

**Minnesota OSHA Construction Seminar:  
Subpart X, Stairway and ladder requirements  
Nov. 20, 2018**

**Presented by Minnesota OSHA Compliance,  
Bob Darling, safety investigator principal**

# 29 CFR 1926.1050 and 1926.1051

- 1926.1050(a) – This subpart applies to all stairways and ladders used in construction, alteration, repair and demolition workplaces covered under 1926 and also set forth, in specific circumstances, when ladders and stairways are required.
- 1926.1051(a) – A stairway or ladder shall be provided at all personnel points of access where there is a break in the elevation of 19 inches or more, and no ramp, runway, sloped embankment or personnel hoist is provided.
- 1926.1051(b) – Employers shall provide and install all stairway and ladder fall protection systems required by this subpart and shall comply with all other pertinent requirements of this subpart before employees begin work that necessitates the installation and use of stairways, ladders and their respective fall-protection systems.

# 29 CFR 1926.1052 – Stairways

- 1926.1052(b)(3) – Treads solid material installed the full width and depth.
- 1926.1052(c)(1) – Stairways with four or more risers or rising more than 30 inches, whichever is less, shall be equipped with:
  - (i) at least one handrail; and
  - (ii) one stair-rail system along each unprotected side or edge.
- 1926.1052(c)(3) – Height of stair-rails shall be as follows:
  - (i) – installed after March 15, 1991, shall be less than 36 inches from the upper surface of the stair-rail to the surface of the tread.

# 29 CFR 1926.1052 – Stairways

- 1926.1052(c)(4) – Midrails shall be provided between the top rail of the stair-rail system and the stairway steps.
- 1926.1052(c)(6) – The height of handrails shall not be more than 37 inches nor less than 30 inches from the upper surface of the handrail to the surface of the tread.
- 1926.1052(c)(7) – When the top edge of a stair-rail system also serves as a handrail, the height of the top edge shall not be more than 37 inches nor less than 36 inches from the upper surface of the stair-rail system to the surface of the tread.
- 1926.1052(C)(12) – Unprotected sides or edges of stairway landings shall be provided with a guardrail system.



# 29 CFR 1926.1053 – Ladders

- 1926.1053(a)(2) – Ladder rungs, cleats and steps shall be parallel, level and uniformly spaced when the ladder is in position for use.
- 1926.1052(a)(3) – Ladder rungs, cleats and steps of portable ladders and fixed ladders shall be spaced not less than 10 inches nor more than 14 inches apart as measured between center lines.
- 1926.1052(a)(7) – Ladders shall not be tied or fastened together to provide longer sections unless specifically designed for such use.
- 1926.1052(a)(8) – A metal spreader or locking device shall be provided on each stepladder to hold the front and back sections in the open position when the ladder is being used.

# 29 CFR 1926.1053 – Ladders

- 1926.1053(b)(1) – When portable ladders are used for access to an upper landing surface, the ladder siderails shall extend at least 3 feet above the upper landing surface.
- 1926.1053(b)(3) – Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer’s rated capacity.
- 1926.1053(b)(4) – Ladders shall be used only for the purpose for which they were designed.
- 1926.1053(b)(5)(i) – Non-self-supporting ladders shall be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder.
- 1926.1053(b)(6) – Ladders shall be used only on stable and level surfaces unless secured to prevent accidental displacement.

# 29 CFR 1926.1053 – Ladders

- 1926.1053(b)(7) – Ladders shall not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental displacement.
- 1926.1053(b)(11) – Ladders shall not be moved, shifted or extended while occupied.
- 1926.1053(b)(12) – Ladders shall have non-conductive siderails if they are used where the employee or the ladder could contact exposed energized electrical equipment.
- 1926.1053(b)(13) – The top or top step of a step ladder shall not be used as a step.
- 1926.1053(b)(15) – Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.

# 29 CFR 1926.1053 – Ladders

- 1926.1053(b)(20) – When ascending or descending a ladder, the user shall face the ladder.
- 1926.1053(b)(21) – Each employee shall use at least one hand to grasp the ladder when progressing up and/or down the ladder.
- 1926.1053(b)(22) – An employee shall not carry any object or load that could cause the employee to lose balance and fall.

# 29 CFR 1926.1060 – Training

- 1926.1060(a) – The employer shall provide a training program for each employee using ladders and stairways as necessary. Enable each employee to recognize hazards related to ladders and stairways and train each employee in the procedures to be followed to minimize these hazards.
- 1926.1060(a)(1) – Ensure each employee has been trained by a competent person in the following areas, as applicable:
  - (i) the nature of fall hazards in the work area;
  - (ii) the correct procedure for erecting, maintaining and disassembling the fall-protection system to be used;
  - (iv) the maximum intended load-carrying capacities of ladders used; and
  - (v) the standards contained in this subpart.

**Table VI-2: Penalty chart amounts unadjusted for good faith, size and history**

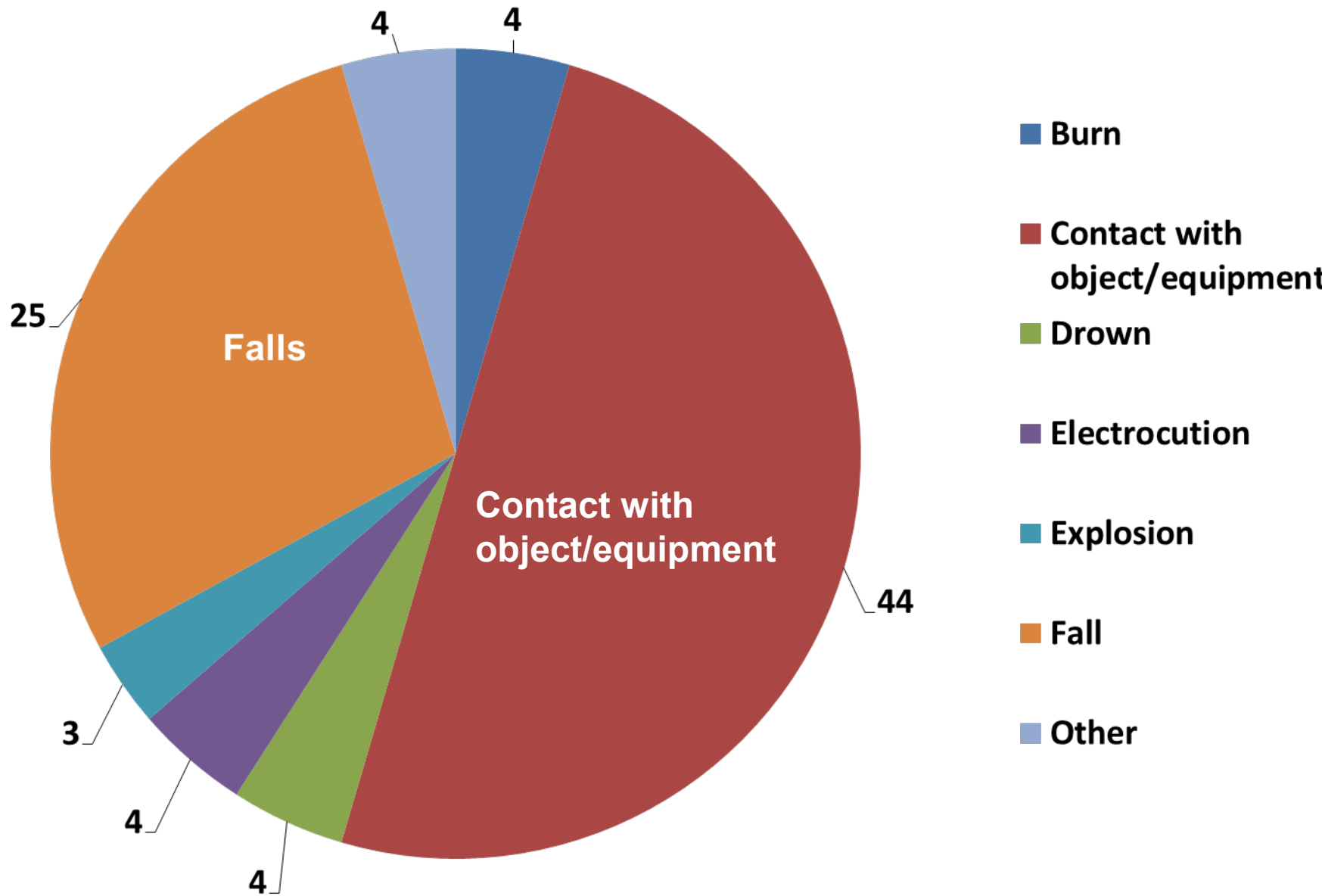
<b>Severity</b> Based on: The injury or illness that could reasonably be expected to result from an employee's exposure to the violative condition.						
<b>Based on:</b>	<b>Non-serious</b>		<b>Serious</b>			
<ul style="list-style-type: none"> <li>– Employee exposure</li> <li>– Proximity to hazard</li> <li>– Duration of hazard</li> <li>– Work conditions</li> </ul>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>Lesser (1-4)</b>	<b>0</b>	<b>\$500</b>	<b>\$1,500</b>	<b>\$2,500</b>	<b>\$3,500</b>	<b>\$5,500</b>
<b>Greater (5-8)</b>	<b>\$250</b>	<b>\$1,000</b>	<b>\$2,000</b>	<b>\$3,000</b>	<b>\$4,500</b>	<b>\$7,000</b>



**Table: Fatal occupational injuries per 100,000 full-time-equivalent workers, 2016**

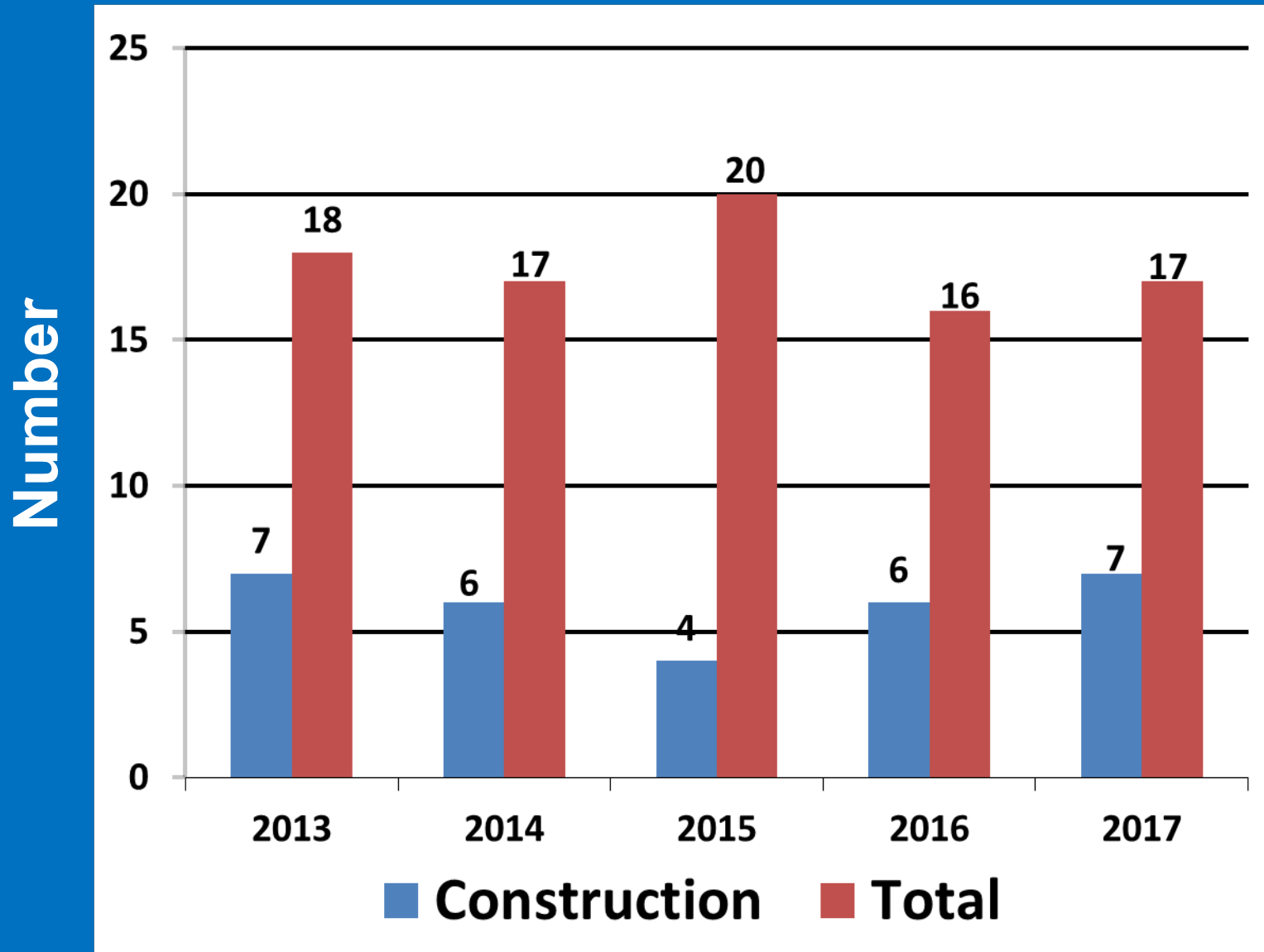
<b>State</b>	<b>Fatality rate</b>
Iowa	4.9
Minnesota	3.4
North Dakota	7.0
South Dakota	7.5
Wisconsin	3.6

# Cause of all Fatalities FFY 2013 - 2017





# Construction Fatalities FFY 2013-2017



# MNOSHA most-frequently cited standards in construction, FFY17

Standard	Description	Frequency
1926.501	Fall protection	142
1926.652	Protective systems for excavations	54
Minnesota Statutes 182.653, subd. 8	A Workplace Accident and Injury Reduction (AWAIR) program	52
1926.451	General requirements for scaffolds	52
1926.651	Specific requirements for excavations	45
1910.1200	Hazard communication	43
1926.1053	Ladders	29
1926.405	Electrical wiring, components and equipment	22
1926.503	Fall protection training requirements	21
Minnesota Rules 5207.1000	Mobile earth-moving equipment	19

# Standards cited with a fatality, FFY11-17

- 1910.23(c)(8) – Similar to 1926.1053(b)(13), the employee was working from the top step of a stepladder.
- 1910.28(b)(11)(ii) – Similar to 1926.1052(c)(1), the employee slipped and fell from the second step from the bottom, when at least one handrail and one stair-rail system was not provided along the unprotected side or edge.
- 1926.1053(b)(1) – Siderails of a portable ladder did not extend at least 3 feet above the landing surface.
  - The stepladder an employee used in the folded position did not extend at least 3 feet above the roof.

# Standards cited with a fatality, FFY11-17

- 1926.1053(b)(4) – A ladder was used for other than what it was designed for:
  - the upper section of an extension ladder was used to access a lower roof;
  - the employee used a stepladder in the folded position to access the roof;
  - a 12-foot extension ladder was wedged in structural steel framework to access an electrical junction box; and
  - the employee was using a stepladder in the folded position.
- 1926.1053(b)(6) – The ladder was used on a surface that was not level or stable:
  - the upper section of an extension ladder was used on a low, sloped roof without being secured.

# Standards cited with a serious injury, FFY11-17

- 1926.1053(b)(1) – When portable ladders are used for access to an upper landing surface, the ladder siderails shall extend at least 3 feet above the upper landing surface:
  - an extension ladder used in an excavation did not extend at least 3 feet above the ground;
  - an extension ladder was used to access the third-floor balcony from the ground; and
  - a portable ladder was used in an excavation for access.
- 1926.1053(b)(4) – A ladder was used for other than what it was designed for:
  - a stepladder was used in the folded position to access the roof.

# Standards cited with a serious injury FFY11-17

- 1926.1053(b)(6) – A ladder was used on a surface that was not stable or level:
  - a stepladder was being used on an asphalt roof and was not secured (bundles of shingles were being used to help level the ladder).
- 1926.1053(b)(7) – A ladder used on a slippery surface was not secured:
  - an employee was working on a 24-foot extension ladder set up on top of ice and snow and the ladder was not secured to prevent displacement.

# Standards cited with a serious injury, FFY11-17

- 1926.1053(b)(22) – Employees were carrying objects or loads while descending a ladder that could cause them to lose balance and fall:
  - an employee was carrying a speed lead while climbing down the ladder affixed to a scaffold; and
  - a roofer was carrying bundle of shingles (approximately 60 pounds) from the ground while climbing the extension ladder up to the roof.

# MNOSHA Compliance fatality investigations, FFY12-16

From Oct. 1, 2011 through Sept. 30, 2016, the annual average number of fatalities under Minnesota OSHA Compliance jurisdiction was 17.

The most common types of workplace fatalities were:

- contact with an object or equipment – average of eight workers each year;
- falls – average of five workers each year; and
- electrocution – average of 1.2 workers each year.



# MNOSHA Compliance fatal injuries for all safety inspections, FFY16-17

- Stepladders – two
- Ladders – four
- Stairs – one

# MNOSHA Compliance serious injuries for all safety inspections, FFY16-17

- Stepladders – two
- Ladders – 10
- Stairs – two























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# Guardrail system



- Brackets for engineered guardrail systems can either be side-mounted or deck-mounted. Either way, employers should follow the manufacturer's instructions or the recommendations of a registered professional engineer for proper installation.









































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**250** lbs. LOAD CAPACITY

*Includes User and Materials*  
**113** kg CAPACIDAD DE CARGA  
*Incluye al Usuario y los Materiales*  
HEAVY DUTY  
SERVICIO PESADO  
TYPE I  
TIPO I

Ladder Size  
Tamaño de la escalera

**8'**  
2.44m

Maximum Reach\*  
Alcance máximo\*

**12'**  
3.66m

Working Level  
Alto para el trabajo  
de pie

**5'9"**  
1.75m

Model Number  
Número de modelo

**108**  
Mk 10

\*Assumes a 5'6" person with a vertical 12" reach  
\*Se asume una persona con altura de 1.68m con un alcance vertical de 0.30m

Non-Conductive Fiberglass Side Rails  
Rieles Laterales de Fibra de Vidrio No-Conductores de la Electricidad

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