-lookers away
- Do not disturb the incident scene (unless for life-saving situations)
- Do not accept blame nor assign fault
- Always take photographic evidence of the incident - even if there is “no apparent cause”
- Get information from fallen person as possible i.e. name, age, address, fall description, etc.
- Note condition of fallen person's footwear, physical impairments, glasses/vision, alcohol drug intoxication, soiled clothing, carrying any objects, etc.
- Complete the Accident Investigation form
- Develop & implement corrective actions or controls to prevent a reoccurrence of incident

AON Recommendations

- Develop a safety manual include written procedures for STF
- Conduct floor inspections, correct infractions and document
- Provide canopies at entrances
- Provide gratings/scraping mats in vestibules
- Provide adequate runner mats (length & width) into lobby
- Apply slip-resistant treads / tape / strips
- Repair leaks in roofs, skylights, window or door sills, etc.
- Stairs cases or steps that are worn or smoothed out should be resurfaced to maintain slip resistance
- Instructions to post “wet floor” warning signs
- Provide accident investigation training to supervisors
- Maintain sweep and snow logs
- Ensure contractors have adequate liability insurance

Aon Risk Control Services for STF

- Our Value-added Aon Risk Control Services can assist you prepare and defend against slip, trip and fall charges by:

- Inspections – to identify floor safety risks
- Floor safety audits – detailed review of your whole premises
- Conduct slip-resistance measurements using the English slipmeter (provides you with a baseline measurement of your floor surfaces)
- Assist you develop written floor safety procedures
- Review and match your floor care products to the floor surfaces
- Conduct floor safety and occupier's liability training
- Review previous STF incidents and analyze trends
- Review contractor agreements and insurance coverages

- All designed to identify slip, trip and fall hazards, and offer effective solutions to mitigate and/or reduce liabilities and costs at your premises

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Thank You

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