



The Slippery Slope of Aging: Preventing Slips and Falls as America Ages

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Slips & Falls In The News

Des Moines, Iowa postal facility **fined \$120K** for hazards that put workers' lives at risk

OSHA cited the USPS for:

.....**exposing workers to slip, trip and fall hazards**.....

Slips & Falls In The News

Iowa man sues Texas Roadhouse after slipping on peanuts



Grant Rodgers, grodders@dmreg.com 9:34 p.m. CDT May 9, 2016



(Photo: Damian Giletto/The News Journal)

An Iowa man's knee was shattered after carelessly discarded peanut shells caused him to slip onto the floor of a national steakhouse chain's Cedar Falls restaurant, according to a lawsuit filed in federal court on Friday.

Tama County resident Curtis Jensen slipped and fell in February 2015 on "peanuts and/or peanut shell debris" scattered on the floor of the Texas Roadhouse on University Avenue, according to the

Debris = slipping hazard, broken kneecap

Slip/Fall Risk Not Mentioned



Slip/Fall Prevention?



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Slips & Falls In The News

Posted June 8, 2016 - 10:50pm

Splash pool at Furman Aquatic Center closed for repairs

By Tribune staff

The splash pool at the Furman Aquatic Center has been closed until repairs can be made to prevent patrons from slipping, city officials announced Wednesday.

The zero-depth pool was closed Wednesday afternoon and isn't scheduled to reopen until Monday, city officials said in a news release.

The problem was discovered after patrons continued to complain about the pool basin being slippery, despite measures being taken by the city to clean it. It was later discovered that the contractor who painted the pool basin in April did not use slip-resistant paint as required for safety, and which was specified in the specifications for the project, said city spokeswoman Susan Gwasda.

"They knew it was to be textured, it's in the specs and in the contract," she said.

Gwasda said there have been no reports of any patrons being hurt, but that as the pool is designed for toddlers and mother's carrying babies and holding toddler's hands, the move was taken as a precaution to avoid any possible injuries.

Paint was not slip resistant



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Slips & Falls In The News

Bad Night At The Museum



Distractions & low profile platform



\$1.5M painting

Falls and Business Interruption



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Donut King, 9/28/2015



Hall Of Shame



Funeral home – seeking new customers?



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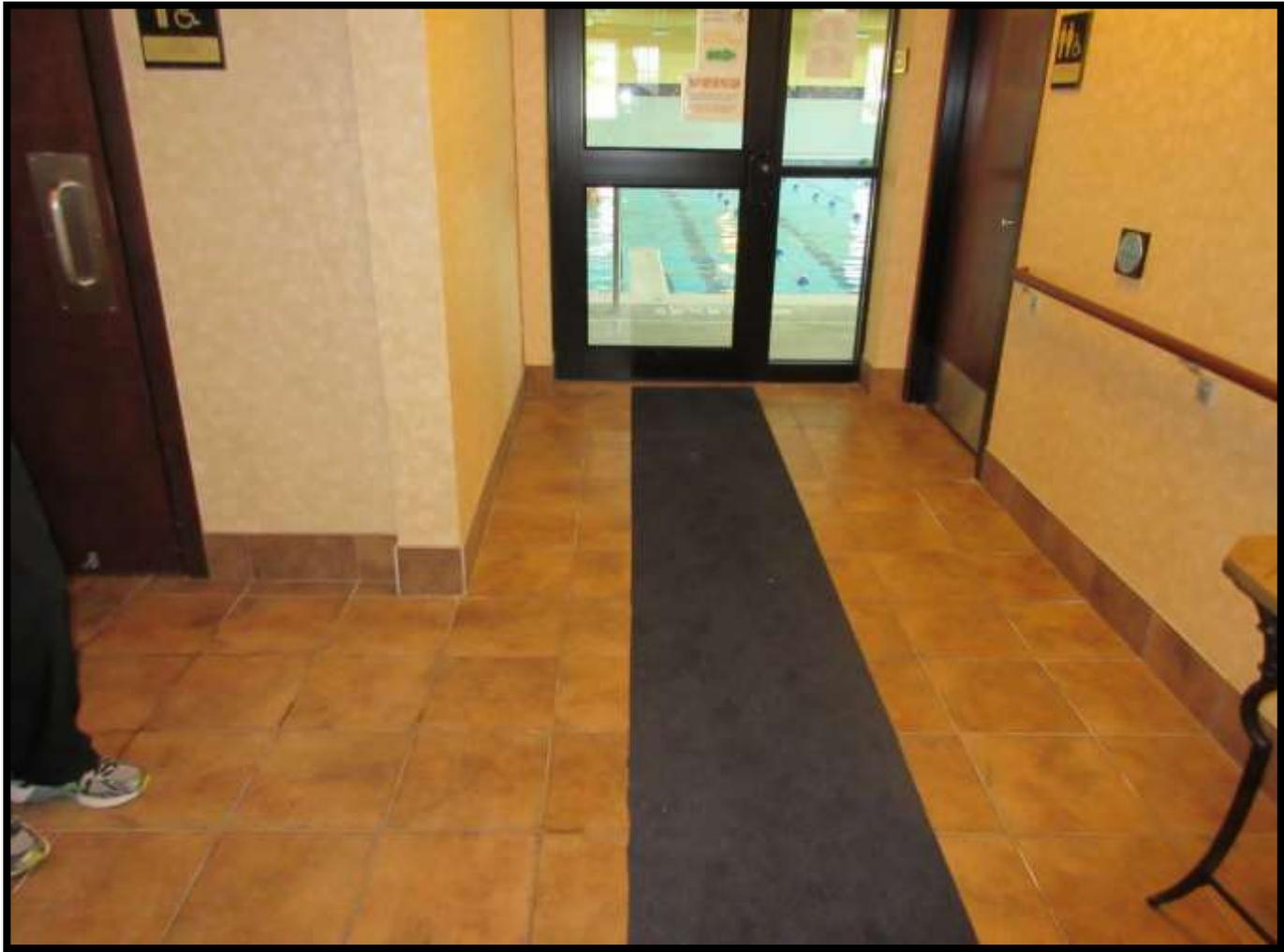


Hall Of Shame



Outdoor throw rug - why?

Hall Of Shame



Low traction tile near pool – retirement home

Hall Of Shame



Wrong Mat – Wrong Place

Hall Of Shame



Unnecessary tire stops...creates narrow walkway

No Narrow Sidewalk Here



Hospital parking lot

Hall Of Shame



Bus Stop

Why Do people Fall?

Critical Environmental Hazards

- Uneven surfaces *#1 Issue for seniors*
- Slippery surfaces
- Obstacles

Personal Risk Factors

- Complacency
- Distractions
- Personal health factors

Personal Risk Factors

- Lower body weakness, ankle flexibility
- Arthritis and impaired gait
- Taking 3+ prescriptions
- Vision impairment or age-related factors
 - More light needed as we age
 - Glare and bright sunlight
 - Reduced contrast sensitivity
- Not sensitive to the risks & consequences
- Distracted – not focused**

Recent Distracted Walking Studies

- Cause at least 10% of all pedestrian injuries
- 78 percent of Americans said [distracted walking](#) is a serious issue.
- People using their phone while walking veered off course 61 percent of the time
- 52% of distracted walking injuries happen in the home, not on the streets

Watch Your Stride – Arrive Alive

1. Scan ahead for hazards when walking, at least 10 – 15 feet
2. Be cautious when going through doors
 - ✓ Expect uneven surfaces, puddles, buckled mats...
 - ✓ Pause to let eyes adjust to lighting/sunlight
 - ✓ Expect traction issues...test footing before committing
3. Mat matters – be especially cautious around the edges
4. Be aware of flooring changes – traction may be different
 - ✓ Different materials/finish
 - ✓ Assume floor is slippery when wet, especially ceramic tile
 - ✓ Painted surfaces may be slippery when wet
 - ✓ Avoid sharp turns – you will need more traction
5. Wet ice? – No dice. Avoid and beware of refreeze
6. Use caution at curbs. Be sure you see them and any slopes
7. Watch out for asphalt/concrete transition – expect uneven surfaces
8. Be on high alert if construction/maintenance is in process
9. Move slowly in crowded spaces or if vision is obstructed
10. Footwear – right size, right outsole, inspect heels
11. Fight complacency and distractions – walking needs your full attention



Critical Environmental Hazards

- Uneven surfaces**
- Slippery surfaces**
- Obstacles**

Uneven Surfaces



Slab settled 2", broken hand

Uneven Surfaces



½" drop-off, broken hip

Beware of concrete/asphalt transitions

Uneven Surfaces



Snow/ice accumulation is a clue – sunken ½”

Uneven Surfaces: Which Is Safer?



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Subtle Risk = Complacency?



**5/8" raised edge = broken wrist
Scan ahead when walking**

Uneven Surfaces



Fatality. Flared edges not marked

Awareness



Highlight flared curbing

Slippery Surfaces



Ceramic tile, unknown traction, fell when turning

Floor Cleaning Method



★☆☆☆☆ Left the bathroom tile so slick I skidded and fell ...

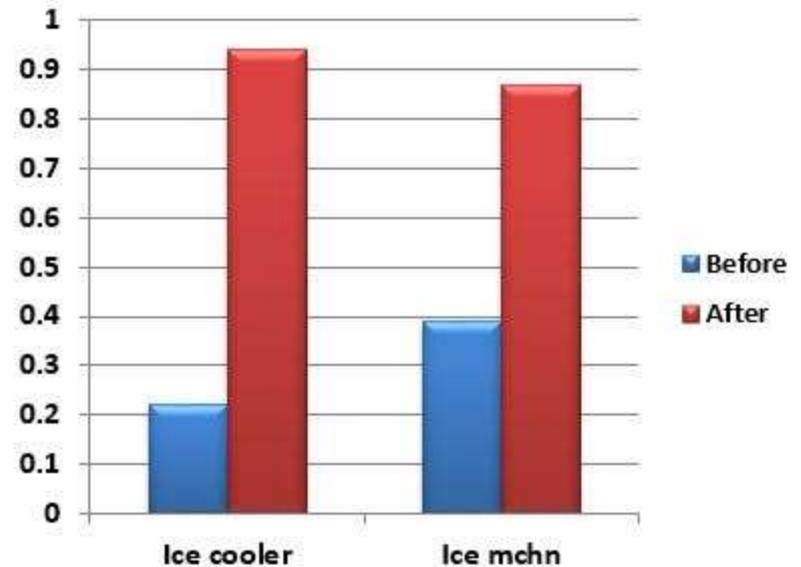
By [REDACTED] on June 17, 2015

Left the bathroom tile so slick I skidded and fell when my foot landed on the tile from the carpet.

Improving Floor Traction



Store 130 Traction Study



ANSI/NFSI B101.0 2011: SCOF \geq 0.6 is high traction
ANSI/NFSI B101.3 2012: DCOF \geq 0.4 is high traction

Slippery Surfaces

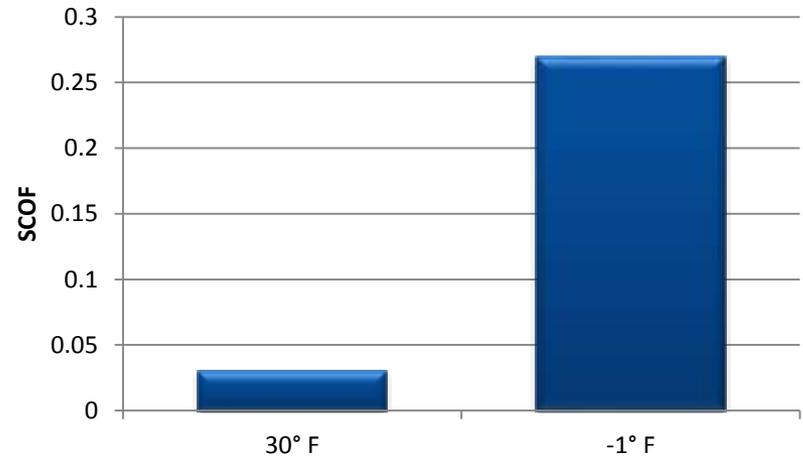


Rainy day blues (black and blue) SCOF = 0.15
Assume ceramic tile is slippery, walk accordingly

Thaw/Refreeze



Ice Traction vs Temperature



37° air temperature at 7:00 am, Mar 7, 2014
22° pavement temperature



**Ice burnished by cars spinning out
Multiple falls (7+) in one day**

Obstacles



Fatality

Obstacles



Customer feet tangled/tripped, ankle injury
Visual/mental distractions

Obstacles

**Nothing Below Knee Level
Visual/Mental Distractions**



Tripped on bags, serious knee injury

Nothing Below Knee Level



\$35,000 payout at this slot machine
Visual/mental distractions

Obstacles



**76-year old tripped on hose, fractured hand
Beware of construction/maintenance activity**

When Mats Attack



Tripped when leaving, shoulder fracture

Mat Migration



**Use pressure sensitive adhesive
Be cautious going thru doors**

Wavy Mats



Be cautious around mat edges

Grippy Mat



Disposable wiper mats – adhesive backed

Ignoring Hazards



Manager walked right past this hazard

Hierarchy of Hazard Control

Most Effective



Eliminate

Identify/Isolate

Warn

Least Effective

Hierarchy of Hazard Control

Most Effective



Eliminate

Identify/
Isolate

Warn

Least Effective



Hierarchy of Hazard Control

Most Effective



Eliminate



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Least Effective

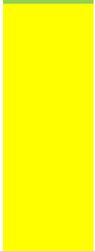


Hierarchy of Hazard Control

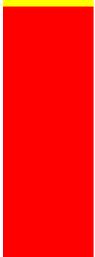
Most Effective



Eliminate



Identify/
Isolate



Warn

Least Effective



Are You Kidding?



Eliminating hazard is always best!



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Slip/Fall Hazards in Healthcare Settings



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Who is Taking Care of Those Who Care for Everyone Else?*

**OSHA's top official, Dr. David Michaels*

- In 2013, the injury rate in U.S. hospitals was twice that of private industry.
- June 25, 2015, OSHA released "Inspection Guidance for Inpatient Healthcare Settings."
- Covers hospitals, nursing and residential care facilities

Healthcare Injuries

- Musculoskeletal disorders - patient or resident handling
- Workplace violence
- Bloodborne pathogens
- Tuberculosis
- Slips, trips, and falls

Slip, Trips, Falls

- Slippery or wet floors
- Uneven floor surfaces
- Corridor clutter
- Areas with inadequate lighting
- Damaged stairs and stairways
- Improper use of ladders and **stepstools**

A Word On Step Stools

Type 1: 250 lb rating



Top rail for balance assistance

Large no-slip feet

Environmental Tours

- Every 6 months in patient handling areas
- Annually in non-patient care areas
- Multidisciplinary team
- Inspect inside of the facility , grounds, parking lots and sidewalks



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Warning or Obstacle?



False Warning = Complacency

Slippery Surface



Slippery Surfaces



Hospital – Why live with a slippery floor?

Mats



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Mats



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Mats



Hump

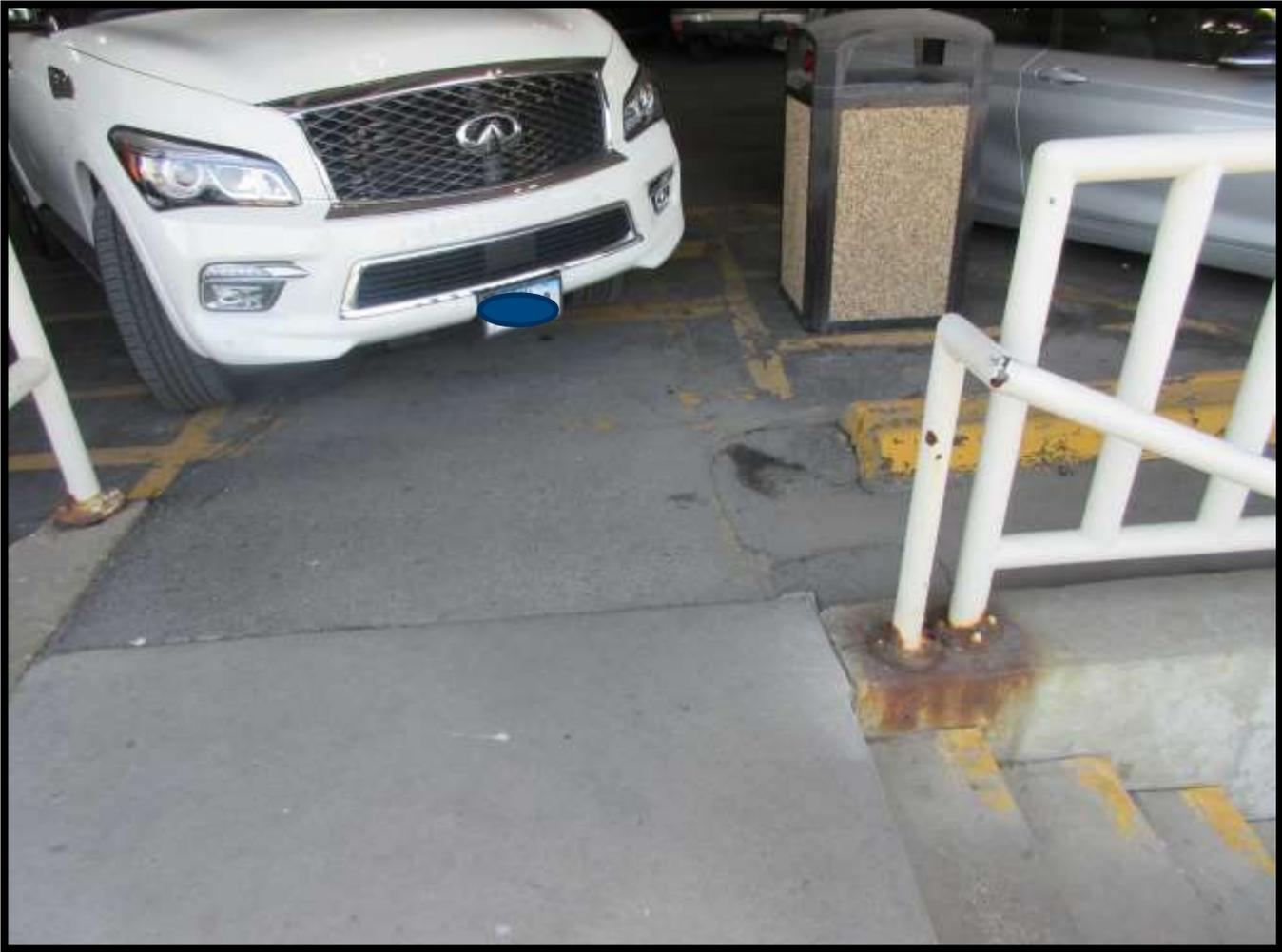


Mat Hiding Raised Slab



Mats can't function as ramps

Car Blocking Path



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Worn Paint On Steps



Uneven Surface



Uneven Surface

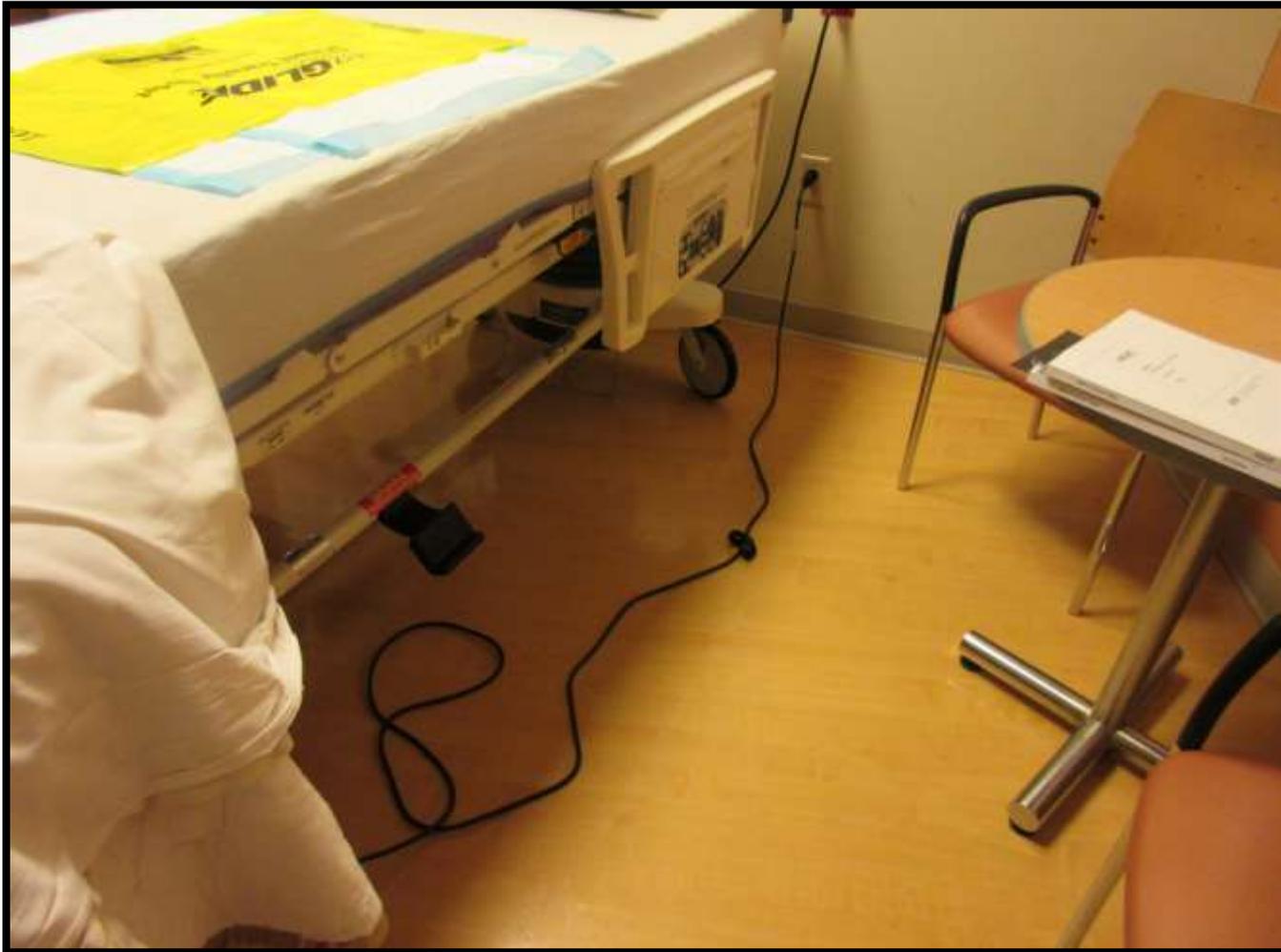


1.5" raised edge

Medical Office Entrance

- ✓ **Paint alone not enough**
- ✓ **Broken finger and had to redo disc fusion surgery**

Loose Cords



Marginal Shower Traction



Traction



Abrupt change in traction at ER entrance

Variable Traction

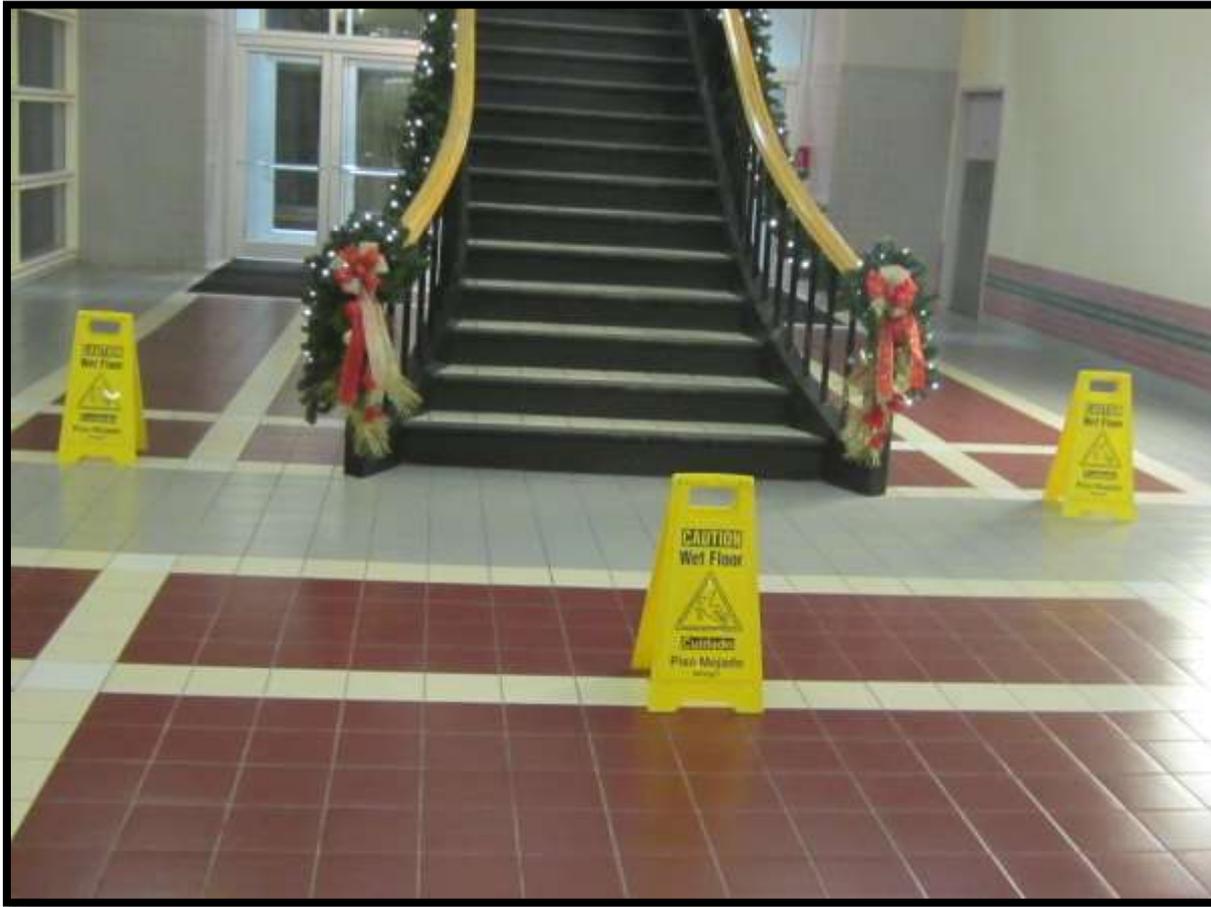


Thaw/Refreeze



Brain Injury Facility - Poor drainage design

Awareness



Don't leave up too long - Remove when dry

Addressing Human Factors



How would you walk on a slippery surface?

Footwear



Slip resistant footwear

Studies show at least 50% reduction in slips

Older people tend to buy shoes that are too big

- **Less control/coordination = missteps**

Slip/Fall Survey – Historical House



Slip Happens: Making Your Home Safer

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Home Modification

Issue

- 75% of older persons live in conventional homes
- 75% of those homes were built 30 years ago... for **Peter Pan**
- 9 out of 10 seniors prefer to remain in their own homes as long as possible
- 2030: 90% of 85+ will own a home

Universal Design

Benefits all users

Minimizes need for modification

- One zero step entrance
- 32"+ wide interior doorways
- Main floor bathroom
- Stable, firm slip resistant flooring
- Lever operated controls & doors
- Large, flat panel light switches
- Bright, appropriate lighting

Home Modification

Adapt/modify home environment to:

- Improve safety
- Make tasks easier...for everyone
- Allow independent living

Home Modification Barriers

- Assessments – often reactive
- State of denial
- Unaware solutions are available
- Funding?
- Products/services require some digging

Barriers – Denial?

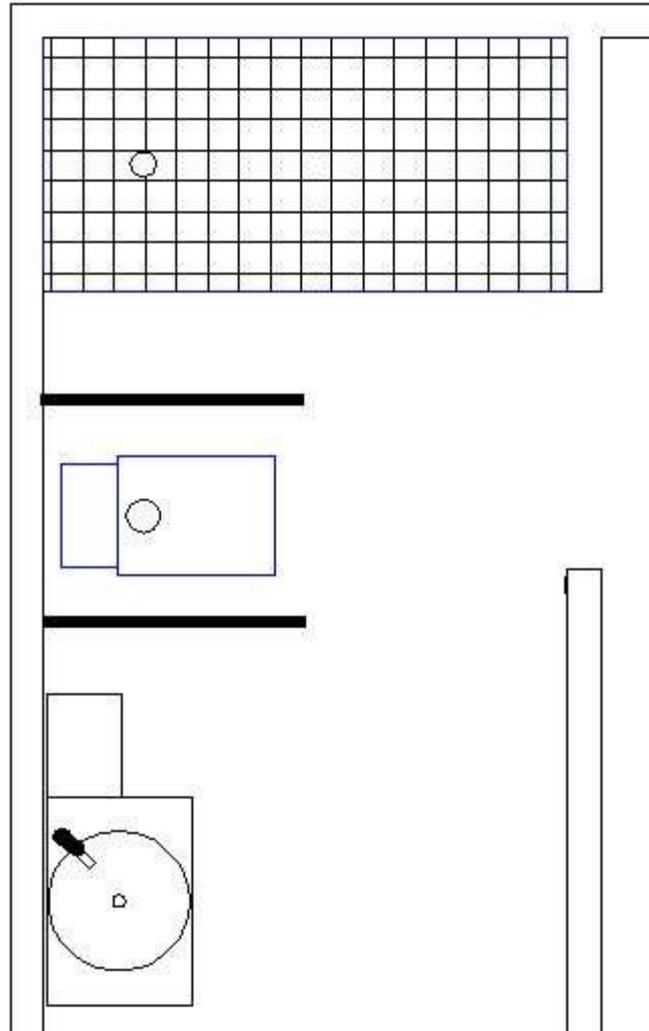


What if they think this is OK?

Example Home Modification Project

- Curbless shower
- Raised toilet & bidet, folding grab bars
- New tile flooring with radiant heat
- Custom vanity cabinet – hideaway doors
- Tilted mirror above vanity
- Various door/wall modifications

Example Home Modification Project



Home Modification

Most common Minor Changes:

- Grab bars
- Raised toilet seat
- Handrails
- Hand-held shower
- Shower seat
- Modified faucet
- Improved lighting

Home Modification

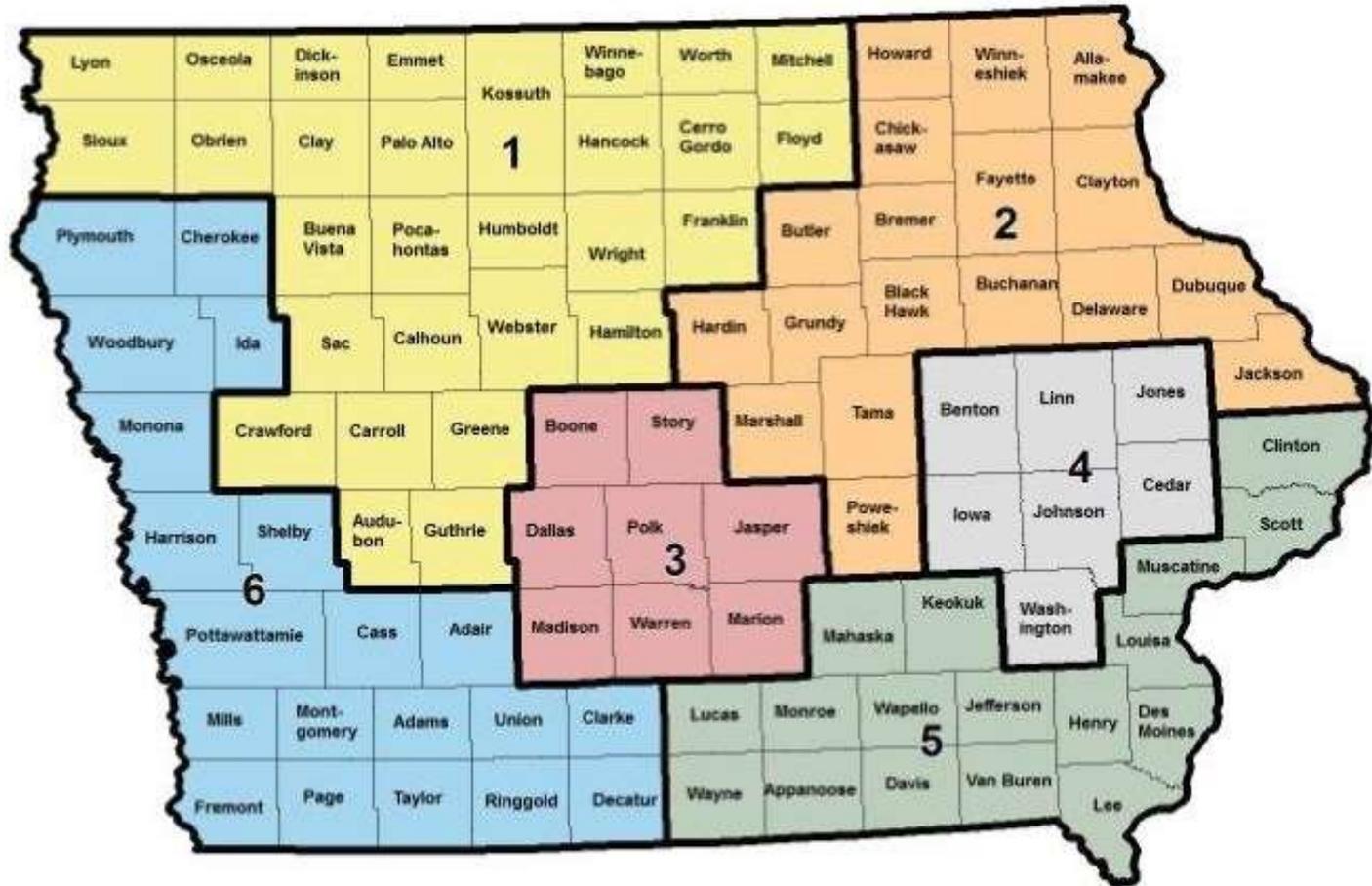
Most common Major Changes:

- Ramps
- Widened doorways
- Curbless shower
- Adjust cabinet or appliance height
- New/modified outdoor walkways

Home Modification Funding

- Charitable Organizations
 - Connect via Agencies on Aging or CIL
 - Rebuilding Together, UW, HFH
- Medicaid/Medicare Waivers
- HUD Community Development Block Grant
- Low interest loans
 - Iowa Able Foundation
 - Mortgage refinance

Area Agencies On Aging



Area Agencies On Aging

Area 1: Elderbridge Agency on Aging www.elderbridge.org

Area 2: Northeast Iowa Area Agency on Aging (NEI3A) www.NEI3A.org

Area 3: Aging Resources of Central Iowa www.agingresources.com

Area 4: The Heritage Area Agency on Aging www.heritageaaa.org

Area 5: Milestones Area Agency on Aging www.milestonesaaa.org

Area 6: Connections Area Agency on Aging www.southwest8.org

Key Areas For Falls

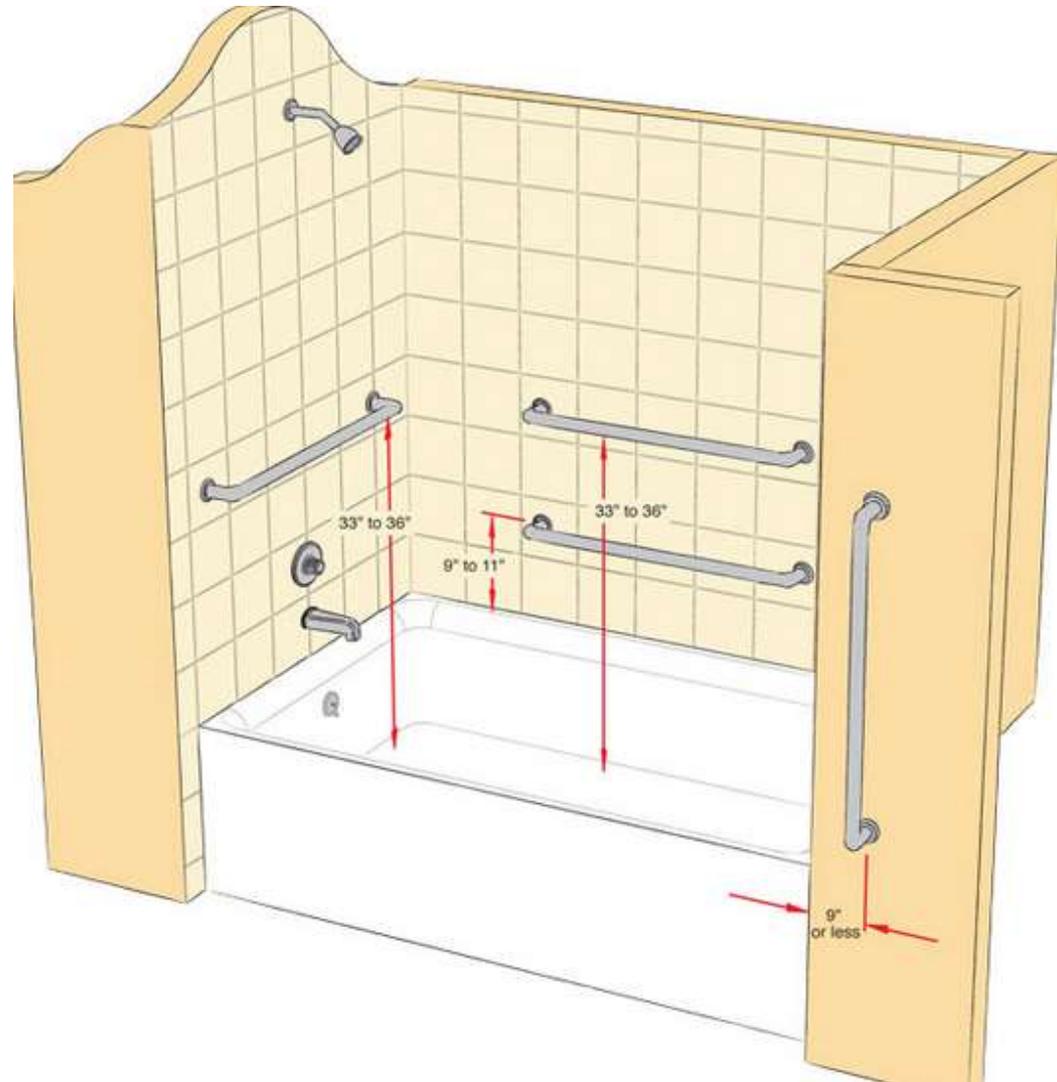
- **Bathrooms**
- **Stairs, inside & outside**
- **Kitchens**

Bathroom = Risky Business

- Getting In & Out of Bathtub/Shower
- Slippery tub/shower basin
- Slippery flooring
- Loose mats/rugs that slide or curl
- Inadequate light over tub/shower
- Getting on/off toilet

Bathroom Grab Bars

- 1 -1/4" diameter (arthritic or smaller hands)
- Vertical grab bar by shower entrance (may also assist with toilet)
- Horizontal grab bars in tub/shower area (wet, soapy hands may slip on vertical)
- Knurled or peened finish for better grip
- Fitted to person, not ADA

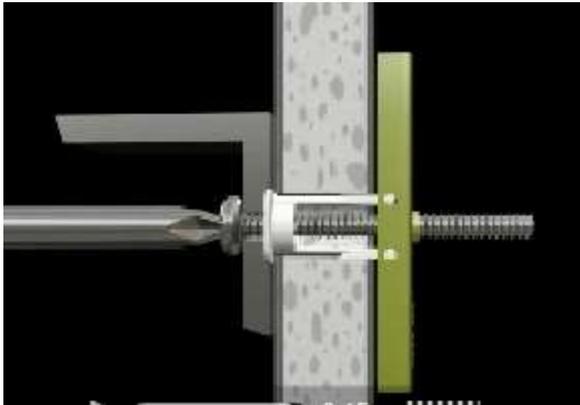


Don't rely on ADA standards – fit to the person

Grab Bars Mounting

Must support 250 lbs.

Mount to studs or use special mounting hardware



Stainless

Please Select...
Please Select...
12" (+\$73.99)
16" (+\$75.99)
18" (+\$77.99)
24" (+\$79.99)
30" (+\$81.99)
32" (+\$83.99)
36" (+\$85.99)
42" (+\$87.99)
48" (+\$89.99)

Look for grab bars in increments of 16"

Shower Surround Units



How to mount to tub walls?

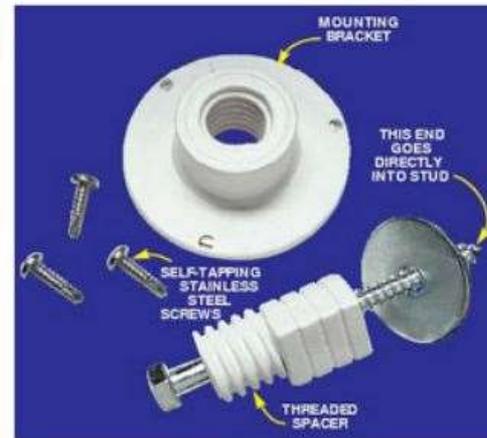


**Avoid Suction models -
balance assistance only!**

Grab Bars Mounting



The Solid Mount™



For manufactured shower enclosures

Custom Grab Bars

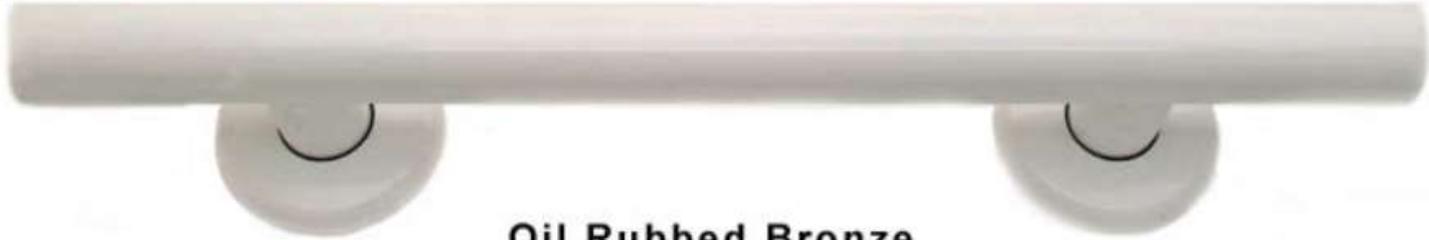


 buttercup yellow	 ruby red	 steel blue	 ultramarine blue
 biscuit/linen	 anthracite gray	 stone gray	 light gray
 pure white	 blossom yellow	 vanilla	 lavender blue
 ice blue	 gloss black		

Powder coat custom colors
Ex. 32" x 1-1/4" ruby red = \$83

Custom Grab Bars

White



Oil Rubbed Bronze



Polished Brass Sure Grip



Ex. 36" x 1-1/4" = \$119

Custom Grab Bars



Stairs



No edge contrast, need excellent lighting

Stair Edge Awareness



No-slip strips for stairs – place 1.5” from step nosing

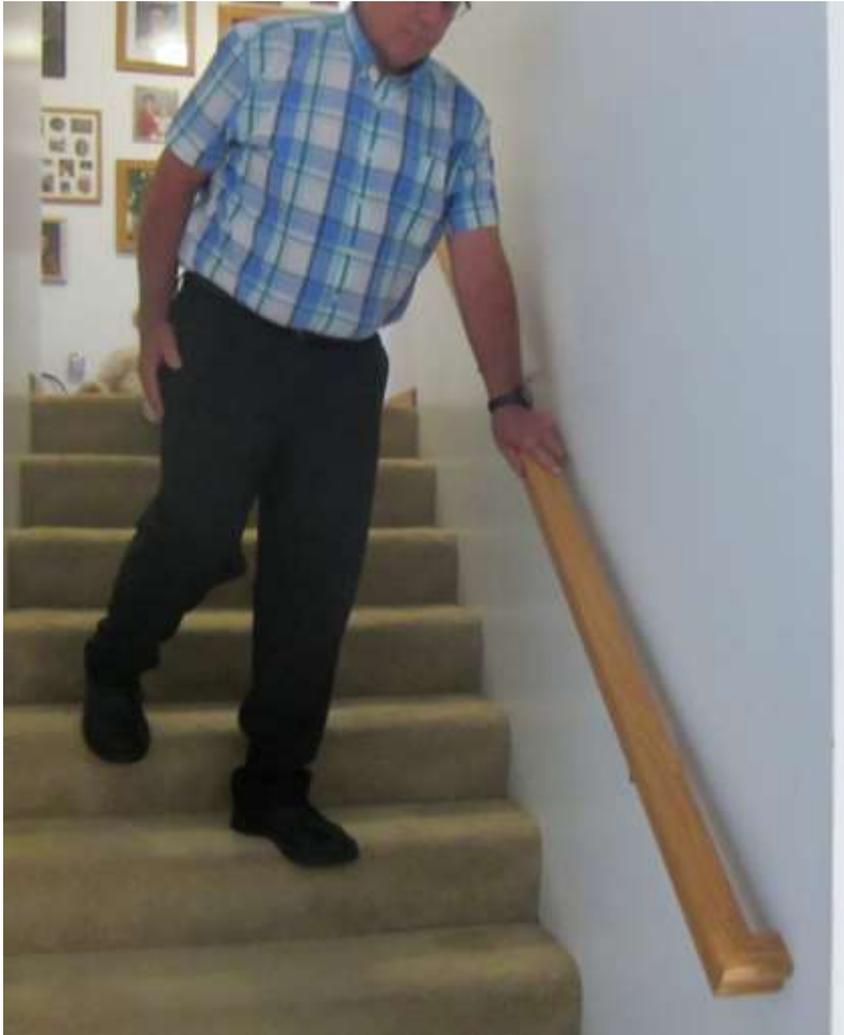
Handrails



8.25" perimeter

Round railing: 1.25 to 1.5 inch diameter (same as grab bars)
If not round, perimeter should be 4 to 6.25"

Handrails: Hand/Arm Strength?



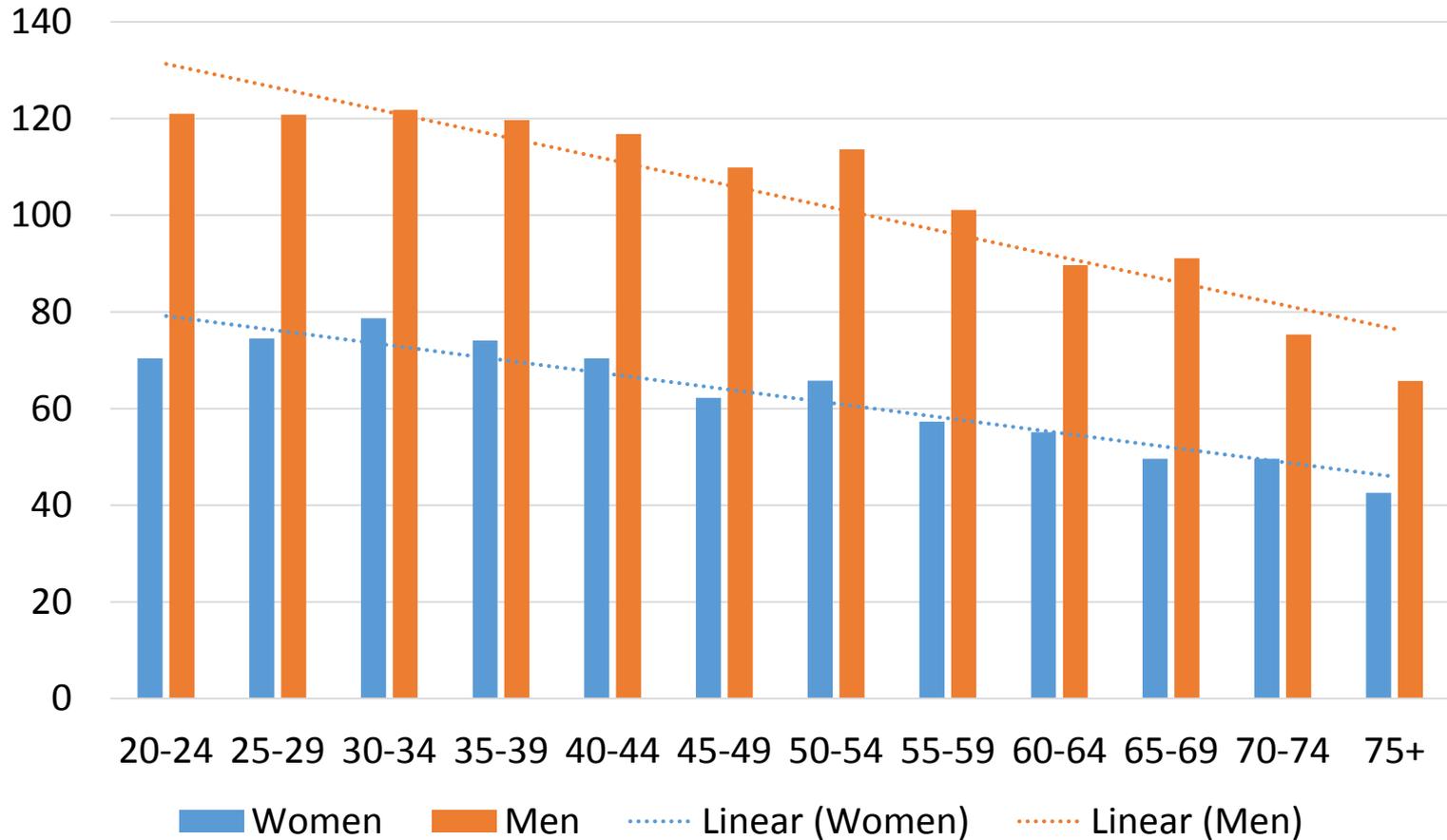
Point hips toward railing



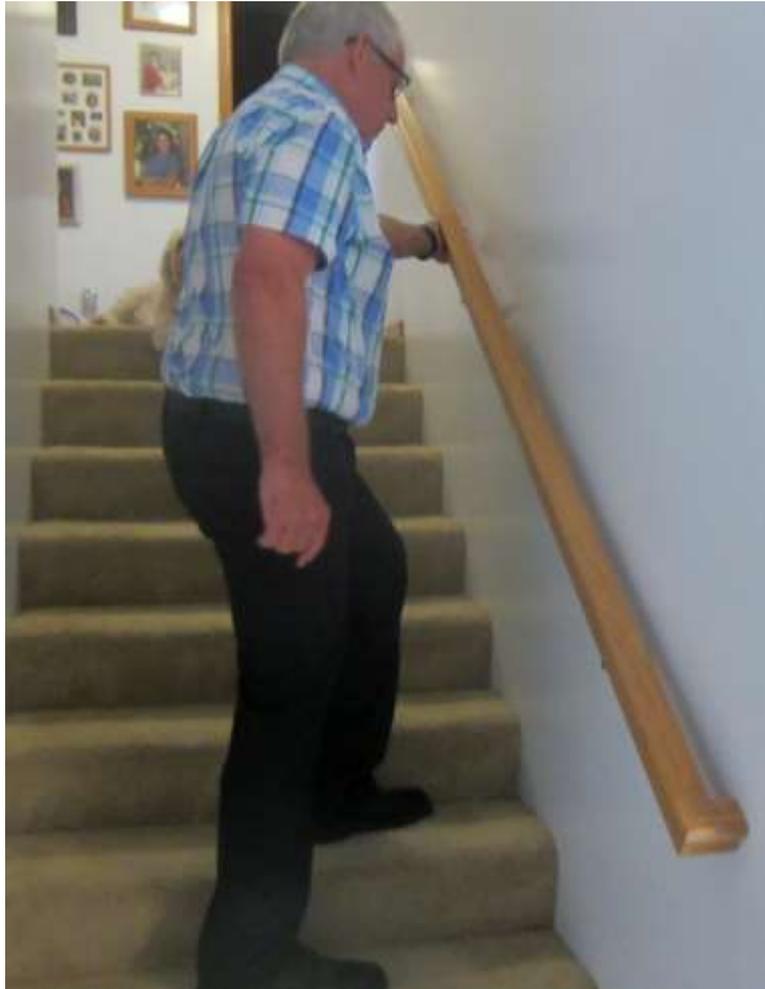
Keep hands free for gripping

Handrails: Grip Strength?

Grip Strength As We Age



Handrails: Hand/Arm Strength?



Sidestep, tension on extended arm when stepping

Home Fall Prevention



Handrails on both sides

3 coats of gloss urethane improved grip

Home Fall Prevention

1. Reduce step height. Was 8", now 5" & 3" (\$10)
2. ½" trim material added under threshold lip for stability



- Scraper mat
- Epoxy coating on floor, was smooth concrete
- Step stool kept handy

Home Fall Prevention



Large tote bag keeps one hand free for handrail
Can be used as a laundry basket

Home Fall Prevention



Add a graspable handrail onto existing 2x6 “handrail”

Home Fall Prevention



Add contrasting, high traction step covers

Kitchen

- Rugs
- Slippery tile flooring
- Reaching tall cabinets – improper step stool

Some Cleaners Create Slippery Floors

Single
Application

After One
Month

	Pine Sol® Cleaner	+1% 	0%
	Pledge® Grab It™ Wet Floor Wipes	+1% 	0%
	Pledge® Orange Wood Floor Cleaner	+1% 	-11% 
	Spic and Span®	-12% 	-35% 
	Swiffer Wet™ Disposable Cloths	-25% 	-20% 
	Xtra-Pine®	-5% 	-20% 

Wet/Slippery surfaces



Started out 0.64 SCOF (high traction)

After cleaning regularly with a Swiffer: < 0.30 (low traction)

Wet/Slippery surfaces - treatments

Products are available to treat any hard-surfaced floor

www.noskidding.com

www.slipdoctors.com

www.tractionplus.com

Home Depot: InvisaTread



\$79.97 /each



Ship to Home FREE

Estimated Arrival: JUL 12 - JUL 14

[See Shipping Options +](#)



Ship to Store FREE

Available for Pick Up: JUL 13 - JUL 18

1

ADD TO CART

SAVE
MY L

OR

Buy now with **PayPal**

Item cannot be shipped to the following state(s): GU,PR,VI,AK,HI



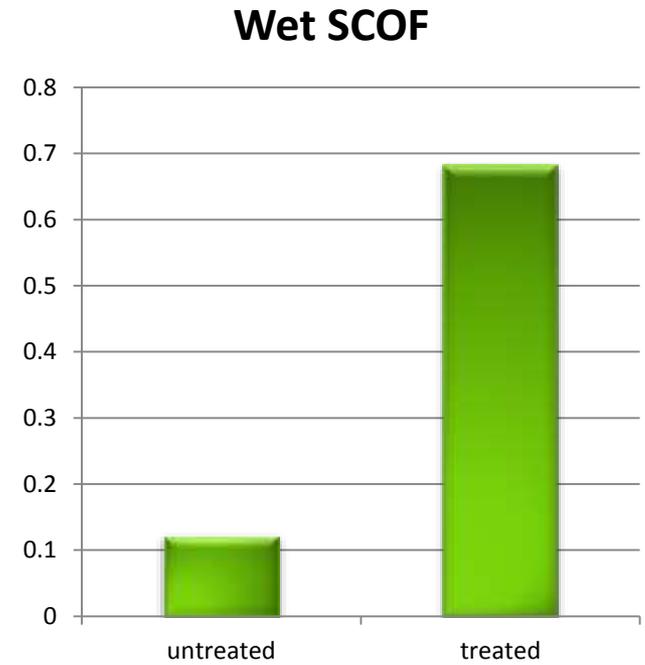
PRODUCT NOT SOLD IN STORES



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Tile Surface Modifier Treatment



Prevention - Homes



Treat slippery floors

Wet SCOF increased from .25 to .67 (168% increase)

Walking Dynamics

85% of population use heel strike method

Heel Strike Phase

“Hydroplaning” possible even if high traction flooring



- 1. Cannot recover from 10 cm foot slide***
- 2. 1 to 2 cm slide can cause falls***
- 3. Loose-fitting footwear, worn heels compounds risk***

Slow down, walk flat-footed to prevent hydroplaning

Footwear



Heels and soles should be inspected monthly

You inspect your tires regularly, right?

Footwear



Prevention:

1. Buy shoes that fit snugly and avoid raised heels
2. Use a long-handled shoe horn if needed
3. Inspect soles and heels frequently
4. Use footwear appropriate for expected walkway conditions
5. Use a spare set of shoes indoors - Avoid slippers and bare feet



Foot Issues

- ✓ **Callused, dry skin reduces traction**
- ✓ **Etch or treat tubs, showers and bathroom floors**



Safety standards currently being developed for wet barefoot conditions

Home Fall Prevention



Motion-activated LED nightlights & switches
Remove the human element

Home Fall Prevention



Route power cords to prevent tripping
Outdoor scraper mats help keep moisture out

Home Fall Prevention



Eliminate throw rugs

Use mats with slip resistant backing

Putting it All Together

Safe walking is like safe driving

1. **Avoid distractions:** No texting or reading when walking
2. **Look ahead for hazards:** 10-15 feet, use lights if dark
3. **Slow down when turning a corner:** Make wide turns and look for low lying objects
4. **Use your mirrors:** Look down and behind before backing up
5. **If slippery, slow way down:** Take 1/2 stride or less, step flat-footed

Putting it All Together

Safe walking is like safe driving

6. **Buy tires with good traction:** Wear slip resistant footwear
7. **Inspect your tires:** Check shoe heels/soles regularly
8. **Keep windshield clear:** Get regular eye exams
9. **Get regular tune ups:** Get annual physicals, Rx review, take a Tai Chi class