

# MINNESOTA RULES 1987

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SAFETY AND HEALTH STANDARDS 5205.0010

## CHAPTER 5205

### DEPARTMENT OF LABOR AND INDUSTRY SAFETY AND HEALTH STANDARDS

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#### **5205.0010 ADOPTION OF FEDERAL OCCUPATIONAL SAFETY AND HEALTH STANDARDS BY REFERENCE.**

The Minnesota Department of Labor and Industry Occupational Safety and Health Codes and rules are amended by incorporating and adopting by reference, and thereby making a part thereof, Title 29 of the Code of Federal Regulations as follows:

Part 1910: Occupational Safety and Health Standards as published in Volume 43, No. 206 of the Federal Register on October 24, 1978 and corrected in Volume 43, No. 216 on November 7, 1978 which incorporates changes, additions, deletions, and corrections made up to November 7, 1978; and subsequent changes made prior to December 31, 1986:

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Federal Register, Vol. 43, No. 234, dated 12/5/78; "Corrections to 1910.1043; Occupational Exposure to Cotton Dust."

Federal Register, Vol. 43, No. 234, dated 12/5/78; "Corrections to 1910.1046; Occupational Exposure to Cotton Dust in Cotton Gins."

Federal Register, Vol. 43, No. 237, dated 12/8/78; "Corrections to Tables of Exposure Limits for Air Contaminants, 1910.1000."

Federal Register, Vol. 43, No. 220, dated 11/14/78; "Lead Standard, 1910.1025."

Federal Register, Vol. 44, No. 19, dated 1/26/79; "Corrections to Lead Standard, typographical."

Federal Register, Vol. 44, No. 50, dated 3/13/79; "Modifications to Lead Standard, Portions of Standard Stayed."

Federal Register, Vol. 44, No. 168, dated 8/28/79; "Corrections to Lead Standard, Exemption of Construction Industry."

Federal Register, Vol. 44, No. 138, dated 7/17/79; "Occupational Exposure to Chlorine, Lifting of Stay."

Federal Register, Vol. 44, No. 206, dated 10/23/79; "Appendexes to Lead Standard."

Federal Register, Vol. 44, No. 232, dated 11/30/79; "Corrections to Appendexes to Lead Standard."

Federal Register, Vol. 45, No. 20, dated 1/29/80; "Servicing Multi-Piece Rim Wheels, 1910.177."

Federal Register, Vol. 45, No. 28, dated 2/8/80; "Mechanical Power Presses; Corrections to Final Rule."

Federal Register, Vol. 45, No. 121, dated 6/20/80; "Commercial Diving Operations: Correction to Final Rule."

Federal Register, Vol. 45, No. 179, dated 9/12/80; "Revisions to Subpart L, Fire Protection; Subpart E, Means of Egress; and Subpart H, Hazardous Materials."

Federal Register, Vol. 46, No. 11, dated 1/16/81; "Subpart S, Electrical."

Federal Register, Vol. 46, No. 118, dated 6/19/81; "Deletion of 1910.1046; Occupational Exposure to Cotton Dust in Cotton Gins."

Federal Register, Vol. 46, No. 141, dated 7/23/81; "Occupational Exposure to Lead, New Trigger Levels for Medical Removal Protection; 1910.1025."

Federal Register, Vol. 46, No. 152, dated 8/7/81; "Corrections to Subpart S, Electrical."

Federal Register, Vol. 46, No. 162, dated 8/21/81; "Occupational Noise Exposure, Hearing Conservation Amendment; 1910.95."

Federal Register, Vol. 46, No. 238, dated 12/11/81; "Occupational Exposure to Lead, Final Rule Amended."

Federal Register, Vol. 47, No. 173, dated 9/7/82; "Hazardous Materials; Attendant Exemption and Latch-Open Devices; 1910.106(g)(2) and (g)(3)(vi)."

Federal Register, Vol. 47, No. 219, dated 11/12/82; "Occupational Exposure to Lead: Respirator Fit Testing, 1910.1025(f)(3)."

Federal Register, Vol. 47, No. 228, dated 11/26/82; "Exemption of Educational/Scientific Diving from Subpart T, Part 1910."

Federal Register, Vol. 47, No. 233, dated 12/3/82; "Occupational Exposure to Lead: Administrative Stay of Compliance Plans for Certain Industries; 1910.1025(c)(e)(i)(B) & (E)."

Federal Register, Vol. 48, No. 15, dated 1/21/83; "Occupational Exposure to Coal Tar Pitch Volatiles; Modification of Final Interpretation: 1910.1022."

Federal Register, Vol. 48, No. 25, dated 2/4/83; "Occupational Exposure to Cotton Dust; Stay for Knitting and Hosiery Industry; 1910.1043."

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Federal Register, Vol. 48, No. 46, dated 3/8/83; "Occupational Exposure to Lead; Corrections to Respirator Fit Testing Requirements; 1910.1025 and Occupational Noise Exposure, Hearing Conservation Amendment; 1910.95(c)."

Federal Register, Vol. 48, No. 125, dated 6/28/83; "Hearing Conservation Amendment, Corrections to Final Rule."

Federal Register, Vol. 49, No. 4, dated 1/6/84; "Commercial Diving Operations; Deletion of 1910.411."

Federal Register, Vol. 49, No. 24 dated 2/3/84; "Servicing of Single Piece and Multi-Piece Rim Wheels; 1910.177."

Federal Register, Vol. 49, No. 29, dated 2/10/84; "Revocation of Advisory and Repetitive Standards."

Federal Register, Vol. 49, No. 37, dated 2/23/84; "Occupational Exposure to Cotton Dust; Partial Administrative Stay of 1910.1043(m)(2)(ii)."

Federal Register, Vol. 49, No. 109, dated 6/5/84; "Occupational Exposure to Lead; Effective Date of Compliance Plan Requirements for Primary and Secondary Smelting and Battery Manufacturing Industries, 1910.1025(e)(3)(ii)(B) and (E)."

Federal Register, Vol. 49, No. 122, dated 6/22/84; "Occupational Exposure to Ethylene Oxide (1910.1047), Final Rule."

Federal Register, Vol. 50, No. 6, dated 1/9/85; "Educational/Scientific Diving: Guidelines for Scientific Diving (Appendix B) Subpart T of Part 1910."

Federal Register, Vol. 50, No. 22, dated 2/1/85; "Power Lawnmowers: Amendments; 1910.243(e)."

Federal Register, Vol. 50, No. 178, dated 9/13/85; "Coke Oven Emissions (1910.1029); Deletion of Portions of Standard."

Federal Register, Vol. 50, No. 198, dated 10/11/85; Occupational Exposure to Ethylene Oxide (1910.1047); Labeling Requirements."

Federal Register, Vol. 50, No. 240, dated December 13, 1985; "Occupational Exposure to Cotton Dust; 29 Code of Federal Regulations 1910.1043."

Federal Register, Vol. 51, No. 119, dated June 20, 1986; "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite (1910.1001 and 1926.58); Final Rules."

Federal Register, Vol. 51, No. 128, dated July 3, 1986; "Occupational Exposure to Cotton Dust (1910.1043), Corrections and Information Collection Requirements Approval."

Federal Register, Vol. 51, No. 132, dated July 10, 1986; "Occupational Exposure to Ethylene Oxide (1910.1047), Technical Amendments and Corrections to Final Rule."

Federal Register, Vol. 51, No. 133, dated July 11, 1986; "Electrical Standards for Construction, Part 1926, Subpart K."

Federal Register, Vol. 51, No. 181, dated September 18, 1986; "Commercial Diving Standard (1910.430); Technical Amendments to Final Rule."

Federal Register, Vol. 51, No. 182, dated September 19, 1986; "Accident Prevention Tags (1910.145); Amendment to Final Rule."

Federal Register, Vol. 51, No. 188, dated September 29, 1986; "Recordkeeping Requirements for Tests, Inspections, and Maintenance Checks (1910.68, 1910.106, 1910.157, 1910.179, 1910.180, 1910.181, 1910.217, 1910.218, 1910.252, and 1910.440)."

Federal Register, Vol. 51, No. 201, dated October 17, 1986; "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite (1910.1101); Partial Administrative Stay of Final Rules and Redesignation and Amendment of Final Rule."

Federal Register, Vol. 51, No. 244, dated December 19, 1986; "Hazardous Waste Operations and Emergency Response (1910.120); Interim Final Rule."

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Part 1915: Occupational Safety and Health Standards for Shipyard Employment as published in Volume 47, No. 76 of the Federal Register on April 20, 1982 and subsequent changes made prior to December 31, 1986, which consolidates Part 1915 and Part 1916.

Federal Register, Vol. 51, No. 188, dated September 29, 1986; "Recordkeeping Requirements for Tests, Inspections, and Maintenance Checks (1915.113 and 1915.172); Final Rule."

Part 1917: Safety and Health Standards for Marine Terminals as published in Volume 48, No. 129 of the Federal Register on July 5, 1983.

Part 1918: Safety and Health Regulations for Longshoring as published in Part II, Volume 39, No. 119 of the Federal Register on June 19, 1974 incorporating changes, additions, deletions and corrections made up to June 3, 1974; and subsequent changes made prior to June 1, 1984:

Federal Register, Vol. 42, No. 141, dated 7/22/77; "Commercial Diving Operations, adding 1918.99."

Federal Register, Vol. 43, No. 88, dated 5/5/78; "Occupational Exposure to Benzene; supersedes standards in Part 1918."

Part 1926: Construction Safety and Health Regulations as published in Part VII, Volume 44, No. 29 of the Federal Register on February 9, 1979 which incorporates changes, additions, deletions and corrections made up to October 17, 1978 and includes General Industry Occupational Safety and Health Standards (29 CFR Part 1910) which have been identified as applicable to construction work; and subsequent changes made prior to June 1, 1984:

Federal Register, Vol. 45, No. 222, dated 11/14/80; "Guarding Low-Pitched Roof Perimeters During Performance of Built-Up Roofing Work."

Part 1928: Occupational Safety and Health Standards for Agriculture as published in Part II, Volume 40, No. 81 of the Federal Register on April 25, 1975 and subsequent changes made prior to June 1, 1984:

Federal Register, Vol. 41, No. 206, dated 11/22/76; "Non-substantive changes to guarding of farm field equipment."

Federal Register, Vol. 42, No. 141, dated 7/22/77; "Excludes commercial diving operations standards from agricultural applicability."

Federal Register, Vol. 42, No. 146, dated 7/29/77; "Excludes air contaminant standards from agricultural operations."

Federal Register, Vol. 43, No. 122, dated 6/23/78; "Occupational Exposure to Cotton Dust in Cotton Gins, amends 1928.21 by adding paragraph (a)(5)."

Federal Register, Vol. 43, No. 127, dated 6/30/78; "Occupational Exposure to Cotton Dust in Cotton Gins, corrections of errors in 1928.21 and 1928.113."

Federal Register, Vol. 43, No. 153, dated 8/8/78; "Occupational Exposure to Cotton Dust in Cotton Gins, correction of errors in 1928.113."

Federal Register, Vol. 43, No. 234, dated 12/5/78; "Occupational Exposure to Cotton Dust in Cotton Gins, corrections to Appendix C."

**Statutory Authority:** *MS s 182.655*

**History:** 7 SR 1706; 8 SR 172; 8 SR 1743; 9 SR 112; 9 SR 663; 9 SR 2585; 10 SR 1507; 10 SR 2418; 11 SR 867; 11 SR 1792

## PERSONAL PROTECTIVE EQUIPMENT

### 5205.0020 HEAD PROTECTION.

Employees working in areas where there is danger of scalp injury if the employee's hair should become entangled in moving machinery parts shall be protected by having their hair contained or secured in a shop cap, snood, or similar device.

**Statutory Authority:** *MS s 182.655*

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### 5205.0030 HIGH VISIBILITY PERSONAL PROTECTIVE EQUIPMENT.

Subpart 1. **General requirement.** Employees, other than police and fire protection personnel covered by subpart 3, exposed to vehicular traffic when the work area is on the driving lanes or on the shoulders or berms, or on the median adjacent to streets, highways, or roadways shall be provided with and required to wear warning vests or other high visibility garments. For work during the hours of darkness this protective equipment must be made of or marked with reflectorized material.

Subp. 2. **Exception.** Where employees are continually protected from vehicular traffic by permanent or semipermanent barricades, high visibility vests, or other high visibility equipment are not required.

Subp. 3. **Law enforcement, fire protection personnel.** Law enforcement and fire protection personnel shall be provided with, and be required to wear, high visibility, reflectorized outer garments at any time such personnel are engaged in vehicular traffic control.

**Statutory Authority:** *MS s 182.655*

### WALKING, WORKING SURFACES

### 5205.0040 ELEVATED STORAGE PLATFORM OR RACK.

No employee shall be required or permitted to work on an elevated platform or rack intended primarily for the storage of materials unless such storage area has been provided with the safeguards specified in Code of Federal Regulations, title 29, section 1910.23 (c) (1). Existing part 5205.0220 "ships ladders" and part 5205.0230 "ships ladders (special)" will be renumbered as parts 5205.0050 and 5205.0060. This change is intended to allow these standards to apply to general industry locations.

**Statutory Authority:** *MS s 182.655*

### 5205.0050 SHIPS LADDERS.

Subpart 1. **Requirement.** Employers shall replace fixed and portable ladders with ships ladders whenever possible.

The angle of rise of ships ladders shall be between 50 and 60 degrees measured from the horizontal.

Subp. 2. **Soffits.** Where ladders are located one above the other, soffits shall be enclosed except where solid treads and risers are provided.

Subp. 3. **Treads.** The height between treads shall be eight to 12 inches. Tread surfaces other than steel grating shall be provided with skid resistance. Treads shall be flat steps with minimum of six inches in width and at least 24 inches long.

Subp. 4. **Handrails.** Handrails shall be provided on both sides of ladders and shall be placed to run parallel with stringers and be positioned 12 to 14 inches measured vertically, from the stringers. Handrail diameters shall be 1-1/4 to 1-5/8 inches o.d. When ships ladders serve door entrances, handrails shall continue to the door.

Subp. 5. **Stringers.** Ladder stringers shall be at least six inches in depth and permanently attached at terminations.

**Statutory Authority:** *MS s 182.655*

### 5205.0060 SHIPS LADDERS, SPECIAL REQUIREMENTS.

Ships ladders shall be provided in all buildings where mechanical equipment is located on the roof in order to make all equipment accessible to maintenance and inspection personnel. Ships ladders shall be placed at an angle between 50 and 60 degrees measured from the horizontal. The opening in ceilings and building roofs shall have a minimum area of nine square feet and a minimum width of two feet. No ships ladders shall be located in or pass through elevator shafts, elevator penthouses, or elevator machine rooms.

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Inside a penthouse handrails shall continue through ceiling and roof openings to a distance of 36 inches. A guardrail and intermediate rail shall be provided on all open sides with a substantial chain guard on the entrance side.

**Statutory Authority:** *MS s 182.655*

### GENERAL ENVIRONMENTAL CONTROLS

#### 5205.0100 SUBMISSION OF ENVIRONMENTAL CONTROL MEASURES.

Plans showing the location and type of dust, fumes, gas, vapor, or mist generating operation and the method of control to be employed at each point of dissemination, together with the details of design and operation of such dust, fumes, gas, vapor, or mist control measures, shall be submitted in duplicate before installation of the proposed equipment by the owner or his authorized agent. One copy each to the Department of Labor and Industry and to the Department of Health for review and conditional approval subject to final acceptance after tests have been conducted to determine whether the control measure is effective in maintaining the concentrations of toxic materials below those specified herein.

**Statutory Authority:** *MS s 182.657*

#### 5205.0110 WORKROOM VENTILATION AND TEMPERATURE.

**Subpart 1. Air.** Air shall be provided and distributed in all workrooms as required in this code.

Outside air shall be provided to all workrooms at the rate of 15 cubic feet per minute per person or 1-1/2 air changes per hour, whichever is greater.

Air circulated in any workroom shall be supplied through air inlets arranged, located, and equipped so that the workers shall not be subjected to air velocities exceeding 200 feet per minute except under special circumstances specified in this code or where approved by the Department of Labor and Industry.

**Subp. 2. Temperature and humidity table.** The following tables shall be used as a guide in appraising and controlling health hazards associated with extremes in temperature and humidity.

High Environmental Dry and Wet-Bulb Temperatures\* That can

Be Tolerated in Daily Work by Healthy, Acclimatized Men

Wearing Warm Weather Clothing

Activity	Relative Humidity Percent	Air Movement					
		15-25 Dry Bulb	100 fpm Wet Bulb	100 Dry Bulb	300 fpm Wet Bulb	300 Dry Bulb	100 fpm Wet Bulb
Summer season	80	89	84	91	85	93	87
Light sedentary activities	60	94	82	96	84	98	85
(ET 85° F.)	40	100	79	101	81	103	82
	20	109	75	110	75	110	75
	5	119	69	118	69	117	68
Summer season	80	83	78	86	81	89	83
Heavy work	60	88	76	90	78	93	80
(ET 80° F.)	40	93	73	95	75	97	76
	20	100	69	101	70	102	70
	5	107	64	107	64	106	63
Winter season	80	78	73	81	77	85	79
Light or heavy							

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work	60	81	71	85	74	88	76
(ET 75° F.)	40	86	68	89	70	91	72
	20	91	63	93	65	94	66
	5	97	58	97	58	97	59

\*(Including Radiation Effect.)

If thermal radiation appears to be an important factor, the value listed above should be corrected accordingly.

Subp. 3. **Minimum air temperature.** The minimum air temperature of 60 degrees Fahrenheit shall be maintained in all rooms where work of a strenuous nature is performed, and the minimum air temperature of 65 degrees Fahrenheit shall be maintained in all other workrooms unless prohibited by process requirements.

Subp. 4. **Recirculated air.** Air from any exhaust system handling materials listed herein shall not be recirculated without written permission from the Department of Labor and Industry.

**Statutory Authority:** *MS s 182.657*

### ILLUMINATION

#### 5205.0120 MINIMUM LEVELS OF ILLUMINATION.

Subpart 1. **For traversed spaces.** Illumination by daylight or artificial light shall be supplied for traversed spaces, such as hallways, roadways, etc., during working hours, and for work when attended by operators. Minimum levels of illumination, as listed in the following table, are required in all places of employment in Minnesota. Values greater than these minima shall be used when ordered by the Occupational Safety and Health Division.

#### Illumination on Traversed Spaces

	Recommended Minimum Footcandles
Roadways, yard thoroughfares	2-1
Storage spaces, aisles and passageways in workrooms, excepting exits and passageways leading thereto	3-2
Spaces such as stairways, hallways, exits and passages leading thereto	5-3
Spaces such as locker rooms, wash rooms, toilet rooms, and passageways where there are exposed moving machines, hot pipes, or live electric parts	6-4

Subp. 2. **At the working place.**

#### Illumination at the Work

	Recommended Minimum Footcandles
Where discrimination of detail is not essential: Work such as handling material of a coarse nature, grinding clay products, rough sorting, coal and ash handling, foundry charging	5-3
Where slight discrimination of detail is essential:	

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Work such as rough machining, rough assembling, rough bench work, rough forging, grain milling	10-5
Where moderate discrimination of detail is essential:	
Work such as machining, assembly work, bench work, fine core making in foundries	30
Where close discrimination of detail is essential:	
Work such as fine lathe work, pattern making, tool making, weaving or sewing light-colored silk or woolen textiles, office work, accounting, typewriting	50
Where discrimination of minute detail is essential:	
Work such as drafting, weaving or sewing dark colored material, very fine inspection or inspection of very dark goods	100-25

The preceding table gives the range of minimum illumination values that are considered desirable for different classes of work. These values are based upon practice established through years of experience. Elderly persons or persons with defective eyesight require more light than do those having perfect vision. A range of footcandle values is given for each group of operations. In modern practice it will usually be found desirable to select values in or even beyond the upper portion of the range.

It is recognized that any specific process when carried on in different factories is performed with different degrees of fineness and with other variations, so that one factory may need more illumination than another for the same class of work. In the table, ranges of footcandle values are given to correspond to the variations actually existing in practice. Attention is called to the fact that the values in the table are operating values, that is, they apply to measurements of the lighting system in ordinary use, not simply when the lamps and reflectors are new and clean.

**Statutory Authority:** *MS s 182.657*

## 5205.0130 DIFFUSION AND DISTRIBUTION OF LIGHT.

**Subpart 1. Requirement.** Lighting, whether natural or artificial, shall be such as to provide good distribution of light and to avoid glare and objectional shadows and extreme contrasts. In artificial lighting, lamps shall be so installed in regard to their height, location, and spacing and shall be so equipped with reflectors, shades, or other suitable accessories as to accomplish these objects.

**Subp. 2. Glare.** Bare light sources, such as exposed lamp filaments, located within the ordinary field of the worker's vision are presumptive evidence of glare. The principal causes of glare are:

A. the light source may be too bright; that is, it may have too high a candlepower per square inch of area;

B. the light source may be too powerful for comfort; that is, it may have too great a total candlepower in the direction of the eye;

C. a given light source may be located at too short a distance from the eye or it may lie too near the center of the field of vision for comfort; that is, within too small an angle from the ordinary line of sight;

D. the contrast between the light source and its darker surroundings may be too great;

E. the time of exposure may be too great; that is, the eye may be subjected to the strain caused by a light source of given strength within the field of vision for too long a time.

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Glare from natural lighting may frequently be reduced by the use of refracting or diffusing glass in windows and skylights, and by the rearrangement of machines and benches so that operators are not required to face windows.

**Statutory Authority:** *MS s 182.657*

### **5205.0140 EXIT AND EMERGENCY LIGHTING.**

The lighting to be provided in all important stairways and all exits from work places and in the passageways related thereto shall be so supplied that it will not be subject to failure of the room or work-space lighting from internal causes. In artificial illumination, the service for exit and emergency lighting shall preferably be from an independent connection or connections extending back to the main service entrance. In cases of unusual danger which may exist on account of the type of building or nature of the work, crowded conditions, or lack of suitable exit space, an independent service shall be assured by connecting to a separate source of supply without or within the building. During the hours of occupancy when daylight is lacking, this separate source of supply shall be connected so as to function continuously or to come on automatically upon failure of the regular lighting service.

**Statutory Authority:** *MS s 182.657*

### **5205.0150 MAINTAINING THE LEVEL OF ILLUMINATION.**

**Subpart 1. Regular maintenance system.** The proper maintenance of equipment for both natural and artificial lighting is essential. Systems which are adequate when first installed will soon deteriorate unless properly maintained. For continued effectiveness and economy in lighting, the factory owner shall establish a regular definite system of maintenance so that skylights, side windows, lamps, and accessories are at all times kept clean, in proper adjustment, and in good repair. Means for easy access to all lighting units shall be provided for employees in charge of their maintenance. Walls and ceilings shall be repainted at regular intervals and preferably in light tones. This is especially true where systems of indirect lighting are used.

**Subp. 2. Measuring equipment.** Especially in connection with the maintenance of lighting systems, attention is called to the desirability of having available in the factory an instrument with which the footcandles of illumination received at any point can be measured. One instrument, the footcandle meter, while not designed for precise measurement, has a wide field of usefulness because, with a little practice, determinations are easily made and are accurate enough for most practical purposes. The footcandle meter is small, light in weight, and entirely self-contained. Illumination is read directly from the scale without computation or manipulation.

By measuring light actually delivered to the work, the footcandle meter automatically reveals the combined effect of all possible causes of deterioration. Ignorance of the magnitude of deterioration has often been the cause of inadequate maintenance.

**Statutory Authority:** *MS s 182.657*

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**5205.0160 SAFETY AND HEALTH STANDARDS**

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**5205.0160 POORLY LIGHTED INDUSTRIAL PLANT.**



**Statutory Authority: *MS s 182.657***

**5205.0170 SAME PLANT WELL LIGHTED.**



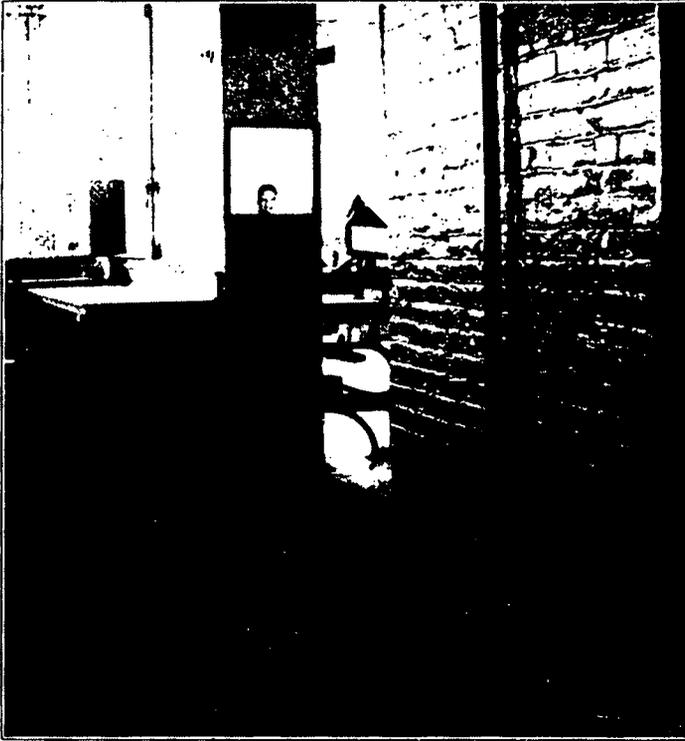
**Statutory Authority: *MS s 182.657***

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## 5205.0180 BLIND CORNER MIRROR.



**Statutory Authority:** *MS s 182.657*

## VENTILATION FOR GARAGES

## 5205.0200 GARAGE VENTILATION.

Subpart 1. **Size of system.** Provide a ventilation system capable of removing a volume of air equal to the floor area times a height of six feet not less than once every ten minutes. Exhaust ducts are to be not more than 14 inches from the floor, so placed as to remove carbon monoxide gas from the entire garage. An equal amount of tempered fresh air should be provided for, preferably ten to 11 feet high.

Subp. 2. **Department approval of plans.** Plans showing the location and type and the method of control to be employed at each point of dissemination, together with the details of design and operation of control measure, shall be submitted in duplicate before installation of the proposed equipment by the owner or his authorized agent, one copy each to the Department of Labor and Industry and to the Department of Health, for review and conditional approval, subject to final acceptance after tests have been conducted to determine whether the control measure is effective in maintaining the concentration of toxic materials below those specified in this code.

**Statutory Authority:** *MS s 182.657*

## CONSTRUCTION

## 5205.0210 PRIVIES AT CONSTRUCTION AND ENGINEERING PROJECTS.

Privies shall be provided on all construction and engineering projects as provided for in the sanitation laws of Minnesota. Privies shall be placed inside of heated buildings wherever possible to do so. Where privies are not placed inside of heated buildings, provisions shall be made for heating privies to a minimum of heat that can be emitted from the installation of a 1,300 watt heater or other type equivalent heater.

**Statutory Authority:** *MS s 182.655*

## 5205.0220 SHIPS LADDERS.

Subpart 1. **Requirement.** Employers shall replace fixed and portable ladders with ships ladders whenever possible.

The angle of rise of ships ladders shall be between 50 and 60 degrees measured from the horizontal.

Subp. 2. **Soffits.** Where ladders are located one above the other, soffits shall be enclosed except where solid treads and risers are provided.

Subp. 3. **Treads.** The height between treads shall be eight to 12 inches. Tread surfaces other than steel grating shall be provided with skid resistance. Treads shall be flat steps with minimum of six inches in width and at least 24 inches long.

Subp. 4. **Handrails.** Handrails shall be provided on both sides of ladders and shall be placed to run parallel with stringers and be positioned 12 to 14 inches measured vertically, from the stringers. Handrail diameters shall be 1-1/4 to 1-5/8 inches o.d. When ships ladders serve door entrances, handrails shall continue to the door.

Subp. 5. **Stringers.** Ladder stringers shall be at least six inches in depth and permanently attached at terminations.

**Statutory Authority:** *MS s 182.655*

## 5205.0230 SHIPS LADDERS, SPECIAL REQUIREMENTS.

Ships ladders shall be provided in all buildings where mechanical equipment is located on the roof in order to make all equipment accessible to maintenance and inspection personnel. Ships ladders shall be placed at an angle between 50 and 60 degrees measured from the horizontal. The opening in ceilings and building roofs shall have a minimum area of nine square feet and a minimum width of two

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feet. No ships ladders shall be located in or pass through elevator shafts, elevator penthouses, or elevator machine rooms.

Inside a penthouse handrails shall continue through ceiling and roof openings to a distance of 36 inches. A guardrail and intermediate rail shall be provided on all open sides with a substantial chain guard on the entrance.

**Statutory Authority:** *MS s 182.655*

### 5205.0240 SPRAY PAINTING OF BUILDING EXTERIORS.

**Subpart 1. Nonflammable paints.** Where spray painters are applying nonflammable paint on walls, ceilings, fixtures, etc., at such time when employees other than painters are employed in or near such areas, safeguarding measures shall be taken to protect the lives and health of spray painters and others as per code:

A. Respiratory mouth and nose masks and/or fresh air hoods shall be provided for spray painters by employers at no cost to spray painters.

B. Such personal respiratory equipment shall meet the requirements of ANSI Z88.2-1969, Practices for Respiratory Protection.

C. Areas being spray painted shall be sealed off from other areas of the building by means of curtains. Employees other than painters shall not be required to work in such enclosed areas.

D. Such curtains shall have no openings except entry ways, which shall be kept closed during painting.

E. Cross-ventilation shall be provided to remove spray paint fumes from the enclosures to the outside air by means of either mechanical exhaust or window ventilation.

F. Provisions shall be made to prevent exhaust fumes from reentering any part of the building.

**Subp. 2. Flammable paints.** In addition to meeting the requirements of subpart 1, where flammable paints are being applied, parts 5205.0300, 5205.0310, and 5205.0320 shall be added.

All motors, lights, switches, and electrical appliances shall be deenergized. Exception: portable vapor proof lights may be used when located 20 feet or more from the painting area.

Air pollution control board should be consulted for any air pollution control measures required.

**Statutory Authority:** *MS s 182.655*

### 5205.0250 ENCLOSURES AT CONSTRUCTION OR ENGINEERING PROJECTS.

The ground actually occupied by the building construction operations or engineering project shall be shut off by an enclosure from places accessible to the public. The enclosure shall be such as to avoid any risk that might arise from the fall of any objects whatsoever. Places on the building site that are accessible to the workers shall be protected in a similar manner.

**Statutory Authority:** *MS s 182.655*

### 5205.0260 WARNING SIGNS AT CONSTRUCTION OR ENGINEERING PROJECTS.

Warning signs and red lights shall be conspicuously placed and maintained at all dangerous places on the job.

**Statutory Authority:** *MS s 182.655*

### 5205.0270 SIDEWALK SHEDS.

Whenever a building shall be erected or increased over two stories in height, or whenever a building of more than 25 feet in height is to be demolished upon any street of a municipality on which municipal regulations will not allow side-

walks to be blockaded, the owner, builder, or contractor constructing, repairing, or demolishing such building shall erect and maintain, during the period of such construction and repair, a shed which shall extend over not less than one-half the width of the sidewalk and shall have a minimum width of three feet. The side wall toward the building shall be sealed with boards. The roof over the shed shall be constructed to support the approximate load carried, but in no case shall the planks on the roof be less than two inches in thickness. The street side of the sidewalk shed shall have a hand and an intermediate rail.

**Statutory Authority:** *MS s 182.655*

#### 5205.0280 LIGHTS AT SIDEWALK SHEDS.

Every sidewalk shed shall be kept in good repair, free from unnecessary obstruction, and properly lighted at night. The ends of the sidewalk shed walk shall be marked with red lights on the street side.

**Statutory Authority:** *MS s 182.655*

#### 5205.0290 JOBSITE SHELTER.

**Subpart 1. Definitions.** "Suitable place" means an enclosed shed, designated area within a new or existing structure, or van, panel truck, or mobile home. A "man-day" is equivalent to one man working an eight-hour shift.

**Subp. 2. Scope.** The provisions of this standard apply to those construction projects which have exceeded 30 man-days.

**Subp. 3. Place to change and eat.** From November 1 to March 15 of each winter season, all construction jobs shall be provided with a suitable place for employees to change their clothes and eat their lunch.

**Subp. 4. Size.** The size of jobsite shelters shall be based on the maximum number of employees using the room at one time. The minimum space requirements, in square feet per person, shall be determined by the values as shown below:

- A. 25 or less, 13;
- B. 26 to 74, 12;
- C. 75 to 149, 11;
- D. 150 and over, 10.

**Subp. 5. Temperature.** Jobsite shelters shall be heated to a temperature of at least 50 degrees Fahrenheit during all periods when the shelter is occupied.

**Subp. 6. Contaminated clothing storage.** If toxic or harmful substances are handled so that work clothes become contaminated, facilities shall be provided so that street clothes and work clothes will not be stored in contact with each other.

**Subp. 7. Lighting.** Jobsite shelters shall be lighted with not less than ten footcandles of light.

**Subp. 8. Crew mobility.** The requirements of this standard can be met by furnishing transportation to a reasonably convenient location which meets the other requirements of this standard.

**Statutory Authority:** *MS s 182.655*

#### 5205.0300 WALKING-WORKING SURFACES.

**Subpart 1. Labeling floor or wall opening covers.** In those instances where floor or wall opening covers are used, they shall be labeled, "Floor Opening — Do Not Remove," or "Wall Opening — Do Not Remove" as applicable with lettering at least two inches in height and such covers shall be secured against accidental displacement.

**Subp. 2. Tripping and impaling hazards.** Where employees are exposed to tripping or impaling hazards caused by projecting conduit ends, reinforcing rods,

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pipe ends, or similar objects, these hazards shall be barricaded, guarded, or otherwise covered.

Subp. 3. **Construction stairways.** In addition to the requirements of Code of Federal Regulations, title 29, section 1926.501, semifinished permanent stairways or temporary stairways to a second floor are to be in place before supports or structure to the sixth floor are raised. Similarly, the supports or structure on multi-floored buildings shall never be more than five floors ahead of stairways.

On steel frame buildings, stairways shall extend to the uppermost floor that has been planked or decked. Ladders for access purposes may be used only above that point.

A second means of egress remote from the prime means of egress shall be provided, for emergency use, when any multi-floored structure reaches the 30-foot level or the fourth floor.

Ladders which meet the requirements of Code of Federal Regulations, title 29, section 1926.450 may be used as a second means of egress.

Subp. 4. **Multi-stage suspension scaffolds.** Multi-stage suspension scaffolds shall meet the requirements of Code of Federal Regulations, title 29, section 1926.451 (i) with the exception of section 1926.451 (i) (8).

In addition, the following requirements shall be met:

A. All multi-stage suspension scaffolds shall be equipped with at least one additional emergency support cable and automatic locking device at each end of the platform capable of supporting the work platform in the event one or both of the main suspension cables should fail.

B. The two additional emergency support cables required in item A, shall provide the required strength for a safety factor of six times the platform's intended load, including support for scaffold platforms, materials, tools, and employees working on the scaffold.

C. Employees shall tie off with a lanyard to the scaffold system in lieu of a lifeline to the building. The section of scaffold system or cable used by employees for attachment of lanyard, when tying off to the scaffold in lieu of a lifeline as required above, shall be capable of supporting at least six times the intended load.

**Statutory Authority:** *MS s 182.655*

### 5205.0310 DEMOLITION OPERATIONS.

The cutting or removal of reinforcing steel or cables that are suspending debris, or the removal of columns or studs that support debris, shall not take place in close proximity to any area where employees are working unless the area has been isolated by a protective enclosure separating the work area from falling or sliding debris.

**Statutory Authority:** *MS s 182.655*

### 5205.0320 HIGH VISIBILITY PERSONAL PROTECTIVE EQUIPMENT.

Employees exposed to vehicular traffic when the work area is on the driving lanes or on the shoulders or berms, or on the median adjacent to streets, highways, or roadways shall be provided with and required to wear warning vests or other high visibility garments. For work during the hours of darkness, this protective equipment must be made of or marked with reflectorized material.

Where permanent or semipermanent barricades are installed to protect employees from vehicular traffic, high visibility vests or other high visibility equipment are not required.

**Statutory Authority:** *MS s 182.655*

## STEAM BOILERS

## 5205.0330 STEAM BOILERS.

Subpart 1. **Scope.** The requirements of this item shall not apply to heating plants in buildings occupied solely for residence purposes, with accommodations therein not to exceed four families; to railroad locomotives; nor to railroad locomotive engineers employed by railroad companies.

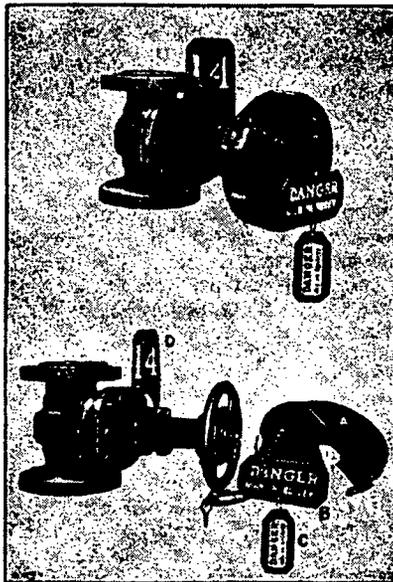
Subp. 2. **Definition.** Any steam boiler with a safety valve set to permit a pressure exceeding 15 pounds shall be considered a high-pressure steam boiler.

Subp. 3. **Safety valves.** Safety valves shall not discharge within seven feet of floor, platform, ground, or boiler top, across a passageway or foot-walk or in such a way as to endanger persons operating stop valves. The arrangement of piping must not be such as to create a back pressure on the safety valve.

Subp. 4. **Boiler blowoffs.** Open blowoffs shall not discharge within seven feet of floor, platform, or ground, across a passageway.

Subp. 5. **Exits from boiler room.** Safe exit from all parts of boiler room shall be provided by at least two stairways, ladders permanently fastened in place, or other means of exit.

Subp. 6. **Boiler valve locks.** An effective valve locking device is one which will prevent any motion of the valve stem, and which is so attached to the valve that it cannot be removed. When two or more boilers are connected to a common steam, feedwater, or blowoff line, at least one controlling valve in the connection from each boiler to each such common steam, feed-water, or blowoff line shall be equipped with an effective valve locking device; and whenever a person is working in any boiler of a battery, the steam, feed-water and blowoff valves shall be closed and locked.



Boiler Valve Lock

Subp. 7. **Nonreturn valves.** A nonreturn valve is one which will automatically close and prevent steam from the main line from flowing back into the boiler if the pressure in the latter should fall below that in the steam line. Where two or more boilers are connected to one steam line, a nonreturn valve shall be provided in the main steam connection of each boiler, either in addition to or combined with the regular stop valve.

**Statutory Authority:** *MS s 182.657*

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## ELEVATORS, DUMBWAITERS, ESCALATORS, AND MOVING WALKS

### 5205.0400 SCOPE.

The matters covered in this code shall include rules for passenger elevators, freight elevators, hoists, lifts, dumbwaiters, moving stairways, moving walks, or any mechanical device or apparatus, permanently installed and fixed in position in any building or structure except private residences, for the purpose of conveying people, animals, vehicles, merchandise, building materials, or any other load regardless of whether said load is to be conveyed above or below the grade line.

The rules given herein shall apply to the construction, installation, alteration, and operation of all such installations listed in the first paragraph of this part, which are constructed, installed, or altered within the limits of the state of Minnesota after July 7, 1980.

**Statutory Authority:** *MS s 182.655*

### 5205.0410 DEFINITIONS.

**Subpart 1. Existing elevator installation or moving stairway.** An "existing elevator installation or moving stairway" shall mean one on which construction was begun prior to July 7, 1980.

**Subp. 2. New elevator or moving stairway installation.** A "new elevator or moving stairway installation" shall mean one on which construction was begun after July 7, 1980.

**Statutory Authority:** *MS s 182.655*

### 5205.0420 EXISTING INSTALLATIONS.

**Subpart 1. Requirements.** All existing installations may be continued in service as long as they are properly maintained and are installed and maintained in a safe condition. The Department of Labor and Industry shall have the authority to shut down any piece of equipment covered by parts 5205.0400 to 5205.0490, which is dangerous to life, limb, and adjoining property, and such equipment shall not be put back into operation until such unsafe condition has been corrected and approved by the Department of Labor and Industry. Specific requirements for existing installations are:

A. Car gates: a door or gate shall be provided at each entrance to the car.

B. Car tops: tops of car enclosures shall be so designed and installed as to be capable of sustaining a load of 300 pounds on any square area two feet on a side and 100 pounds applied at any point. Simultaneous application of these loads is not required.

C. Car walls: all sides of the elevator car, except the sides used for entrance and exit, shall be permanently enclosed.

D. Hoistway enclosure: hoistways shall be enclosed throughout their height with material equivalent to the rest of the building construction.

E. Hoistway entrance guarding: all elevator hoistway landing openings shall be provided with entrances which shall guard the full width of the opening to not less than 72 inches in height.

F. Locking devices: passenger and freight elevators shall be equipped with hoistway-unit system hoistway door interlocks.

G. Car door or gate electric contacts: car doors or gates shall be provided with electric contacts conforming to Rule 111.5 of ANSI A17.1-1978.

H. Noncrushing astragals: a fire-resistive, nonshearing, and noncrushing member of either the meeting or overlapping type shall be provided on the upper panel of vertical opening hoistway doors to close the space between the rigid door sections when in contact with the stops.

I. Car safety and speed governors: the car of every elevator suspended by wire rope shall be provided with a car safety device attached to the lower member

of the car frame. On all elevators where travel exceeds two stories or 15 feet, car safeties shall be activated by speed governors.

J. Operating devices: all operating devices shall be of the enclosed electric type. Rope or rod operated devices activated by hand, or rope operating devices activated by wheels, levers, or cranks, shall be removed. Exception: this shall not be considered a material change.

Subp. 2. **Material changes.** Any installation which is materially changed after July 7, 1980, shall comply with all of the requirements covering a new installation. A material change shall be defined as any change which moves the location, increases or decreases the length of travel, changes the type of operation, increases the speed or carrying capacity, or changes the types of power supply of an existing installation.

Subp. 3. **Repairs or rebuilding required.** Any installation, whether new or existing, which shall become damaged, defective, or worn by fire or other causes including ordinary wear to such an extent that it becomes dangerous to life, limb, and adjoining property shall be repaired or rebuilt in conformity with the provisions of parts 5205.0400 to 5205.0490 for new installations. Such equipment shall be taken out of service until such unsafe condition has been removed.

**Statutory Authority:** *MS s 182.655*

#### 5205.0430 INSPECTIONS, TESTS, AND APPROVAL.

Subpart 1. **Approval of plan.** Any person, firm, or corporation desiring to install, relocate, alter materially, or extend any installation covered by parts 5205.0400 to 5205.0490 shall be required to obtain approval for so doing from the Department of Labor and Industry.

Subp. 2. **Inspections and tests.** It shall be unlawful for any person, firm, or corporation to put into service any installation covered by parts 5205.0400 to 5205.0490 whether such installation is newly installed, relocated, or altered materially without such installation being inspected and approved by the Department of Labor and Industry. The installer of any equipment included in parts 5205.0400 to 5205.0490 shall notify the Department of Labor and Industry seven days prior to completion of the installation for such inspection. The Department of Labor and Industry shall have the authority to require tests necessary to prove the safe operation of any installation providing these tests meet the requirements as outlined in ANSI A17.1-1978 and supplements.

Subp. 3. **Approval.** A certificate or letter of approval shall be issued by the Department of Labor and Industry for such installation when the entire installation is completed in conformity with parts 5205.0400 to 5205.0490. The entire installation shall include all enclosures or shafts, gates, doors, machinery safety and control devices, and all other appurtenances necessary.

**Statutory Authority:** *MS s 182.655*

#### 5205.0440 ACCIDENTS.

Subpart 1. **Notification.** The owner or person in control of an elevator or other installation covered by parts 5205.0400 to 5205.0490 shall promptly notify the Department of Labor and Industry of any accident to person or apparatus, on, about, or in connection with such elevator or other installation, and shall afford the Department of Labor and Industry every facility for investigating such accident and the damage resulting therefrom. Notification may be given to the Department of Labor and Industry by telephone or verbally, but such notification shall be confirmed in writing.

Subp. 2. **Investigation.** The Department of Labor and Industry shall make or cause to be made an investigation and the report of such investigation shall be placed on file in the office of the Department of Labor and Industry. Such report shall give in detail the cause or causes, so far as they can be determined, and such report shall be open to public inspection.

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**Subp. 3. Operation discontinued.** When an accident involves the failure or destruction of a part of the installation or the operation mechanism, the elevator or other installation shall be taken out of service and shall not be used again until it has been made safe and such reuse approved by the Department of Labor and Industry. The Department of Labor and Industry may, if deemed necessary, order the discontinuance of operation of any such elevator or installation until a new certificate of approval has been issued.

**Subp. 4. Removal of parts restricted.** No part of the damaged installation, construction, or operating mechanism shall be removed from the premises until permission is granted by the Department of Labor and Industry.

**Statutory Authority:** *MS s 182.655*

### 5205.0450 STANDARDS INCORPORATED BY REFERENCE.

The ninth edition of the American National Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks, ANSI A17.1-1978, including supplements A17.1a-1979, is hereby incorporated by reference and made a part of these Minnesota Department of Labor and Industry occupational safety and health rules.

**Statutory Authority:** *MS s 182.655*

### 5205.0460 EXCEPTIONS AND AMENDMENTS TO ANSI A17.1.

**Subpart 1. Winding drum machine.** Winding drum machines shall not be permitted on new elevator installations nor as replacements on existing installations.

**Subp. 2. Swing doors.** Horizontal swing doors, either single section or center opening two section, shall not be permitted on new elevator installations nor as replacements on existing installations unless the conditions are such as to make it impossible to install other than swing doors.

**Subp. 3. Side exits.** Side emergency exits on elevator cars shall not be permitted.

**Subp. 4. Solid bumpers.** Solid bumpers shall not be permitted on new installations nor as a replacement on existing installations.

**Subp. 5. Door unlocking devices.** Hoistway door unlocking devices shall not be permitted except at the bottom landings.

**A.** Top and bottom landings shall be provided with hoistway access switches conforming to rules 111.9b and 111.9c of ANSI A17.1-1978.

**B.** The door at the lowest landing shall be provided with a special key not easily duplicated and said key shall be available only to elevator mechanics and inspectors. The interlocks shall be designed and adjusted as to prevent movement of the car until after the door is closed and in the locking position.

**C.** The operating means for unlocking hoistway doors shall be kept on the premises by the person responsible for the maintenance and operation of the elevators in a location readily accessible to qualified persons in case of an emergency but where they are not accessible to the general public.

**Subp. 6. Door openings.** Elevator doors shall provide a clear opening of at least 32 inches.

**Subp. 7. Door closing speed.** Automatic closing doors shall have a closing interval of not less than three seconds except center opening horizontal slide doors.

**Subp. 8. Emergency elevators.** In each lobby served by elevators complying with ANSI rule 211.3 of the elevator code identified as ANSI A17.1-1978, all automatic-operation elevators serving three or more stories above or below the main floor or having a travel of 25 feet or more above or below the main floor, at least one elevator car serving all floors in a building shall have a platform size that is standard for the elevator supplier, and capable of accommodating an

ambulance stretcher in its horizontal position. The opening to the elevator car shall be capable of passageway for such ambulance stretcher.

**Subp. 9. Height of call buttons.** Exterior elevator call buttons shall be placed not higher than 60 inches above the floor. No emergency stop switch, door opening and door closing buttons, or elevator floor buttons shall be placed higher than 60 inches above the floor.

**Subp. 10. Standby power.** In every building over one story and more than 75 feet in height, emergency power shall be provided for at least one passenger elevator in each bank. This emergency power shall be transferable to any other elevator in the bank and shall be capable of operating the elevator with a full load at contract speed or not less than 150 feet per minute. Emergency power shall be provided by an approved self-contained generator set to operate whenever there is a loss of power in the normal power supply. The generator shall be in a separate room having at least a one-hour fire-resistive occupancy separation from the remainder of the building and shall have an on-site fuel supply adequate to operate the equipment for two hours. See Uniform Building Code Standard 18-1.

**Subp. 11. Emergency communications.** Every elevator car shall be provided with a two-way communication system connected to an approved emergency service which operates 24 hours every day.

**Subp. 12. Illumination.** A guarded light and convenience outlet shall be provided on the top and underside of each elevator car.

**Subp. 13. Limited use of an elevator.** When a building or structure is to be equipped with one or more elevators, at least one of such elevators may be approved for limited use prior to the completion of the building or structure. The use of such elevators may be permitted by the Department of Labor and Industry under the authority of a limited permit issued for each class of service. Such limited permit shall specify the class of service permitted and it shall not be issued until the elevator has been tested with rated load and the car safety and terminal stopping equipment has been tested to determine the safety of the equipment and until permanent or temporary guards or enclosures are placed on the car and around the hoistway and at the landing entrance on each floor. Landing entrance guards shall be provided with locks that can be released from the hoistway side only. Automatic and continuous pressure elevators shall not be placed in a temporary operation from the landing push buttons unless door locking devices and/or interlocks are installed and operative.

**Subp. 14. Dumbwaiters and hand-powered elevators.** All dumbwaiters and hand-powered elevators shall be equipped with a broken rope safety device.

**Subp. 15. Car safety mechanism switch.** Car safety mechanism switches shall be of the manually reset type.

**Subp. 16. Hoistway door protection in passenger elevators.** Hoistway doors on all passenger elevators shall not be solely dependent upon the door edge reopening device for protection from the doors closing on an obstruction, but shall also be provided with an approved light beam or electronic door protection device.

**Subp. 17. Emergency keys.** All keyed switches installed to operate elevators on emergency service will be required to be keyed alike to a pattern approved by the Department of Labor and Industry. In lieu of the above, keys for emergency elevator service may be in a metal box placed in a location approved by the Department of Labor and Industry, provided said box is locked with a five-pin tumbler core lock or equivalent which is keyed to the same pattern.

**Subp. 18. Special requirement.** One car in each bank of automatic-operation elevators serving five or more floors above or below the main floor or having a travel of 50 feet or more above or below the main floor shall meet the requirements of rule 211.3a of ANSI A17.1-1978.

**Subp. 19. Vents required.** Hoistways of elevators serving more than three

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floors shall be provided with means for venting smoke and hot gases to the outer air in case of fire. Vents may be manually openable or remote control automatic vents. They shall be located in the wall or roof of the penthouse or overhead machinery space above the roof. Vents passing through machine rooms must be in noncombustible ducts. When a vent is installed in the roof of the hoistway, a protective grill shall be provided to prevent persons from falling into hoistway.

**Statutory Authority:** *MS s 182.655*

### **5205.0470 STAGE AND ORCHESTRA LIFTS.**

Stage and orchestra lifts shall be designed, installed, constructed, and maintained so as to be reasonably safe to life, limb, and adjoining property and shall be approved by the Department of Labor and Industry prior to installation or construction.

**Statutory Authority:** *MS s 182.655*

### **5205.0480 MECHANIZED PARKING GARAGE EQUIPMENT.**

Mechanized parking garage equipment shall be designed, constructed, installed, and maintained so as to be reasonably safe to life, limb, and adjoining property, and shall conform to the standards specified in the American Standard Safety Code for Mechanized Parking Garage Equipment ANSI A113.1-1964 (R1971).

**Statutory Authority:** *MS s 182.655*

### **5205.0490 WHEELCHAIR ELEVATING DEVICES.**

Wheelchair elevating devices shall conform to the requirements of State Building Code, parts 1320.2500 to 1320.2700.

**Statutory Authority:** *MS s 182.655*

## **PLATFORM MANLIFTS**

### **5205.0550 INSTALLATION LIMITATIONS.**

Subject to the approval of the Department of Labor and Industry, manlifts may be installed in buildings where such manlifts are not accessible to the public and where their installation and use are safe. Such manlifts shall comply with the safety requirements set out in this part:

A. The use of manlifts shall be restricted to employees and authorized persons who are trained in their use. New employees shall be individually and properly instructed in the use of manlifts.

B. The area adjoining the floor opening shall be kept clear and adequately lighted at all times.

C. Signs shall be posted at a conspicuous position on each landing, at approximately eye level, indicating "Authorized Personnel Only."

**Statutory Authority:** *MS s 182.655*

### **5205.0560 INSPECTION.**

Before final approval, an inspection of each new or relocated manlift shall be made by the Department of Labor and Industry.

**Statutory Authority:** *MS s 182.655*

### **5205.0570 TYPES OF MANLIFTS.**

Manlifts may be of the following types: hand-powered platform passenger type manlifts or special purpose personnel elevators.

**Statutory Authority:** *MS s 182.655*

### **5205.0580 HAND-POWERED PLATFORM PASSENGER TYPE MANLIFTS.**

Subpart 1. **Requirement.** Hand-powered platform passenger type manlifts shall conform to the following requirements.

Subp. 2. **Sill clearance.** The clearance between the platform and the landing shall be not more than 1-1/2 inches nor less than three-fourths inch.

Subp. 3. **Guarding of access openings.** Access openings shall be guarded by semiautomatic vertical sliding gates or by self-closing swing gates. Such gates shall be equipped with a top crossmember not less than 42 inches above the floor, a bottom crossmember not more than one-half inch above the floor, and with at least one intermediate crossmember. The gates shall be placed within four inches horizontally from the landing sill.

Subp. 4. **Shaftway enclosures.** All unused sides of the shaftway shall be enclosed to a height of at least eight feet above the floor.

Subp. 5. **Ladders.** A fixed ladder shall be installed in the shaftway accessible from the manlift at any point within its travel to provide a means of exit from the elevator hatchway.

Subp. 6. **Car sides.** The car shall be enclosed to a height of at least 42 inches on all sides not used for entrances.

Subp. 7. **Car construction.** Car frames and platforms shall be of metal or sound-seasoned wood designed with a safety factor of not less than four for metal construction and six for wood construction based on the rated load uniformly distributed. Connections between frame members of the car frame and platform shall be riveted, bolted, or welded.

Glass shall not be used on any part of the frame or enclosure.

Subp. 8. **Counterbalancing of cars.** Cars counterbalancing each other shall not be permitted.

Subp. 9. **Car safety device.** All cars shall be provided with a car safety device attached to the top or bottom of each car frame capable of stopping and sustaining the car and its rated load. The car safety device is not required to be operated by a speed governor and may be of the instantaneous type operated as a result of the breaking or slackening of the suspension members.

Subp. 10. **Compensating cable.** Where the travel exceeds 40 feet, compensating cables or chains properly guided shall be provided.

Subp. 11. **Load capacity.** The rated load capacity shall not exceed 300 pounds. Only one person shall be permitted to ride elevator at a time. The movement of freight or materials on elevator is prohibited.

Subp. 12. **Load tests.** A rated load test and a test of the car safety device with rated load in the car shall be made on each new or relocated installation before it is placed in service.

Subp. 13. **Guide rails.** Cars and counterweights shall be provided with steel guide rails or straight grained seasoned wood free from knots, shakes, dry rot, or other imperfections.

Subp. 14. **Guide rail fastenings.** Guide rails shall be securely fastened with throughbolts or clips of such strength, design, and spacing that:

A. the guide rails and their fastenings shall not deflect more than one-quarter inch under normal operation;

B. the guide rails and their fastenings shall withstand the application of the safety when stopping the car with rated load under free-fall conditions;

C. car and counterweight guide rails shall rest on suitable supports and extend at the top of the hoistway sufficiently to prevent the guide shoes from running off the guide rails in the case of the car on counterweight traveling beyond the terminal landings.

Subp. 15. **Car counterweights.** When counterweight sections are used, they shall be secured by at least two tie rods passing through holes in each section. The rods shall have lock nuts at each end secured by cotterpins.

Subp. 16. **Factors of safety.** The factor of safety, based on static loads, to be used in the design of driving machines and sheaves shall not be less than eight for wrought iron or rod steel and ten for cast iron or other materials.

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Subp. 17. **Car brake.** Each car shall be equipped with a manual dead-man type brake which operates in either direction of travel and is capable of stopping and holding the car with its rated load at any point in its limit of travel.

Subp. 18. **Overhead beams.** Overhead beams and their supports shall be designed to withstand the static load plus twice the suspended load without deflection exceeding the stress of the materials used.

Subp. 19. **Machine access.** Adequate and permanent means of access shall be provided to all equipment for maintenance and inspection.

Subp. 20. **Power driving mechanism.** Power driving mechanisms shall not be attached to or made part of any hand powered elevator.

Subp. 21. **Suspension cables.** Suspension means shall consist of not less than two wire ropes of not less than one-half inch diameter each.

Subp. 22. **Sheaves.** All hoisting and counterweight sheaves shall have a diameter of at least 40 times the diameter of the cable passing over them.

Subp. 23. **Cable fastenings.** Car and counterweight cable ends, except such fastenings as are required for compensating cables or chains, shall be fastened by passing through tapered and babbitted sockets with the same requirements of those for power elevators or secured by approved clamp or special fastening devices conforming to the following:

A. clamps shall not be of the U-bolt type;

B. both members of the clamps shall be provided with seats conforming with the lay of the rope;

C. clamps shall be drop forgings; and

D. ropes shall be passed around metal thimbles.

Subp. 24. **Operating rope.** The operating rope may pass through the car crossheads if a guard to prevent entry of the hand is provided.

Subp. 25. **Car locking devices.** A separate locking device, independent of the manual brake, that will hold the car and its rated load at each landing shall be provided. This device may be either manual or automatic.

Subp. 26. **Counterweight guarding.** The counterweight shall be fully enclosed for the full length of its travel, except for an inspection section at the lower limit of travel. The inspection section shall be large enough only to inspect the fastenings and be covered with a screen or mesh which will reject a two-inch ball.

Subp. 27. **Shaftway illumination.** Shaftway illumination shall be adequate to enable the operator to have full view of all obstructions and hazards which might possibly cause injury.

Subp. 28. **Bumper springs.** Bumper springs shall be provided either on the top of the car or on the bottom of the sheave supports and shall be of sufficient strength to absorb the impact of the car and its load.

Subp. 29. **Car counterbalance weights.** If weights are to be used to properly counterbalance car, a suitable box or container shall be mounted firmly in the elevator car to contain such weights while in use.

Subp. 30. **Car gate.** A car gate or guardrail 42 inches from car floor capable of withstanding a lateral pressure of 250 pounds without causing structural failure shall be provided.

Subp. 31. **Pit buffers.** Spring buffers of such a design and construction as to absorb the energy of the car with a capacity load shall be provided at the lowest limit of travel.

**Statutory Authority:** *MS s 182.655*

### 5205.0590 SPECIAL PURPOSE PERSONNEL ELEVATORS.

Special purpose personnel elevators may be installed providing they comply with the requirements included in ANSI A17.1-1978, Part XV, Special Purpose Personnel Elevators.

**Statutory Authority:** *MS s 182.655*

**MAINTENANCE AND REPAIR OF BUILDINGS AND EQUIPMENT**

**5205.0650 SCOPE.**

Parts 5205.0650 to 5205.0700 apply to building and in-plant maintenance and repair necessary to maintain buildings and equipment in safe operating condition. They are not intended to cover construction of new buildings or equipment.

**Statutory Authority:** *MS s 182.655*

**5205.0660 MAINTENANCE GOALS.**

Buildings shall be maintained so as to assure that no loose parts or equipment including bricks, mortar, glass, wood, or cement parts can fall in passage or work areas occupied by employees.

Catwalks, platforms, walkways, and stairways shall be maintained in a condition free from the hazards associated with ice, snow, overhanging ice or snow, holes, loose members, or badly deteriorated or corroded members.

**Statutory Authority:** *MS s 182.655*

**5205.0670 BLOCKING AND CRIBBING MACHINERY.**

Heavy machinery, equipment, or parts thereof which are suspended or held aloft by slings, cables, chains, jacks, or hoists shall be blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between the members of the equipment.

Elevated bulldozer and scraper blades, power crane booms, end loader buckets, dump truck boxes, and similar equipment shall be fully lowered or adequately blocked or cribbed before being serviced or repaired.

**Statutory Authority:** *MS s 182.655*

**5205.0680 LOCKOUT DEVICES.**

Any main electrical power disconnect means which controls a source of power or material flow shall be locked out with a lockout device whenever employees are maintaining, cleaning, adjusting, or servicing machinery or equipment, if such disconnect is not in clear sight of the employee. A "Do Not Start" tag as described in Code of Federal Regulations, title 29, section 1910.145 (f) (3) shall be affixed to any and all operating controls.

The pressure shall be eliminated from any pneumatic and hydraulic lines which activate a mechanism or machine and the valve holding back the activating substance shall be locked out before an employee works on that mechanism or machine.

Mechanisms under spring tension or compression shall be blocked, clamped, secured in position, or the compression or tension totally relieved before being worked on by an employee.

Suspended mechanisms or parts that normally cycle through a lower position shall be lowered to the lowest position, be clamped, blocked, or otherwise secured in position before being worked on by an employee.

Where more than one employee is engaged in working on machinery or equipment, each employee shall affix their individual lockout device or lock to the disconnect switch or power supply.

Utility companies, when working on lines and equipment, will be exempt from this standard but must comply with the requirements of Code of Federal Regulations, title 29, section 1926.950(d).

**Statutory Authority:** *MS s 182.655*

**5205.0690 LUBRICATION OF MOVING MACHINERY.**

Machinery or equipment shall be shut down during manual lubrication unless lubrication fittings are safeguarded.

**Statutory Authority:** *MS s 182.655*

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### 5205.0700 WIRE ROPE CLIPS.

Wire rope clips attached with U-bolts shall have the U-bolts on the dead or short end of the rope.

Clips shall be made of drop forged steel. When a newly installed rope has been in service for one hour, all nuts on the clip bolts shall be retightened.

Spacing and number of clips shall be in accordance with the table below:

Rope Diameter Inches	Number of Clips Drop Forged	Minimum Spacing (inches)
1/2	3	3
5/8	3	3-3/4
3/4	4	4-1/2
7/8	4	5-1/4
1	5	6
1-1/8	6	6-1/4
1-1/4	6	7-1/2
1-3/8	7	8-1/4
1-1/2	7	9

**Statutory Authority:** *MS s 182.655*

## VEHICLES

### 5205.0750 MOTORIZED SELF-PROPELLED VEHICLES.

Subpart 1. **Scope.** This section applies to:

A. all motorized, self-propelled vehicles used off the highway including industrial type trucks, crawler equipment, and rubber-tired vehicles;

B. emergency vehicles including trucks, snow plows, road maintenance vehicles, and related equipment; and

C. service trucks including garbage compactors.

These parts shall not apply to vehicles with less than a 20 HP motor.

Subp. 2. **General requirements.** Motorized, self-propelled vehicles shall meet the requirements of Code of Federal Regulations, title 29, sections 1926.600, 1926.601, and 1926.602.

Subp. 3. **Transportation of employees.** Vehicles being used to transport employees shall be equipped with a seating arrangement securely anchored, a rear end gate, a guardrail and steps or a ladder for mounting and dismounting.

Under no circumstances shall any employee be allowed to ride in a standing position or with arms or legs outside of the truck body, or seated on the side fenders, cabs, cabshields, rear of truck, or on the load unless such a position is dictated by a job assignment.

No explosives, flammable materials (excepting normal fuel supply), or toxic substances shall be transported in the passenger carrying area of vehicles carrying employees.

No vehicle transporting employees shall be moved until the driver has ascertained that all employees are seated and required guardrails and end gates are in place and doors closed.

No employee shall be allowed to get on or off any vehicle while it is in motion.

Subp. 4. **Vehicle inspection.** The Code of Federal Regulations, title 29, section 1926.601 (b) (14) shall apply to all vehicles covered in Code of Federal Regulations, title 29, section 1926.602.

**Statutory Authority:** *MS s 182.655*

### 5205.0760 POWERED INDUSTRIAL TRUCK OPERATIONS.

All industrial trucks designed and constructed for use on solid hard level surfaces shall be restricted to such operations.

All solid hard level surfaces must be free of cracks, irregularities, or holes that could upset the balance of the industrial truck.

When a fork truck operator is positioning a load in an area which is not fully visible to the fork truck operator, the operator shall be assisted by a designated person who shall direct the safe placing of the load by using predetermined signals.

**Statutory Authority:** *MS s 182.655*

#### **5205.0770 GREASE RACKS, HOISTS, AND PITS.**

Vehicles shall not be supported on jacks or held suspended by ropes, chains, or cables but shall be supported by adequate blocking or cribbing or set on supports designed for that purpose.

Employees shall not be allowed to stand directly in front of self-propelled vehicles while directing the vehicle onto the hoist or pit, or to work in front of a moving vehicle unless a crib or barricade, adequate to stop the vehicle, is between the employee and the moving vehicle. The crib or barricade shall not in itself create any additional hazards to the employees.

A space of two feet or more shall be provided as working clearance between the sides of a vehicle on a floor hoist and any wall surface.

On automotive hoists, an automatic mechanical device having a safety factor of three based on the manufacturer's rated load capacity shall be provided to hold the lift in the fully extended position at the manufacturer's rated load capacity.

**Statutory Authority:** *MS s 182.655*

### **MACHINE GUARDING**

#### **5205.0850 PNEUMATIC POWER TOOLS.**

All pneumatically driven nailers, staplers, and other fastening equipment provided with automatic fastener feed shall have a safety device on the muzzle which is designed to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.

**Statutory Authority:** *MS s 182.655*

#### **5205.0860 MACHINES WITH REVOLVING PARTS.**

**Subpart 1. Scope.** The provisions of this part shall apply to extractors, mixers, mullers, and centrifuges.

Nothing in this part shall apply to equipment used in research laboratories or equipment with less than one-quarter HP driving motors.

Nothing in this part shall apply to any machine which must be hand-fed where the feed opening is protected either by a guarded hopper or automatic feed system which prevents the operator from reaching into the point of operation.

**Subp. 2. Requirements.** Each machine shall be fully guarded with a cover, hatch, or grate with an interlocking device that will prevent the cover, hatch, or grate from being opened while the rotating parts are in motion, and will also prevent the power operation of the machine while the cover, hatch, or grating is not fully closed and secured.

Each machine shall be effectively secured in position on the floor or foundation so as to eliminate unnecessary vibrations.

The manufacturer's recommended speeds shall be stamped on the machine, and located where they are readily visible in letters not less than one-quarter inch in height. The maximum permissible speed shall be given in revolutions per minute (RPM).

**Statutory Authority:** *MS s 182.655*

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SAFETY AND HEALTH STANDARDS 5205.0940

## SMOKING IN THE WORK PLACE

### 5205.0900 STATUTORY AUTHORITY.

Parts 5205.0900 to 5205.0950 are promulgated pursuant to authority granted to the Minnesota Department of Labor and Industry by the provisions of Laws of Minnesota 1975, chapter 211, section 4, and may be cited as parts 5205.0900 to 5205.0950.

**Statutory Authority:** *MS s 144.414*

### 5205.0910 PURPOSE.

Laws of Minnesota 1975, chapter 211, section 4, relating to smoking in public places and at public meetings, excludes from its provisions, factories, warehouses, and similar places of work not usually frequented by the general public. At the same time, Laws of Minnesota 1975, chapter 211, section 4 directs the Department of Labor and Industry to establish rules to restrict or prohibit smoking in those places where the close proximity of workers or the inadequacy of ventilation causes smoke pollution detrimental to the health and comfort of nonsmoking employees. The purpose of parts 5205.0900 to 5205.0950 is to implement that provision and provide clarification of the scope and extent of employers' obligations relating thereto and to safeguard the nonsmoking employee's health and comfort within reasonable regulation of his working environment without serious disruption of the work activities at his place of work.

Parts 5205.0900 to 5205.0950 are intended to implement the provision in Laws of Minnesota 1975, chapter 211, section 4, which pertains to factories, warehouses, and similar places of work.

**Statutory Authority:** *MS s 144.414*

### 5205.0920 SCOPE.

Parts 5205.0900 to 5205.0950 apply to "factories, warehouses, and similar places of work" not usually frequented by the general public. Parts 5205.0900 to 5205.0950 apply where the close proximity of workers or the inadequacy of ventilation causes smoke pollution detrimental to the health or comfort of nonsmoking employees. Nothing in parts 5205.0900 to 5205.0950 shall be construed to affect, in any way, smoking prohibitions imposed by the fire marshal or other laws, ordinances, or rules.

**Statutory Authority:** *MS s 144.414*

### 5205.0930 DEFINITIONS.

**Subpart 1. Factories, warehouses, and similar places of work.** For the purposes of Minnesota Statutes, section 144.414, "factories, warehouses, and similar places of work" shall mean the indoor area of any facility of an enterprise used principally to manufacture or assemble goods, products, or merchandise for sale, or to store goods, products, or merchandise not for the purpose of direct retail sale, and shall include those areas incidental but related to the primary operation covered by these regulations.

**Subp. 2. Smoke pollution.** As used in parts 5205.0900 to 5205.0950, "smoke pollution" shall mean that smoke caused by a lighted cigar, cigarette, pipe, or any other lighted smoking substance or equipment.

**Statutory Authority:** *MS s 144.414*

### 5205.0940 STANDARDS.

**Subpart 1. Employer's duty.** An employer who prohibits smoking in areas utilized by nonsmoking employees shall be considered to have complied with parts 5205.0900 to 5205.0950. Lacking that, subparts 2 and 3 apply.

**Subp. 2. Lunchrooms, cafeterias, lounge, or rest areas provided for employees.** In a lunchroom, cafeteria, lounge, or rest area provided for the employees and not

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## 5205.0940 SAFETY AND HEALTH STANDARDS

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open to the general public, the employer or person in charge shall reserve one side or area of the room for the sole use of nonsmokers and shall minimize the toxic effects of smoke pollution in that area. The size of such nonsmoking area shall be proportional to employee preference. The employer or person in charge shall maintain records which document employee preference.

**Subp. 3. General work area.** Upon complaint of an employee that the close proximity of workers or inadequate ventilation is causing smoke pollution detrimental to his or other nonsmoking employees' health and comfort, the employer or person in charge shall determine the causative factors of the smoke pollution.

If the employer or person in charge finds that the smoke pollution is due to the close proximity of workers or the inadequacy of ventilation, he shall minimize the toxic effects of the smoke pollution on nonsmokers. The employer or person in charge shall maintain records which document the actions taken on complaints received.

**Statutory Authority:** *MS s 144.414*

## 5205.0950 MINIMIZING TOXIC EFFECTS OF SMOKE POLLUTION.

To the extent possible without unreasonable interference with the business operation, efforts to minimize the toxic effects of the smoke pollution on nonsmokers shall include, but need not be limited to, the following:

- A. utilization of existing physical barriers;
- B. utilization of the flow of air movement, so that insofar as possible, smoke shall move away from nonsmokers; and
- C. arrangement of seating or work patterns for separation of smokers and nonsmokers.

**Statutory Authority:** *MS s 144.414*