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# **OREGON OCCUPATIONAL SAFETY AND HEALTH CODE**

(Oregon Administrative Rules, Chapter 437)

Division 81

## **AGRICULTURAL OPERATIONS AND FARMING**

Effective June 15, 1977

(As amended through February 1, 1993)



**OREGON OCCUPATIONAL  
SAFETY AND HEALTH DIVISION  
(OR-OSHA)  
DEPARTMENT OF INSURANCE AND FINANCE  
Salem, Oregon 97310**

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The Oregon Department of Insurance and Finance adopted these rules pursuant to ORS 654.025(2).

The Secretary of State Designated OAR Chapter 437 as the "Oregon Occupational Safety and Health Code." Individual subjects within this code are designated as "Divisions."

Rules in this division of the Oregon Occupational Safety and Health Code are numbered in a uniform system developed by the Secretary of State. This system does not number the rules in sequence (001,002, 003, etc.). Omitted numbers may be assigned to new rules at the time of their adoption.

A list of all occupational safety and health codes for the State of Oregon is available upon request.

To obtain this list or copies of these codes, address:

Oregon Occupational Safety and Health Division  
Department of Insurance and Finance  
1st Floor, Labor and Industries Building  
Salem, Oregon 97310

The rules referenced in this division are available for viewing in the Office of the Secretary of State, 121 State Capitol Building, Salem, Oregon 97310, or the Central Office, Oregon OSHA Division of the Department of Insurance and Finance, 1st Floor, Labor and Industries Building, Salem, Oregon 97310.

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Oregon Administrative Rules are arranged in the following Basic Codification Structure adopted by the Secretary of State:

Chapter	Division	Rule	Section	Subsection	Paragraphs
437	40	010	(1)	(a)	(A) (I) (I) (a) (A) (I) (I)

NOTE: Date at the bottom of each page reflects the effective date of the most recent rule amendment on that page.

█ A vertical line in the margin indicates a rule has been amended since the last printing of this codebook. Insert pages with amended rules will also contain vertical lines to identify changed areas.

## Division 81

# AGRICULTURAL OPERATIONS AND FARMING

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**Appendix -- Listing of Agricultural Production Enterprises which Comprise the Farming Industry (Standard Industrial Classification)**

1. Name of the donor: [Faint text]

2. Name of the donee: [Faint text]

3. Description of the property: [Faint text]

4. Value of the property: [Faint text]



## Division 81

# AGRICULTURAL OPERATIONS AND FARMING

### GENERAL PROVISIONS PURPOSE, SCOPE, APPLICATION AND DEFINITIONS

#### Purpose

**437-81-001** The purpose of this division is to prescribe reasonable rules to assure as far as possible safe and healthful working conditions for employes engaged in farming activities. Authority for promulgation and enforcement of these rules is contained in ORS 654.003 through ORS 654.295. (Formerly 33-1-1)

#### Scope

**437-81-002(1)** The rules contained in this division shall apply to every place of agricultural employment. All agricultural employers, workers, and other persons shall obey and comply with these rules and regulations, and shall abide by all safety orders issued by the Board or its authorized representatives. The rules in this division are minimum. More stringent rules may be required in unusual circumstances, if necessary to protect the physical safety of workers. (Formerly 33-1-2 & 3)

(2) Rules on labor camps in OAR 437, Division 2, Subdivision J, General Environmental Controls, OAR 437-02-142, Labor Camps, shall apply to agricultural operations.

Hist: WCB Admin. Order No. 1-75, f. 1/24/75, ef. 3/31/75.  
WCB Admin. Order 5, 1977, f. 4/20/77, ef. 6/15/77.  
OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.

#### Application

**437-81-003** The right of inspection and examination at any time is reserved by the Board. Terms used in this division, other than those specifically defined, shall be interpreted in the most commonly accepted sense as used in production agriculture. (Formerly 33-1-4 & 5)

#### Definition

**437-81-004** The following general definitions apply to terms used in this division. Definitions applicable to specific subjects are contained within those specific areas.

(1) Adequate--Sufficient for the required purpose. (Formerly 33-1-6)

(2) Capacity--The maximum load or severity of service to which a tool, machine, equipment, structure, or material may be subjected without failure either to safely accommodate the loading, or by deformation, separation or fracture. (Formerly 33-1-7)

(3) Employee--Any individual, whether lawfully or unlawfully employed, who engages to furnish his services for a remuneration, financial or otherwise,

subject to the direction and control of an employer. It includes any individual who is provided with worker's compensation coverage pursuant to ORS Chapter 656, whether by operation of law or by election. As used in this division, employe and worker are synonymous. (Formerly 33-1-8)

(4) Employer--Any person engaged in production agriculture who has one or more employes; or any sole proprietor or member of a partnership who elects worker's compensation coverage as a subject worker pursuant to ORS 656.128. (Formerly 33-1-9)

(5) Equipment--Machines, machinery, tools, devices, safeguards, and protective facilities used in connection with the operation and maintenance of an agricultural production enterprise. (Formerly 33-1-10)

(6) Farming--Agricultural production of field crops, fruits and nuts, horticultural specialties, livestock, and animal specialties of all types. "Farming" includes agricultural services such as soil preparation, planting, cultivating, crop protection, harvesting and crop preparation for market. "Farming" includes veterinary and other services to animals, farm labor and management services, landscaping and horticultural services, ornamental shrub and tree services, and greenhouse operations. A detailed listing of farming i.e., Agricultural Production Enterprises is contained in the Appendix. (Formerly 33-1-11)

NOTE: Throughout this division the term "farming," "agriculture" and "production agriculture" are synonymous.

(7) Place of employment--Every place, whether fixed or movable or moving, whether indoors or out or underground, and the premises and structures appurtenant thereto, where either temporarily or permanently an employe works or is intended to work. It includes every place where there is carried on any activity related directly or indirectly to an employer's business, including a labor camp provided by an employer for his employes or by another person engaged in providing living quarters or shelters for employes. (Formerly 33-1-12)

NOTE: Place of employment does not include any place where the only employment involves nonsubject workers employed in or about a private home.

(8) Safeguard--Any form of safety device, equipment, personal protective equipment, guard, barricades, warning, danger sign, method or process prescribed or adopted for the protection of an employe. (Formerly 33-1-13)

(9) Shall and must--Used to indicate those actions, measures, steps or conditions specified or prescribed in this division which are mandatory. (Formerly 33-1-14)

(10) Substantial--Constructed with sufficient strength or installed so as to provide ample support to withstand loads to which the structure or device may be subjected. (Formerly 33-1-15)

## MISCELLANEOUS PROVISIONS: RESPONSIBILITIES OF EMPLOYER AND EMPLOYEES

### Miscellaneous Provisions

**437-81-006** Warning signs, danger signs, warning flags, warning lights, or similar devices shall be conspicuously posted at all locations where existing conditions not otherwise adequately guarded warrant their use. (Formerly 33-1-16)

**437-81-009** Any safeguard or device that is required by any rule in this division shall be maintained in operable condition to perform its intended function; and it shall be used to perform its intended function. (Formerly 33-1-17)

**437-81-013** Protective barriers or suitable guards shall be erected when covers over openings are removed or excavations made in places which are accessible to workers or to vehicles. (Formerly 33-1-18)

**437-81-016** The use of intoxicating liquor or mind altering drugs on the job is prohibited. Anyone whose ability to work safely is impaired by alcohol, drugs, or medication shall not be allowed on the job while in that condition. (Formerly 33-1-19)

**437-81-019** There must be no horseplay, scuffling, practical jokes, or any other activity of a similar nature. (Formerly 33-1-20)

### Employers' Responsibilities

**437-81-023** Every employer shall furnish employment and a place of employment which are safe and healthful for employes therein, and shall furnish and use such devices and safeguards, and shall adopt and use such practices, means, methods, operations and processes as are reasonably necessary to render such employment and place of employment safe and healthful, and shall do every other thing reasonably necessary to protect the life, safety and health of such employes. (Formerly 33-1-21)

NOTE: The above rule is an extract of ORS 654.010.

**437-81-026** The employer shall insure that every worker is qualified, capable, and competent to:

(a) Safely perform any process or practice in which he will be involved; and

(b) Safely operate any machinery, tools, or equipment which he is intended to operate. (Formerly 33-1-22)

**437-81-029** Employes shall be required to demonstrate their competence to safely perform assigned duties. (Formerly 33-1-23)

**437-81-033** The employer shall provide supervision over employes adequate to insure and enforce compliance with safe operating procedures and prac-

tices in every activity of employment. (Formerly 33-1-24)

NOTE: It is not the meaning of this rule to require a supervisor on every facet of any operation, nor to prohibit workers from working alone.

\* **437-81-036** The employer shall take all reasonable means to require employes:

(1) To work and act in a safe and healthful manner;

(2) To conduct their work in compliance with all applicable safety and health rules;

(3) To use all means and methods, including but not limited to, ladders, scaffolds, guardrails, machine guards, safety belts and lifelines, that are necessary to safely accomplish all work where employes are exposed to a hazard;

(4) Not to remove, displace, damage, destroy or carry off any safety device, guard, notice or warning provided for use in any employment or place of employment while such use is required by applicable safety and health rules.

NOTE: "Reasonable means" shall be defined as: "means which would be taken by a prudent person familiar with the circumstances of the industry to perform any function in a safe and healthful manner."

(Adopted temporarily, effective May 5, 1976, by WCB Admin. Order, Safety 11-1976. Adopted permanently 7-6-76 by WCB Admin. Order, Safety 15, 1976; filed 7-6-76; effective 8-1-76. (Formerly 33-1-24.1)

**437-81-039** A procedure prudent to the type of operation shall be used to check on the well-being of workers whose duties require them to work alone or in isolated circumstances. All workers shall be instructed as to the procedure. (Formerly 33-1-25)

NOTE: A two-way system of signals which is thoroughly understood by both parties, or other form of two-way communication may be used. Motor noise is not acceptable as contact or as an indication of well-being.

### Employment of Minors

**437-81-043** Work assignments and duties assigned to employes under 18 years of age shall be restricted to those for which the employe is specifically authorized under current Oregon Bureau of Labor rules. (Formerly 33-1-26)

NOTE: Interested persons may obtain information on current regulations governing the employment of minors from their local branch office of the Oregon Bureau of Labor, or by writing to:

Wage and Hour Division  
Oregon Bureau of Labor  
Labor & Industries Bldg.  
Salem, Oregon 97310

### Inspections

**437-81-046** All places of employment shall be inspected by a qualified person or persons as often as the type of operation or the character of the equipment requires. Defective equipment or unsafe

\*A vertical line beside a rule indicates that the rule is new or amended.

conditions found by these inspections shall be replaced, repaired or remedied promptly. (Formerly 33-1-27)

### Extraordinary Hazards

**437-81-049** When conditions arise that cause unusual or extraordinary hazards to workers, additional means and precautions shall be taken to protect workers or to control hazardous exposure. If the operation cannot be made reasonably safe, regular work shall be discontinued while such abnormal conditions exist, or until adequate safety of workers is ensured. (Formerly 33-1-28)

### Investigation of Injuries

**437-81-053** Each employer shall investigate every lost time injury that his workers suffer in connection with their employment, to determine means to prevent recurrence. He shall promptly install any safeguard or take any corrective measure indicated or found advisable. (Formerly 33-1-29)

### Employes' Responsibilities

NOTE: Additional safety rules for employes are contained in other rules within this division.

**437-81-056** A foreman, supervisor, or person in charge of work is held to be the agent of the employer in the discharge of his authorized duties.

(1) As a supervisor, he shall insure that those persons under this supervision comply fully with the rules of this division.

(2) Since he is an employe as well, he shall comply fully himself with the rules of this division. (Formerly 33-1-30)

**437-81-059** Employes shall conduct their work in compliance with the safety rules contained in this division. (Formerly 33-1-31)

**437-81-063** All injuries shall be reported immediately to the person in charge or other responsible representative of the employer. (Formerly 33-1-32)

**437-81-066** Workers shall not remove, displace, deface, damage or destroy any warning, danger sign, guard, barricade, safety device, or personal protective equipment; nor interfere, diminish, or degrade in any way the effectiveness of any form of safeguard which they or any other workers are using, or which is prescribed or furnished for use regardless of by whom the safeguards are furnished. (Formerly 33-1-33)

**437-81-069** Workers shall make full use of safeguards provided for their protection. (Formerly 33-1-34)

**437-81-073** Workers shall not operate a machine which is not fully or effectively guarded. (Formerly 33-1-35)

**437-81-076** Workers shall report to their supervisor any missing, improperly adjusted or ineffective guard. (Formerly 33-1-36)

**437-81-079** Workers shall stop the engine or motor of a machine before lubricating, adjusting, or repairing unless it is provided with effective means to prevent contact with or injury from moving parts. Tag and lock-out procedures as prescribed in this division shall be followed. (See Rules 437-81-629 thru 437-81-636; 437-81-1789; 437-81-1833; 437-81-1836 and 437-81-1839) (Formerly 33-1-37)

**437-81-083** Workers shall not use hands or any portion of their body to reach between moving parts or to remove hang ups, or jams. (Formerly 33-1-38)

**437-81-086** Workers shall not use tools or equipment which are defective. No tool or equipment shall be used for any purpose for which it is not suited and none shall be overloaded or forced beyond its safe capacity. (Formerly 33-1-39)

**437-81-089** Workers shall not go, work, or reach under supported or suspended objects or elevated components which could accidentally fall (e.g., loads on jacks, raised dump beds, raised loader buckets or forks, etc.) until such objects are blocked or shored so as to prevent their falling. (Formerly 33-1-40)

**437-81-093** Workers shall not work underneath or over others exposed to a hazard thereby without first notifying them and seeing that proper safeguards or precautions have been taken. (Formerly 33-1-41)

**437-81-096** Except in open locations where no person would be endangered thereby, and which are free of obstruction, long or unwieldy articles shall not be carried or moved unless adequate means of guarding or guiding are provided to prevent injury. (Formerly 33-1-42)

NOTE: See Rules 437-81-746 thru 437-81-766 for specific requirements and precautions to be taken where there are energized power lines.

**437-81-099** Workers observed working in a manner which might cause immediate injury to either themselves or other workers shall be warned of the danger. (Formerly 33-1-43)

**437-81-103** Before leaving a job workers shall correct, or arrange to give warning of, any condition which might result in injury to others unfamiliar with existing conditions. (Formerly 33-1-44)

**437-81-106** Hazardous conditions or practices observed at any time shall be reported as soon as practicable to the person in charge or some other responsible representative of the employer. (Formerly 33-1-45)

### SIGNALS AND SIGNAL SYSTEMS, GENERAL

NOTE: Specific requirements on signals and signal systems peculiar to a certain operation will be found in other appropriate rules within this division.

**437-81-109** When the nature of the work requires the use of signals, they shall be arranged and

agreed upon by all parties involved before work is begun. (Formerly 33-1-46)

**437-81-113** Control signals shall be given by only one person at a time.

(1) When given, signals shall be made clear and distinct.

(2) The person receiving the signals shall understand their meaning before taking action. (Formerly 33-1-47)

**437-81-116** Emergency stop signals from what-

ever source shall be acted upon immediately. (Formerly 33-1-48)

**437-81-119** Throwing any type of material that can produce injury, such as rocks, wooden or metal objects, etc., as a signal is prohibited. (Formerly 33-1-49)

**437-81-123** Signals for the movement of materials or equipment shall not be given until those persons who would be endangered by such movement are in the clear. (Formerly 33-1-50)

## REQUIREMENTS FOR WORK PLACES AND STRUCTURES

### GENERAL

**437-81-126** Rules 437-81-126 thru 437-81-406 prescribe safety standards to provide for protection against hazards incurred in or around structures and work locations in any place of agricultural employment. (Formerly 33-2-1)

#### Definitions

**437-81-129** The following definitions apply to Rules 437-81-126 thru 437-81-406.

(1) **Equivalent**—Alternative design or features, which will provide an equal degree or factor of safety. (Formerly 33-2-2)

(2) **Structure**—Anything that is artificially built up of parts that are joined together in some definite manner. This term includes but is not limited to walkways, fences, corrals, ramps, platforms, bridges, silos, bins, hoppers, bunks, racks, shelters, sheds, and buildings. (Formerly 33-2-3)

(3) **Platform**—A floor surface which is elevated above the surrounding floor or ground, providing space for storage of material or working space for persons; such as a balcony, or a platform for the operation of machinery or equipment. (Formerly 33-2-4)

(4) **Passageway**—Any aisle, corridor, walkway, runway, ramp, incline or stairway which is or is a part of, or is within a structure, and which may be used to provide access to any area of an operation. (Formerly 33-2-5)

(5) **Runway**—A passageway for persons, elevated above the surrounding floor or ground level, such as a footwalk along shafting or a walkway between buildings. (Formerly 33-2-6)

(6) **Ramp**—An inclined plane surfaced passageway leading from one level of elevation to another. The terms "ramp", "incline" and "inclined walkway" are synonymous. (Formerly 33-2-7)

(7) **Floor**—The surface of a structure, yard, or ground upon which one works, walks, treads, or travels. (Formerly 33-2-8)

(8) **Floor hole**—An opening measuring less than 12" but more than 1" in its least dimension, in any floor, platform, pavement or yard, through which materials but not persons may fall. (Formerly 33-2-9)

(9) **Floor opening**—An opening measuring 12" or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall; such as a hatchway, stair or ladder opening, pit or large manhole. (Formerly 33-2-10)

NOTE: Floor openings occupied by elevators, conveyors, machinery, or containers are excluded.

(10) **Wall opening**—An opening at least 30" high and 18" wide, in any wall or partition, through

which persons may fall; such as a window, doorway or chute opening. (Formerly 33-2-11)

(11) **Stairs, stairway**—A series of steps leading from one level of floor to another. A series of steps and landings having three or more risers constitutes stairs or stairway. (Formerly 33-2-12)

(12) **Landing**—An extended tread or platform breaking a continuous run of stairs. (Formerly 33-2-13)

(13) **Nose, nosing**—That portion of a tread projecting beyond the face of the riser immediately below. (Formerly 33-2-14)

(14) **Rise**—The vertical distance from the top of a tread to the top of the next higher tread. (Formerly 33-2-15)

(15) **Riser**—The upright member of a step situated at the back of a lower tread and near the leading edge of the next higher tread. (Formerly 33-2-16)

(16) **Open riser**—The air space between the treads of stairways without upright members (risers). (Formerly 33-2-17)

(17) **Tread**—The horizontal member of a step. (Formerly 33-2-18)

(18) **Tread width**—The horizontal distance from front to back of tread including nosing when used. (Formerly 33-2-19)

(19) **Standard Guardrail**—A vertical barrier, 36" to 44" high, secured to uprights and erected along the exposed edges of a floor opening, wall opening, platform or runway to prevent persons from falling. (Formerly 33-2-20)

NOTE: The height of a standard guardrail is determined by the vertical distance from the floor to the upper edge of the top rail.

(20) **Stair railing**—A vertical barrier 30" to 34" high, secured to uprights erected along exposed sides of a stairway to prevent persons from falling. (Formerly 33-2-21)

NOTE: The height of a stairway railing is the vertical distance from the nosing of the tread to the upper edge of the top rail.

(21) **Ramp railing**—A vertical barrier 36" to 44" high, erected along exposed sides of a ramp or incline to prevent persons from falling. (Formerly 33-2-22)

NOTE: The height of a ramp railing is the vertical distance from the floor of the ramp to the upper edge of the top rail.

(22) **Handrail**—A single bar or rail 30" to 34" high supported on brackets from a wall or partition to provide a continuous handhold for persons using a stair, ramp, or incline. (Formerly 33-2-23)

NOTE: The height of a handrail is the vertical distance from the nosing of the tread to the upper edge of the top rail.

(23) **Toeboard**—A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials. A standard toeboard is 4" high, measured from the floor to its upper edge. (Formerly 33-2-24)

## Structures

**437-81-133** Structures and all parts thereof used in places of employment shall be of sufficient strength to support the anticipated loads acting on them including due allowance for wind, impact, snow, earthquake and erection. (Formerly 33-2-25)

NOTE: For additional information pertaining to loadings and allowable stresses for various materials, see the State of Oregon Structural Specialty Code and Fire and Life Safety Code, Part VI, Engineering Regulations—Quality and Design of Materials of Construction. This code is available from the Oregon Department of Commerce, Salem, Oregon 97310.

**437-81-136** Structures shall be maintained in a sound condition reasonably free of deteriorated or broken parts, components, or structural members. (Formerly 33-2-26)

## Arrangement and Layout

**437-81-139** The layout, arrangement, and conduct of the facility, operation, or function shall provide for safe conditions and procedures in every phase. Ample space shall be provided to:

- (1) Give safe clearance and freedom from obstruction to workers;
- (2) Furnish adequate storage space for materials in process; and
- (3) Provide clearance between machinery, equipment and operations. (Formerly 33-2-27)

**437-81-143** Work platforms shall be provided of sufficient width to furnish a safe working space and provide safe clearance to each worker from other workers and from obstructions. Platforms over 4' above the ground shall be provided with standard guardrails on all open sides. (See Rules 437-81-1276 thru 437-81-1286 for requirements for operator's station on vehicles and Self-propelled Equipment.) (Formerly 33-2-28)

NOTE: The railing may be omitted from one side where operating conditions necessitate such omission. In such cases, the platform shall be not less than 18" wide.

**437-81-146** A vertical clearance of not less than 6½' shall be provided over work areas and passageways. Where it is otherwise impractical to secure adequate head room, overhead obstructions may be padded or may be indicated by means of contrasting paint, telltales, or similar means, if such means will furnish adequate protection. (Formerly 33-2-29)

NOTE: Crop storage areas such as hay mows, etc., which are occupied only for short and infrequent periods are excepted.

## Access and Egress

**437-81-149** A safe means of access to and egress from all parts of an operation shall be provided. Capacity of the means of egress shall be such that in an emergency, the safe and immediate evacuation of all occupants will not be delayed. (Formerly 33-2-30)

**437-81-153** A safe means of access and egress shall be provided to any location more than 4' above

or below the floor. Such means of access may be by ladder, stairway, or ramp which meet the standards of this division. (Formerly 33-2-31)

**437-81-156** Where means of egress is not substantially level, such difference in elevation shall be negotiated by stairs or ramps. (Formerly 33-2-32)

**437-81-159** At least two means of egress (other than elevators) shall be provided on every floor of every building or section of a building where persons are employed, whenever the lack of such exits would unreasonably delay escape in an emergency. (Formerly 33-2-33)

NOTE: This requirement does not apply to basements, cellars, grain bins, produce storage facilities and similar places which are entered only occasionally or for servicing.

**437-81-163** Power-operated doors at building exits shall be operable without any special effort or knowledge necessary; or a secondary emergency exit door shall be provided. (Formerly 33-2-34)

**437-81-166** Exit doors serving hazardous areas shall swing in the direction of exit and open in a manner that will not obstruct passageways used as exits. Means of exit shall not be blocked at any time. All exit doors and windows used as means of egress in case of fire or panic shall be so arranged as to be readily opened from the inside. Locks on exit doors and windows, if provided, shall not require the use of a key to open from the inside. (Formerly 33-2-35)

**437-81-169** Exit signs shall be placed at all emergency means of egress, except those which are obviously and clearly identifiable as such, and additional directional signs to exits installed where necessary. (Formerly 33-2-36)

**437-81-173** At least one door which can be easily opened from the inside shall be provided for all rooms subject to extremes in temperature or toxic atmospheres, such as cold storage rooms, walk-in freezers or smoke houses. If this door can be locked from the outside, illumination and a set of instructions for opening the door shall be located inside the room on or near the door. Any necessary equipment for opening the door from the inside shall be conveniently located. In addition there shall be located inside the room a means of communication or a control which will operate an alarm located outside the building, or if other employees are on duty 24 hours a day, outside the room. (Formerly 33-2-37)

## FLOORS, FLOOR OPENINGS, PASSAGEWAYS, AND STAIRWAYS

### Floors

**437-81-176** Floors subject to slipping hazards due to any operation or materials to which they will be exposed shall be of material or design which will effectively control slippery conditions. (Formerly 33-2-38)

**437-81-179** In operations involving large quantities of liquids that spill, drainage shall be provided which prevents the liquids from accumulating or standing on walking surfaces. (Formerly 33-2-39)

NOTE: The use of "duck boards" or other gridded flooring should be considered to improve floor conditions.

**437-81-183** Rooms or areas for handling or mixing acids, caustics, or other materials of a harmful nature shall have water-tight floors with drainage facilities to a safe location when located above areas where workers may pass or work, except where employees who are required to enter beneath such area wear clothing and personal protective equipment suitable for the hazard involved. (Formerly 33-2-40)

### Open Floor Sides, Floor Openings, Floor Holes, and Platforms

**437-81-186** A standard guardrail shall be erected along the edges of open-sided floors, floor openings, passageways, or platforms 4' or more above an adjacent floor, except at the entrance to a ramp, stairway, or fixed ladder. A toeboard shall be installed when required by Rules 437-81-196 thru 437-81-203. (Formerly 33-2-41)

NOTE: Exceptions to this rule may be permitted as described below. However, when conditions exist as noted in Rule 437-81-199 that rule shall take precedence over these exceptions.

(1) The intermediate railing and toeboard may be omitted where materials have to be regularly passed over the edge of the floor (as in hay storage) or where the railing is set back 12" or more from the edge.

(2) The entire railing may be omitted from particular sections of open-sided floors where, in the opinion of the Board, regular operating conditions make a railing wholly impractical.

(3) For infrequently used stairways where traffic across the opening prevents the use of permanent guardrails, the guard shall consist of a hinged cover and adequate removable or hinged railings on exposed sides except at the entrance. When the cover is opened, the guardrails shall be in place around the opening.

**437-81-189** Open-sided floors, passageways and ramps used for vehicle travel and which are over 4' above the adjacent floor shall be equipped with one of the following means to prevent vehicles from running over the edge:

(1) Substantial guardrails shall be installed along the exposed edge. This guardrail shall be of a design, construction, and installation sufficiently strong to withstand collision by any vehicle to which exposed.

(2) Where standard guardrails are used, a shear timber or curbing shall be installed on the floor along the open edge. The shear timber shall not be less than nominal 6 x 6" material set on nominal 3"

blocks; or curbing of such height and strength as to furnish equivalent protection. (Formerly 33-2-42)

**437-81-193** Every floor hole shall be protected by a cover that leaves no openings more than 1" wide. The cover shall be secured in place to prevent tools or materials from falling through. (Formerly 33-2-43)

**437-81-196** A toeboard shall be installed in the guardrail along the edge of floor opening or platform below which:

(1) Persons can pass,

(2) There is moving machinery, or

(3) There is equipment with which falling materials could create a hazard. (Formerly 33-2-44)

**437-81-199** Regardless of height, open-sided floors, platforms, passageways and ramps above or adjacent to dangerous equipment, vats or tanks containing hazardous substances shall be guarded by a standard guardrail, with midrail and toeboard. (Formerly 33-2-45)

**437-81-203** Where material is piled on any platform to such a height that a standard toeboard does not provide protection, paneling or screening from the platform floor to a height sufficient to retain or enclose the material shall be provided. (Formerly 33-2-46)

NOTE: Screening should be at least No. 16 U.S. Gauge wire netting or equivalent. Maximum size of mesh opening should be 2" or smaller if necessary.

**437-81-206** Guardrails around floor openings for ladderways shall be offset or provided with swinging gates so that persons cannot walk directly into the openings. (Formerly 33-2-47)

**437-81-209** Hatchway and chute floor openings shall be guarded to prevent a person from falling through the opening by either:

(1) Bars, grids, grilles; or

(2) A cover. Either the cover shall be so attached and arranged, or the opening equipped with standard guardrails so as to leave only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded by removable rails, ropes, or chains; or

(3) A removable railing. No more railing shall be removed at any time than is necessary for operation. The removable railing shall be kept in place when the opening is not in use. The removable railing shall be equivalent in height, strength, and configuration to a standard guardrail. (Formerly 33-2-48)

**437-81-213** Hinged hatchway and chute floor opening covers shall be secured when in the open position. (Formerly 33-2-49)

### Wall Openings

**437-81-216** When there is a drop of more than 4' from a wall opening and the lower edge of the

opening is less than 3' above the working surface, the wall opening shall be guarded by a top rail, mid rail, and toeboard as necessary to achieve the proper height and configuration prescribed for standard guardrails; or, other equivalent barriers shall be used.

(1) When necessary for the handling of materials, the guardrail may be removed.

(2) When the opening is not in use for material handling, the guardrail shall be kept in place. (Formerly 33-2-50)

### Areas Under Floor and Wall Openings

**437-81-219** Positive means of guarding areas under floor and wall openings through which materials are lowered or dropped shall be provided.

(1) Where used regularly, the area under the openings shall be barricaded or standard guardrails shall be erected.

(2) Where used only infrequently, other positive means of keeping the area under an opening clear of workers may be used, such as by a watchman, temporary barricades, or the equivalent. (Formerly 33-2-51)

NOTE: Openings used for loose hay, straw, grain, and similar materials are excepted from this rule.

### Passageways and Ramps

**437-81-223** Passageways at least 22" wide, and wider if necessary to permit the free and unobstructed movement of persons, shall be provided to all parts of an operation where workers are present or may go. (Formerly 33-2-52)

**437-81-226** Passageways customarily used for vehicles shall be wide enough to permit easy maneuvering of the vehicles and at the same time provide safe clearance for any pedestrian. (Formerly 33-2-53)

NOTE: Suitable turnouts adjacent to one-way traffic aisles are permitted for two-way traffic when such turnouts will provide equivalent safety.

**437-81-229** All passageways shall be kept clear and in good repair, free of holes with no obstructions, loose boards or planking, or material across or in the passageway that could create a hazard. Flooring, planking, or surface covering material shall be secured to prevent movement or displacement. (Formerly 33-2-54)

**437-81-233** Open-sided ramps and passageways over 4' above the adjacent floor, which are used for vehicle travel shall be equipped as specified in Rule 437-81-189(1) or (2), to prevent vehicles from running over the edge. (Formerly 33-2-55)

**437-81-236** When ramps are provided, the angle of slope of the ramp shall never exceed 20° from horizontal. (Formerly 33-2-56)

NOTE: The preferred maximum angle of slope is 15°. See Figure B-1.

**437-81-239** The surface of ramps shall be coated with an abrasive, or otherwise treated and maintained with an effective non-slip surface to help provide safe footing. (Formerly 33-2-57)

**437-81-243** Ramps used for wheelbarrows, if surfaced with planking, shall have an odd number of planks and no cleats on the center plank. (Formerly 33-2-58)

**437-81-246** Ramp railings shall be installed on the glazed and open sides of all ramps over 4' above the floor or with a vertical rise of more than 24" regardless of elevation above the floor. In addition, toeboards shall be installed where a ramp is above a work place or passageway. Ramp railings shall meet the specifications prescribed for standard guardrails in Rules 437-81-309 thru 437-81-326. (Formerly 33-2-59)

**437-81-249** Handrails shall be installed on at least one side of closed ramps with a vertical rise of more than 24". (Formerly 33-2-60)

NOTE: (1) Handrails should be installed on the right side descending.

(2) See Rules 437-81-293 thru 437-81-299 for specifications for handrails.

### Stairways

**437-81-253** No door opening on a stairway shall be so constructed that it:

(1) Must be swung over the tread;

(2) Opens directly at or even with the top or bottom riser;

(3) Restricts the width of the stairway landing to less than 22" at any point in the swing. (Formerly 33-2-61)

**437-81-256** Stairway landings and entrances to stairways shall not be obstructed by their location, by other parts of the structure, or by material. (Formerly 33-2-62)

**437-81-259** Stairways shall be designed and constructed to carry loads of 5 times the anticipated normal load but never of less strength than to carry a moving concentrated load of 1,000 lbs. (Formerly 33-2-63)

**437-81-263** Stairways shall have a minimum clear width of 22". In stairways which are wider than 88", a center handrail shall be provided. (Formerly 33-2-64)

**437-81-266** Stairways shall be installed at angles to horizontal of between 30° and 50°. See Fig. B-1 for minimum and maximum angles for stairs, fixed ladders, and ramps. (Formerly 33-2-65)



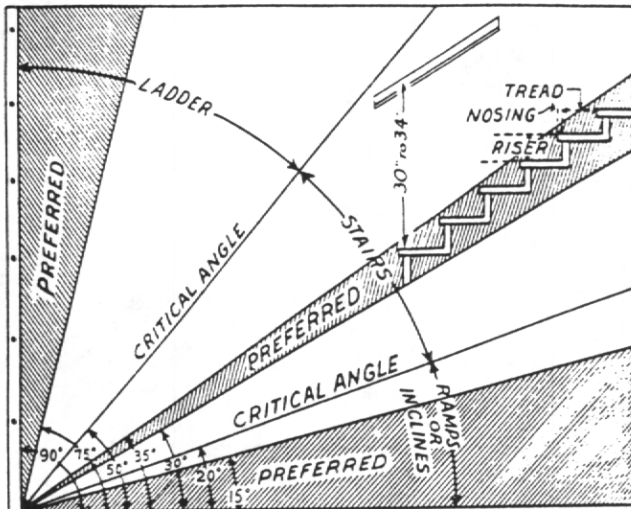


Fig. B-1 - Preferred angles for fixed ladders, stairs and ramps.

**437-81-269** The maximum variation in either rise height or tread run in any one flight of stairs including any foundation structure used as one or more treads shall not exceed  $3/16''$ . (Formerly 33-2-66)

**437-81-273** Treads shall be reasonably slip-resistant and the nosing shall be of non-slip finish. (Formerly 33-2-67)

**437-81-276** Treads shall be firmly secured. Defective treads shall be promptly replaced or repaired to a safe condition. (Formerly 33-2-68)

**437-81-279** Stairway landings and platforms shall be no less than the width of the stairway and a minimum of  $30''$  in length measured in the direction of travel. (Formerly 33-2-69)

**437-81-283** Vertical clearance above any stair tread to an overhead obstruction shall be at least  $6\frac{1}{2}'$  measured from the nosing of the tread. Where it is not possible to secure adequate headroom, overhead obstructions may be padded or may be indicated by marking, if such methods will furnish adequate protection. (Formerly 33-2-70)

**437-81-286** Stair railings shall be provided on the glazed and open sides of all stairways of 4 risers or more. (Formerly 33-2-71)

**437-81-289** Handrails shall be installed on at least one side of closed stairways and landings of 4 risers or more. (Formerly 33-2-72)

NOTE: Handrails should be installed on the right side descending.

## RAILINGS

### Handrails

**437-81-293** A handrail shall consist of a single lengthwise member supported on brackets from a

wall or partition to provide a continuous handhold for persons using a stair or incline. (Formerly 33-2-73)

**437-81-296** The handrail shall be of sound wood or other material of a dimension that will furnish equivalent strength and adequate hand hold.

(1) If of wood, the handrail shall be at least  $2''$  in diameter. If of metal pipe, the handrail shall be at least  $1\frac{1}{2}''$  nominal outside diameter.

(2) Handrails shall be smooth surfaced, without rough or sharp edges. They shall be maintained in a secure condition.

(3) Ends of handrails shall be terminated so as not to form a projection hazard. (Formerly 33-2-74)

**437-81-299** Handrails shall be mounted directly on a wall or partition by means of brackets attached to the lower side of the rail so as to offer no obstruction to a smooth surface along the top and both sides of the rail.

(1) Handrails shall be placed not less than  $30''$  nor more than  $34''$  above the nosing of the treads.

(2) The length of brackets shall be such as will give a clearance between handrail and wall or any other object of at least  $3''$ , except where terminated by turning in to the wall. The spacing of brackets shall not exceed eight feet.

(3) Mounted handrails shall be capable of withstanding a load of 200 lbs. applied in any direction at any point on the rail. (Formerly 33-2-75)

### Stair Railings

**437-81-303** A stair railing shall consist of a lengthwise top rail, an intermediate rail or filler panels, and supporting posts erected along the open and glazed sides of stairways and stair landings to prevent persons from falling. (Formerly 33-2-76)

**437-81-306** Stair railings shall meet all construction, strength, and material requirements specified for standard guardrails in Rules 437-81-309 thru 437-81-326 except that the vertical height of the top rail of stairway guardrails shall not be less than  $30''$  and not more than  $34''$  above the nosing of the treads, and shall be from  $36''$  to  $44''$  above the level of the landing. (Formerly 33-2-77)

### Standard Guardrails and Toeboards

**437-81-309** A standard guardrail shall consist of top rail, intermediate rail (midrail), toeboard when required, and supporting posts, erected along the exposed edges of floors to prevent persons from falling. (Formerly 33-2-78)

NOTE: See Rules 437-81-196 thru 437-81-203 which prescribe when toeboards are required.

**437-81-313** The top rail shall have a vertical height of  $36''$  to  $44''$  above the level of the floor it serves. The intermediate rail shall be placed midway between the top rail and floor level, or toeboard if used. (Formerly 33-2-79)

**437-81-316** Rails shall be smooth surfaced, without splinters or rough or sharp edges, and the ends shall not overhang the terminal posts except where such overhang does not constitute a projection hazard. (Formerly 32-2-80)

**437-81-319** Standard toeboards shall be not less than 4" in height. Toeboards may be of nominal 1" x 4" lumber, or other material either solid or with openings of not over 1" and having equal strength.

(1) Toeboards shall be securely fastened in place with not more than ¼" clearance between the floor and the toeboard.

(2) Where material is piled to such a height that a standard toeboard does not provide protections, paneling or screening from floor to intermediate rail or to top rail shall be provided.

(3) Panel or screen strength shall be equivalent to that required for toeboards. (Formerly 33-2-81)

**437-81-323** Standard guardrails shall be constructed and maintained to support a live load of not less than 200 lbs. applied in any direction at any point on the top rail. Where heavy stresses are expected additional strength shall be provided. (Formerly 33-2-82)

**437-81-326** Standard guardrails shall meet the following minimum material requirements:

(1) For wood railings: Posts and the top and intermediate rails shall be of at least 2" x 4" nominal stock. Posts shall be spaced at intervals not to exceed 6'. If the top rail is made of two right-angle pieces of 1" x 4" nominal stock, posts may be spaced on 8' centers, with 2" x 4" nominal intermediate rail.

(2) For pipe railings: Posts and the top and intermediate rails shall be at least 1½" nominal outside diameter with posts spaced not more than 8' on centers.

(3) For structural steel railings: Posts and the top and intermediate rails shall be of 2" x 2" x ⅝" angles or other metal shapes of equivalent bending strength with posts spaced not more than 8' on centers.

(4) Other types, sizes, and arrangements of railing construction including fixed or removable stanchions supporting fixed or removable rope, cable, chains, or rails may be acceptable in place of standard railings if the strength and the protection provided by such means is equivalent in all respects to that provided by standard railings. (Formerly 33-2-83)

#### **ENCLOSURES, BINS, HOPPERS, TANKS AND VATS**

**437-81-329** No person shall enter any enclosure in which the atmosphere may be immediately dangerous to life unless:

(1) The atmosphere therein has been tested immediately prior to such entry by a competent person and found to be free of toxic gases, and to contain sufficient oxygen to sustain life; or,

(2) Mechanical or natural ventilation has been applied and at least one complete change of uncontaminated air has been provided immediately prior to entry and is continued while the enclosure is occupied; or,

(3) The person entering the enclosure is wearing and using a properly functioning supplied air or self-contained breathing apparatus, and is being closely supervised by a safety watcher similarly equipped, stationed at the entrance with adequate help to remove the person if necessary. (Formerly 33-2-84)

NOTE: Enclosures in which the atmosphere may be immediately dangerous to life include controlled atmosphere storage facilities, and upright or pit silos, tanks, manholes, liquid manure tanks, cisterns, wells, and similar confined spaces which have been sealed or unventilated. (The anaerobic acid fermentation process through which fodder is converted to silage causes the formation of both toxic and inert gases which, being heavier than oxygen, replace the oxygen in depressions or unventilated spaces above the silo contents. The gas formation begins with the introduction of fodder into the silo, and continues for approximately 3 weeks after the last fodder is added. The gases will remain in any depression until the space has been mechanically ventilated as required in Rule 437-81-329(2), or naturally ventilated by creating an opening at the silage surface level and another at the top of the silo or pit so as to allow the gases to drain off.)

**437-81-333** Employees shall not enter bins, bunkers, or hoppers unless they are so constructed and arranged that the employees will not be subject to the hazards of collapsing materials. (Formerly 33-2-85)

**437-81-336** Material gates, hopper doors, and similar devices for removing contents on all bins, bunkers, and hoppers shall be so arranged that they may be operated in a safe manner. (Formerly 33-2-86)

**437-81-339** If workers are required to work from the top of bins, bunkers, or hoppers, a platform or walkway equipped with standard railings shall be provided, or lifelines shall be used as required by Rule 437-81-1126. (Formerly 33-2-87)

**437-81-343** Vats and pits that contain hazardous materials, manure, or that are more than 4' in depth, shall meet one of the following requirements:

(1) A cover or grating must be provided of sufficient strength to safely support imposed loads; or,

(2) The edges must extend at least 42" above the adjacent floor level; or,

(3) A standard guardrail must be provided. Where vehicles are operated near vats or pits the railing shall be strong enough to keep the vehicle out of the pit, or a curb or shear rail which will effectively keep the vehicle out of the pit shall be provided in addition to the railing. (Formerly 33-2-88)

**437-81-346** Every person shall wear a safety belt attached to a securely anchored lifeline, and shall be attended by a safety watcher holding the lifeline, when entering any silo, bin, hopper, or other container holding:

(1) Granular material in bulk form (e.g. seed, grain, fertilizer etc.) or other material of a yielding nature more than 4' in depth; or

(2) Material of any depth which is subject to removal from the bottom. (Formerly 33-2-89)

NOTE: See Rules 437-81-1126 thru 437-81-1149 for safety belt and lifeline requirements.

## MISCELLANEOUS STRUCTURES AND SURFACES

### Bridgeplates (Dockboards)

**437-81-349** Bridgeplates shall be used to bridge any gap of over 4'' between two separate surfaces, as, for example between a platform and a truck bed. (Formerly 33-2-90)

**437-81-353** Bridgeplates shall be designed to carry four times the heaviest expected load. (Formerly 33-2-91)

**437-81-356** Bridgeplates shall be wide enough to permit easy maneuvering of vehicles which travel over them. (Formerly 33-2-92)

**437-81-359** Bridgeplates shall have at least a 6'' bearing surface on each end. (Formerly 33-2-93)

**437-81-363** Bridgeplates shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping. (Formerly 33-2-94)

**437-81-366** Bridgeplates shall bear solidly on the surface at each end. Plates which teeter or rock shall be repaired or replaced. (Formerly 33-2-95)

### Roadways

**437-81-369** Roadways shall be of sufficient width to ensure the safe operation of equipment. (Formerly 33-2-96)

**437-81-373** Broken planking, deep holes, large rocks, logs or other dangerous surface defects shall be corrected before any equipment is used thereon. (Formerly 33-2-97)

**437-81-376** Obstructions to clear view at intersections or sharp curves shall be removed or all reasonable precautions taken to relieve the hazards of these conditions. (Formerly 33-2-98)

## Bridges and Culverts

**437-81-379** Bridges and culverts shall be designed, constructed and maintained to safely support the heaviest expected load. Structural members shall be sound and free of decay or other deterioration which may reduce the safety of the bridge. (Formerly 33-2-99)

**437-81-383** Bridges and culverts shall have adequate width to ensure the safe passage of equipment. (Formerly 33-2-100)

**437-81-386** The roadway surface of bridges and culverts shall be maintained in safe condition, free of holes, broken planking, and sloughing, caving, or slipping fill materials or approaches. (Formerly 33-2-101)

## HOUSEKEEPING

**437-81-389** Areas around operations, working areas, and storage areas shall be kept free of obstructions and of accumulated material and debris that constitute hazards from tripping, slipping, fire, explosion or pest harborage. (Formerly 33-2-102)

**437-81-393** Passageways and stairways shall be kept clear of obstructions and debris to provide for the free and safe movement of workers and equipment, and shall not be used for any type of storage. (Formerly 33-2-103)

**437-81-396** Sharp, pointed or otherwise hazardous projections in work areas shall be removed or rendered harmless. (Formerly 33-2-104)

**437-81-399** Slippery working surfaces shall be avoided or eliminated whenever practical. (Formerly 33-2-105)

**437-81-403** When materials, including grain or liquids that may spill create a hazardous condition, measures shall be taken to control or prevent leakage of such materials. (Formerly 33-2-106)

## Disposal of Waste Materials

**437-81-406** Scrap, waste materials, or debris shall be removed from work areas at reasonable intervals as the work progresses. Material shall not be permitted to accumulate in any manner which contributes to a hazardous condition or impedes the free and safe movement of persons. (Formerly 33-2-107)

## FIRE PREVENTION AND PROTECTION

### GENERAL

**437-81-409** Rules 437-81-409 thru 437-81-556 prescribe safety standards to provide for protection against injury from fire hazards in places of agricultural employment.

(1) The requirements of Rules 438-81-2073 thru 437-81-2443 of this division shall be complied with in welding operations.

(2) The requirements of Rule 437-81-1996 of this division shall be complied with in storing, handling, and using explosives. (Formerly 33-3-1)

NOTE: Additional rules which pertain to the protection of property are published by other authority. The Oregon State Fire Marshal, or the local fire protection authority having jurisdiction should be consulted for these additional requirements.

### Definitions

**437-81-413** The following definitions apply to Rules 437-81-409 thru 437-81-556.

(1) **Approved**—Acceptance or approval by a responsible U.S. Federal agency such as Bureau of Mines, Department of Transportation, U.S. Coast Guard, etc., or by a responsible agency of the State of Oregon, or by a nationally recognized testing laboratory such as Factory Mutual Engineering Corp., or Underwriters' Laboratories, Inc., which issue approvals for such equipment. (Formerly 33-3-2)

(2) **Closed container**—A container so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures. (Formerly 33-3-3)

(3) **Combustible liquids**—Any liquid having a flash point of 100°F (37.78°C) and above. Combustible liquids are classified as Class II or Class III liquids. (Formerly 33-3-4)

NOTE: Examples of some common combustible liquids are diesel fuel, fuel oils, kerosene and Stoddard Solvent.

(4) **Flammable**—capable of being easily ignited, burning intensely, or having a rapid rate of flame spread. (Formerly 33-3-5)

(5) **Flammable liquids**—Any liquid having a flash point below 100°F (37.78°C) and having a vapor pressure not exceeding 40 psi (absolute) at 100°(2.812 Kg/sq. cm. @ 37.78°C). Flammable liquids are classified as Class IA, Class IB, and Class IC Liquids.

NOTE: Examples of some common flammable liquids are:

- (1) Ethers and other highly volatile liquids (Class IA).
- (2) Gasolines (Class IB).
- (3) Methyl Alcohol (Class IC). (Formerly 33-3-6)

(6) **Portable tank**—A closed container having a liquid capacity more than 60 U.S. Gallons (230 liters) and not intended for fixed installation. (Formerly 33-3-7)

(7) **Safety can**—An approved closed container, of not more than 5 gallons (20 liters) capacity, having a flash-arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure. (Formerly 33-3-8)

(8) **Salamander**—A self-contained heating device employing combustibles and which is not vented to the outside atmosphere. (Formerly 33-3-9)

NOTE: Catalytic-type heaters are included in this definition as well as flame-type heaters.

### Ignition

**437-81-416** Combustible waste material, including oily rags, in work areas shall be stored in covered metal receptacles and not allowed to accumulate. (Formerly 33-3-10)

**437-81-419** Electrical lights, apparatus, equipment, and wiring installed or used in locations where flammable or explosive gases, vapors, mists, dust, fibers or flyings are present shall comply with the State Electrical Code. (Formerly 33-3-11)

NOTE: See Rule 437-81-563.

**437-81-423** Internal combustion engines shall be located so that exhausts are well away from combustible materials. A clearance of at least 6" shall be maintained between exhaust piping and combustible material. (Formerly 33-3-12)

**437-81-426** Smoking, open flames, the use of spark-producing devices or tools which are not approved for use in such areas, and other sources of ignition are prohibited in areas:

- (1) Used for fueling.
- (2) Used for servicing fuel systems for internal combustion engines.
- (3) Used for receiving or dispensing flammable or combustible liquids.
- (4) Where flammable or combustible liquids are used.
- (5) Where flammable or combustible liquids are stored.
- (6) Which are subject to the presence of flammable or explosive gases, vapors, mists, dust, and fibers or flyings. (Formerly 33-3-13)

NOTE: Other sources of ignition include cutting and welding; grinding hot surfaces; frictional heat; static, electrical and mechanical sparks; spontaneous ignition including heat-producing chemical reactions; and radiant heat.

**437-81-429** Signs reading, "No Smoking or Open Flame", shall be conspicuously posted in all areas;

- (1) Used for fueling;
- (2) For receiving or dispensing flammable or combustible liquids;
- (3) Where flammable or combustible liquids are used and where they are stored; or

(4) Which are subject to the presence of flammable or explosive gases, vapors, mists, dust, fibers or flyings. (Formerly 33-3-14)

## STORAGE, TRANSPORTING, AND HANDLING OF FLAMMABLE LIQUIDS

### Storage and Transporting

**437-81-433** The storage of flammable and combustible liquids in containers having a capacity of 60 gallons (230 liters) or more shall be in fixed or portable tanks. Such tanks shall be constructed to meet the material and design requirements specified by National Fire Protection Association Bulletins NR 30 or NR 395. (Formerly 33-3-15)

NOTE: The NFPA bulletins are generally maintained at every Fire Department office, and are also on file in the offices of the Accident Prevention Division of the Workmen's Compensation Board. Should you desire specific information from the bulletins, it is recommended that you contact your local fire chief or fire marshal, or write to:

Accident Prevention Division  
Workmen's Compensation Board  
Attn: Technical Services Section  
Labor & Industries Building  
Salem, Oregon 97310

**437-81-436** Storage of flammable and combustible liquids in containers of less than 60 gallons (230 liters) capacity shall be in one of the following:

- (1) Closed metal drums which meet DOT requirements.
- (2) Closed metal containers.
- (3) Approved metal safety cans.
- (4) Approved closed plastic containers of not more than 5 gallons (20 liters) capacity and bearing an approval label stamped or molded into the container. (Formerly 33-3-16)

**437-81-439** Flammable or combustible liquids shall be stored in a manner that will not obstruct, impede, or limit use of exits, stairways, or areas normally used for safe egress of people. (Formerly 33-3-17)

**437-81-443** If tank truck service is not used, flammable and combustible liquids may be carried in the unenclosed cargo compartment of trucks in closed metal containers.

(1) Containers shall not be carried inside the crew of passenger compartment.

(2) Bungs shall be tight, and containers shall be secured as necessary to prevent movement. (Formerly 33-3-18)

**437-81-446** Flammable or combustible liquids transported on passenger-type vehicles (cars, buses, carry-alls, crew transporters, etc.) shall be contained in approved metal safety containers not exceeding 5 gallons (20 liters) capacity. Such containers shall be carried outside the passenger com-

partment, secured in a location providing ventilation which will prevent an accumulation of flammable or explosive vapors, and protected against rupture in event of a collision. (Formerly 33-3-19)

### Tanks and Containers

**437-81-449** Tanks and containers used for the storage of flammable and combustible liquids shall be clearly marked "FLAMMABLE—KEEP FIRE AND FLAME AWAY." Fill risers and pumps or discharge devices shall be marked with the name of the product contained in the tank. (Formerly 33-3-20)

**437-81-453** Pumps, containers, tanks, and supports for tanks used for combustible or flammable liquids shall be protected against collision damage. (Formerly 33-3-21)

**437-81-456** Above ground tanks shall be mounted on supports of sufficient strength and stability to safely support imposed loads. Sufficient clearance shall be provided to permit inspection and maintenance as well as clearance from the ground. (Formerly 33-3-22)

### Tanks Elevated for Gravity Discharge

**437-81-459** The gravity discharge outlet shall be provided with an approved hose equipped with a self-closing valve at the discharge end. (Formerly 33-3-23)

**437-81-463** The bottom opening for gravity discharge shall be equipped with a shut-off valve located adjacent to the tank shell which can be closed manually. Underground tanks from which fuel flows under gravity shall be equipped with a manual shut-off valve between the tank and the hose. (Formerly 33-3-24)

### Tanks with Top Openings Only

**437-81-466** Tanks constructed with all openings in the top of the tank shall be equipped with a firmly attached approved pumping device having an approved hose. (Formerly 33-3-25)

**437-81-469** Siphons and discharge devices requiring pressure in the container are prohibited. (Formerly 33-3-26)

**437-81-473** An effective anti-siphoning device shall be included in the pump discharge; tank plumbing shall not permit fuel to siphon or flow from the tank when the pump is not operating, even though discharge nozzle valves or line valves are open. (Formerly 33-3-27)

### Dispensing and Fueling

**437-81-476** Pumping devices or faucets used for dispensing flammable and combustible liquids shall be maintained to prevent leakage. (Formerly 33-3-28)

**437-81-479** Fuel tanks and pumps from which Class I liquids are dispensed shall be equipped with an approved hose of sufficient length for filling containers to be served.

(1) Hoses shall be equipped with a metal nozzle at the discharge end.

(2) Hoses shall be constructed to incorporate an effective electrical interconnect between the nozzle and the supply tank. (Formerly 33-3-29)

**437-81-483** Class I liquids shall not be dispensed into or from portable or stationary metal tanks or drums of over 50 gallons net capacity unless there is an effective electrical interconnect (bond) between the source and the receiving containers. (Formerly 33-3-30)

NOTE: The electrical interconnect may be made by insuring that the metal nozzle of the approved hose (See Rule 437-81-479) is held in contact with the metal fill neck or bung of the receiving container during filling.

**437-81-486** Internal combustion engines, except diesel engines, shall be shut off while being refueled. (Formerly 33-3-31)

### Handling and Use of Flammable and Combustible Liquids

**437-81-489** Leakage or the escape of flammable and combustible liquids shall be controlled and measures to prevent accidental spills shall be employed. Soaked or contaminated areas shall be promptly cleaned up and neutralized. (Formerly 33-3-32)

**437-81-493** Flammable liquids, including gasoline, may be used only where there is no open flame or other source of ignition within 50' of the operation, or within the possible path of vapor travel. (Formerly 33-3-33)

NOTE: This rule is not intended to prohibit the refueling of orchard heaters used out of doors while adjacent heaters are burning.

**437-81-496** Flammable liquids, including gasoline, shall not be used indoors as a solvent or for cleaning purposes unless sufficient ventilation is provided to bring and maintain the concentrations of explosive vapors in the atmosphere below 20% of its lower explosive limit. (Formerly 33-3-34)

**437-81-499** Flammable liquids, including gasoline, shall be kept in closed containers when not in actual use. (Formerly 33-3-35)

### HEATING DEVICES

NOTE: Heating devices and associated equipment shall be installed, operated, and maintained in conformance with the standards contained in the State of Oregon Mechanical Specialty Code and Mechanical and Life Safety Code, Vol. 2 of the Uniform Building Code.

**437-81-503** Heaters, when in use, shall be set on a stable, level base; or mounted as specified by the manufacturer. (Formerly 33-3-36)

**437-81-506** Heaters not suitable for use on wood floors shall rest on heat insulating material or at least 1" concrete, or equivalent. The insulating material shall extend beyond the heater 2' or more in all directions. (Formerly 33-3-37)

**437-81-509** Heaters used in the vicinity of combustible tarpaulins, canvas, or similar coverings shall be located at least 10' from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater due to wind action on the covering or other material. (Formerly 33-3-38)

**437-81-513** Liquid-fired heaters shall be equipped with a primary safety control to stop the flow of fuel in the event of flame failure. (Formerly 33-3-39)

NOTE: Barometric or gravity oil feed shall not be considered a primary safety control.

**437-81-516** Heating devices having no built-in means to effectively control the fuel supply or the flame are prohibited in buildings occupied by workers. (Formerly 33-3-40)

**437-81-519** Heating devices employing combustibles used inside buildings occupied by workers shall be vented to the outside atmosphere. This requirement may be excepted only when one of the following alternate requirements is met:

(1) The heating device shall bear an "approval label" issued by the American Gas Association or a nationally recognized testing laboratory indicating it is approved for use as an unvented heater in occupied buildings; or,

(2) The atmosphere inside buildings where unvented heating devices are in use shall be tested prior to entry and shall be free of carbon monoxide in hazardous quantities; or,

(3) Workers required to enter buildings where unvented heating devices are in use shall wear an approved respiratory protection device which will provide a safe breathing medium. (Formerly 33-3-41)

NOTE: See Rules 22-018(a), 22-018(b), 22-028, and 22-032 of the Oregon Occupational Health Rules for ventilation requirements.

**437-81-523** Fuel-burning devices shall be provided with means which will prevent the emission of sparks or other sources of ignition. (Formerly 33-3-42)

### EXTINGUISHERS

**437-81-526** Fire extinguishers shall be provided which are classified for use on the character or class of fire potential within the work area. (Formerly 33-3-43)

NOTE: "Relation of Extinguishers to Classes of Fires" To facilitate proper use of extinguishers on different types of fires, the NFPA Extinguisher Standard has classified fires into four types, or classes. The four classes are:

Class A: Fires involving ordinary combustible materials (such as wood, cloth, paper, rubber, and many plastics) requiring the heat-absorbing (cooling) effects of water, water solutions, or the coating effects of certain dry chemicals which retard combustion.

Class B: Fires involving flammable or combustible liquids, flammable gases, greases, and similar materials where extinguishment is most readily secured by excluding air (oxygen), inhibiting the release of combustible vapors, or interrupting the combustion chain reaction.

Class C: Fire involving energized electrical equipment where safety to the operator requires the use of electrically nonconductive extinguishing agents. (Note: When electrical equipment is deenergized, the use of Class A or B extinguishers may be indicated.)

Class D: Fires involving certain combustible metals, such as magnesium, titanium, zirconium, sodium, potassium, etc., requiring a heat-absorbing extinguishing medium not reactive with the burning metals.

**437-81-529** Fire extinguishers shall be plainly labeled as to their method of operation and conspicuously marked as to the class of fire for which they are intended to be used.

(1) See Fig. C-1 for markings recommended by NFPA No. 10, "Standard for the Installation of Portable Fire Extinguishers." Decals of these markings are available from NFPA and other sources.



1. Extinguishers suitable for "Class A" fires should be identified by a triangle containing the letter "A". If colored, the triangle shall be colored green.\*



2. Extinguishers suitable for "Class B" fires should be identified by a square containing the letter "B". If colored, the square shall be colored red.\*



3. Extinguishers suitable for "Class C" fires should be identified by a circle containing the letter "C". If colored, the circle shall be colored blue.\*



4. Extinguishers suitable for fires involving metals should be identified by a five-pointed star containing the letter "D". If colored, the star shall be colored yellow.\*

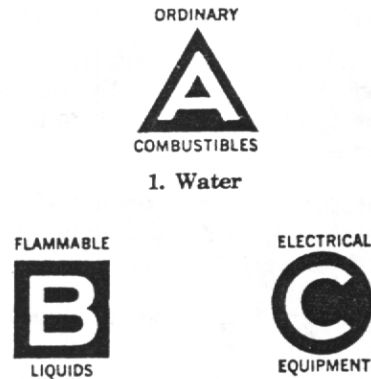
\*Note: Recommended colors as described in the Federal Color Standard Number 5951 are:

Green	— No. 14260	Blue	— No. 15102
Red	— No. 11105	Yellow	— No. 13655

NOTE: Extinguishers suitable for more than one class of fire may be identified by multiple symbols.

Fig. C—1 Design and color of markings to indicate extinguisher suitability.

(2) See Fig. C-2 for typical types of extinguisher and their class suitability. (Formerly 33-3-44)



2. Carbon Dioxide, Dry Chemical Bromochlorodifluoromethane and Bromotrifluoromethane



3. Multipurpose Dry Chemical



4. Dry Powder

Fig. C—2 Typical markings of extinguishers.

**437-81-533** Fire extinguishers shall be mounted on hangers, brackets, in cabinets or set on shelves. The maximum height of the top of the extinguisher above the floor shall be as specified in the following table:

WEIGHT OF FIRE EXTINGUISHER	MAXIMUM HEIGHT OF TOP ABOVE FLOOR
40 Lbs. or less	5'
over 40 Lbs.	3½'

(Formerly 33-3-45)

**437-81-536** Fire extinguishers shall be conspicuously located along normal paths of travel and near exits to be immediately available without workers being subjected to a greater exposure to fire to reach the extinguisher. (Formerly 33-3-46)

**437-81-539** Fire extinguisher locations shall not be obstructed or obscured from view. Where visual obstructions cannot be completely avoided, means shall be provided to conspicuously indicate the location of the extinguisher. (Formerly 33-3-47)

**437-81-543** Passageways to and space in front of fire extinguishers shall be kept clear and free from obstruction. (Formerly 33-3-48)

**437-81-546** Fire extinguishers shall be maintained in servicable condition, fully charged, at all times. After being used they shall promptly be fully recharged. (Formerly 33-3-49)

**437-81-549** Portable extinguishers shall be kept in their designated places at all times when they are not being used. (Formerly 33-3-50)

**437-81-553** Fire extinguishers shall be inspected

at intervals not more than 1 year apart, or more often as required to maintain full servcability. Inspection and maintenance shall be performed by a person fully qualified in fire extinguisher maintenance and repair. Each extinguisher shall have a durable tag securely attached showing the inspection, maintenance, and recharge dates and the initials or signature of the person who performed the service. (Formerly 33-3-51)

**437-81-556** Fire extinguishers containing carbon tetrachloride or chlorobromomethane, or other toxic vaporizing fluids, shall not be used indoors or in other confined spaces. (Formerly 33-3-52)



## ELECTRICAL GENERAL

### Purpose, Scope and Application

**437-81-559** Rules 437-81-559 thru 437-81-773 prescribe safety standards to provide for protection against hazards incurred with electricity in places of agricultural employment. (Formerly 33-4-1)

NOTE: The provisions of Rules 437-81-559 thru 437-81-773 do not cover:

- (1) Installations in watercraft, aircraft or automotive vehicles.
- (2) Facilities under the exclusive control of electric utilities (See Rule 437-81-1999).
- (3) Electric welding (See Rules 437-81-2073 thru 437-81-2443).

**437-81-563** Unless otherwise provided in Rules 437-81-559 thru 437-81-773 all electrical work, installation, and wire capacities shall be in accordance with pertinent standards under the jurisdiction of the Oregon Department of Commerce. (Formerly 33-4-2)

NOTE: The Oregon Department of Commerce has adopted the National Electrical Code, NFPA 70-1971; ANSI C1-1971, and enforces its provisions. Should further information be desired, it is recommended you contact the State Electrical Inspector, Oregon Department of Commerce, Salem, Oregon 97310.

### Definitions

**437-81-566** The following definitions apply to Rules 437-81-559 thru 437-81-773.

(1) Approved—"Acceptable to the Oregon Department of Commerce." (Formerly 33-4-3)

(2) Acceptable—An installation of equipment acceptable to the Oregon Department of Commerce and approved within the meaning of Rules 437-81-559 thru 437-81-773:

(a) If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory.

(b) If it is inspected or tested by a federal agency, or by state, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with the provisions of the National Electrical Code. (Formerly 33-4-4)

(3) Labeled—Equipment is "labeled" if there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which:

(a) Makes periodic inspections of the production of such equipment, and

(b) Whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner. (Formerly 33-4-5)

(4) Accepted—An installation is "accepted" if it has been inspected and found by a nationally recognized testing laboratory to conform to specified plans or to procedures of applicable rules of the

Oregon Occupational Safety and Health Code. (Formerly 33-4-6)

(5) Certified—Equipment is "certified" if it:

(a) Has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner, or

(b) Is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and

(c) It bears a label, tag, or other record of certification. (Formerly 33-4-7)

(6) Bonding Jumper—A conductor to assure the required electrical conductivity between metal parts required to be electrically connected. (Formerly 33-4-8)

(7) Branch Circuits—That portion of a wiring system extending beyond the final overcurrent device protecting the circuit. A device not approved for branch circuit protection, such as thermal cutout or motor overload protective device, is not considered as the overcurrent device protecting the circuit. (Formerly 33-4-9)

(8) Exposed (as applied to live parts)—A live part that can be inadvertently touched or approached nearer than a safe distance by a person. This term applies to parts not suitably guarded, isolated, or insulated. (Formerly 33-4-10)

(9) Ground—A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and earth, or to some conducting body which serves in place of the earth. (Formerly 33-4-11)

(10) Shock Hazard—Considered to exist at an accessible part in a circuit between the part and ground, or other accessible parts if the potential is more than 42.4 volts peak and the current through a 1,500-ohm load is more than 5 milliamperes. (Formerly 33-4-12)

(11) Weatherproof—So constructed or protected that exposure to the weather shall not interfere with successful operation. (Formerly 33-4-13)

(12) Grounded—Connected to earth or to some conducting body which serves in place of the earth. (Formerly 33-4-14)

(13) Hazard—Considered to include casualty, fire, and shock when applicable. (Formerly 33-4-15)

(14) Isolated—Not readily accessible to persons unless special means of access are used. (Formerly 33-4-16)

### TEMPORARY LIGHTING AND WIRING

#### Temporary Lighting and Portable Extension Lamps

**437-81-569** Temporary lights shall be equipped with guards to prevent accidental contact with the bulb. (Formerly 33-4-17)

NOTE: Guards are not required when the bulb is deeply recessed in the reflector. (The entire bulb is below the rim and completely surrounded and protected by the reflector.)

**437-81-573** Temporary lights shall be equipped with heavy duty electric cords with connections and insulation maintained in safe condition. (Formerly 33-4-18)

**437-81-576** Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this means of suspension. (Formerly 33-4-19)

**437-81-579** Handlamps of the portable type shall be of molded composition or other approved type. Brass shell, paper lined lampholders shall not be used. Handlamps shall be equipped with a handle and a substantial guard over the bulb and attached to the lampholder or the handle. (Formerly 33-4-20)

**437-81-583** Portable extension lamps used where flammable vapors or gases, or combustible dusts, or easily ignitable fibers or flyings are present, shall be specifically approved as complete assemblies for the type of hazard involved. (Formerly 33-4-21)

### Temporary Wiring

**437-81-586** Working spaces, walkways, and similar locations shall be kept clear of power cords. (Formerly 33-4-22)

**437-81-589** All temporary wiring shall be grounded. (Formerly 33-4-23)

**437-81-593** All electric equipment used in hazardous locations shall be chosen from among those listed by a nationally recognized testing laboratory, such as Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corp., except custom made components and utilization equipment. (Formerly 33-4-24)

**437-81-596** All wiring equipment shall be maintained as vapor, dust, or fiber tight as contemplated by their approvals. There shall be no loose or missing screws, gaskets, threaded connections, or other impairments to this tight condition. (Formerly 33-4-25)

**437-81-599** Precautions shall be taken to make any necessary open wiring inaccessible to unauthorized personnel. (Formerly 33-4-26)

## PROTECTIVE ARRANGEMENTS

### Protection of Employes

**437-81-603** All exposed live electrical conductors shall be isolated from accidental contact by persons or equipment. (Formerly 33-4-27)

**437-81-606** Electrical repairs shall be made only by persons authorized by the employer. (Formerly 33-4-28)

**437-81-609** When fuses are installed or removed with one or both terminals energized, special tools insulated for the voltage shall be used. (Formerly 33-4-29)

**437-81-613** No employer shall permit an employe to work in such proximity to an electric power circuit that he may contact it unless the employe is protected against electric shock. (Formerly 33-4-30)

NOTE: Protection may be accomplished by deenergizing the circuit and grounding it, by guarding it, by effective insulation, or other means.

**437-81-616** In work areas where the exact location of underground electric power lines is unknown, workers using jack-hammers, bars or other hand tools which may contact a line shall be provided with insulated protective gloves. (Formerly 33-4-31)

**437-81-619** Before work is begun the employer shall ascertain by inquiry or direct observation, or by instruments, whether any part of an electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool or machine into physical or electrical contact therewith.

(1) The employer shall post and maintain proper warning signs where such a circuit exists.

(2) He shall advise his employes of the location of such lines, the hazards involved and the protective measures to be taken. (Formerly 33-4-32)

### Workspace

**437-81-623** Sufficient space shall be provided and maintained in the area of electrical equipment to permit safe operation and maintenance of such equipment.

(1) When parts are exposed, the minimum clearance for the workspace shall not be less than 6¼' high, nor less than a radius of 3' wide.

(2) There shall be clearance sufficient to permit at least a 90° opening of all doors or hinged panels. (Formerly 33-4-33)

**437-81-626** Suitable barriers or other means shall be provided to ensure that workspace for electrical equipment will not be used as a passageway during periods when energized parts of electrical equipment are exposed. (Formerly 33-4-34)

### Lockout and Tagging of Circuits

**437-81-629** Equipment or circuits that are deenergized for cleanup, maintenance, or repair work shall be locked out and tags shall be attached at all points where such equipment or circuits can be energized. (Formerly 33-4-35)

**437-81-633** Controls that are to be deactivated during the course of work on energized or deener-

gized equipment or circuits shall be so tagged or labeled. (Formerly 33-4-36)

**437-81-636** Tags shall be placed to identify plainly the equipment or circuits being worked on. (Formerly 33-4-37)

## EQUIPMENT INSTALLATION AND MAINTENANCE

### Flexible Cable and Extension Cords

**437-81-639** Extension cords used with portable electric tools and appliances shall be of three-wire type, and fitted with approved grounding-type attachment plug and receptacle providing ground continuity. (Formerly 33-4-38)

NOTE: This rule does not apply to cords used with portable tools and equipment protected by an approved system of double insulation or its equivalent.

**437-81-643** Worn or frayed electric cables shall not be used. (Formerly 33-4-39)

**437-81-646** Flexible cables and extension cords shall be protected against accidental damage as may be caused by traffic, sharp corners, or projections and pinching in doors or elsewhere. (Formerly 33-4-40)

**437-81-649** Cables passing through work areas shall be covered or elevated to protect them from damage. (Formerly 33-4-41)

**437-81-653** Flexible cables and extension cords shall not be fastened with staples, hung from nails or suspended by wire. (Formerly 33-4-42)

**437-81-656** Electrical conductors shall be spliced or joined in splicing devices suitable for the use, by brazing, welding or soldering with a fusible metal or alloy.

(1) Soldered splices shall first be so spliced or joined as to be mechanically and electrically secured without solder, and then soldered. (Rosin-core solder should be used, NOT acid core solder, when joining electrical conductors.)

(2) All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors or with an insulating device suitable for that purpose.

(3) Splices for flexible cords must provide the flexibility and usage characteristics as that of the cord being spliced. Such repairs may be made by vulcanized splices or equivalent means such as systems using shrinkable materials. (Formerly 33-4-43)

### Attachment Plugs and Receptacles

**437-81-659** Attachment plugs for use in work areas shall be so constructed that they will endure rough use and be equipped with a suitable cord grip to prevent strain on the terminal screws. (Formerly 33-4-44)

**437-81-663** Attachment plugs shall be of approved grounding type. (Formerly 33-4-45)

**437-81-666** Receptacles for attachment plugs shall be of approved concealed contact type with a contact for extending ground continuity and shall be so designed and constructed that the plug may be pulled out without leaving any live parts exposed to accidental contact. (Formerly 33-4-46)

**437-81-669** Polarized attachment plugs, receptacles and cord connectors shall be wired in proper continuity. (Formerly 33-4-47)

**437-81-673** Polarized attachment plugs, receptacles and cord connectors for plugs and polarized plugs shall have the terminal intended for connection to the grounded (white) conductor identified by a metal coating substantially white in color. If the terminal is not visible, its entrance hole shall be marked with the word "white". (Formerly 33-4-48)

**437-81-676** The terminal for the connection of the equipment grounding conductor shall be identified by:

(1) A green colored, not readily removable terminal screw with hexagonal head; or

(2) A green colored, hexagonal, not readily removable terminal nut; or

(3) A green colored pressure wire connector.

(4) If the terminal for the grounding conductor is not visible, the conductor entrance hole shall be marked with the word "green" or otherwise identified by a distinctive green color. (Formerly 33-4-49)

NOTE: Two-wire attachment plugs, unless of the polarity type, need not have their terminals marked for identification.

**437-81-679** Where different voltages, or types of current (A.C. or D.C.) are to be supplied by portable cords, receptacles shall be of such design that attachment plugs used on such circuits are not interchangeable. (Formerly 33-4-50)

**437-81-683** Attachment plugs or other connectors supplying equipment at more than 300 volts shall be of the skirted type or otherwise so designed that arcs will be confined. (Formerly 33-4-51)

### Cord and Plug Connected Equipment

**437-81-686** The noncurrent-carrying metal parts of portable or plug-connected equipment shall be grounded. (Formerly 33-4-52)

**437-81-689** Portable tools and appliances protected by an approved system of double insulation, or its equivalent, need not be grounded. Where such an approved system is employed, the equipment shall be distinctively marked. (Formerly 33-4-53)

**437-81-693** Exposed noncurrent-carrying metal parts of fixed electrical equipment, including motors, frames, electrically driven machinery, etc., shall be grounded. (Formerly 33-4-54)

**437-81-696** All shocks received from electrical equipment, no matter how slight, shall be reported immediately to the person in charge or the employer. The equipment causing the shock shall be checked and any necessary corrective action taken without delay. (Formerly 33-4-55)

### Grounding and Bonding

**437-81-699** Effective Grounding. The path from circuits, equipment, structures, and conduit or enclosures to ground shall be permanent and continuous; having ample carrying capacity to conduct safely the currents liable to be imposed on it; and have impedance sufficiently low to limit the potential above ground and to result in the operation of the overcurrent devices in the circuit. (Formerly 33-4-56)

**437-81-703** Ground Resistance. Driven rod electrodes shall, where practicable, have a resistance to ground not to exceed 25 ohms. Where the resistance is not as low as 25 ohms, two or more electrodes connected in parallel shall be used. (Formerly 33-4-57)

**437-81-706** Testing of Grounds. Grounding circuits shall be checked to ensure that the circuit between the ground and the grounded power conductor has a resistance which is low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current. (Formerly 33-4-58)

**437-81-709** Conductors used for bonding and grounding stationary and moveable equipment shall be of ample size to carry the anticipated current. (Formerly 33-4-59)

### Switches and Circuit Breakers

**437-81-713** Not less than 3' of clear space shall be maintained in front of switch centers or panels at all times. Passageways to switch centers or panels shall be kept free from obstruction at all times. (Formerly 33-4-60)

**437-81-716** Live parts of electrical switchboards and panelboards shall be enclosed or screened. (Formerly 33-4-61)

**437-81-719** Each disconnecting means for motors and appliances, and each service feeder or branch circuit at the point where it originates, shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident. (Formerly 33-4-62)

**437-81-723** Disconnecting means shall be located or shielded so that employes will not be injured. The use of open knife switches is prohibited. (Formerly 33-4-63)

**437-81-726** Boxes for disconnecting means shall be securely and rigidly fastened to the surface upon which they are mounted and fitted with covers. (Formerly 33-4-64)

**437-81-729** Boxes and disconnecting means installed in damp or wet locations shall be waterproof to the extent that water does not enter or accumulate. (Formerly 33-4-65)

### Identification and Load Ratings

**437-81-733** Name plates, rating data, and marks of identification on electrical equipment and electrically-operated machines shall not be removed, defaced or obliterated. (Formerly 33-4-66)

**437-81-736** In existing installations no changes in circuit protection shall be made to increase the load in excess of the load rating of the circuit wiring, as specified in the National Electrical Code, NFPA 70-1971; ANSI C1-1972, Article 310. (Formerly 33-4-67)

**437-81-739** Tampering with, bridging, or using oversize fuses is prohibited. If fuses blow repeatedly, such trouble shall be immediately reported to the employer or an authorized electrician. (Formerly 33-4-68)

**437-81-743** Attempts to start electric motors that kick out repeatedly are prohibited. (Formerly 33-4-69)

### PROXIMITY TO OVERHEAD LINES

#### Clearance or Safeguards Required

**437-81-746** All exposed overhead conductors shall be isolated from probability of accidental contact by persons or equipment. (Formerly 33-4-70)

**437-81-749** Irrigation pipe shall not be stored within 100' of overhead conductors. (Formerly 33-4-71)

**437-81-753** Upending irrigation pipe within 100' of overhead conductors is prohibited. (Formerly 33-4-72)

**437-81-756** No part of any water or irrigation system, or any other device which discharges a conductive liquid, shall be set up or operated in such a way that the discharge from that system is directed or may come within 10' of overhead high-voltage lines, or may contact any other exposed electrical power conductor. (Formerly 33-4-73)

**437-81-759** No employer shall require or permit any employe to enter or to perform any function in proximity to high-voltage lines, unless danger from accidental contact with said high-voltage lines has been effectively guarded against. (Formerly 33-4-74)

NOTE: Voltage 750 V and higher is considered HIGH VOLTAGE.

**437-81-763** The operation, erection, or transportation of any tools, equipment, or any part thereof capable of movement; the handling, transportation, or storage of any materials; or the moving of any

building near high-voltage lines is prohibited if at any time it is possible to bring such object within 10' of high-voltage lines. (Formerly 33-4-75)

**437-81-766** Except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines, equipment or machines shall be operated near power lines only in accordance with the following:

(1) For lines rated 50 kV. or below, minimum clearance between the lines and any part of the object shall be 10';

(2) For lines rated over 50 kV. minimum clearance between the lines and any part of the object shall be 10' plus 0.4" inches for each 1 kV., over 50 kV., or twice the length of the line insulator but never less than 10'.

(3) In transit, the clearance shall be a minimum of 4' for voltages less than 50 kV., 10' for voltages over 50 kV. up to and including 345 kV., and 16' for voltages up to and including 750 kV.

(4) A person shall be designated to observe clearance and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. (Formerly 33-4-76)

### Warning Sign Required

**437-81-769** The employer shall post and maintain in plain view of the operator on each derrick, power-shovel, drilling-rig, hay loader, hay stacker, or similar apparatus, any part of which is capable of vertical, lateral or swinging motion, a durable warning sign legible at 12' reading "Unlawful to operate this equipment within 10' of high-voltage lines." (Formerly 33-4-77)

### Notification to Power Company and Responsibility for Safeguards

**437-81-773** When any operations are to be performed, tools or materials handled, or equipment is to be moved or operated within 10' of any high voltage line, the person or persons responsible for the work to be done shall promptly notify the operator of the high-voltage line of the work to be performed, and shall be responsible for the completion of the safety measures as required before proceeding with any work which would impair the aforesaid clearance. (Formerly 33-4-78)

NOTE: The foregoing rules are not intended to apply to the construction, reconstruction, operations and maintenance of overhead electrical conductors (and their supporting structures and associated equipment) by authorized and qualified electrical workers; nor to authorized and qualified employees engaged in the construction, reconstruction, operations and maintenance of overhead electrical circuits or conductors (and their supporting structures and associated equipment) of rail transportation systems, or electrical generating, transmission, distribution, and communication systems.

## STEAM-AIR COMPRESSORS; PIPING SYSTEMS CARRYING HAZARDOUS MATERIALS

### GENERAL

NOTE: The Oregon Department of Commerce is the governing authority on Boilers and Unfired Pressure Vessels and should be consulted for requirements. Boilers and Unfired Pressure Vessels are defined in the Oregon Boiler and Pressure Vessel Law, as noted in ORS 480.510. Standards pertaining to Oxygen Fuel Gas welding processes are contained in Rules 437-81-2073 thru 437-81-2443.

**437-81-776** Rules 437-81-776 thru 437-81-869 prescribe standards to provide for protection against hazards incurred with cookers and other heated pressure vessels, steam, compressed air, and piping systems carrying hazardous materials, used in places of agricultural employment. (Formerly 33-5-1)

**437-81-779** All boilers and pressure vessels used in places of employment shall be manufactured, operated, maintained and tested in accordance with minimum standards adopted in the Oregon Boiler and Pressure Vessel Law. (Formerly 33-5-2)

**437-81-783** Workers shall not repair or maintain high pressure systems unless the pressure has been relieved and the controls locked out. (Formerly 33-5-3)

**437-81-786** Unless controls are located at the vessel, each control valve shall be permanently identified in relation to the pressure vessel to which it is connected. (Formerly 33-5-4)

**437-81-789** Relief valve exhaust systems shall be secured to withstand the forces involved; and their discharge shall be directed into areas that will not endanger workers. (Formerly 33-5-5)

### HEATED PRESSURE VESSELS

**437-81-793** Any person who enters a pressure vessel shall disable the door closing mechanism, or use lock-out procedures or some other positive method which will prevent the door from being closed and heat or pressure from being applied. (Formerly 33-5-6)

**437-81-796** Doors or covers of pressure vessels shall not be closed until it is certain that all workers are outside the vessel. (Formerly 33-5-7)

**437-81-799** Heat shall not be applied until all covers are closed and secured. (Formerly 33-5-8)

**437-81-803** Pressure vessels shall be equipped with a pressure gauge, or with interlocks to prevent unlatching of the door until all pressure has been relieved. (Formerly 33-5-9)

**437-81-806** Covers shall not be unlatched until inside pressure has been reduced to atmospheric pressure. (Formerly 33-5-10)

**437-81-809** The water gauge glass on boilers shall be guarded and provided with a light when necessary for visibility. Guard shall be equivalent to ¼" mesh of No. 18 gauge screen, or heavier. (Formerly 33-5-11)

**437-81-813** All steam and other high temperature pipe lines within 7' of the floor, work platform or passageway shall be covered with noncombustible insulating material or otherwise protected against accidental contact of persons. (Formerly 33-5-12)

**437-81-816** Operators shall not blow condensate from a steam apparatus while workers are nearby. (Formerly 33-5-13)

### AIR COMPRESSORS AND AIR RECEIVERS

#### Air Compressors

**437-81-819** Every air compressor shall be provided with a safety valve and pressure gauge. The gauge shall be of the type that blows out the back if it fails. (Formerly 33-5-14)

**437-81-823** Air compressor intakes shall not be located in atmospheres containing concentrations of flammable or toxic gases or vapors. (Formerly 33-5-15)

NOTE: This rule shall not apply to properly designed scavenging systems.

**437-81-826** If a shut-off valve is located between the compressor discharge and the air receiver, a pressure relieving safety device, set to open at not more than 10% above the maximum allowable working pressure of the compressor cylinder, shall be placed in the line between the compressor and the shut-off valve. (Formerly 33-5-16)

**437-81-829** Mineral oil having a high flash point, water, or special lubricants designed for the purpose shall be used for lubricating air compressors. When mineral oil is used, the quantity shall be metered to the minimum amount necessary for proper lubrication. (Formerly 33-5-17)

**437-81-833** Pressure hose connections shall be securely made and maintained in safe working condition. Effective means shall be used to prevent an uncoupled hose from whipping. (Formerly 33-5-18)

#### Use of Compressed Air

**437-81-836** Compressed air shall be used for cleaning purposes only when the following prerequisite conditions are met:

(1) The downstream pressure of the air at the nozzle or opening of the cleaning lance used for cleaning purposes shall be reduced to a pressure level of less than 30 psi for all static conditions.

(2) Effective chip guarding and personal protective equipment shall be used for the protection of the operator and workers. (Formerly 33-5-19)

NOTE: The requirements for dynamic flow are such that when dead ending occurs, a static pressure at the main orifice

shall not exceed 30 psi. This requirement is necessary in order to prevent a back pressure buildup in case the nozzle is obstructed or dead ended. See Figures E-1 and E-2 for acceptable methods of meeting this requirement.

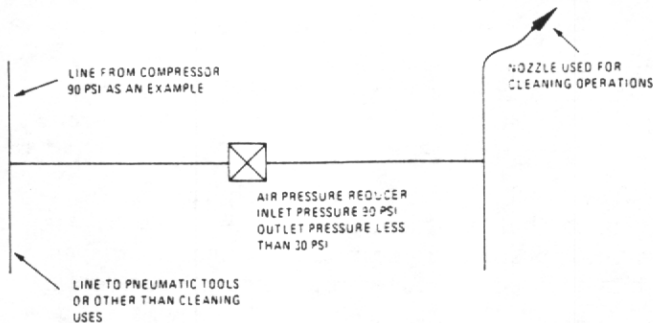


Fig. E-1

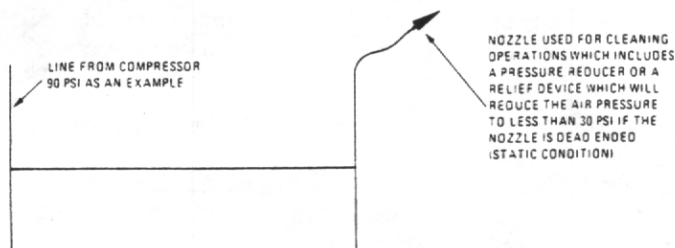


Fig. E-2

NOTE: "Effective chip guarding" means any method or equipment which will prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other workers. The use of protective cone air nozzles is acceptable in general for the protection of the operator but barriers, baffles, or screens may be required to protect other workers if they are exposed to flying chips or other particles.

**437-81-839** Workers shall not use compressed air to clean clothing which is being worn, nor shall it be intentionally directed at any other person. (Formerly 33-5-20)

### Air Receivers

NOTE: Rules 437-81-843 thru 437-81-859 apply to compressed air receivers used in conjunction with tire inflation, cleaning, spraying, or used to power pneumatically operated tools and equipment. It does not apply to air-actuated braking systems on vehicles.

**437-81-843** All new air receivers installed after the effective date of these regulations shall be

constructed in accordance with the 1971 edition of the ASME Boiler and Pressure Vessel Code Section 8. (Formerly 33-5-21)

**437-81-846** Air receivers shall be located with sufficient clearance to permit a complete external inspection and servicing, and to avoid corrosion of external surfaces. (Formerly 33-5-22)

**437-81-849** Under no circumstances shall an air receiver be buried underground or located in an inaccessible place. (Formerly 33-5-23)

**437-81-853** The receiver shall be located as close to the compressor or aftercooler as is possible in order to keep the discharge pipe short. (Formerly 33-5-24)

**437-81-856** No valve of any type shall be placed between the air receiver and its safety valve or valves. (Formerly 33-5-25)

**437-81-859** A drain valve shall be installed at the lowest point of every air receiver. The receiver shall be drained as often as necessary to prevent liquids from accumulating in the receiver. (Formerly 33-5-26)

### PIPING SYSTEMS

**437-81-863** All piping systems and their component parts which carry air, steam, or other material at more than atmospheric pressure shall be of adequate design and strength to withstand pressures to be placed upon them. (Formerly 33-5-27)

**437-81-866** Exposed piping systems which carry dangerous, flammable, explosive or toxic gases or liquids, or other injurious materials, shall be positively identified by labeling at all valves and discharges, at places where they emerge from walls, and at other points where confusion as to their contents could create a hazard. Arrows to indicate direction of flow shall be marked on the piping systems. (Formerly 33-5-28)

**437-81-869** All steam and other high temperature pipe lines within 7' of the floor, passageway or work platform shall be insulated or otherwise protected against accidental contact. (Formerly 33-5-29)

## HAND TOOLS AND HAND-HELD POWER DRIVEN TOOLS GENERAL

### Scope and Application

**437-81-873** Rules 437-81-873 thru 437-81-1016 prescribe safety standards to provide for protection against hazards incurred with hand tools, hand-held power driven tools, and jacks used in places of agricultural employment. (Formerly 33-6-1)

### Definitions

**437-81-876** The following definitions apply to Rules 437-81-873 thru 437-81-1016.

(1) **Hand Tool**—A hand tool is an instrument used in performing an operation, and which is used, worked, and held by hand. Examples of hand tools are: knife; chisel; wrench; ax and shovel. (Formerly 33-6-2)

(2) **Hand-held power driven tool**—An instrument or machine used in performing an operation, and which is used, worked, and held by hand; but whose functional parts are actuated by a supplied source of energy such as electricity, hydraulic or air pressure, or internal combustion engine. Examples are: portable electric circular saw; electric or pneumatic hand drill; chain saw; pneumatic nailer; powered pruning shears. The terms "hand-held power driven tool," "power tool," and "powered tool" as used in Rules 437-81-873 thru 437-81-1016 are synonymous. (Formerly 33-6-3)

### General

**437-81-879** Tools shall be appropriate for the purpose for which they are used; they shall be of proper size or capacity, and shall be safely used. (Formerly 33-6-4)

**437-81-883** Only tools which may be surely controlled may be used. Handles and grips shall:

- (1) Present a smooth surface, free of sharp edges or splinters.
- (2) Provide adequate clearance for the hand.
- (3) Be securely attached to the tools. (Formerly 33-6-5)

**437-81-886** Wooden handles of hand tools shall be of straight-grained stock and free of splinters. (Formerly 33-6-6)

**437-81-889** Wooden handles of hand tools shall be well fitted to bear snugly against the eye or socket at all points, and shall be securely fastened, wedged, or held in place. (Formerly 33-6-7)

**437-81-893** Tools shall be kept in safe condition. The use of defective or unsafe tools is prohibited. (Formerly 33-6-8)

**437-81-896** The heads of shock tools, such as chisels, punches, wedges, hammers, sledges, shall be ground and dressed as they begin to mushroom or spall.

(1) Shock tools with burred heads shall not be used.

(2) Shock tools which begin to split and which show a tendency to chip shall be removed from service. (Formerly 33-6-9)

**437-81-899** Workers who use sharp-edged cutting tools shall be furnished and required to use personal protective equipment such as gloves, aprons, and leg guards to protect against accidental cuts. (Formerly 33-6-10)

**437-81-903** Heavy leather holsters, sheaths, or equivalent protection shall be used for sharp-edged or sharp-pointed tools carried on a worker's person. (Formerly 33-6-11)

**437-81-906** When not in actual use, tools shall be placed or secured where they will not create a hazard. Sharp, pointed, and serrated parts and cutting edges shall be protected against inadvertent contact. (Formerly 33-6-12)

**437-81-909** Power supply lines and hoses shall not be laid out, or left draped, coiled, or tangled in walkways or work areas where they may:

- (1) Create a tripping hazard to others;
- (2) Be subjected to damage by material, equipment, or other work in progress; or
- (3) Be caught up, pulled, or jerked so as to unbalance or otherwise interfere with the operator. (Formerly 33-6-13)

**437-81-913** When not in use, power supply lines and hoses shall be disconnected from tools and removed to a safe storage area, out of traffic and work areas. Except for power cables in retractable reels, electrical power supply cables shall, in addition, be disconnected from the power source. (Formerly 33-6-14)

**437-81-916** Spark-resistant tools or tools of non-ferrous materials shall be used in flammable or explosive atmospheres. (Formerly 33-6-15)

## HAND-HELD POWER DRIVEN TOOLS

### Controls

**437-81-919** Hand-held power driven tools shall always be stopped when not in use, and they shall always be disconnected from the power source or the engine shut down before accessories are changed. (Formerly 33-6-16)

**437-81-923** Every hand-held power driven tool shall be equipped with a switch or device to turn the tool on and off. (Formerly 33-6-17)



**437-81-926** Power tool controls shall be so located, arranged, or protected as to prevent accidental operation of the tool.

(1) Guards over power tool controls shall provide sufficient clearance to allow full and free manipulation of the control.

(2) Completely enclosed "trigger guard" type guards which may restrict the immediate release of the control or the tool, or which may catch the operator's finger, are prohibited. (Formerly 33-6-18)

**437-81-929** The hand-held power driven tools listed below shall be equipped with a constant pressure type switch or control. The control shall function to automatically shut off the power whenever the operator releases the control. Control lock-on devices are prohibited with the following tools:

(1) Portable circular saws.

(2) Electric, pneumatic, or hydraulic chain saws. (Formerly 33-6-19)

**437-81-933** The hand-held power driven tools listed below shall be equipped with a constant pressure type switch or control which will automatically shut off the power whenever the operator releases the control. A control lock-on device may be permitted on these tools provided turn-off can be accomplished by a single motion of the same finger or fingers that turns it on.

(1) Portable drills.

(2) Portable grinders with abrasive wheels larger than two inches in diameter. (Formerly 33-6-20)

### Electrical Power Supply Cables

**437-81-936** Power supply cords and flexible cables shall be of the type designed for severe service conditions. If used in damp locations or outdoors, they shall have weather-resistant insulation and connections. Flexible power supply cords or cables with defective sheathing, insulation, or connections shall not be used. (Formerly 33-6-21)

NOTE: Polarized plugs or grounding type plugs with the grounding contact member missing, or with exposed conductors shall be considered as defective.

### Grounding of Power Tools

**437-81-939** The frame and all exposed, non-current carrying metal parts of hand-held electric powered tools operated at more than 90 volts to ground shall be grounded. The ground shall be provided through the ground wire in a 3-conductor power supply cord, or through a separate ground wire run in conjunction with the power supply cable assembly, and a polarized plug and receptacle. (Formerly 33-6-22)

Exception: Electric-powered tools designated on the data plate as "Double Insulated", and bearing an Underwriters' Laboratories approval for that designation, are exempt from the grounding requirements described above.

### Guarding

**437-81-943** All projecting set screws, keys, and similar projections in exposed revolving or reciprocating parts on hand-held power driven tools shall be guarded. Guards shall be replaced or correctly adjusted before use. (Formerly 33-6-23)

**437-81-946** Portable power circular hand saws shall be equipped with a base plate or shoe, and with guards above and below the base plate.

(1) The upper guard shall cover the saw to the depth of the teeth.

(2) The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper contact with the work.

(3) When the saw is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

(4) The saw guards shall not be blocked in an open position.

(5) The lower saw guard shall be equipped with a handle or lug by which it may be temporarily retracted without exposing the operator's fingers to the blade. (Formerly 33-6-24)

**437-81-949** Portable powered grinders shall be provided with a safety guard over the abrasive wheel, unless the abrasive wheel is a metal, wooden, cloth, paper, or bonded reinforced disc, having a layer of abrasive on the surface.

(1) Safety guards for portable grinders of the right-angle head or vertical type shall have a maximum exposure angle of 180°. The guard shall be positioned so as to be between the operator and the wheel during use. It shall be so adjusted that pieces of an accidentally broken wheel will be deflected away from the operator. In operations where the work provides a suitable measure of protection to the operator, the guard may be so designed that the spindle end, nut, and outer flange are exposed. (See Figure F-1)

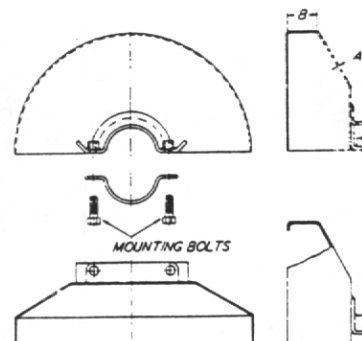


Fig. F-1

(2) Safety guards for other portable grinders shall enclose the wheel except for a maximum permissible exposure angle of 180°. The guard shall cover the periphery and sides of the wheel, including the spindle end, nut, and flange projections. It shall be positioned so as to be between the operator and the wheel during use, and adjusted so that pieces of an accidentally broken wheel will be deflected away from the operator. (See Figures F-2 and F-3) (Formerly 33-6-25)

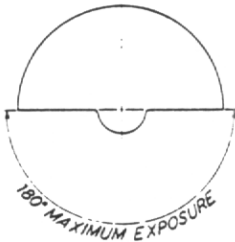


Fig. F-2

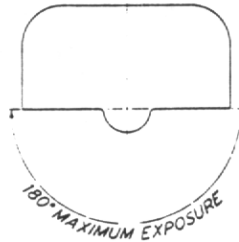


Fig. F-3

**437-81-953** Power driven nailers and staplers shall be equipped with a device to prevent ejection of nails or staples when the tool is not in firm contact with the work. (Formerly 33-6-26)

**437-81-956** Powered impact tools shall be equipped with a retainer or safety device which will prevent the attachment or tool from being ejected. (Formerly 33-6-27)

### Internal Combustion Engine-Driven Tools

**437-81-959** Internal combustion engine powered tools shall be equipped with a pressure control that, when released, will return the engine to idling speed. In addition, they shall be equipped with a positive on and off ignition switch that will remain in either position. (Formerly 33-6-28)

**437-81-963** Internal combustion engine powered tools shall be stopped and the engine shut off while being fueled. (Formerly 33-6-29)

**437-81-966** Fuel systems on internal combustion engine powered tools shall be maintained free of leaks or defects which will allow the escape of fuel. (Formerly 33-6-30)

**437-81-969** Internal combustion engine-driven tools shall be equipped with a self-rewinding starting mechanism, or with a starting method or device that will furnish equivalent safety. (Formerly 33-6-31)

**437-81-973** Exhaust ports on internal combustion engine powered tools shall be equipped with mufflers, and the exhaust shall be deflected away from the operator. (Formerly 33-6-32)

**437-81-976** Carrying slings of sling-carried internal combustion engine powered tools such as back-pack sprayers, pruning tools, and shrub-

shearing tools, shall be designed so that the operator can remove the tool immediately and with minimum effort. Quick-release fasteners or equivalent means should be used to facilitate quick removal. (Formerly 33-6-33)

### Pneumatic Powered Tools

**437-81-979** Compressed air hose and connections used with pneumatic power tools shall not be subjected to pressures nor to service in excess of that for which they were designed. (Formerly 33-6-34)

**437-81-983** A shut-off valve shall be located between the hose and the compressed air supply. Hoses shall not be coupled or uncoupled without first shutting off the compressed air supply unless couplers are equipped with self-closing check valves. (Formerly 33-6-35)

**437-81-986** A safety line or chain shall be attached to the hose and to the tool housing to keep the hose from whipping should the coupling break. A safety check valve shall be installed in the air line at the manifold to automatically shut off the air supply should a fracture occur anywhere in the line. (Formerly 33-6-36)

**437-81-989** Oxygen or combustible gases shall not be used to drive pneumatic power tools. (Formerly 33-6-37)

**437-81-993** The exhaust from pneumatic power tools shall be deflected away from the operator. (Formerly 33-6-38)

### JACKS

#### Definitions

**437-81-996** The following definitions apply to Rules 437-81-001 thru 437-81-2943.

(1) Jack—a manually-operated appliance for lifting, lowering, or moving horizontally a load by application of a pushing force. They may be lever and ratchet, screw, or hydraulic. (Formerly 33-6-39)

(2) Rating—The rating of a jack is the maximum working load for which it is designed to lift safely that load throughout its specified amount of travel. (Formerly 33-6-40)

#### General

**437-81-999** Jacks shall be inspected before each use. Jacks which are found to be defective in any way shall not be used until the defective condition is corrected. Defective jacks shall be marked or tagged "DEFECTIVE—DO NOT USE," or words to that effect. (Formerly 33-6-41)

**437-81-1003** Jacks shall be serviced, lubricated, and maintained as necessary to insure their good operating condition, or as specified by the manufacturer. Jacks shall function smoothly and freely in both ascending and descending modes when under load. (Formerly 33-6-42)

**437-81-1006** The rated load of hydraulic jacks shall be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means. (Formerly 33-6-43)

**437-81-1009** The operator shall make sure the jack used has a rating sufficient to lift and sustain the load. (Formerly 33-6-44)

**437-81-1013** The base of the jack shall be placed on a firm foundation. In the absence of a firm foundation, the base of the jack shall be blocked. If there is a possibility of slippage of the cap, a block shall be placed between the cap and the load. (Formerly 33-6-45)

**437-81-1016** After the load has been raised, it shall be immediately cribbed, blocked, or otherwise secured. (Formerly 33-6-46)

NOTE: This rule does not apply to changing of automotive-type wheels on vehicles when all of the following conditions are met:

- (1) The vehicle is equipped with at least four wheels (each pair of duals count as one wheel).
- (2) The wheel is raised only for the minimum time necessary to remove the original wheel and immediately replace it with another.
- (3) No person places any part of his body under the vehicle while it is on the jack in the raised position.
- (4) The vehicle is attended by a responsible person while it is on the jack.

## PERSONAL PROTECTIVE EQUIPMENT

### Definitions

**437-81-1019** The following definitions apply to Rules 437-81-1019 thru 437-81-1169.

(1) Contaminant—Any material which by reason of its action upon or to a person is likely to cause physical harm. (Formerly 33-7-1)

(2) Lanyard—A rope, suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a lifeline. (Formerly 33-7-2)

(3) Lifeline—A rope suitable for supporting one person, to which a lanyard or safety belt (or harness) is attached. (Formerly 33-7-3)

(4) Safety Belt—A device, usually worn around the waist which, by reason of its attachment to a lanyard and lifeline or a structure, will prevent a worker from falling. (Formerly 33-7-4)

(5) Personal protective equipment—Any type of shield, barrier, restraint, or equipment applied to or worn by an individual for his personal protection against exposure to or injury from a hazardous object, substance, condition, or environment. (Formerly 33-7-5)

### General Requirements

**437-81-1023** No unprotected person shall knowingly be subjected to a hazardous condition. (Formerly 33-7-6)

**437-81-1026** Wherever there is a hazard arising from any source, the hazard shall be contained or eliminated at the source by administrative or engineering controls. Where it is not feasible to do so, or where the hazards have not been so contained or eliminated, personal protective equipment shall be used to prevent injury or occupational illness. (Formerly 33-7-7)

**437-81-1029** Personal protective equipment which is designed and constructed to protect against the hazards encountered, and suitable to the work being performed shall be furnished and used. (Formerly 33-7-8)

**437-81-1033** Personal protective equipment shall meet the following minimum requirements:

(1) It shall provide adequate protection against the particular hazards for which it is designed.

(2) It shall be reasonably comfortable when worn under the designated conditions.

(3) It shall fit securely and shall not unduly interfere with the movements of the wearer.

(4) It shall be durable.

(5) It shall be capable of being disinfected.

(6) It shall be easily cleanable. (Formerly 33-7-9)

**437-81-1036** Personal protective equipment shall be worn and used in a manner which will make full use of its protective properties. (Formerly 33-7-10)

**437-81-1039** Personal protective equipment shall be kept clean and sanitary. (Formerly 33-7-11)

**437-81-1043** When not in use, personal protective equipment shall be stored in such a way that it will be clean and ready for use. (Formerly 33-7-12)

**437-81-1046** Where employees furnish their own personal protective equipment, the employer shall be responsible for assuring its adequacy, including proper maintenance and sanitation of such equipment. (Formerly 33-7-13)

**437-81-1049** Personal protective equipment shall be maintained in good repair and reliable condition. Defective personal protective equipment shall not be used. (Formerly 33-7-14)

**437-81-1053** Where the need for their use is indicated, protective covering, aprons, gloves, ointments, or other effective protection shall be provided for and used by persons exposed to materials which are hazardous to the skin. (Formerly 33-7-15)

**437-81-1056** Clean water in ample quantities shall be immediately available where materials are handled that are caustic or corrosive to the eyes or skin. (Formerly 33-7-16)

**437-81-1059** Rings, wristwatches, earrings, bracelets, and other jewelry which might contact power driven machinery or electric circuitry shall not be worn. (Formerly 33-7-17)

### Work Clothing

**437-81-1063** Workers shall wear sufficient clothing to protect them from hazards to which they may be exposed. Such clothing shall be appropriate to the work being performed and the conditions encountered. (Formerly 33-7-18)

NOTE: Consideration must be given to temperatures and weather conditions to which workers are exposed.

**437-81-1066** Loose sleeves, ties, lapels, cuffs or other loose clothing shall not be worn near moving machinery. (Formerly 33-7-19)

NOTE: Application of this rule is not intended to negate requirements for guarding power driven machinery.

**437-81-1069** Clothing which has been wetted or impregnated with flammable liquids, corrosive or toxic substances, irritants, or oxidizing agents shall be removed immediately and not worn again until properly cleaned. (Formerly 33-7-20)

### Head Protection

**437-81-1073** Employees exposed to head injury from impact with overhead objects, or from falling

or flying objects, shall wear protective helmets (hard hats). (Formerly 33-7-21)

NOTE: Helmets worn near electrical conductors must be made of non-conductive material, designed for such use.

**437-81-1076** Workers whose hair is long enough to be caught in equipment or entangled in other objects around which they work shall wear caps, hair nets, or other protection which will adequately confine the hair while performing their duties. (Formerly 33-7-22)

### Eye and Face Protection

**437-81-1079** Suitable eye protectors shall be provided where machines or operations present the hazard of flying objects, glare, liquids, injurious radiation, or a combination of these hazards. (Formerly 33-7-23)

NOTE: Suitable screens or shields which isolate the hazardous exposure may be considered adequate safeguarding for nearby workers.

NOTE: Requirements for protective equipment in welding operations are contained in Rules 437-81-2073 thru 437-81-2443.

**437-81-1083** Employes whose vision requires the use of corrective lenses when required to wear eye protection shall be protected by goggles or spectacles of one of the following types:

- (1) Spectacles with protective lenses which provide optical correction;
- (2) Goggles or face shields that can be worn over corrective spectacles without disturbing the adjustment of the spectacles;
- (3) Goggles that incorporate corrective lenses mounted behind the protective lenses. (Formerly 33-7-24)

**437-81-1086** Face and eye protection equipment shall be kept clean and in good repair. (Formerly 33-7-25)

### Hearing Protection

**437-81-1089** Where noise levels and durations exceed the limits contained in Rule 22-019(a) of the occupational health rules, ear protective devices shall be provided and used. (Formerly 33-7-26)

NOTE: Plain cotton is not an acceptable protective device.

**437-81-1093** Ear protectors which must be inserted within the ear canal shall be initially fitted by a person trained in the procedure who shall explain the techniques for insertion to the employe. (Formerly 33-7-27)

**437-81-1096** In all cases where the noise levels in any area exceed the limits prescribed in Rules 22-019(a) and 22-019(b) of the occupational health rules, a continuing effective hearing conservation program shall be administered. (Formerly 33-7-28)

### Respiratory Protection

**437-81-1099** Where workers are exposed to air contaminated with harmful dusts, sprays, gases, or other harmful material, they shall be furnished and shall wear respiratory protection equipment. Such equipment shall:

- (1) Fit properly;
- (2) Be appropriate for the contaminant involved;
- (3) Meet the specific requirements for respirators and associated equipment contained in Rule 22-069 of the occupational health rules. (Formerly 33-7-29)

### Foot Protection

**437-81-1103** Workers shall wear footwear suitable for the work conditions. (Formerly 33-7-30)

**437-81-1106** Safety-toe shoes or foot guards shall be worn by workers engaged in work where they may be subject to foot injuries. (Formerly 33-7-31)

**437-81-1109** Special types or designs of shoe or foot guards are required where conditions exist that make their use necessary for the safety of workers. (Formerly 33-7-32)

**437-81-1113** Defective footwear, or footwear which is ineffective in preventing or limiting injury, shall not be worn where workers are exposed to conditions which may cause foot injuries. (Formerly 33-7-33)

**437-81-1116** Where workers' legs are exposed to hot substances, harmful chemicals, heavy brush, sharp tools, poisonous snakes, or other hazards, they shall wear leggings, boots, or other effective leg protection. (Formerly 33-7-34)

### Hand Protection

**437-81-1119** Hand protection suitable for the need shall be worn wherever the nature of the work requires extra protection to the hands. (Formerly 33-7-35)

**437-81-1123** Gloves shall not be worn by persons whose hands are exposed to moving parts in which they could be caught. (Formerly 33-7-36)

NOTE: Application of this rule is not intended to negate requirements for machinery guarding.

### Lifelines and Safety Belts

**437-81-1126** Except for those situations described in (6), below, employes shall be secured by safety belts and lifelines, or protected by use of safety nets, when they work:

- (1) From unguarded surfaces above open pits or tanks, moving machinery, or similar hazardous locations;
- (2) More than 10' above water, ground, or a lower floor or scaffold unless protected by a stand-

ard guardrail or other effective means to prevent falling;

(3) On roofs pitched steeper than  $\frac{1}{3}$  pitch;

(4) When they are otherwise exposed to dangerous falls;

(5) When entering certain confined spaces, pits, silos, or storage facilities as required by Rule 437-81-343.

(6) The foregoing requirements do not apply to:

(a) Haystacks, provided they are not located adjacent to open pits, tanks, or other hazardous locations;

(b) Fixed or portable ladders which are not located over water, exposed moving machinery, or other hazardous locations;

(c) Fixed ladders which are equipped with cages or safety devices. (Formerly 33-7-37)

**437-81-1129** Lifelines, safety belts and lanyards shall be used only for employe safeguarding. (Formerly 33-7-38)

**437-81-1133** The point of attachment for lifelines shall be maintained above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 lbs. (Formerly 33-7-39)

**437-81-1136** All safety belt and lanyard hardware shall be drop forged or pressed steel, cadmium plated. Surfaces shall be smooth and free of sharp edges. (Formerly 33-7-40)

**437-81-1139** Lifelines shall be a minimum of  $\frac{3}{4}$ " manila or equivalent with a minimum breaking strength of 5,400 lbs. (Formerly 33-7-41).

**437-81-1143** Safety belt lanyard shall be a minimum of  $\frac{1}{2}$ " nylon, or equivalent with a maximum length to provide for a fall of no greater than 6'. The rope shall have a nominal breaking strength of 5,400 lbs. (Formerly 33-7-42)

**437-81-1146** All safety belt and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 4,000 lbs. without cracking, breaking, or taking a permanent deformation. (Formerly 33-7-43)

**437-81-1149** All lifelines, lanyards and safety belts shall be inspected each time before use. Any defective belts or lifelines shall be discarded or repaired before use. (Formerly 33-7-44)

### Life Jackets and Buoyant Protective Equipment

**437-81-1153** Employes shall be provided with and shall wear approved buoyant protective equipment at all times while working on or over water:

(1) On floating pontoons, rafts and floating stages, work boats, and open decks which are not protected by bulwarks, guardrails or lifelines.

(2) During the construction, alteration or repair of structures extending over or adjacent to water, except when guardrails, safety nets, or safety belts and lifelines are provided and used.

(3) Working where there are potential drowning hazards regardless of other safeguards provided. (Formerly 33-7-45)

NOTE: "APPROVED" means U.S. Coast Guard approved, or approved by the Workmen's Compensation Board.

**437-81-1156** Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used. (Formerly 33-7-46)

**437-81-1159** Ring buoys with at least 90' of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200'. (Formerly 33-7-47)

**437-81-1163** At least one lifesaving skiff shall be immediately available at locations where employes are working over or adjacent to a body of water of such size or depth that rescue cannot be immediately effected from shore. (Formerly 33-7-48)

**437-81-1166** A safety skiff shall be equipped with good oars, with oarlocks securely attached to the gunwales, one boat hook and one approved life ring with not less than 90' of suitable line attached. (Formerly 33-7-49)

**437-81-1169** Work boats shall not be loaded in excess of their rated capacity. (Formerly 33-7-50)

## VEHICLES

### General

#### Scope and Application

**437-81-1173** Rules 437-81-1173 thru 437-81-1459 shall apply to every vehicle used in production agricultural employment. (Formerly 33-8-1)

NOTE: Additional requirements for industrial-type vehicles designed and used for handling materials, such as fork lifts, are contained in Rules 437-81-1463 thru 437-81-1703.

#### Purpose

**437-81-1176** Rules 437-81-1173 thru 437-81-1459 prescribe safety standards intended to improve the degree of personal safety for operators and others involved during the normal operation and servicing of agricultural equipment. (Formerly 33-8-2)

#### Definitions

**437-81-1179** The following definitions apply to Rules 437-81-1173 thru 437-81-1459.

(1) Vehicle—Every device by which any person or property may be transported except devices moved by human power or used exclusively upon stationary rails or tracks. It includes commercial-type vehicles designed for use on public roads, such as cars or trucks; farm field equipment such as tractors, harvesters, balers, planters, trailers, or any combination thereof; and vehicle-mounted elevating and rotating work platforms. (Formerly 33-8-3)

(2) Commercial-type vehicle—A vehicle designed or used primarily for the transportation of persons or material over private or public roads; and which are not designed, or have not been so modified, as to be primarily for on-farm agricultural production or crop-handling vehicles. (Formerly 33-8-4)

NOTE: Included under this definition are cars, pick-ups, buses, trucks.

(3) Agricultural vehicle—A vehicle specifically designed or modified for use exclusively in agricultural operations, and which is not licensed for use on public roads under current Oregon laws. (Formerly 33-8-5)

NOTE: Included in this definition are farm field equipment such as tractors, harvesters, planters or any combination thereof; unlicensed trucks and wagons or trailers such as feeder trucks or wagons and specialized crop handling vehicles; and mobile elevating and rotating work platforms such as orchard aerial lift devices.

## VEHICLE OPERATING REQUIREMENTS

### Operation of Vehicles

**437-81-1183** Every motor vehicle shall, when under its own power and in motion, have an operator at the vehicular controls at all times. (Formerly 33-8-6)

**437-81-1186** No worker shall operate any vehicle which is not in safe condition. Any unsafe condition found on any vehicle shall be corrected before the vehicle is placed into service. (Formerly 33-8-7)

**437-81-1189** Only workers who have been authorized by the employer to operate the vehicle may do so. (Formerly 33-8-8)

**437-81-1193** Workers shall demonstrate their competence in the safe operation of intended vehicles before being authorized by an employer to operate them. (Formerly 33-8-9)

**437-81-1196** Operators of vehicles shall watch their path of travel and shall not move a vehicle until certain that all persons are in the clear. The operator shall have a clear view of the path of travel unless guided by a signalman who has a clear view of the route. (Formerly 33-8-10)

**437-81-1199** Vehicles shall not be driven up to anyone who is in front of a stationary object. (Formerly 33-8-11)

**437-81-1203** Operators of vehicles shall not exceed the authorized or safe speed, whichever is lesser. The speed shall be no more than will permit the vehicle to be under positive control and stopped in a safe manner. (Formerly 33-8-12)

**437-81-1206** Operators of vehicles shall always maintain a safe distance from other vehicles. (Formerly 33-8-13)

**437-81-1209** At blind crossings and other locations where vision is obstructed, vehicle operators shall slow down or stop as necessary for safe operation. (Formerly 33-8-14)

**437-81-1213** Vehicles shall be controlled manually while being pushed or towed except when a tow bar is used. Special precautions shall be taken when pushing vehicles where view is obstructed. (Formerly 33-8-15)

**437-81-1216** Employes working in the immediate vicinity of a vehicle shall be on the lookout for any movement of the vehicle, and shall heed any warning given. (Formerly 33-8-16)

**437-81-1219** Stunt driving or horseplay shall not be permitted. (Formerly 33-8-17)

### Riding on Vehicles

**437-81-1223** A safe means of access shall be provided to all vehicles. (Formerly 33-8-18)

**437-81-1226** Jumping on or off moving vehicles is prohibited. (Formerly 33-8-19)

**437-81-1229** No one shall be permitted to ride on a vehicle unless a seat or other safe riding facility is provided for each person to be carried. (Formerly 33-8-20)

**437-81-1233** No person shall place arms or legs between working parts, or outside the running lines of vehicles. (Formerly 33-8-21)

**437-81-1236** Riding on tongues, drawbars, buckets, or forks of moving vehicles is prohibited. (Formerly 33-8-22)

**437-81-1239** Employes shall not ride on top of loads that may dangerously shift, topple over, or otherwise become unstable. (Formerly 33-8-23)

**437-81-1243** Employes shall be seated when riding on the load, except when engaged in field work at slow, even speeds over smooth ground, as in loading operations. (Formerly 33-8-24)

**437-81-1246** When employes are working on the cargo space of moving trucks or trailers, as in field operations, effective measures shall be taken to prevent their falling or being thrown off.

(1) Reduce vehicle speed to the slowest possible.

(2) Operate the vehicle at a steady, smooth rate. Avoid erratic operation of the vehicle.

(3) Travel parallel to rows or corrugations. When necessary to cross corrugations or ditches, warn the employes to sit down in a safe place, away from the edge, and to hold on to a secure hand hold. (Formerly 33-8-25)

### Loading of Vehicles

**437-81-1249** No vehicle shall be loaded beyond its safe operating capacity. (Formerly 33-8-26)

**437-81-1253** Except for vehicles that are loaded "on the go", brakes shall be set on vehicles being loaded. In addition, the wheels of such vehicles shall be chocked or blocked when they are being boarded by other motor vehicles, and during other loading operations when necessary to prevent movement. (Formerly 33-8-27)

**437-81-1256** To prevent up-ending, uncoupled trailers shall be supported by props or jacks during loading operations. (Formerly 33-8-28)

**437-81-1259** All loads shall be secured against dangerous displacement either by piling or securing so as to prevent shifting, toppling over, or otherwise becoming unstable. (Formerly 33-8-29)

**437-81-1263** Loaded vehicles shall not be moved unless the load is safe and secure. (Formerly 33-8-30)

**437-81-1266** Operating methods shall be adjusted to maintain stability of the vehicle or load when the load or vehicle shape raises or changes the center of gravity. (Formerly 33-8-31)

**437-81-1269** Adequate means of access shall be provided so that employes can safely reach the top of the load for manual loading or unloading of high loads. (Formerly 33-8-32)

### Parking

**437-81-1273** When the operator of any vehicle is not at the controls, the brakes shall be set or wheels locked against movement; the controls shall be neutralized; and any elevated component shall be lowered to the "down" position or else securely locked or blocked against lowering. In addition, when the vehicle is unattended, the power shall be shut off, and, if parked on an incline, the wheels shall be blocked or chocked. (Formerly 33-8-33)

NOTE: A vehicle is unattended when the vehicle is not within the view of its operator, or when the operator is over 25' away from the vehicle.

### EQUIPMENT AND MAINTENANCE REQUIREMENTS

#### Operator's Station, Work Platforms, and Cabs

**437-81-1276** The operator's station and work platforms on all agricultural vehicles shall be equipped with guardrails or other means to prevent persons from falling, wherever any of the following conditions exist:

(1) The operator is not seated or protected from falling by the framework, body, or design of the equipment; or

(2) The floor of the operator's station is over 22" above the adjacent floor level; or

(3) The operator's station, regardless of height, is so located that a worker could fall into the path of equipment or into moving parts. (Formerly 33-8-34)

NOTE: When guardrails or similar barricades are used, the toprail shall be 36" to 44" above the deck; the railing shall include a midrail except in areas where the operator's view to crop gathering or other functional units would be impaired.

**437-81-1279** Vehicle cabs shall be provided with at least one door. Doors provided shall open easily. Where there is only one door, an alternate means of egress shall be provided as an emergency escape, such as a window which can be opened wide enough to permit passage of the vehicle occupants. The emergency escape shall be capable of being easily opened from inside the cab. (Formerly 33-8-35)

**437-81-1283** A slip-resistant surface shall be provided on the operator's platform. (Formerly 33-8-36)

**437-81-1286** Necessary steps, ladders, handholds, or grab bars shall be provided on vehicles in order to furnish safe access to work platforms, operator's station or cab.

(1) Steps shall be constructed or treated to be as slip-proof as possible.

(2) Adequate toe clearance shall be provided for each step.

NOTE: The height of the first step should not exceed 22" (559mm). Where the configuration of the vehicle or equipment does not impose variations in step spacing, the vertical distance between steps shall be uniform, preferably 12" (305mm) but not more than 16" (406mm). (Formerly 33-8-37)



**437-81-1289** The flooring of vehicles where workers may ride, step or work shall be even and in sound condition, free of holes, breaks or weakness. (Formerly 33-8-38)

**437-81-1293** The backs of vehicle cabs which are exposed to shifting loads shall be provided with a substantial bulkhead or similar device.

NOTE: Conventional steel vehicle cabs may be acceptable if capable of withstanding potential impact of materials or equipment to which they may be exposed. (Formerly 33-8-39)

**437-81-1296** Materials being transported shall not be carried in a manner which would prevent doors of vehicle cabs from being opened. When the load blocks the cab door on one side of the vehicle, means for easy escape shall be provided, such as a "knock-out windshield" or an opening in rear of driver's compartment leading to rear of vehicle which is open or equipped with a door which can be opened from the inside, or similar means of emergency escape. (Formerly 33-8-40)

**437-81-1299** When materials of any type are transported at the same time with workers, the workers and driver shall be protected from the hazards of such materials by substantial partitions or securing of the loads. (Formerly 33-8-41)

#### Windshields—Windows

**437-81-1303** All glass installed in vehicles shall be of a safety glass approved for use anywhere in a motor vehicle, or a material which will furnish equivalent safety. (Formerly 33-8-42)

NOTE: It is not required that non-safety glass which was installed as "original equipment" in agricultural vehicles acquired prior to March 31, 1975 be changed as long as the glass remains unbroken. However, when such glass is replaced because of damage or for any other reason, the replacement glass shall be an approved safety glass.

**437-81-1306** Defective or broken glass in a vehicle which impairs the vision of the operator shall be replaced. Broken or shattered glass which could cause injury to occupants of the vehicle shall be removed and replaced. (Formerly 33-8-43)

**437-81-1309** Deposits on glass which impair the vision of the operator shall be removed. (Formerly 33-8-44)

#### Vehicle Controls

**437-81-1313** A positive engine shut-off shall be provided within reach of the operator in his normal operating position. (Formerly 33-8-45)

**437-81-1316** Trip handles for gates of dump beds shall be so arranged that, in dumping, the operator will be in the clear. (Formerly 33-8-46)

**437-81-1319** Foot pedals shall have either slip-resistant surfaces or other means of minimizing the possibility of operator's foot slipping off the pedals. (Formerly 33-8-47)

#### Brakes

**437-81-1323** All self-propelled vehicles shall be provided with brakes which are capable of controlling the vehicle while fully loaded on any grade over which it is to be operated. (Formerly 33-8-48)

**437-81-1326** On those vehicles equipped with power brakes, the braking system shall be such that in the event of engine or power failure, the vehicle can be brought to a safe stop. (Formerly 33-8-49)

**437-81-1329** All self-propelled vehicles shall be equipped with a parking brake or device controlled from the operator's station, capable of preventing the vehicle from moving when unattended. The brake locking or parking device shall be of the positive type, designed and maintained in such a manner that vibration will not release the device. (Formerly 33-8-50)

**437-81-1333** Brakes on all vehicles must be in a safe working condition at all times and shall be tested as often as operating conditions warrant during the time said vehicle is in use. (Formerly 33-8-51)

**437-81-1336** Brake hose lines and couplings shall be immediately replaced or repaired when found defective. The use of tape for repairing leaks is prohibited. (Formerly 33-8-52)

**437-81-1339** Air or vacuum brake lines shall be of the type designed and constructed for such use. Trailer disconnect fittings shall not be interchangeable with water or other lines. (Formerly 33-8-53)

**437-81-1343** Sufficient slack shall be maintained in hose lines to prevent uncoupling or breakage. (Formerly 33-8-54)

#### Steering

**437-81-1346** Vehicle steering mechanisms shall be maintained in a condition which will enable the operator to exercise full directional stability and control of vehicle movement. (Formerly 33-8-55)

#### Lights

**437-81-1349** Vehicles which are operated at night shall be equipped with sufficient lights to enable the operator to perform his work safely. (Formerly 33-8-56)

#### Inspection

**437-81-1353** Each vehicle shall be checked as often as necessary to assure that it is in safe operating condition. If a defect or potentially unsafe condition exists, the vehicle shall be immediately withdrawn from service until the deficiency is corrected. Checks shall include the following parts, if installed:

- (1) Service brakes, including trailer brakes and brake hose connections, parking brake system, (hand brake) emergency stopping system;
- (2) Tires, horn, turn signal system, steering mechanism, coupling devices;
- (3) Seat belts, operating controls, gauges, and other safety devices;
- (4) Lights, windshield wipers, reflectors, defrosters, fire extinguishers. (Formerly 33-8-57)

### Vehicle Maintenance

**437-81-1356** Vehicles, equipment, or parts which are supported by slings, hoists, or jacks shall be blocked or cribbed to prevent falling or shifting before employes are permitted to work under or between them.

- (1) Components which raise or elevate shall be either fully lowered or blocked when being repaired or when not in use.
- (2) All controls shall be in neutral with motors stopped and brakes set, unless work being performed requires otherwise. (Formerly 33-8-58)

**437-81-1359** A safety tire rack, cage, or equivalent protection shall be provided and used over tires mounted on split rims or rims equipped with locking rings or similar devices:

- (1) When inflating tires;
- (2) When adding air to tires on or off the vehicle if the tire has been run while flat or if the rim or locking device has been disturbed in any way. (Formerly 33-8-59)

NOTE: A tire is considered flat if it has lost more than 50% of its normal pressure.

**437-81-1363** The battery shall be disconnected prior to making repairs to a vehicle electrical system where accidental closing of the circuit could cause injury to workers. (Formerly 33-8-60)

**437-81-1366** Open flames shall not be used for illumination while checking electrolyte level in storage batteries or the fuel level in tanks. (Formerly 33-8-61)

### Guards

**437-81-1369** Wherever any wheel of a vehicle is exposed and is within 42" of the operator's station, work platform or other workers, the portions of the wheels that are exposed to contact shall be guarded. Wheel fenders, bumpers, skirt guards, or other guards which will prevent persons from contacting or being struck by the wheels shall be used. (Formerly 33-8-62)

**437-81-1373** Vehicles with maximum speed exceeding 20 MPH shall be equipped so that the operator is not exposed to material thrown from the wheels. (Formerly 33-8-63)

**437-81-1376** A guard or shield shall be provided to minimize the possibility of inadvertent contact during normal operation or servicing with any exposed elements which may cause burns. (Formerly 33-8-64)

**437-81-1379** Shear points which are within 42" of the operator's station or work platform shall be guarded. (Formerly 33-8-65)

### Fueling

NOTE: Rules 437-81-409 thru 437-81-556 of this division prescribe those standards governing fire prevention measures which must be observed during fueling operations.

### Signaling and Warning Devices

**437-81-1383** Where mobile farm equipment is towed and the driver cannot see the employes on the towed equipment, a positive signaling device shall be installed on the towed equipment, or there shall be a device on the towed equipment that can be actuated to stop the towing equipment in case of an emergency. (Formerly 33-8-66)

**437-81-1386** Vehicles with obstructed view to the rear shall be equipped with a reverse signal alarm audible above the surrounding noise level, unless the vehicle is backed only when an observer signals that it is safe to do so. (Formerly 33-8-67)

NOTE: This rule does not apply where the driver is the only worker at the job site.

### Exhausts

**437-81-1389** Exhaust pipes shall direct the exhaust fumes away from the operator. (Formerly 33-8-68)

**437-81-1393** Engine exhaust systems shall not be piped into or through an enclosed cab. (Formerly 33-8-69)

### Vehicles with Elevating Components

NOTE: See Rule 437-81-089.

**437-81-1396** A means shall be provided to protect against inadvertent dropping of lifted units which must be in raised position for normal servicing or adjusting. (Formerly 33-8-70)

**437-81-1403** Vehicles with elevating components or dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering.

(1) The operational control of the locking device shall be such that no part of a person's body must be placed under any elevated component to lock or unlock the device.

(2) This device shall be used to support the component when it is raised and left unattended, or while maintenance or inspection work is being done. (Formerly 33-8-71)

### Vehicles Operated on Public Roads

**437-81-1406** Vehicles designed for operation at slow speeds (less than 25 MPH) shall display a "slow moving vehicle" emblem as prescribed in Chapter 28 (Division 54), Accident Prevention Signs, Symbols, Tags of the Oregon Occupational Safety and Health Code and in ORS 483.457, "Slow Moving Vehicle Emblem". (Formerly 33-8-72)

**437-81-1409** All vehicles operated on public roads shall be equipped and operated in compliance with the requirements prescribed in ORS 483, "Motor Vehicle Traffic and Equipment." (Formerly 33-8-73)

NOTE: Information concerning the requirements of ORS 483 may be obtained by writing to:

Public Information Office  
Motor Vehicle Division  
1905 Lana Avenue N.E.  
Salem, Oregon 97310

### AERIAL DEVICES

NOTE: The following additional standards pertain to elevating and rotating work platforms, or aerial devices, used to elevate personnel engaged in agricultural employment to job sites above ground.

#### Definitions

**437-81-1413** The following definitions apply to Rules 437-81-1416 thru 437-81-1459.

(1) Aerial device—Any vehicle, mounted device or equipment which is used to raise, maneuver, and lower persons to and from elevated positions. The device may furnish a platform from which work may be performed while at the elevated position. The device may be telescoping, articulating, or rotating, or a combination of these functions. (Formerly 33-8-74)

(2) Platform—Any personnel-carrying device (basket or bucket) which is a component of an aerial device. (Formerly 33-8-75)

#### Design Requirements

**437-81-1416** Aerial devices shall meet or exceed a structural safety factor of 2 to 1 in all working positions based upon the rated capacity assigned by the manufacturer. (Formerly 33-8-76)

**437-81-1419** Aerial devices shall meet or exceed a stability safety factor of 1½ to 1 in all working positions based upon the posted working load. The vehicle shall be considered stable when the tires do not leave the ground. (Formerly 33-8-77)

**437-81-1423** The rated load capacity shall be posted at a conspicuous place on the aerial device and shall be kept in a legible condition. (Formerly 33-8-78)

**437-81-1426** Aerial devices shall not be loaded in excess of the manufacturer's rated capacity. (Formerly 33-8-79)

**437-81-1429** On every aerial device equipped with outriggers, an effective device shall be provided and used to hold all outriggers securely retracted while traveling and solidly extended when they are extended while hoisting. (Formerly 33-8-80)

**437-81-1433** The platforms of aerial devices shall be enclosed with a standard guardrail or equivalent enclosure to prevent workers from falling. The enclosure shall meet the construction and strength requirements specified in Rules 437-81-309 thru 437-81-326. (Formerly 33-8-81)

**437-81-1436** Gates in platform enclosures or guardrails shall be equipped with safety latches to prevent unintended opening. (Formerly 33-8-82)

**437-81-1439** Every vehicle upon which an aerial device is mounted shall be equipped with a parking brake or device capable of holding the vehicle stationary under all conditions of use. (Formerly 33-8-83)

#### Controls

**437-81-1443** Controls shall be plainly marked as to their function. (Formerly 33-8-84)

**437-81-1446** Controls shall be so placed or guarded that the equipment cannot be activated by inadvertent contact by the operator, tools, equipment, or foreign objects. (Formerly 33-8-85)

**437-81-1449** Tool holders shall be provided outside the platform enclosure or guardrail for the safe storage of edged tools and power operated tools. (Formerly 33-8-86)

#### Operation

**437-81-1453** Aerial devices shall be adequately warmed up and an operating test made of the hydraulic system before it is used to hoist workers. (Formerly 33-8-87)

**437-81-1456** The equipment operation and maintenance manual shall be accessible to workers using the equipment. The operating instructions, proper sequences, and maintenance procedures prescribed by the manufacturer shall be followed. Design limitations and operational restrictions shall not be exceeded. (Formerly 33-8-88)

**437-81-1459** When set upon soft or unstable soil, additional pads shall be placed under the outriggers as required to stabilize the aerial device. (Formerly 33-8-89)

## STORING AND HANDLING MATERIALS AND MATERIAL HANDLING EQUIPMENT

### GENERAL

#### Scope and Application

**437-81-1463** The requirements of Rules 437-81-1463 thru 437-81-1703 shall apply to methods, practice and equipment used in the storage of materials and in the handling of materials. (Formerly 33-9-1)

**437-81-1466** The purpose of Rules 437-81-1463 thru 437-81-1703 is to prescribe minimum safety requirements for the storage and handling of materials. (Formerly 33-9-2)

**437-81-1469** Any operation or situation not covered in Rules 437-81-1463 thru 437-81-1703 shall be subject to applicable provisions of other rules of this division. (Formerly 33-9-3)

NOTE: See Chapter 11 (Division 63), Cranes for safety standards pertaining to cranes, rigging and slings. See Chapter 9 (Division 63), Storing and Handling Materials and Material Handling Equipment for rules pertaining to material hoists in service in agricultural operations.

#### Storage of Materials

NOTES: (1) Explosives shall be stored and handled as prescribed in Chapter 13 (Division 45), Explosives and Blasting Agents.

(2) Flammable substances shall be stored and handled as prescribed in Rules 437-81-409 thru 437-81-556.

(3) Oxygen and acetylene cylinders, cylinders or tanks containing other compressed gases used in welding and cutting operations, and carbide shall be stored and handled as prescribed in Rules 437-81-2073 thru 437-81-2443.

(4) Toxic materials such as harmful or irritating chemical fertilizers and agricultural pesticides shall be stored and handled as prescribed in Rules 22-017 and 22-026 of the Oregon Occupational Health Rules.

#### General

**437-81-1473** Storage of material shall not create a hazard. Storage of material shall be planned so that material may be stored and removed without hazard to workers. (Formerly 33-9-4)

**437-81-1476** Access to materials in storage shall be provided which furnishes free and safe movement of material handling equipment and workers. Passageways and ramps shall meet the requirements of Rules 437-81-223 thru 437-81-249. (Formerly 33-9-5)

**437-81-1479** Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked and limited in height to make them stable. (Formerly 33-9-6)

**437-81-1483** Proper drainage shall be provided to prevent conditions from developing which would be hazardous to workers. (Formerly 33-9-7)

#### Storage—Location

**437-81-1486** Stored material shall not obstruct lights, sprinklers, aisles, exits, or electrical switch panels. (Formerly 33-9-8)

**437-81-1489** Temporarily stored material that creates a hazard shall be marked by highly visible warning signs. Reflectorized signs or other effective warning shall be used in conditions of reduced visibility. (Formerly 33-9-9)

**437-81-1493** Materials which could cause hazardous reactions shall be kept segregated in storage and marked with appropriate warning signs. (Formerly 33-9-10)

#### Stacks and Piles

**437-81-1496** All material stacks shall be placed on level and solid supports and shall be stable and self-supporting; stacks shall be braced or shored as necessary to prevent falling or collapsing. (Formerly 33-9-11)

**437-81-1499** Binding strips shall be inserted or the material cross-tied, or the tiers shall be set back, when necessary to insure stability of the pile. (Formerly 33-9-12)

#### Lumber

**437-81-1503** Used lumber shall have all projecting nails withdrawn or bent over before stacking. Lumber to be handled manually shall not be stored more than 16' high (Formerly 33-9-13)

**437-81-1506** Lumber stacks shall be made of units whose height is no more than 1½ times higher than the base. (Formerly 33-9-14)

#### Bagged Materials

**437-81-1509** Bagged materials shall be stacked by stepping back the layers and crosskeying the bags at least every 10 bags high. (Formerly 33-9-15)

NOTE: This requirement does not apply where pallets effectively stabilize the stack of bagged materials.

**437-81-1513** When bags are removed from a pile, the stability of the pile shall be maintained. (Formerly 33-9-16)

#### Corrugated and Flat Iron—Steel

**437-81-1516** Corrugated and flat iron shall be stacked in stable piles. (Formerly 33-9-17)

**437-81-1519** Racks capable of supporting the imposed loads without deformation shall be used for storing steel plate on edge and shall provide positive

protection against the danger to personnel from toppling or sliding plates. (Formerly 33-9-18)

### Pipe and Bar Stock

**437-81-1523** In removing pipe and bar stock from unsecured piles, workers shall not approach the side of the pile but shall remove it from the ends of the pile. (Formerly 33-9-19)

**437-81-1526** Pipe or bar stock extending into passageways shall be clearly marked or padded. (Formerly 33-9-20)

### Drums, Rolls, Cylindrical Objects

**437-81-1529** Barrels, drums, large pipe, and other cylindrical objects piled on their sides shall have the bottom row securely blocked. If separators are used between tiers of the pile, blocks shall be secured at each end of the separators. (Formerly 33-9-21)

**437-81-1533** Spacing strips shall be placed between bundles. (Formerly 33-9-22)

**437-81-1536** Structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked, shall be stacked and blocked to prevent spreading, tilting, or rolling. (Formerly 33-9-23)

## HANDLING MATERIALS

**437-81-1539** Where mechanical handling equipment is used, sufficient clearances shall be maintained for safe passage. (Formerly 33-9-24)

**437-81-1543** Permanent aisles and passageways shall be appropriately marked. (Formerly 33-9-25)

**437-81-1546** All equipment used for handling materials shall be constructed and maintained in accordance with sound engineering practice. They shall be of sufficient strength to support the loads acting on them in addition to their own dead loads. Allowances shall be made for wind, impact, or any special loading that may occur. (Formerly 33-9-26)

**437-81-1549** Safe load capacities recommended by the manufacturers of equipment shall not be exceeded. (Formerly 33-9-27)

**437-81-1553** Workers shall not remain or work under or near loads and units of materials being moved unless they are provided with adequate protection. (Formerly 33-9-28)

**437-81-1556** Loads suspended in slings or supported by hoists, jacks, or other devices, shall be blocked or cribbed before workers are permitted to work underneath. (Formerly 33-9-29)

## CONVEYORS

### Backstops—Brakes

**437-81-1559** Inclined conveyors, where reversing or running away presents a hazard to workers, shall be provided with anti-runaway, backstop devices, or suitable guards. (Formerly 33-9-30)

### Loading, Transfer and Discharge Points

**437-81-1563** Means to guard workers from injury by moving material shall be provided at conveyor loading, transfer and discharge points. (Formerly 33-9-31)

### Conveyor Guards

**437-81-1566** Where a conveyor passes over work area, aisles and thoroughfares, suitable guards shall be provided to prevent material from falling from the conveyor. (Formerly 33-9-32)

**437-81-1569** The return section of all conveyors located over or near passageways or workers shall:

(1) be provided with a trough, if 7' or less above the passageway; or,

(2) be supported by rollers or guards, if higher than 7' above the passageway. (Formerly 33-9-33)

**437-81-1573** The acute angle of entry (nip-point) of powered belt conveyors shall be guarded in accordance with Rules 437-81-1706 thru 437-81-1846. (Formerly 33-9-34)

**437-81-1576** Input conveyors for feed choppers, grain pits, or other dangerous machines shall be fully guarded to prevent workers from falling into the conveyor. Where a part of the guard must be omitted to permit a worker to feed the conveyor, he shall be provided with and shall wear a life belt tied off to an effective life line. (Formerly 33-9-35)

**437-81-1579** Workers shall not cross over conveyors except where suitable bridges or walkways are provided. (Formerly 33-9-36)

### Portable Conveyors

**437-81-1583** Portable conveyors shall be stable at all operating ranges and shall be provided with adequate devices to prevent unintended movement. (Formerly 33-9-37)

**437-81-1586** Portable conveyors, when powered electrically, shall be grounded as required in Rules 437-81-559 thru 437-81-773. Where exposed to outside weather conditions, wiring, switches, and electrical connections shall be moisture and dust proof. (Formerly 33-9-38)

### Riding Conveyors Prohibited

**437-81-1589** Workers shall not be permitted to ride on any conveyor not especially designed for this purpose. (Formerly 33-9-39)

## Chutes, Rollways

**437-81-1593** A method shall be provided for slowing material being put down chutes or rollways whenever excessive speed might create a hazard to packers or other workers. (Formerly 33-9-40)

NOTE: Additional requirements for lowering material in demolition operations are contained in Division 83, Construction (formerly contained in Chapter 18, Demolition of Buildings and Structures) of the Oregon Occupational Safety and Health Code.

**437-81-1596** Where the person putting material down a chute, ramp, skid, or rollway does not have a clear view of a lower landing on which workers are employed, an adequate horn, bell or other warning device which is automatic in operation shall be provided and maintained in good condition at all times. (Formerly 33-9-41)

**437-81-1599** Where chutes and rollways pass over work areas or passageways, guards shall be provided which will prevent material from falling. (Formerly 33-9-42)

**437-81-1603** The underside of all chutes, ramps, skids, rollways or landings shall be fenced off and marked with appropriate warning signs unless provided with other adequate means of protecting workers from falling material. (Formerly 33-9-43)

## WHEELBARROWS, HAND TRUCKS, PALLET JACKS AND DOLLIES

**437-81-1606** Wheelbarrows, hand trucks, pallet jacks and dollies shall be selected for specific work to be done and shall not be loaded beyond safe capacity. Bodies and frames shall be constructed to withstand severe handling and the loads to be carried. (Formerly 33-9-44)

**437-81-1609** Wheelbarrows, hand trucks, pallet jacks and dollies shall be kept in safe repair at all times. (Formerly 33-9-45)

**437-81-1613** Wheelbarrows, hand trucks, pallet jacks and dollies when not in use must be properly stored and never left in such a position that they can tip or fall over or roll thereby endangering other workers. (Formerly 33-9-46)

## POWERED INDUSTRIAL TRUCKS

NOTE: The following rules contain safety requirements relevant to the design, maintenance, and use of fork lifts, platform lift trucks, motorized hand trucks, and other specialized material handling trucks powered by electric motors or internal combustion engines. They apply to vehicles primarily designed and intended for:

(1) Farming operations, such as soil preparation and fertilizing, crop treatment, harvesting, and processing, and hay handling equipment and vehicles, farm tractors and farm tractors with front-end loader attachments, and similar farming implements, equipment and vehicles designed for

agricultural use and not primarily for industrial use. (Exception: Farm tractors which have been converted to fork lifts by the installation of a fork lift attachment are covered by Rules 437-81-1463 thru 437-81-1703 and shall meet the safety requirements set forth herein.)

(2) Earth moving equipment.

(3) Over the road hauling.

NOTE: The following requirements are in addition to applicable rules contained in Rules 437-81-1173 thru 437-81-1459. Where conflicting rules exist, those prescribed in Rules 437-81-1463 thru 437-81-1703 shall apply to powered industrial trucks.

**437-81-1616** All name plates and markings shall be in place and maintained in a legible condition. (Formerly 33-9-47)

**437-81-1619** Modifications and additions which affect capacity and safe operation shall not be performed without the manufacturer's prior written approval, unless the modification is done under the supervision of a professional engineer. Capacity, operation and maintenance instruction plates, tags, or decals shall be changed accordingly. (Formerly 33-9-48)

**437-81-1623** If the truck is equipped with front-end attachments other than factory installed attachments, it shall be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered. (Formerly 33-9-49)

## Overhead Guards

**437-81-1626** Where a rider type lift truck operator is exposed to hoisted objects that might fall, or to stacked objects that might be dislodged and fall, the truck shall be equipped with an overhead guard. The guard shall either meet the requirements and be identified as specified in (1) below, or else constructed as specified in (2) below.

(1) The guard shall be of sufficient strength to support impact load tests as specified in Table I-1 below.

(a) Impact load tests shall be conducted with the guard in place on a vehicle for which it is designed or on a simulated mounting. Running gear need not be in place. The load shall be dropped in free fall from an appropriate height so that the impact is centered approximately above the driver's position. Test loads shall have a length equal to or greater than the width of the guard, and shall strike the canopy at right angles to the vehicle frame.

(b) Guards of a design which have been so tested shall be identified by a metal tag permanently attached to the canopy in a position where it may be easily read from the ground. This tag shall be permanently and clearly marked with the impact test load, expressed in foot-pounds to which guards of the same design have been tested.

Rated Truck Capacity at 24" Load Center	Impact Test (Load X Drop Distance)	Minimum Weight of Test Load
3,000 and under	4,000 ft.-lbs.	750 lbs.
3,001 to 5,000 lbs.	8,000 ft.-lbs.	1,500 lbs.
5,001 to 8,000 lbs.	16,000 ft.-lbs.	3,000 lbs.
8,001 to 14,000 lbs.	24,000 ft.-lbs.	3,000 lbs.
14,001 to 25,000 lbs.	32,000 ft.-lbs.	3,000 lbs.
25,001 and over	36,000 ft.-lbs.	3,000 lbs.

**Table I-1. Impact test data for canopy guards.**

(2) Guards which are not of a design which has been tested in accordance with (b) above may be constructed of material as specified in Table I-2, below, or material of equivalent strength.

(a) The construction of canopy guards built of materials specified in Table I-2 shall be based on the strength of four upright members. Guards constructed with less than four upright members shall be equivalent strength.

(b) Canopy type overhead guard frames shall be braced to overhead members on each side of the frame to provide structural rigidity both longitudinally and transversely.

(c) All guard mountings or attaching brackets shall be constructed and secured to the vehicle in a manner to provide adequate support to the upright members of the canopy type overhead guard.

(d) Cantilever overhead guards shall be of equivalent strength.

Rated Truck Capacity	Round Pipe		Square Tube (CRS)		
	(X Heavy)	(XX Heavy)	(3/16" Wall)	(1/4" Wall)	(1/2" Wall)
3,000 and under	1 1/2"	1 3/4"		1 1/4"	
3,001 to 5,000	2"	1 1/2"		1 1/2"	
5,001 to 8,000	2 1/2"	2"	1 1/2"	2"	
8,001 to 14,000	3"	2 1/2"	2"	3"	2 1/2"
14,001 to 25,000		3 1/2"	3"	3 1/2"	3"
25,001 and over		4"		4"	3 1/2"

**Table I-2. Dimensions of material for canopy guard construction.**

(Formerly 33-9-50)

NOTE: Guards required by this rule are not intended to withstand the impact of a capacity load falling from any height.

**437-81-1629** Guards shall be constructed in a manner that does not interfere with good visibility, but openings in the top shall not exceed 6" in one of the two dimensions, width or length. Guards shall be large enough to extend over the operator under all normal circumstances of operation, including forward tilt.

(1) Provisions shall be made so that failure of the mast-tilting mechanism will not allow the overhead guard to cause injury to the operator.

(2) Lift trucks operated by seated operators shall have not less than 39" of clear vertical space between the operator's seat and the underside of the guard. Lift trucks operated by standing operators shall have not less than 74" of clear vertical space

between the platform and the underside of the guard. (Formerly 33-9-51)

NOTE: Where overall height of truck with forks in lowered position is limited by head room conditions and there is insufficient space for vertical clearance or for the operator to assume a normal driving position, normal overhead guard heights may be reduced, or the overhead guard may be omitted. The height and stability of stacks of piled material, the weight of individual units handled, and the operating space available shall be such as will provide reasonable safety for the operator if it is necessary to remove the overhead guard.

**Load Back Rest**

**437-81-1633** Lift trucks which handle small objects or unbanded units shall be equipped with a vertical load back rest.

(1) It shall have height, width, strength, sufficient to prevent the load or any part of it from falling toward the operator.

(2) It shall be constructed in a manner that does not interfere with good visibility.

(3) Size of openings shall not exceed 6" in one dimension. (Formerly 33-9-52)

**Shear Point Guards**

NOTE: See Rule 437-81-1379.

**Control of Noxious Gases and Fumes**

**437-81-1634** Where powered industrial trucks are used indoors, effective measures shall be taken to prevent exhaust gases from creating a harmful or hazardous work atmosphere, as set forth in Rules 22-017(a) and 22-018(b) of the Oregon Occupational Health Rules. (Formerly 33-9-53)

NOTE: Questions concerning degree of concentration and methods of sampling to ascertain the conditions should be referred to a qualified industrial hygienist.

**Dockboards (Bridge Plates)**

**437-81-1636** Dockboard or bridgeplates, shall be properly secured before they are driven upon. Dockboard or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded. (Formerly 33-9-54)

NOTE: See Rules 437-81-349 thru 437-81-366 for dockboard requirements.

**Operation of Powered Industrial Trucks**

**437-81-1639** A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock or platform, or freight car. (Formerly 33-9-55)

**437-81-1643** There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc. (Formerly 33-9-56)

**Riding**

**437-81-1646** Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized. (Formerly 33-9-57)

**437-81-1649** The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside of running lines of the powered industrial vehicle. (Formerly 33-9-58)

**Elevating Personnel**

**437-81-1653** Whenever a lift truck is used for lifting personnel the following precautions shall be taken for the protection of personnel being elevated:

(1) A work platform, equipped with standard guardrails and firmly secured to the lifting carriage or forks, shall be used.

(2) A person qualified to operate the lift truck shall serve as "tender" for the worker on the platform. The tender shall remain within hearing distance from the worker on the platform, and shall raise and lower the platform and perform other support duties as necessary.

(3) Where there is a possibility of exposure to falling objects, workers on the platform and on the lift truck shall be provided with adequate overhead protection. (Formerly 33-9-59)

**437-81-1656** Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads. (Formerly 33-9-60)

**437-81-1659** Only loads within the rated capacity of the truck shall be handled. (Formerly 33-9-61)

**437-81-1663** Long or high (including multiple-tiered) loads which may affect capacity shall be adjusted. (Formerly 33-9-62)

**437-81-1666** When attachments are used, particular care should be taken in securing, manipulating, positioning, and transporting the load. Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load. (Formerly 33-9-63)

**437-81-1669** The forks shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load. (Formerly 33-9-64)

**437-81-1673** Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted

forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used. (Formerly 33-9-65)

**Traveling**

**437-81-1676** Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8' from the center of railroad tracks is prohibited. (Formerly 33-9-66)

**437-81-1679** Grades shall be ascended or descended slowly.

(1) When ascending or descending grades in excess of 10%, loaded trucks should be driven with the load upgrade.

(2) Unloaded trucks should be operated on all grades with the load engaging means downgrade.

(3) On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface. (Formerly 33-9-67)

**437-81-1683** Motorized hand trucks must enter elevator or other confined areas with load end forward. (Formerly 33-9-68)

**437-81-1686** Running over loose objects on the roadway surface shall be avoided. (Formerly 33-9-69)

**437-81-1689** While negotiating turns, speed shall be reduced and turns shall be made in a smooth manner. (Formerly 33-9-70)

**Trucks and Railroad Cars**

**437-81-1693** The brake shall be set and wheel chocks placed under the rear wheels of vehicles which are being boarded by powered industrial trucks, to prevent them from moving. (Formerly 33-9-71)

**437-81-1696** Brakes shall be set and wheel stops shall be provided to prevent railroad cars from moving during loading or unloading operations or while dock boards or bridge plates are in position. (Formerly 33-9-72)

**437-81-1699** Semitrailers not coupled to a tractor shall be supported by fixed jacks at the overhanging end when being boarded by powered industrial trucks. (Formerly 33-9-73)

**437-81-1703** The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness. Powered industrial trucks shall not be driven onto flooring of inadequate strength. (Formerly 33-9-74)



## AGRICULTURE EQUIPMENT GUARDING

### GENERAL

#### Purpose

\* **437-81-1706** The purpose of Rules 437-81-1706 thru 437-81-1846 is to provide for the protection of employes from the hazards associated with moving machinery parts of farm field equipment and farmstead equipment used in any agricultural operation. (Formerly 33-10-1. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Scope

**437-81-1707** Rules 437-81-1706 thru 437-81-1756 contain general requirements which apply to all equipment. In addition, Rules 437-81-1759 thru 437-81-1796 apply to farm field equipment and Rules 437-81-1799 thru 437-81-1846 apply to farmstead equipment. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Application

**437-81-1708** Rules 437-81-1706 thru 437-81-1846 apply to all farm field equipment and farmstead equipment except that Rules 437-81-1773, 437-81-1776, 437-81-1779, 437-81-1783, 437-81-1789, 437-81-1809, 437-81-1813, 437-81-1816, 437-81-1819, 437-81-1825 and 437-81-1833 do not apply to equipment manufactured before October 25, 1976. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Definitions

**437-81-1709** The following definitions shall apply to terms used in Rules 437-81-1706 thru 437-81-1846.

(1) Farm field equipment—Tractors or implements, including self-propelled implements, or any combination thereof used in agricultural operations. (Formerly 33-10-2)

(2) Farmstead equipment—Agricultural equipment normally used in a stationary manner. This includes, but is not limited to, materials handling equipment and accessories for such equipment whether or not the equipment is an integral part of a building. (Formerly 33-10-3)

(3) Ground driven components—Components which are powered by the turning motion of a wheel as the equipment travels over the ground. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

(4) Guard or shield—A barrier designed to protect against employe contact with a hazard created by a moving machinery part. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

(5) Power take-off shafts—Shafts and knuckles between the tractor, or other power source, and the first gear set, pulley, sprocket, or other components on power take-off shaft driven equipment. (Formerly 33-10-4. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

(6) Point of operation—The area on a machine where work is actually performed upon the material being processed. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Operating Instructions

**437-81-1713** At the time of initial assignment and at least annually thereafter, the employer shall instruct every employe in the safe operation and servicing of all equipment with which he is or will be involved, including at least the following safe operating practices:

(1) Keep all guards in place when the machine is in operation;

(2) Permit no riders on farm field equipment other than persons required for instruction or assistance in machine operation;

(3) Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employes as to all steps and procedures which are necessary to safely service or maintain the equipment;

(4) Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine;

(5) Lock out electrical power before performing maintenance or service on farmstead equipment. (Formerly 33-10-9. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Methods of Guarding

**437-81-1716** Except as otherwise provided in Rules 437-81-1706 thru 437-81-1846 each employer shall protect employes from coming into contact with hazards created by moving machinery parts as follows:

(1) Through the installation and use of a guard or shield or guarding by location;

(2) Whenever a guard or shield or guarding by location is infeasible, by using a guardrail or fence. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Strength and Design of Guards

**437-81-1719** Guards shall be designed and located to protect against inadvertent contact with the hazard being guarded. (Formerly 33-10-11. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

NOTE: Minimum requirements for guards shall correspond to Table J-1.

\*A vertical line beside a rule indicates that the rule is new or amended.

TABLE J-1

Material	Clearance From Moving Parts at All Points	Largest Mesh or Opening Allowable	Minimum Gauge (U.S. Standard) or Thickness
Woven Wire	(inches)	(inches)	
	under 2	$\frac{3}{8}$	No. 16 Gauge
	2-4	$\frac{1}{2}$	No. 16 Gauge
	4-15	2	No. 12 Gauge
Expanded Metal	under 4	$\frac{1}{2}$	No. 18 Gauge
	4-15	2	No. 13 Gauge
Perforated Metal	under 4	$\frac{1}{2}$	No. 20 Gauge
	4-15	2	No. 14 Gauge
Sheet Metal	under 15		No. 22 Gauge
Plastic	under 15		Tensile strength of 10,000 lb/in <sup>2</sup>

**437-81-1723** Unless otherwise specified, each guard and its supports shall be capable of withstanding the force that a 250 lb. individual, leaning on or falling against the guard, would exert upon that guard. (Formerly 33-10-12. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1726** Guards shall be free from burrs, sharp edges, and sharp corners, and shall be securely fastened to the equipment or building. (Formerly 33-10-13)

#### Guarding by Location

**437-81-1729** A component is guarded by location during operation, maintenance, or servicing when, because of its location, no employe can inadvertently come in contact with the hazard during such operation, maintenance, or servicing. (Formerly 33-10-10. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Guarding by Railings

**437-81-1733** Guardrails or fences shall be capable of protecting employes from inadvertently entering the hazardous area. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Servicing and Maintenance

**437-81-1736** Whenever a moving machinery part presents a hazard during servicing or maintenance, the engine shall be stopped, the power source disconnected, and all machine movement stopped before servicing or maintenance is performed, except where the employer can establish that:

(1) The equipment must be running to be properly serviced or maintained; and

(2) The equipment cannot be serviced or maintained while a guard or guards otherwise required by Rules 437-81-1706 thru 437-81-1846 are in place. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Miscellaneous General Requirements

**437-81-1739** Machines which are of a type that will throw stock, material, or objects shall be covered or provided with a device designed and constructed to minimize this action. (Such machines as rip saws, rotary mowers and beaters, rotary tillers are a few in this classification.) (Formerly 33-10-29)

**437-81-1743** When the periphery of the blades of a fan is less than 7' above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than  $\frac{1}{2}$ ". (Formerly 33-10-27. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Machine Controls

**437-81-1746** If the operation of a machine requires the presence of an operator on the machine, a power control device shall be provided on each machine to enable the operator to stop the machine or machine feed without leaving his position. (Formerly 33-10-39. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1749** Power control devices whose function is not readily self-evident to a casual observer shall be marked to indicate their function and the machine which they control. The position of ON and OFF shall be indicated. (Formerly 33-10-42)

**437-81-1753** "Stop" buttons shall be colored red or orange. Each machine shall have one or more stop buttons according to the working position of the operator or operators. (Formerly 33-10-43)

**437-81-1756** Machine control devices shall be located or guarded to prevent unexpected or accidental movement of the control. Electrical switch "Start" buttons shall be recessed. (Formerly 33-10-44. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### FARM FIELD EQUIPMENT

##### Power Take-off Guarding

**437-81-1759** All power take-off shafts, including rear, mid- or side-mounted shafts, shall be guarded either by a master shield, as provided in Rule 437-81-1763 or by other protective guarding. (Formerly 33-10-17. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1763** All tractors shall be equipped with an agricultural tractor master shield on the rear power take-off except where removal of the tractor master shield is permitted by Rule 437-81-1766. The master shield shall have sufficient strength to prevent permanent deformation of the shield when a 250 pound operator mounts or dismounts the tractor using the shield as a step. (Formerly 33-10-16. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1766** Power take-off driven equipment shall be guarded to protect against employe contact with positively driven rotating members of the power drive system. Where power take-off driven equipment is of a design requiring removal of the tractor master shield, the equipment shall also include protection from that portion of the tractor power take-off shaft which protrudes from the tractor. (Formerly 33-10-18)

**437-81-1769** Signs shall be placed at prominent locations on tractors and power take-off driven equipment specifying that power drive system safety shields must be kept in place. (Formerly 33-10-19)

#### Other Power Transmission Components

**437-81-1773** The mesh or nip-points of all power driven gears, belts, chains, sheaves, pulleys, sprockets, and idlers shall be guarded by protective shield, location, guardrail or fence. (Formerly 33-10-20. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1776** All revolving shafts, including projections such as bolts, keys, or set screws, shall be guarded by protective shield, location, guardrail or fence, except smooth shaft ends protruding less than ½ the outside diameter of the shaft and its locking means. (Formerly 33-10-21. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1779** Ground driven components shall be guarded in accordance with Rules 437-81-1773 and 437-81-1776 if any employe may be exposed to them while the drives are in motion. (Formerly 33-10-24. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Functional Components

**437-81-1783** Functional components, such as snapping or husking rolls, straw spreaders and choppers, cutterbars, flail rotors, rotary beaters, mixing augers, feed rolls, conveying augers, rotary tillers, and similar units, which must be exposed for proper function, shall be guarded to the fullest extent which will not substantially interfere with normal functioning of the component. (Formerly 33-10-25. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Access to Moving Parts

**437-81-1786** Guards, shields, and access doors shall be in place when the equipment is in operation. (Formerly 33-10-31)

**437-81-1789** Where removal of a guard or access door will expose an employe to any component which continues to rotate after the power is disengaged the employer shall provide, in the immediate area, the following:

(1) A readily visible or audible warning of rotation; and

(2) A safety sign warning the employe to:  
(a) Look and listen for evidence of rotation; and  
(b) Not remove the guard or access door until all components have stopped. (Formerly 33-10-32. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

#### Additional Requirements

**437-81-1793** A clutch or other effective means of stopping shall be used on powered machines not driven by an individual motor. (Formerly 33-10-40)

**437-81-1796** All friction clutches shall have sufficient clearance and shall be kept adjusted to prevent any drag or creeping when disengaged. (Formerly 33-10-41)

#### FARMSTEAD EQUIPMENT

##### Power Take-off Guarding

**437-81-1799** All power take-off shafts, including rear, mid-, or side-mounted shafts, shall be guarded either by a master shield as provided in Rule 437-81-1763 or other protective guarding. (Formerly 33-10-17. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1803** Power take-off driven equipment shall be guarded to protect against employe contact with positively driven rotating members of the power drive system. Where power take-off driven equipment is of a design requiring removal of the tractor master shield, the equipment shall also include protection from that portion of the tractor power take-off shaft which protrudes from the tractor. (Formerly 33-10-18)

**437-81-1806** Signs shall be placed at prominent locations on power take-off driven equipment specifying that power drive system safety shields must be kept in place. (Formerly 33-10-19)

##### Other Power Transmission Components

**437-81-1809** The mesh or nip-points of all power driven gears, belts, chains, sheaves, pulleys, sprockets, and idlers shall be guarded by protective shield, location, guardrail or fence. (Formerly 33-10-20. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1813** All revolving shafts, including projections such as bolts, keys, or set screws, shall be guarded by protective shield, location, guardrail or fence, with the exception of:

(1) Smooth shafts and shaft ends (without any projecting bolts, keys, or set screws), revolving at less than 10 rpm, on feed handling equipment used on the top surface of materials in bulk storage facilities; and

(2) Smooth shaft ends protruding less than ½ the outside diameter of the shaft and its locking means. (Formerly 33-10-21. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

### Functional Components

**437-81-1816** Functional components, such as choppers, rotary beaters, mixing augers, feed rolls, conveying augers, grain spreaders, stirring augers, sweep augers, and feed augers, which must be exposed for proper function, shall be guarded to the fullest extent which will not substantially interfere with the normal functioning of the component. (Formerly 33-10-25. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1819** Sweep arm material gathering mechanisms used on the top surface of materials within silo structures shall be guarded. The lower or leading edge of the guard shall be located no more than 12" above the material surface and no less than 6" in front of the leading edge of the rotating member of the gathering mechanism. The guard shall be parallel to, and extend the fullest practical length of, the material gathering mechanism. (Formerly 33-10-26. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1823** Rule 437-81-1819 does not apply to bulk grain storage bins and similar structures where no workers are present except for installation or removal of the sweep arm material gathering mechanisms. During such work, the electrical power source shall be disconnected and lockout procedures as prescribed in Rules 437-81-1836 and 437-81-1839 shall be followed. (Formerly 33-10-26. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1825** Exposed auger flighting on portable grain augers shall be guarded in accordance with Rule 437-81-1826. (Formerly 33-10-30. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1826** Exposed auger flighting on portable augers shall be guarded with either grating type guards or solid baffle style covers as follows:

(1) The largest dimensions or openings in grating type guards through which materials are required to flow shall be 4¾". The area of each opening shall be no larger than 10 square inches. The opening shall be located no closer to the rotating flighting than 2½".

(2) Slotted openings in solid baffle style covers shall be no wider than 1½", or closer than 3½" to the exposed flighting.

(3) Openings larger than those specified in (1) and (2) above may be permitted if necessary to permit the free flow of material which has a tendency to bridge over. Such opening shall be no larger than that required for proper functioning of the auger. In any case, the guard shall be designed, arranged or located so that no part of a worker's person or limbs may contact the auger flighting. (Formerly 33-10-30. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

### Access to Moving Parts

**437-81-1829** Guards, shields, and access doors shall be in place when the equipment is in operation. (Formerly 33-10-31)

**437-81-1833** Where removal of a guard or access door will expose an employe to any component which continues to rotate after the power is disengaged, the employer shall provide, in the immediate area, the following:

(1) A readily visible or audible warning of rotation; and

(2) A safety sign warning the employe to:

(a) Look and listen for evidence of rotation; and

(b) Not remove the guard or access door until all components have stopped. (Formerly 33-10-32. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

### Electrical Disconnect Means

**437-81-1836** Application of electrical power from a location not under the immediate and exclusive control of the employe or employes maintaining or servicing equipment shall be prevented by:

(1) Providing an exclusive, positive locking means on the main switch which can be operated only by the employe or employes performing the maintenance or servicing; or

(2) In the case of material handling equipment located in a bulk storage structure, by physically locating on the equipment an electrical or mechanical means to disconnect the power. (Formerly 33-10-45. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

**437-81-1839** All circuit protection devices, including those which are an integral part of a motor, shall be of the manual reset type, except where:

(1) The employer can establish that because of the nature of the operation, distances involved and the amount of time normally spent by employes in the area of the affected equipment, use of the manual reset device would be infeasible;

(2) There is an electrical disconnect switch available to the employe within 15' of the equipment upon which maintenance or service is being performed; and

(3) A sign is prominently posted near each hazardous component which warns the employe that unless the electrical disconnect switch is utilized, the motor could automatically reset while the employe is working on the hazardous component. (Adopted 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

### Additional Guarding Requirements

**437-81-1843** Carton or bag stitching machines shall be properly safeguarded to prevent persons

from coming in contact with the stitching head and other pinch or nip points. (Formerly 33-10-28)

**437-81-1846** The point of operation of all machines shall be guarded. The guard shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.

NOTE: Table J-2 prescribes the distances that point-of-operation guards shall be positioned from the danger line with relation to the size of the opening.

(Formerly 33-10-37. Amended 4-20-77 by WCB Admin. Order, Safety 5-1977; filed 4-20-77; effective 6-15-77.)

TABLE J-2

Guarding Line or Distance of opening from point of operation hazard (inches)	Maximum width of opening (inches)
½ to 1½	¼
1½ to 2½	¾
2½ to 3½	½
3½ to 5½	¾
5½ to 6½	¾
6½ to 7½	¾
7½ to 12½	1½
12½ to 15½	1½
15½ to 17½	1¾
17½ to 31½	2¾

## ROPE, CHAIN, RIGGING, AND HOISTS

### GENERAL

#### Scope and Application

**437-81-1849** Rules 437-81-1849 thru 437-81-1989 prescribe standards for the safe use of hoists, rope, chain, and fittings used in places of agricultural employment. (Formerly 33-11-1)

**437-81-1853** The rules contained in Chapter 11 (Division 63), Cranes of the Oregon Occupational Safety and Health Code shall apply to all hoisting devices and equipment not specifically mentioned in this section. (Formerly 33-11-2)

NOTE: See Rules 437-81-1463 thru 437-81-1703 for forklifts.

#### Definitions

**437-81-1856** The following definitions apply to Rules 437-81-1849 thru 437-81-1989.

(1) **Rope**—Wire rope unless otherwise specified. (Formerly 33-11-3)

(2) **Mousing**—Using small cordage or wire to prevent unintended separation of rigging components. (Formerly 33-11-4)

#### Loading and Capacity

**437-81-1859** No rigging equipment or hoisting device shall be loaded in excess of its rated safe working load or capacity. (Formerly 33-11-5)

#### Inspection

**437-81-1863** Rigging equipment and hoisting devices shall be inspected prior to use and as necessary during its use to ensure that it is safe. Defective rigging equipment or hoisting devices shall be immediately removed from service. (Formerly 33-11-6)

#### Operators—Handling Loads

**437-81-1866** Workers shall not ride hooks, slings, rigging, or loads. When it is necessary for a person to be suspended by hoisting gear, a safe manskip shall be provided. (Formerly 33-11-7)

**437-81-1869** Manskips shall meet the following minimum requirements:

(1) The structure shall be rigid and sufficiently strong to support the loads carried with a safety factor of 4.

(2) The manskip shall be sufficiently large to accommodate all persons without crowding, and to provide sufficient work space so workers will not hinder or obstruct each other.

(3) Standard guardrails shall be provided around all edges of the manskip. (See Rules 437-81-309 thru 437-81-326 for specifications for standard guardrails).

(4) The manskip shall be supported from all four corners in such a way as to provide full stability against tipping while occupied.

(5) The load lifting attachment for a manskip shall be secured to the crane or derrick hook in a manner that will prevent accidental release. (Formerly 33-11-8)

**437-81-1873** Only one person shall give operating signals during hoisting operations. (Formerly 33-11-9)

EXCEPTION: In an emergency, anyone may give a "stop" signal; such signal shall be heeded.

**437-81-1876** All persons shall be in the clear before a signal is given to move a load or equipment. (Formerly 33-11-10)

### TACKLE AND HOISTING EQUIPMENT

#### Blocks, Sheaves, Shackles and Drums

**437-81-1879** Sheave and drum diameters shall be as recommended by the wire rope manufacturer for the size rope being used. (Formerly 33-11-11)

**437-81-1883** All pins, including bearing and yoke pins, of all blocks shall be secured against accidental displacement. (Formerly 33-11-12)

**437-81-1886** All blocks shall be fitted with line guards or shall be designed and used in a manner that prevents fouling. (Formerly 33-11-13)

**437-81-1889** Sheaves carrying ropes which can be momentarily unloaded shall be provided with close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again. (Formerly 33-11-14)

**437-81-1893** Pins for all shackles used to hang blocks, jacks, or rigging, or used with hoisting chain, shall be secured by use of a bolt, nut and cotter pin (safety-type shackle) or a screw pin with cotter pin, or securely moused. (Formerly 33-11-55)

**437-81-1896** Shackles used to hang blocks, jacks, or other rigging that can be subjected to a potential stress greater than that imposed by a single part of the pulling line shall have a strength equal to but not less than two times the stress imposed by the pulling line. (Formerly 33-11-16)

**437-81-1899** All shackles used for joining or attaching lines shall have a strength of not less than 1½ times that of the lines they join. (Formerly 33-11-17)

**437-81-1903** Ends of lines attached to drums shall be securely fastened by means of clamps, socketing, or other means furnishing equal strength. Not less than two wraps of line shall be maintained on drums. (Formerly 33-11-18)

**437-81-1906** A guide pulley, tool, stick or other mechanical means shall be used in guiding lines onto drums. Guiding lines onto drums with the hands in direct contact with the line is prohibited. (Formerly 33-11-19)

**Chains**

**437-81-1909** Hoisting chain shall be repaired or removed from hoisting service when the increase in length (stretch) of the measured section exceeds 5%; or when a link is bent, twisted, or otherwise damaged, or when raised scarfs or defective welds appear. (Formerly 33-11-20)

**437-81-1913** Knots shall not be tied in a chain. (Formerly 33-11-21)

**437-81-1916** Lap links, cold shuts, or patent repair links shall not be used for hoist chains or slings unless such devices will develop greater strength than the chain with which they are used. (Formerly 33-11-22)

**437-81-1919** End fastenings shall be capable of sustaining loads equal to the breaking strength of the chain with which they are used. (Formerly 33-11-23)

**Hooks and Attachment Devices**

**437-81-1923** Hooks, rings, shackles, and other attachment devices or end fastenings which have become distorted or deformed shall be immediately withdrawn from service. (Formerly 33-11-24)

**437-81-1926** Makeshift hooks, links, or fasteners such as those formed from rods, bolts, etc., or other such devices shall not be used. Only approved factory-made attachments or fasteners shall be used. (Formerly 33-11-25)

**437-81-1929** When necessary to prevent lifting attachments from inadvertently lifting out of the hook, a safety-type hook or other device or means shall be used. (Formerly 33-11-26)

**Wire Rope**

**437-81-1933** Wire rope and replacement wire rope shall be of the same size, same or better grade, and same construction as originally furnished by the equipment manufacturer or contemplated in the design, unless otherwise recommended by the equipment or wire rope manufacturer. (Formerly 33-11-27)

**437-81-1936** Running wire ropes shall be guarded if within 7' of the floor or platform. (Formerly 33-11-28)

**437-81-1939** Care shall be taken to prevent friction of ropes with other objects which will cause chafing or breaking wires. Thimbles of proper size for the rope shall be used in all eye-splices to prevent friction and chafing of the eye. (Formerly 33-11-29)

**437-81-1943** Wire rope used as guys, for hoisting or supporting objects, in cable-operated components, and on winches or drums, shall be removed from service when any of the following conditions exist:

- (1) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.
- (2) Corroded, damaged, or improperly aligned end connections.
- (3) Evidence of any heat damage from any cause.
- (4) In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
- (5) Wear of 1/3 the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
- (6) Reductions from nominal diameter exceeding that given in the following table:

TABLE K-1

Rope Size (inches)	Max Reduction (inches)
Up to 5/16	1/16
5/16 to 1/2	1/32
9/16 to 3/4	3/64
7/8 to 1 1/8	1/16
1 1/4 to 1 1/2	3/32

(Formerly 33-11-30)

**Cable Clips or Clamps**

**437-81-1946** When cable clips or clamps are used for form eyes, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope. (Formerly 33-11-31)

**437-81-1949** When U-bolt rope clips are used for form eyes, the following table shall be used to determine the number and spacing of clips.

TABLE K-2

Rope Diameter (inches)	Number of Clips		Minimum Spacing (inches)
	Drop forged	Other material	
1/8 to 1/4	2	2	1 1/2
5/16 to 3/8	3	3	2 1/4
7/16 to 9/16	3	4	3
5/8	3	4	3 3/4
3/4	4	5	4 1/2
7/8	4	5	5 1/4
1	5	6	6
1 1/8	6	6	6 3/4

(Formerly 33-11-32)

**437-81-1953** The use of cable clips or clamps may be accepted only when used in locations where they are readily accessible and subject to frequent inspection. Clips and clamps shall be of the correct size and shall be properly applied. (See Rules 437-81-1946 thru 437-81-1959)

**437-81-1956** The use of cable clips or clamps for joining lines is prohibited, except where used for transferring slack lines from one place to another. (Formerly 33-11-34)

**437-81-1959** Knots or combination knots and cable clip or clamp attachments shall not be used as end connections for any hoisting rope or sling. (Formerly 33-11-35)

EXCEPTION: This rule does not apply to drop hammers of pile drivers.

### Fiber Rope

**437-81-1963** Fiber rope shall be inspected frequently. Rope shall not be used if it shows visual signs of excessive wear, abuse, spots indicating caustic or acid damage, or other defect that would reduce the rated strength below the safe working load required.

NOTE: The following procedure is recommended for inspection of rope:

(1) Examine the entire length of the rope for cuts or severe abrasions.

(2) Look for spots indicating acid damage.

(3) If acid spots are found, throw a twist in and out of the rope where the spots are discovered; take a short kink in the rope and put on a strain. If the rope has been injured by acid, a weakness of the fibers will be noticed.

(Formerly 33-11-36)

**437-81-1966** In manila rope, eye splices shall contain at least 3 full tucks, and short splices shall contain at least 6 full tucks (3 on each side of the centerline of the splice). (Formerly 33-11-37)

**437-81-1969** In layed synthetic fiber rope, eye splices shall contain at least 4 full tucks, and short splices shall contain at least 8 full tucks (four on each side of the centerline of the splice). (Formerly 33-11-38)

**437-81-1973** In fiber rope splices, strand end tails shall not be trimmed short (flush with the surface of the rope) immediately adjacent to the full tucks. This precaution applies to both eye and short splices and all types of fiber rope. (Formerly 33-11-39)

**437-81-1976** For all eye splices in fiber rope, the eye shall be sufficiently large to provide an included angle of not greater than 60° at the splice when the eye is placed over the load or support. (Formerly 33-11-40)

**437-81-1979** Knots shall not be used in lieu of splices for joining fiber rope. (Formerly 33-11-41)

**437-81-1983** When not in use, fiber rope shall be stored under cover in a clean, dry, well-ventilated place, free from excessive heat, and protected against corrosives and acid. (Formerly 33-11-42)

**437-81-1986** Fiber rope shall not be used while it is in a frozen condition. Should rope become frozen, it shall not be piled against any source of heat which will dry out the oil and destroy the life of the rope. (Formerly 33-11-43)

**437-81-1989** New fiber rope shall not be stressed beyond  $\frac{1}{6}$  of the manufacturer's rated breaking strength. (Formerly 33-11-44)



## EXPLOSIVE ACTUATED TOOLS

437-81-1933 The rules contained in Chapter 12 (Division 65) Powder Actuated Tools of the Oregon Occupational Safety and Health Code shall apply to the storage and use of explosive actuated tools. (Formerly 33-12-1)

**EXPLOSIVES AND BLASTING  
AGENTS**

**437-81-1996** Rules contained in Chapter 13 (Division 45) Explosives and Blasting Agents, of the Oregon Occupational Safety and Health Code shall apply to storing, handling, transporting and use of explosives and blasting agents. (Formerly 33-13-1)

## **ELECTRIC POWER TRANSMISSION**

**437-81-1999** Employment in connection with electric power transmission is outside the scope of agricultural employment. (Formerly 33-14-1)

## POWERED SAWS

### GENERAL

#### Scope and Application

**437-81-2003** Rules 437-81-2003 thru 437-81-2066 prescribe safety standards to provide for protection against hazards incurred with the use of band saws, radial arms saws, table saws, and circular fuel wood saws used in places of agricultural employment. (Formerly 33-15-1)

**437-81-2006** The rules contained in Chapter 15 (Division 79) Lumber, Plywood and Shingle Manufacturing of the Oregon Occupational Safety and Health Code shall apply and be complied with in all powered wood working tools and related operations not specifically mentioned in Rules 437-81-2003 thru 437-81-2066. (Formerly 33-15-2)

#### SAWS

##### Band Saws

**437-81-2009** All band wheels shall be completely encased or guarded on both sides. Guards shall be constructed of not less than No. 14 U. S. gauge metal, nominal 2" wood material, or mesh or perforated metal of not less than U.S. gauge No. 20 with openings not greater than  $\frac{3}{8}$ ". (Formerly 33-15-3)

**437-81-2013** All portions of the band saw blade shall be enclosed or guarded except the working side of the blade between the guide and the table. (Formerly 33-15-4)

##### Radial Arm Saws

**437-81-2016** Radial arm saws shall be equipped with a hood that will completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. (Formerly 33-15-5)

**437-81-2019** Means shall be provided which will prevent the leading edge of the saw from passing the front edge of the table or roll case. (Formerly 33-15-6)

NOTE: This may be accomplished by:

- (1) A positive stop; or,
- (2) A deeper table whose front edge extends beyond the limit of the blade travel.

**437-81-2023** When used for ripping, radial arm saws shall be equipped with anti-kick-back fingers located on each side of the saw, and shall be equipped with a spreader. (Formerly 33-15-7)

**437-81-2026** The direction of saw rotation shall be marked on the hood and a permanent warning sign prohibiting ripping or ploughing from that position attached to the rear of the guard. Ripping and ploughing shall be permitted only against the direction in which the saw turns. (Formerly 33-15-8)

**437-81-2029** Radial arm saws shall be equipped with a means to return the saw and keep it in position at the back of the table.

NOTE: This may be accomplished by a counterweight, a saw retractor device, or tilting the arm sufficiently to maintain the saw at the back when released by the operator or some other equally effective means.  
(Formerly 33-15-9)

##### Table Saws

**437-81-2033** Each circular crosscut table saw shall be guarded by a standard type hood which shall cover the saw at all times at least to the depth of the teeth. The hood shall adjust itself automatically to the thickness of, and shall remain in contact with, the material being cut, except that when finished surfaces of stock may be marred by the guard, it may be raised slightly to avoid contact. The hood shall be so designed as to protect the operator from flying splinters and broken saw teeth. (Formerly 33-15-10)

**437-81-2036** Rip table saws, and combination rip and crosscut table saws shall be fully guarded as required in Rule 437-81-2033. In addition they shall be equipped with a spreader and anti-kick-back fingers. While used in performing rabbetting, ploughing, grooving or dado operations they may be used without a spreader but upon completion of such operations, the spreader shall be replaced immediately. (Formerly 33-15-11)

**437-81-2039** The part of the table saw which is located beneath the table shall be fully guarded. (Formerly 33-15-12)

**437-81-2043** Push sticks shall be provided and must be used for pushing short stock and ends through table saws not equipped with a self-feeding device. (Formerly 33-15-13)

##### Wobble Saws

**437-81-2046** The dangerous practice of inserting wedges between a saw disk and its collar to form a "wobble saw" for rabbetting is prohibited. (Formerly 33-15-14)

NOTE: This rule is not applicable to properly designed adjustable rabbetting blades.

##### Circular Fuel Wood Saws

**437-81-2049** Fuel wood saws shall be guarded by a standard guard that will completely enclose the blade to the depth of the teeth, except for that portion where material is fed into the blade. (Formerly 33-15-15)

**437-81-2053** The table of fuel wood saws shall be designed and constructed so that material being sawn is supported on both sides of the blade. (Formerly 33-15-16)

**437-81-2056** The table on fuel wood saws shall be sufficiently deep to prevent the leading edge of the saw from passing the front edge of the table. (Formerly 33-15-17)

**437-81-2059** Tilting tables of fuel wood saws shall be provided with a backrest for the full length of the table. The back rest shall extend upward from the table platform at least to the height of the saw opening. The backrest shall be filled, with no opening greater than 2". The backrest frame and filler shall be constructed of material of sufficient strength and rigidity to prevent distortion under normal use conditions. (Formerly 33-15-18)

**437-81-2063** Shafting, flywheels, pulleys on fuel

wood saws shall be guarded as required in Rules 437-81-1706 thru 437-81-1846. (Formerly 33-15-19)

**Cracks in Blades**

**437-81-2066** A circular saw which has developed a crack equal to the length indicated in the following table shall be discontinued from use until properly repaired.

Length of Crack	Diameter of Saw in Inches
½"	12"
1"	24"
1½"	36"

(Formerly 33-15-20)

**LOGGING**

**437-81-2069** The rules contained in Chapter 16 (Division 80) Logging, of the Oregon Occupational Safety and Health Code shall apply to all logging and land clearing activities. (Formerly 33-16-1)

## GAS AND ELECTRIC WELDING

### GENERAL

#### Scope and Application

**437-81-2073** Rules 437-81-2073 thru 437-81-2443 prescribe safety standards for repair welding and simple fabrication welding operations and associated equipment in places of agricultural employment. (Formerly 33-17-1)

**437-81-2076** The rules contained in Chapter 17 (Division 66) Gas and Electric Welding of the Oregon Occupational Safety and Health Code shall apply in all welding operations in places of agricultural employment where any of the following conditions exist:

- (1) Production-type welding activities.
- (2) Custom welding.
- (3) Welding performed in tanks, vats, or other confined spaces.
- (4) Toxic or dangerous coatings or fluxes are used.
- (5) Welding or heating galvanized materials, fluxes and coatings containing beryllium, cadmium, lead, manganese, mercury, or zinc. (Formerly 33-17-2)

#### Definitions

**437-81-2076** The following definitions apply to Rules 437-81-2073 thru 437-81-2443.

(1) **Welding**—As used in Rules 437-81-2073 thru 437-81-2443, includes welding, brazing, soldering, heating, burning, and cutting metals using electric or gas welding and cutting equipment. (Formerly 33-17-3)

(2) **Welder and welding operator**—Any operator of electric or gas welding and cutting equipment. (Formerly 33-17-4)

(3) **Approved**—Listed or approved by nationally recognized testing laboratory, such as Factory Mutual Engineering Division, Factory Insurance Association, or Underwriters' Laboratories, Inc.; or, upon application, by the Accident Prevention Division, Oregon Workmen's Compensation Board. (Formerly 33-17-5)

#### Planning and Job Layout

**437-81-2089** Before commencing a welding job, the welder shall survey the job and surroundings to determine the safeguards and personal protective equipment that must be used. No welding shall be done until all precautionary measures necessary to prevent injury to the worker and to other workers have been taken. (Formerly 33-17-6)

**437-81-2093** Cutting or welding shall be permitted only in fire safe areas. This shall be accomplished in one of the following ways:

- (1) Move the work to a fire safe area.
- (2) Remove flammables to establish a fire safe area around the work.
- (3) Where (1) or (2) cannot be accomplished, use fire proof guards or wetdown, or use other effective means to prevent heat, sparks, or slag from igniting flammable material. (Formerly 33-17-7)

**437-81-2096** When welding operations are conducted in an area where there are combustible materials of any kind, suitable fire extinguishing equipment shall be maintained ready for use. (Formerly 33-17-8)

NOTE: Such equipment may consist of pails of water, sand, portable extinguishers, hose, or sprinkler systems, depending upon the nature of the combustible material.

**437-81-2099** Workers shall be instructed on procedures to be followed in case of fire. (Formerly 33-17-9)

**437-81-2103** Welding operations shall not be permitted in rooms containing flammable vapors. (Formerly 33-17-10)

**437-81-2106** Before operations are started, portable welding equipment shall be secured to prevent accidental movement. (Formerly 33-17-11)

**437-81-2109** Where employes are exposed to contact with hot metal after operations are completed, the operator shall mark the hot metal or provide other effective warning. (Formerly 33-17-12)

## HEALTH PROTECTION

### Ventilation

**437-81-2113** Local exhaust systems or general ventilating systems shall be provided to keep the amount of toxic fumes, gases, or dusts below the threshold limit value, as specified in Rules 22-017(a), 22-018(a), and 22-032 of the Oregon Occupational Health Rules. (Formerly 33-17-13)

NOTE 1: Experience has shown that there is no health hazard, under ordinary conditions, when welding clean carbon steel with bare or coated carbon steel welding rods, in large or well-ventilated areas.

NOTE 2: See Rules 437-81-2179 thru 437-81-2196 for procedures when welding on equipment which has been contaminated with toxic material.

### Precautionary Labels

**437-81-2116** Users shall require the suppliers of welding materials to explain the hazard, if any, associated with the use of their materials in welding, cutting, etc., and to provide appropriate warning labels. Employers shall insure that employes are cognizant of such hazards before using the materials. (Formerly 33-17-14)

**437-81-2119** Warning labels shall conform to the requirements of Rule 22-015 of the Oregon Occupational Health Rules. (Formerly 33-17-15)

## Cleaning Solvents—Degreasers

NOTE: See Rules 22-017(a) and 22-032 of the Oregon Occupational Health Rules.

**437-81-2123** In the use of cleaning materials, because of their possible toxicity or flammability, manufacturer's instructions shall be followed. (Formerly 33-17-16)

**437-81-2126** Degreasing or other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapors from these operations will reach or be drawn into the atmosphere surrounding any welding operation. (Formerly 33-17-17)

**437-81-2129** Welding in the vicinity of a degreaser is prohibited. (Formerly 33-17-18)

**437-81-2133** A warning of the danger of trichloroethylene or perchloroethylene decomposition shall be given. (Formerly 33-17-19)

NOTE: These dangerous vapors break down into phosgene gas when drawn through a welding arc or flame.

## Eye Protection

**437-81-2136** Helmets or hand shields shall be used during arc welding or arc cutting operations. (Formerly 33-17-20)

**437-81-2139** Helmets and hand shields shall be arranged to protect the face, neck, and ears from direct radiant energy from the arc. (Formerly 33-17-21)

**437-81-2143** Helmets, hand shields, and goggles shall be made of material which is an insulator for heat and electricity, is not readily flammable, and is capable of withstanding sterilization. (Formerly 33-17-22)

**437-81-2146** All glass lenses and cover plates shall be tempered. (Formerly 33-17-23)

**437-81-2149** Where the "liftfront" welders helmet is used, there shall be a stationary safety glass on the inside of the frame next to the eyes, to protect the welder against flying particles when the front is lifted. Where lens containers will not permit use of such safety glass, safety goggles shall be worn. (Formerly 33-17-24)

**437-81-2153** Spectacles with side shields and with suitable lenses, or cup type of cover type goggles with suitable filters, shall be used for gas welding, cutting, and brazing operations, and for inspection. (Formerly 33-17-25)

**437-81-2156** Workers adjacent to the welding areas shall be protected from the rays by flameproof screens, or goggles of sufficient color density to prevent harmful exposure. (Formerly 33-17-26)

## Protective Clothing

NOTE: The following practices are recommended for protection against burns while welding:

(1) Except when engaged in light work, all welders should wear flameproof gauntlet gloves.

(2) Flameproof aprons made of leather, asbestos or other suitable material may also be desirable as protection against radiated heat and sparks.

(3) Woolen clothing is preferable to cotton because it is not so readily ignited and helps protect the operator from changes in temperature.

(4) Cotton clothing, if used, should be chemically treated to reduce its flammability. Such clothing should be re-treated after laundering or cleaning.

(5) Sparks may lodge in rolled-up sleeves or pockets of clothing, or cuffs of overalls or trousers. It is therefore recommended that sleeves and collars be kept buttoned and pockets be eliminated from the front of overalls and aprons.

**437-81-2159** Trousers or overalls shall not be turned up on the outside. (Formerly 33-17-27)

**437-81-2163** All outer clothing such as jumpers or overalls shall be free from accumulations of oil or grease. (Formerly 33-17-28)

**437-81-2166** Easily ignited, highly flammable clothing, such as is made from some synthetic materials, shall not be worn. (Formerly 33-17-29)

**437-81-2169** Capes or shoulder covers made of leather or other suitable materials shall be worn during overhead welding or cutting operations (Formerly 33-17-30)

NOTE: Leather skull caps may be worn under helmets as additional protection against head burns.

**437-81-2173** For overhead welding and cutting, protection is required to prevent hot sparks and slag from entering the worker's ears. (Formerly 33-17-31)

## Containers

**437-81-2176** No torch or arc shall be applied to any container until the vessel has been freed of all flammable material or gases. (Formerly 33-17-32)

**437-81-2179** To free a vessel from contaminants, the following steps shall be followed:

(1) Vessels shall first be drained of all liquids. Those which do not drain freely shall be flushed of flammable material by the use of water.

(2) Flammable vapors shall be removed by ventilation which shall be continued until all liquids have been evaporated and the atmosphere within the vessel has been found to be gas-free by the use of an approved vapor indicator.

(3) Scale and residue on the inside of the vessel, which may contain flammable residue or vapors, shall be removed.

(4) Ventilation shall be continued during the time that hot work is in progress, and frequent tests shall be made to determine that the atmosphere within the vessel remains free of flammable vapors.



**EXCEPTION:** Small punctured drums, or containers of not more than 60 gallons capacity, may be freed of volatile fumes by draining and flushing and by injecting live steam into the container for not less than 3 hours. When steam (or other methods equally effective) is not available, such drums may be freed of gas by first draining, then refilling to the point of welding and allowing the water to remain in the drum during the welding process. This method may be used only when the puncture is at the uppermost part of the drum (in whatever position it may be laid) and when the water is brought to the point of welding, and further provided that the container is vented and does not contain any interior baffles or seams that might create small gas pockets. This system is uncertain, under some conditions, and the steam process is preferable where it is possible. The use of carbon dioxide is also effective. Carbon tetrachloride will produce toxic gas. Its use is prohibited.

(Formerly 33-17-33)

### Equipment and Vessels Used With Toxic Substances

**437-81-2183** The following procedures shall be followed when applying any flame or arc to equipment or containers which have been used with toxic material, such as pesticides or toxic agricultural chemicals:

(1) The equipment or containers shall first be freed from contaminants, following the steps prescribed in Rule 437-81-2179; and

(2) Effective local ventilation which will capture and remove all fumes and vapors shall be used, or

(a) If indoors, employes shall use an approved air line respirator;

(b) If in the open air, employes shall wear an appropriate approved respirator. (See Rule 437-81-2166)

**NOTE:** See Rules 22-018(a) and 22-032 of the Oregon Occupational Health Rules.

(Formerly 33-17-34)

### Preservative Coatings

**437-81-2186** Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made to determine its flammability. (Formerly 33-17-35)

**NOTE:** Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

**437-81-2189** When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition. (Formerly 33-17-36)

### Toxic Preservative Coatings

**437-81-2193** The preservative coatings shall be removed a sufficient distance (at least 4") from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised (artificial cooling of the metal surrounding the heating area may be used to limit the size of the

area required to be cleaned); or, the procedures prescribed in Rule 437-81-2179(2) shall be used. (Formerly 33-17-37)

**437-81-2196** In the open air, employes shall be protected by a respirator against hazard from breathing toxic vapors in accordance with Rule 22-069 of the Oregon Occupational Health Rules. (Formerly 33-17-38)

## ARC WELDING

### Equipment

**437-81-2199** All arc welding equipment shall be installed, maintained, and operated in strict accordance with the manufacturer's specifications and instructions. (Formerly 33-17-39)

**437-81-2203** The frame or case of the welding machine (except engine-driven machines) shall be grounded. (Formerly 33-17-40)

### Protection From Electrical Shock

**NOTE:** It should never be assumed that because contact with the electrode at one time is not harmful, similar contacts at other times will be harmless.

**437-81-2206** Terminals for welding leads on machines capable of exceeding 50 volts shall be protected from accidental contact by persons or metal objects. (Formerly 33-17-41)

**437-81-2209** Work lead cable and electrode lead cables with damaged insulation or exposed conductors shall not be used. (Formerly 33-17-42)

**437-81-2213** The jaws and handles of electrode holders shall be insulated so as to prevent contact with current-carrying parts. (Formerly 33-17-43)

**437-81-2216** Welders shall wear dry protective coverings on hands, arms, and body which will insulate from both the work and the metal electrode and holder. (Formerly 33-17-44)

**437-81-2219** Welding cables shall not be placed in proximity to power supply cables or high tension wires. (Formerly 33-17-45)

**437-81-2223** Welding cables shall be spread out before use to avoid overheating and damage to insulation. (Formerly 33-17-46)

**NOTE:** Loose loops are permissible. Coils are to be avoided.

**437-81-2226** The electrode cable shall not be coiled or looped above a person's body. (Formerly 33-17-47)

### Machine Hook-Up

**437-81-2229** Before starting operations all connections to the machine shall be checked to make certain they are properly made. (Formerly 33-17-48)

**437-81-2233** The work lead shall be firmly attached or connected to the work. (Formerly 33-17-49)

**437-81-2236** Work lead clamps shall be free from spatter on contacts. (Formerly 33-17-50)

**437-81-2239** Power shall be removed from welding machines while they are idle for extended periods of time, or not in use. (Formerly 33-17-51)

## OXYGEN—FUEL GAS

### General

**437-81-2243** Mixtures of fuel gases and air or oxygen shall not be allowed to accumulate. (Formerly 33-17-52)

**437-81-2246** Attachment permitting mixture of air or oxygen with combustible gases prior to consumption, except at the burner or in a standard torch or blow-pipe, shall not be allowed. (Formerly 33-17-53)

**437-81-2249** Only approved apparatus such as torches, regulators or pressure-reducing valves, and hoses shall be used. (Formerly 33-17-54)

### Storage, Handling, Use of Cylinders

**437-81-2253** Inside of buildings cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20' from highly combustible materials such as oil or excelsior. Cylinders shall be stored in assigned places away from elevators, stairs, or gangways. (See Rules 437-81-2333 thru 437-81-2353 for additional specific requirements for fuel-gas cylinders: See Rules 437-81-2356 thru 437-81-2370 for additional specific requirements for oxygen cylinders.) (Formerly 33-17-55)

**437-81-2256** Cylinders shall be kept away from sources of heat. (Formerly 33-17-56)

**437-81-2259** Cylinders shall be stored in assigned storage spaces, located where they will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. (Formerly 33-17-57)

**437-81-2263** Cylinders shall be kept far enough from the welding or cutting operation so that sparks, hot slag, or flame will not reach them, or they shall be protected by fire-resistant shields. (Formerly 33-17-58)

**437-81-2266** Any practice such as the tapping of an electrode against a cylinder to strike an arc is prohibited. (Formerly 33-17-59)

**437-81-2269** Cylinders shall be handled carefully. Rough handling, knocks and falls are prohibited. (Formerly 33-17-60)

**437-81-2273** Cylinders shall never be used as rollers or supports, whether full or empty. (Formerly 33-17-61)

**437-81-2276** Cylinders shall not be moved by dragging or sliding. They may be moved by tilting and rolling them on their bottom edge. (Formerly 33-17-62)

**437-81-2279** Cylinders shall be securely lashed in place when necessary to prevent them from falling. (Formerly 33-17-63)

**437-81-2283** A suitable cylinder truck, chain, or steadying device shall be used to keep cylinders from being knocked over while in use. (Formerly 33-17-64)

**437-81-2286** When setting up cylinders for use, the acetylene valve outlet shall be pointed away from the oxygen cylinders. (Formerly 33-17-65)

**437-81-2289** A hammer or wrench shall not be used to open cylinder valves. If valves cannot be opened by hand, the supplier shall be notified. (Formerly 33-17-66)

**437-81-2293** Cylinders without hand wheels shall have keys, handles, or non-adjustable wrenches on valve stems while these cylinders are in service. (Formerly 33-17-67)

**437-81-2296** Cylinders or valves shall not be tampered with nor shall any attempt be made to repair them.

(1) If trouble is experienced the supplier shall be notified.

(2) Supplier's instructions shall be followed. (Formerly 33-17-68)

**437-81-2299** Before connecting the regulator to the cylinder valve, the valve shall be opened  $\frac{1}{4}$  turn and closed immediately (this action is termed "cracking"). This action is intended to clear the valve of dirt that otherwise might enter the regulator. (Formerly 33-17-69)

**437-81-2303** Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame, or other possible sources of ignition. (Formerly 33-17-70)

**437-81-2306** Always stand to one side of the outlet when opening the valve. (Formerly 33-17-71)

**437-81-2309** Cylinder valves shall always be opened slowly. (Formerly 33-17-72)

**437-81-2313** Nothing shall be placed on top of a cylinder when in use which may damage the safety device or interfere with the quick closing of the valve. (Formerly 33-17-73)

**437-81-2316** Cylinder valves shall be closed when work is finished. (Formerly 33-17-74)

**437-81-2319** Valves of empty cylinders shall be closed. (Formerly 33-17-75)

### Valve Protection Caps

**437-81-2323** Unless cylinders are secured on a special truck, regulators shall be removed and valve-protection caps shall be put in place before cylinders are moved. (Formerly 33-17-76)

**437-81-2326** Valve protection caps shall not be used for lifting cylinders from one vertical position to another. (Formerly 33-17-77)

**437-81-2329** Valve protection caps shall always be in place, hand-tight, except when cylinders are connected for use. (Formerly 33-17-78)

### Fuel Gas

**437-81-2333** Acetylene cylinders shall be stored valve end up. (Formerly 33-17-79)

**437-81-2336** Fuel gas cylinders shall be placed with valve end up whenever they are in use. (Formerly 33-17-80)

**437-81-2339** Liquified gas cylinders shall be stored and shipped with the valve end up. (Formerly 33-17-81)

**437-81-2343** Under no condition shall acetylene be used at a pressure in excess of 15 psi gauge pressure. (Formerly 33-17-82)

NOTE: This requirement does not apply to storage of acetylene dissolved in a solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements.

**437-81-2346** Fuel-gas shall never be used from cylinders through torches or other devices equipped with shut-off valves without reducing the pressure through a regulator attached to the cylinder valve or manifold. (Formerly 33-17-83)

**437-81-2349** An acetylene cylinder valve shall not be opened more than 1½ turns of the spindle, and preferably no more than ¾ of a turn. (Formerly 33-17-84)

**437-81-2353** Under no circumstances shall acetylene gas be brought in contact with unalloyed copper except in a blowpipe or torch. (Formerly 33-17-85)

### Oxygen

**437-81-2356** Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials a minimum of 20' or by a non-combustible barrier at least 5' high having a fire-resistance rating of at least ½ hour. (Formerly 33-17-86)

**437-81-2359** Oxygen is prohibited for use in pneumatic tools, in oil preheating burners, to start internal-combustion engines, to blow out pipe lines, to "dust" clothing or work, to create pressure, or for ventilation. (Formerly 33-17-87)

NOTE: Oxygen will not burn, but supports and accelerates combustion and will cause oil and similar materials to burn with great intensity.

**437-81-2363** As oxygen under high pressure may react violently with oil or grease, every precaution shall be taken to prevent oxygen from coming in contact with oil or grease.

(1) Oxygen cylinders, and all oxygen apparatus shall be kept free from oily or greasy substances.

(2) Oxygen cylinders and apparatus shall not be handled with oily hands, gloves, or greasy materials.

(3) A jet of oxygen must never be permitted to strike an oily surface, greasy clothes, or enter a fuel-oil or other storage tank. (Formerly 33-17-88)

**437-81-2366** Unless connected to a manifold, oxygen from a cylinder shall not be used without first attaching any oxygen regulator to the cylinder valve. (Formerly 33-17-89)

**437-81-2369** When a regulator is attached, open an oxygen cylinder valve slightly at first so that the regulator cylinder pressure gauge hand moves up slowly—then open the valve all the way. (Formerly 33-17-90)

**437-81-2370** When the oxygen cylinder is in use, the valve should be opened fully in order to prevent leakage around the valve stem. (Formerly 33-17-91)

### Regulators

**437-81-2373** Pressure-reducing regulators shall be kept in good repair. Cracked, broken, or otherwise defective parts (including gauge glasses) shall be replaced. (Formerly 33-17-92)

**437-81-2376** Union nuts and connections on regulators shall be inspected before use to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves. Damaged nuts or connections shall be destroyed. (Formerly 33-17-93)

**437-81-2379** Excessive force shall not be used in tightening the connections. (Formerly 33-17-94)

**437-81-2383** Pressure-adjusting screws on regulators shall always be fully released before the regulator is attached to a cylinder and the cylinder valve opened. (Formerly 33-17-95)

**437-81-2386** Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator. (Formerly 33-17-96)

### Hoses

**437-81-2389** Oxygen and fuel-gas hose shall be of dissimilar colors. (Formerly 33-17-97)

NOTE: Red is the accepted color for acetylene and other fuel-gas hose, green for oxygen hose, and black for air or inert gas hose.

**437-81-2393** When parallel lengths of oxygen

and acetylene hose are taped together, not more than 4' out of 12' shall be covered by tape. (Formerly 33-17-98)

**437-81-2396** Hose shall be protected from damage, and from flying sparks, hot slag, and hot objects. (Formerly 33-17-99)

**437-81-2399** Hose showing leaks, burns, worn places, evidence of damage from flashback, or other defects rendering it unsafe for service shall be repaired or replaced. (Formerly 33-17-100)

**437-81-2403** Damaged hose shall not be repaired with tape. (Formerly 33-17-101)

**437-81-2406** Oil-free air or an oil-free inert gas shall be used for testing hose. (Formerly 33-17-102)

**437-81-2409** Connections for oxygen hose shall be of sufficiently different dimension or pattern from that for fuel-gas to prevent intermixing in making connections; or, hose connections shall be marked for identification to avoid interchange of acetylene and oxygen hose. (Formerly 33-17-103)

**437-81-2413** After connecting welding or cutting apparatus to oxygen and fuel-gas cylinders, or when starting to re-use the apparatus after an interval of ½ hour or more, each gas shall be allowed to flow through its respective hose separately for a few seconds to purge the hose of any mixture of gases. (Formerly 33-17-104)

### Blowpipes or Torches

**437-81-2416** Approved back-flow or flash-back preventers shall be installed between the blow pipe or torch and the hoses. (Formerly 33-17-105)

**437-81-2419** Connect the acetylene hose from the acetylene regulator to the hose connection on the torch marked "Acetylene". (Formerly 33-17-106)

**437-81-2423** Connect the oxygen hose from the

oxygen regulator to the hose connection on the torch marked "Oxygen". (Formerly 33-17-107)

**437-81-2426** Select the proper welding head or mixer, tip or cutting nozzle (according to the chart or table furnished by the torch manufacturer) and screw carefully and tightly into the torch. (Formerly 33-17-108)

**437-81-2429** Operators shall follow the procedure outlined by the manufacturer of the apparatus as they deal with the sequence of operations in lighting, adjusting, and extinguishing blow pipe flames and connecting the apparatus to the sources of gas supply. (Formerly 33-17-109)

**437-81-2433** To light the torch do not use matches; hand burns may result. Use friction lighters, stationary pilot flames or some other suitable source of ignition. Outlet of torch tip shall be pointed so that burns will not result when gas ignites. (Formerly 33-17-110)

**437-81-2436** Operators shall never put down a torch unless the oxygen and acetylene have been completely shut off at the torch. (Formerly 33-17-111)

**437-81-2439** Gases shall not be shut off by crimping the hose. (Formerly 33-17-112)

**437-81-2443** When the welding or cutting is stopped for an extended period (during lunch or overnight) proceed as follows:

- (1) Close oxygen and fuel gas cylinder or manifold valves.
- (2) Open torch valves momentarily to release all gas pressure from hose.
- (3) Close torch valves.
- (4) Release regulator pressure adjusting screws.

NOTE: When the welding or cutting is to be stopped for a few minutes, it is permissible to close the torch valves only. (Formerly 33-17-113)

## DEMOLITION OF BUILDINGS

### Definitions

**437-81-2446** The following definition applies to Rule 437-81-2449.

(1) Demolition work—The dismantling of any building or fixed structure. (Formerly 33-18-1)

**437-81-2449** The rules contained in Rules 437-83-4543 thru 437-83-4736 are applicable to all demolition of buildings and structures. (Formerly 33-18-2)

## LADDERS AND SCAFFOLDS

### GENERAL

#### Scope and Application

**437-81-2453** Rules 437-81-2453 thru 437-81-2709 prescribe requirements for construction, care, and use of portable and fixed ladders constructed of wood or metal, commonly used in places of agricultural employment. These ladders include single ladders, sectional ladders, extension ladders, step ladders, orchard ladders, and fixed ladders. (Formerly 33-19-1)

**437-81-2456** Special types of ladders, ladders not specifically mentioned in this code, and the use of such ladders shall meet the requirements prescribed in Chapter 19 (Division 41) Ladders and Scaffolds of the Oregon Occupational Safety and Health Code. (Formerly 33-19-2)

#### Definitions

**437-81-2459** The following definitions apply to Rules 437-81-2453 thru 437-81-2709.

(1) **Ladder**—An appliance usually consisting of two side rails joined at regular intervals by cross-pieces called steps, rungs, or cleats, on which a person may step while ascending or descending. (Formerly 33-19-3)

(2) **Step Ladder**—A self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails. (Formerly 33-19-4)

(3) **Orchard Ladder**—A self-supporting portable ladder of the tripod type, nonadjustable in length, consisting of two front side rails having flat steps and a hinged single leg back section. (Formerly 33-19-5)

(4) **Single Ladder**—A non-supporting portable ladder, nonadjustable in length, consisting of but one section. Its size is designated by the overall length of the side rail. (Formerly 33-19-6)

(5) **Extension Ladder**—A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails. (Formerly 33-19-7)

(6) **Sectional Ladder**—A non-self-supporting portable ladder, nonadjustable in length, consisting of two or more sections so constructed that the sections may be combined to function as a single ladder. Its size is designated by the overall length of the assembled sections. (Formerly 33-19-8)

(7) **Fixed Ladder**—A ladder permanently attached to a structure, building, or equipment. (Formerly 33-19-9)

(8) **Individual-rung Ladder**—A fixed ladder each rung of which is individually attached to a structure, building, or equipment. (Formerly 33-19-10)

(9) **Rail Ladder**—A fixed ladder consisting of side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure or equipment. (Formerly 33-19-11)

(10) **Pitch**—The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side. (Formerly 33-19-12)

(11) **Fastenings**—A device to attach a ladder to a structure, building, or equipment. (Formerly 33-19-13)

(12) **Rungs**—Ladder crosspieces of circular or oval cross-section on which a person may step in ascending or descending. (Formerly 33-19-14)

(13) **Cleats**—Ladder crosspieces of rectangular cross-section placed on edge on which a person may step in ascending or descending. (Formerly 33-19-15)

(14) **Steps**—The flat crosspieces of a ladder on which a person may step in ascending or descending. (Formerly 33-19-16)

(15) **Cage**—A guard that may be referred to as a cage or basket guard; it is an enclosure that is fastened to the structure and encircles the climbing space of the ladder for the safety of the person who must climb the ladder. (Formerly 33-19-17)

(16) **Well**—A permanent complete enclosure around a fixed ladder, which is attached to the walls of the well. Proper clearances for a well will give the person who must climb the ladder the same protection as a cage. (Formerly 33-19-18)

#### When Ladders Required

**437-81-2463** Except where stairways, ramps or runways are provided, ladders shall be provided to give access to all floors or platforms where work is being performed more than 4' above the ground. (Formerly 33-19-19)

NOTE: See Rule 437-81-153.

#### Use of Ladders

**437-81-2466** Ladders with parts which are defective or which are not sound, and ladders with improvised repairs shall not be used.

NOTE: Some examples of conditions which constitute unsoundness or defectiveness are:

- (1) Broken, cracked, or split side rails;
- (2) Broken, cracked, split, or missing steps, rungs, or cleats;
- (3) Deteriorated wood or metal parts;
- (4) Loose connections, fastenings, or hardware;
- (5) Excessive play or binding of moveable parts;
- (6) Loose, broken or missing bracing; and
- (7) Instability or lack of rigidity.

(Formerly 33-19-20)

**437-81-2469** Ladders shall not be used as guys, braces, gin poles, skids, scaffolds, or for other than their intended purpose.

NOTE: It may be permissible to place planks between two ladders to provide a low work platform, provided that:

- (1) Ladders are self-supporting and securely placed upon a solid footing.
- (2) The height of planks above ground does not exceed 3½'.
- (3) Planks are at least nominal 2 x 8" lumber, and the total width of the planking is at least 22" .
- (4) Planking is tight and secured from spreading.
- (5) Planking is fully contained between ladder side rails, and the ends extend at least 12" beyond the ladder steps.
- (6) The span does not exceed:
  - (a) 6' with a p.s.f. loading of 50; or
  - (b) 8' with a p.s.f. loading of 25.

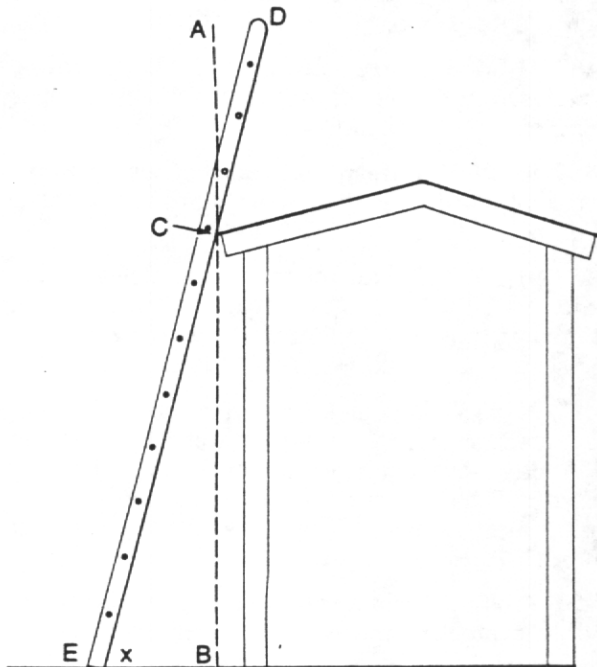
(Formerly 33-19-21)

**437-81-2473** Single short ladders shall not be spliced together to provide long sections. (Formerly 33-19-22)

NOTE: This rule does not apply to ladders which are designed to be joined together such as "sectional ladders".

### Erection, Setting Up, and Placement of Ladders

**437-81-2476** Non self-supporting ladders shall be erected and used at a pitch of 75½ degrees for maximum balance and strength (see Figure S-1). (Formerly 33-19-23)



AB is the vertical plane of the top support.

C is the top support

D is the top of the ladder

E is the foot of the ladder

X is the angle of erection (pitch)

EB = ¼ EC

X = 75½°

CD = minimum of 3', where portable ladders are used as a means of access to an upper level.

Fig. S-1. Diagram of proper ladder pitch.

NOTE: A simple rule for setting up a ladder at the proper pitch is to place the base a distance from the vertical plane of the top support equal to ¼ of the working length of the ladder between the foot and the top support.

**437-81-2479** Ladders shall be set up and placed so that they are stable.

(1) Ladder feet shall be placed on solid and secure footing.

(2) Ladders shall not be placed on boxes, barrels, drums, or other unstable bases to obtain additional height, or for any other reason.

(3) Ladders shall be set and used so as to prevent tipping sideways.

(4) Top rest shall be stable and have ample strength to safely support the applied load. (Formerly 33-19-24)

**437-81-2483** Ladders shall be secured as necessary to prevent them from being displaced. When used on surfaces where ladders may be subject to slipping, one or more of the following means shall be employed:

(1) Feet of ladders shall be equipped with non-slipping bases; or,

(2) Feet of ladders shall be equipped with steel points or safety shoes designed for the type of surface on which used; or

(3) Feet of ladders shall be nailed to the floor, or set against secured blocks or chocks. (Formerly 33-19-25)

NOTE: Nonslip bases are not intended as a substitute for care in safely placing, lashing, or holding a ladder that is being used upon oily, metal, concrete, or slippery surfaces.

**437-81-2486** When subjected to prolonged use at one station, the ladder top shall be nailed or lashed in place. (Formerly 33-19-26)

**437-81-2489** The area around the bottom of the ladder shall be kept clear, and the ladder shall be placed so that ample clear head room is provided and the climbing area is not obstructed in such a way that will cause the climber to lean away from the ladder or bend around the obstacle. (Formerly 33-19-27)

**437-81-2493** The top of portable ladders shall extend not less than 36" above the landing (See Fig. S-1). When this is not practical, grab rails which provide a secure grip for an employe moving to or from the point of access shall be installed. (Formerly 33-19-28)

**437-81-2496** Ladders shall not be placed in passageways, doorways, driveways, or any other location where they may be exposed to being bumped or displaced, unless protected by barricades, guards, or other effective means of protection. (Formerly 33-19-29)

**437-81-2499** Metal ladders, or wood ladders with vertical metal parts or reinforcements, shall not be used for electrical work or placed where they may contact electrical conductors; all such ladders shall be legibly and permanently marked with a sign reading "WARNING—do not use around energized electrical equipment" or words of equivalent meaning. (Formerly 33-19-30)

**437-81-2503** Portable rung ladders with reinforced rails shall be used only with the metal reinforcement on the under side. (Formerly 33-19-31)

### Erecting and Adjusting Extension Ladders

**437-81-2506** Extension ladders shall always be erected so that the upper section is resting on the lower section. (Formerly 33-19-32)

**437-81-2509** Extension ladders not equipped with shackle, pulley, and rope shall be extended and locked before raising. (Formerly 33-19-33)

**437-81-2513** Extension ladders which are equipped with shackle, pulley and rope for adjusting the ladder shall be extended or adjusted from the base of the ladder.

(1) The pulley shall be at least 1¼" in diameter.

(2) The rope shall be at least 5/16" in diameter, shall have a breaking strength of at least 560 lbs., and shall be sufficiently long to permit adjustment from the base.

(3) The rope and pulley shall be securely attached to the ladder in a manner that will not weaken the side rails or rungs. (Formerly 33-19-34)

**437-81-2516** Extension or adjustment of any extension ladder shall not be made:

(1) While the user is standing on the ladder, or

(2) From the top of the ladder or from any level above the locking device. (Formerly 33-19-35).

### Climbing

**437-81-2519** Ladders shall not be used to support more than one person at a time, unless specially designed with larger dimensions of the parts so as to provide the strength and clearance necessary to safely accommodate the additional loading. (Formerly 33-19-36)

**437-81-2523** The bracing on the back legs of step ladders shall not be used for climbing. (Formerly 33-19-37)

NOTE: Such bracing is designed and intended solely for increasing stability.

**437-81-2526** Persons on ladders shall not bend their body away from the ladder or reach out in such a way as to throw the ladder out of balance. (Formerly 33-19-38)

**437-81-2529** Tops of the ordinary types of step-ladders or orchard ladders shall not be used as steps. (Formerly 33-19-39)

**437-81-2533** Workers shall "face" a ladder when ascending or descending. (Formerly 33-19-40)

NOTE: Exceptions to this rule may be permitted when picking fruit from orchard ladders. See Rule 437-81-2623.

**437-81-2536** Workers shall always have the free use of both hands in going up and down a ladder. (Formerly 33-19-41)

NOTE: Exceptions to this rule may be permitted when using orchard ladders. See Rule 437-81-2623.

### Care and Maintenance of Ladders

**437-81-2539** Ladders shall be maintained in good condition at all times.

(1) The joint between steps, cleats or rungs and side rails shall be tight;

(2) All hardware and fittings shall be securely attached;

(3) All movable parts shall operate freely without binding, and without undue play. (Formerly 33-19-42)

**437-81-2543** Metal bearings of locks, wheels, pulleys, etc., shall be frequently lubricated. (Formerly 33-19-43)

**437-81-2546** Frayed or badly worn rope shall be replaced. (Formerly 33-19-44)

**437-81-2549** Rungs, cleats and steps shall be free of splinters, sharp edges, burrs or projections which create a hazard. (Formerly 33-19-45)

**437-81-2553** Rungs, cleats, and steps shall be kept clean and free of oily, greasy, or slippery substances. (Formerly 33-19-46)

**437-81-2556** Safety feet and other auxiliary equipment shall be kept in good condition to insure proper performance. (Formerly 33-19-47)

**437-81-2559** Ladders carried on vehicles shall be adequately supported to avoid sagging, and securely fastened in position to minimize chafing and the effects of road shock. (Formerly 33-19-48)

**437-81-2563** Ladder storage facilities shall provide protection from the weather and other elements which may cause deterioration or damage. Racks, if used, shall be designed to prevent ladders from sagging and the possibility of developing a permanent set. (Formerly 33-19-49)

**437-81-2566** Ladders shall be kept coated with a suitable protective material. (Formerly 33-19-50)

NOTE: The painting of ladders is satisfactory, providing the ladders are carefully inspected and found free of any defect prior to painting, and provided the ladders are not for resale.

**437-81-2569** Each ladder shall be serially numbered or otherwise identified where more than two ladders of any one type are used. (Formerly 33-19-51)

## DESIGN AND CONSTRUCTION OF LADDERS

### General Requirements

**437-81-2573** All ladders shall be constructed, erected and maintained in a safe condition to give



proper support to persons employed. Metal ladders shall be of strength equivalent to that of wood ladders. (Formerly 33-19-52)

**437-81-2576** Manufactured portable metal ladders shall be in accordance with the provisions of ANSI, A14.2-1956, "Safety Code for Portable Metal Ladders". Manufactured portable wood ladders shall be in accordance with the provisions of ANSI, A14.1-1968, "Safety Code for Portable Wood Ladders." (Formerly 33-19-53)

NOTE: The above ANSI standards are on file in the offices of the Workmen's Compensation Board, and may be obtained by writing to: Technical Services Section, APD—WCB, Labor & Industries Bldg., Salem, Oregon 97310

**437-81-2579** A uniform step, rung, or cleat spacing of not to exceed 12" shall be used in all ladders. (Formerly 33-19-54)

**437-81-2583** All steps, rungs and cleats shall be parallel and level. (Formerly 33-19-55)

**437-81-2586** Metal steps and rungs shall be made slip-resistant. This may be accomplished by one of the following, or other equally effective methods:

- (1) Knurling, ridging, grooving, or inverted dimpling.
- (2) Application of a non-slip material, or treating with a non-slip finish. (Formerly 33-19-56)

**437-81-2589** Wood cleats shall be securely attached to each side rail by not less than three 10d nails or equivalent. (Formerly 33-19-57)

**437-81-2593** Wood cleats shall be attached to the side rails in one of the following manners:

- (1) Wood cleats shall be housed into the side rails not less than ½".
- (2) Wood strips the same thickness as the cleats may be secured to the side rails between each cleat.
- (3) A binder strip of wood, wire, metal or equivalent may be fastened over the cleats to the side rails in a manner to prevent the cleats from pulling loose.
- (4) The cleats may be secured by through bolts. (Formerly 33-19-58)

**437-81-2596** Portable step ladders over 20' in length shall not be used. (Formerly 33-19-59)

**437-81-2599** Metal parts shall be malleable or wrought iron, steel or equivalent construction, securely attached by means of rivets, bolts or screws. (Formerly 33-19-60)

NOTE: Spreaders, locking devices, steel points or safety shoes are not required on orchard ladders.

**437-81-2603** The bottom of the feet on the four rails of step ladders shall be equipped with insulating non-slip material for the safety of the user. (Formerly 33-19-61)

## Orchard Ladders

**437-81-2606** Orchard ladders longer than 16' shall not be used. (Formerly 33-19-62)

**437-81-2609** The minimum dimensions of the parts of orchard ladders shall not be less than the following when made of group 2 or group 3 woods. (See Table S-2 for wood groups.)

	Length 6 to 10 ft.		Length 12 to 16 ft	
	Thickness (inches)	Depth (inches)	Thickness (inches)	Depth (inches)
Side Rails	⅝	2⅞	⅝	2⅞
Back leg	1½	1½	1⅞	1⅞
Steps	⅝	2⅞	⅝	2⅞
Top	⅝	5	⅝	5

(Formerly 33-19-63)

NOTE: The minimum thickness of side rails provides for the cutting of a groove ⅞" in depth with a tolerance of +¼". The thickness of the side rail shall be increased when grooves of greater depth are used.

**437-81-2613** Steps shall be closely fitted into grooves in the side rails ⅞" in depth and secured with at least two 6d nails or equivalent; or they shall be closely fitted into metal brackets of equivalent strength, which in turn shall be firmly secured to the side rails.

(1) Each step shall be reinforced by:

- (a) A steel rod not less than 0.160" in diameter, which shall pass through metal washers of sufficient size to prevent pressing into the side rails, and through a truss block which shall be fitted between the rod and the center of each step; or
- (b) A metal angle brace on each end firmly secured to the steps and side rails; or
- (c) Construction of equivalent strength and safety.

(2) Where the rod reinforcement construction is used, the bottom step shall be provided further with a metal angle brace on each end which shall be securely attached to the bottom step and side rails.

(3) All steps 27" or more in length shall be provided with a metal angle brace at each end securely attached to the step and rail. (Formerly 33-19-64)

**437-81-2616** Width and Spread. The minimum width between side rails at the top step, inside to inside, shall be not less than 9½". From top to bottom the side rails shall spread at least an average of 2½" for each foot of ladder length. (Formerly 33-19-65)

**437-81-2619** Top. All orchard ladders shall have a top with wood or metal brackets or fittings tightly secured to the top, side rails and back leg, to allow free swinging of the back leg without excessive play or wear at the joints. (Formerly 33-19-66)

NOTE: The top is not intended for and shall not be used as a step.

**437-81-2623** Workers shall face ladders and have the free use of both hands when ascending or descending, except that fruit pickers on orchard ladders may deviate from this requirement when necessary if such deviation shall result in an equivalent degree of safety to the worker. (Formerly 33-19-67)

**Single Ladders**

**437-81-2626** Single ladders shall not exceed 30' in length between supports (base and top landing). (Formerly 33-19-68)

NOTE: If a ladder is to connect different landings, or if the length required exceeds this maximum length, two or more separate ladders shall be used, offset with a platform between each ladder. Guardrails and toeboards shall be erected on the exposed sides of the platform.

**437-81-2629** The width of single cleat ladders shall be at least 15", but not more than 20", between rails at the top. (Formerly 33-19-69)

NOTE: This does not apply to manufactured topping ladders which are designed for orchard use, with top rails converging so as to rest in the crotch of tree limbs.

**437-81-2633** Side rails shall be parallel or flared top to bottom by not more than 1/4" for each 2' of length. (Formerly 33-19-70)

NOTE: This does not apply to manufactured "topping ladders" (See note under Rule 437-81-2629 above).

**437-81-2636** The length of single ladders and individual sections of ladders shall not exceed 30'. Non-extension sectional ladders with two or more sections shall not exceed 60' in total length. (Formerly 33-19-71)

**437-81-2639** Extension ladders shall not exceed 48' in maximum extended length. (Formerly 33-19-72)

**437-81-2643** Wood side rails of ladders having cleats shall be not less than 1 1/2" thick and 3 1/2" deep (2" by 4" nominal) when made of group 2 and group 3 woods (see Table S-2). Wood side rails of group 4 woods may be used in the same cross-section of dimensions for cleat ladders up to 20' in length. (Formerly 33-19-73)

NOTE: It is preferable that side rails be continuous. If splicing is necessary to attain the required length the splice must develop the full strength of a continuous side rail of the same length.

**437-81-2646** Wood cleats shall have the following minimum dimensions when made of Group 1 wood (see Table S-2 for wood groups).

Length of Cleat (Inches)	Thickness	Width
Up to and including 20.....	3/4	3
Over 20 and up to and including 30	3/4	3 3/4

(Formerly 33-19-74)

**437-81-2649** Wood rungs shall have a minimum diameter of 1 1/8" and a tenon diameter of 7/8", and

tenon length of 1 3/16", for rungs up to 28" in length. (Formerly 33-19-75)

**437-81-2653** Cleats may be made of species of any other group of wood provided equal or greater strength is maintained (see Table S-2). (Formerly 33-19-76)

**Group 1**

- White Ash
- Beech
- Birch
- Rock Elm
- Hickory
- Locust
- Hard Maple
- Red Oak
- White Oak
- Pecan
- Persimmon

**Group 2**

- Douglas Fir  
(coast region)
- Western Larch
- Southern Yellow Pine

**Group 3**

- Red Alder
- Oregon Ash
- Pumpkin Ash
- Alaska Cedar
- Port Orford Cedar
- Cypress
- Soft Elm
- Douglas Fir  
(Rocky Mtn. Region)
- Noble Fir

- Gum
- West Coast Hemlock
- Magnolia
- Oregon Maple
- Norway Pine
- Poplar
- Redwood
- Eastern Spruce
- Sitka Spruce
- Sycamore
- Tamarack
- Tupelo

**Group 4**

- Aspen
- Bashwood
- Buckeye
- Butternut
- Incense Cedar
- Western Red Cedar
- Black Cottonwood
- White Fir

- Hackberry
- Eastern Hemlock
- Holly
- Soft Maple
- Idaho White Pine
- Northern White Pine
- Ponderosa Pine
- Sugar Pine

**Table S-2. Grouping of woods used in construction.**

**FIXED LADDERS: DESIGN, CONSTRUCTION AND INSTALLATION**

**General**

**437-81-2656** The minimum clear length of rungs, cleats or steps shall be 16". (Formerly 33-19-77)

EXCEPTION: Minimum clear length of rungs is 12" on fixed ladders in underground manholes.

NOTE: See Figures S-3 and S-4.

**437-81-2659** Individual rungs shall be so designed that the foot cannot slide off the end. (See Figure S-3.) (Formerly 33-19-78)

**437-81-2663** A uniform rung spacing of not to exceed 12" shall be maintained; rungs shall be parallel and level (see Figures S-3 and S-4). (Formerly 33-19-79)

**437-81-2666** One rung of any section of ladder shall be located at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the same rung spacing as used on the ladder shall be used from the landing platform to the first rung below the landing. (Formerly 33-19-80)

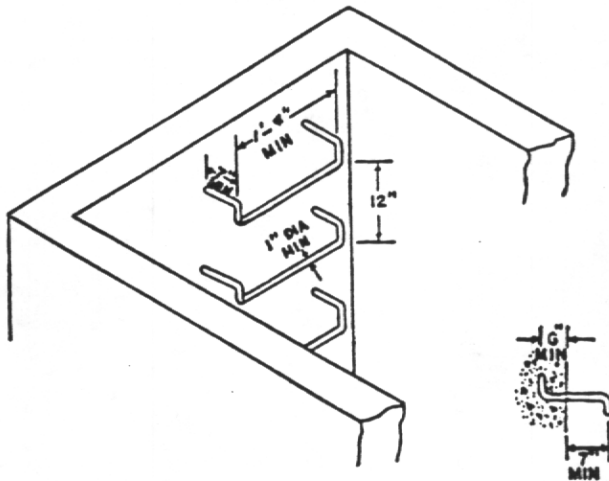
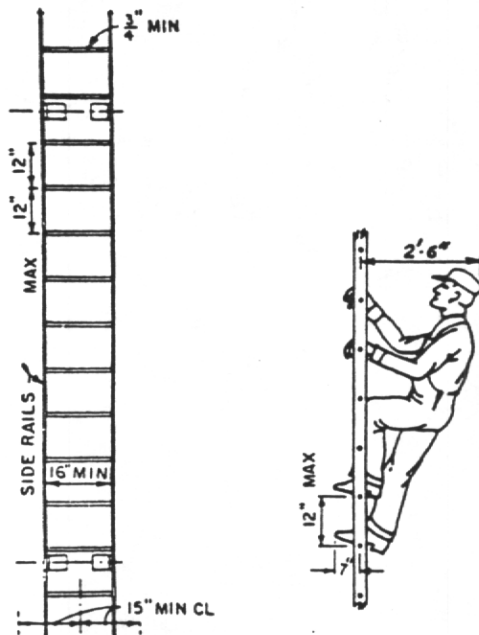


Fig. S-3.  
Suggested design for rungs on individual-rung ladders.



RAIL LADDER WITH BAR STEEL RAILS  
AND ROUND STEEL RUNGS  
Fig. S-4. Minimum ladder clearances.

**437-81-2669** A clear width of at least 15" shall be provided each way from the center line of fixed ladders except when cages are provided (see Figures S-4 and S-6). (Formerly 33-19-81)

NOTE: See Rule 437-81-2699 for clearances inside ladder cages.

**437-81-2673** The distance from the center line of rungs, cleats or steps to the nearest permanent object in the back of the ladder shall be not less than 7", except that when unavoidable obstructions are encountered,

(1) The rung of the ladder below the obstruction shall be not less than 4 1/2" lower than the obstruction; and

(2) The next higher rung shall be not less than 1 1/2" above the obstruction. (See Figure S-5.) (Formerly 33-19-82)

NOTE: The required 12" rung spacing shall be maintained.

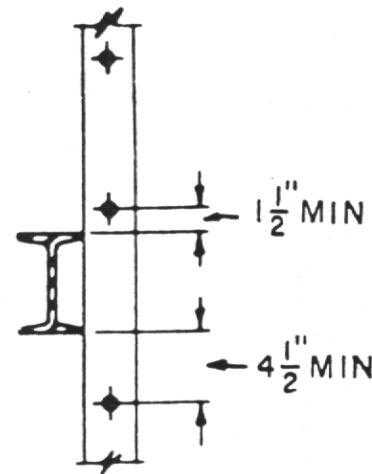


Fig. S-5. Clearance for unavoidable obstruction.

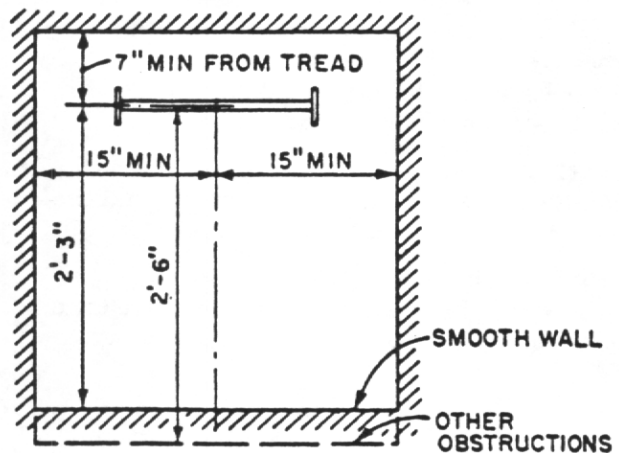


Fig. S-6. Clearance diagram for fixed ladder in a well.

**437-81-2676** Fixed ladders shall not be attached nor placed in a position in which they incline away from the vertical toward the person climbing. (Formerly 33-19-83)

**437-81-2679** Ladders shall be firmly secured to the structure at points not in excess of 10' apart for ladders constructed of wood, nor 15' apart for ladders constructed of steel. (Formerly 33-19-84)

**437-81-2683** The side rails of fixed ladders shall extend at least 3½' above the roof or landing platform, and the upper end shall be goosenecked, or other convenient and secure handholds shall be provided at such places. For step-through access, the rungs shall be omitted from this extension and side rail extension shall be at least 18" and not more than 24" wide. (Formerly 33-19-85)

NOTE: A ladder secured on and continuing up the slope of the roof, with its base adjacent to the top of the vertical fixed ladder, may be used to provide "convenient and secure handholds" only when the eaves of the roof are less than 20' above the ground or the landing platform.

**437-81-2686** Ladders shall extend down to the floor or an adequate landing place. No jump off ladders shall be permitted at any work place. (Formerly 33-19-86)

**Requirements for Cages and Landing Platforms**

**437-81-2689** A cage guard or well shall be provided on fixed ladders having a slope of more than 80° from the horizontal where the ladder is used to ascend to a height exceeding 20' above the ground or a landing platform. (Formerly 33-19-87)

NOTE: Approved ladder safety devices may be used on tower, water tank, silo, and grain bin ladders over 20' in unbroken length in lieu of cage protection and landing platforms.

**437-81-2693** Landing platforms shall be provided for each 30' of height or fraction thereof. Where no cage, well, or ladder safety device is provided, landing platforms shall be provided for each 20' of height or fraction thereof.

(1) Each landing shall be offset from adjacent sections.

(2) Landing platforms shall be provided for each ladder section offset. (Formerly 33-19-88)

**437-81-2696** Landing platforms shall be not less than 24" in width and 30" in length, and shall be equipped with standard guardrails. (Formerly 33-19-89)

**437-81-2699** Cage guards shall:

(1) Extend not less than 24" nor more than 28" back from the center line of the ladder rungs.

(2) Provide a clear width of at least 13½" each way from the center line of the ladder rungs.

(3) Be clear of projections on the inside. (Formerly 33-19-90)

NOTE: See Figure S-7 for ladder cages.

**437-81-2703** Cage guards shall be securely fastened to the ladder at intervals not to exceed 8' and shall be substantially built. (Formerly 33-19-91)

**437-81-2706** Cages shall extend a minimum of 42" above the top of landing, unless other acceptable protection is provided. (Formerly 33-19-92)

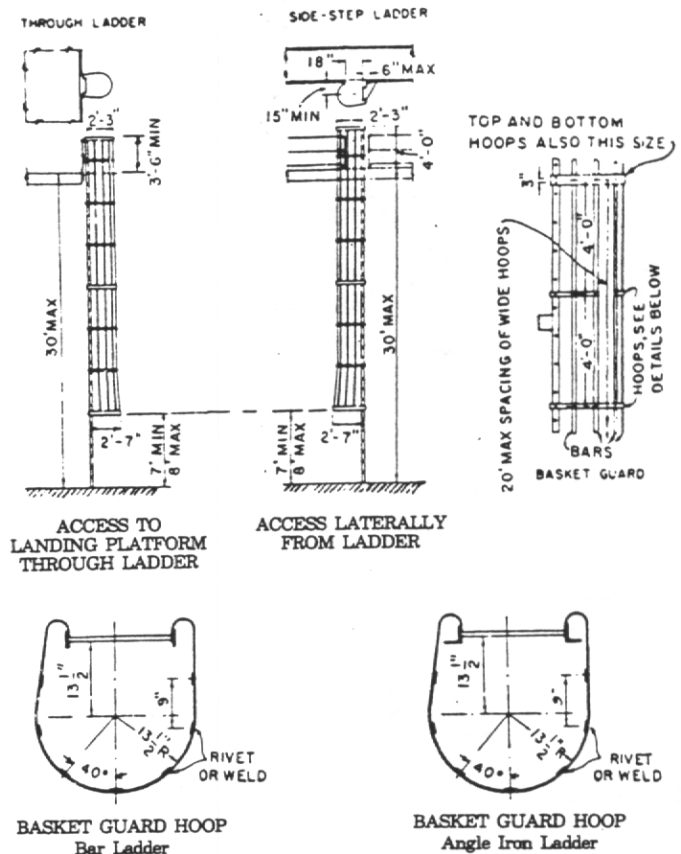


Fig. S-7. Cages for ladders more than 20 feet high.

**SCAFFOLDS**

**437-81-2709** Whenever scaffolds are used by employes, the standards contained in Chapter 19 (Division 41) Ladders and Scaffolds of the Oregon Occupational Safety and Health Code shall apply. (Formerly 33-19-93)

## ABRASIVE WHEELS

### GENERAL

#### Scope and Application

**437-81-2713** Rules 437-81-2713 thru 437-81-2766 prescribe safety standards to provide for protection against those hazards commonly associated with the use of abrasive wheels and grinders in any place of agricultural employment. Those hazards are injury from:

- (1) Particles of metal and abrasive material in the eyes.
- (2) Personal contact with moving abrasive wheel surfaces.
- (3) Thrown pieces of work.
- (4) Personal contact with belt drives or revolving shaft spindles.
- (5) Abrasive wheel parts thrown from an exploding or disintegrating wheel. (Formerly 33-20-1)

**437-81-2716** The standards in Rules 437-81-2713 thru 437-81-2766 apply to all grinders, grinding machines, and abrasive wheels used in any place of agricultural employment, except:

- (1) Portable, hand-held power-driven grinders. Standards pertinent to these machines are contained in Rules 437-81-873 thru 437-81-1016 of this division.
- (2) Natural sandstone wheels.
- (3) Metal, wooden, cloth or paper wheels or discs having a layer or layers of abrasive on the surface. (Formerly 33-20-2)

#### Definitions

**437-81-2719** The following definitions apply to Rules 437-81-2713 thru 437-81-2766.

- (1) Abrasive Wheel—A cutting tool consisting of abrasive grains held together by organic or inorganic bonds. Diamond and reinforced wheels are included. (Formerly 33-20-3)
- (2) Off-hand Grinding—The grinding of any material or part which is held in the operator's hand. (Formerly 33-20-4)
- (3) Portable Grinding—A grinding operation where the grinding machine is hand held and may be easily moved from one location to another. (Formerly 33-20-5)
- (4) Safety Guard—An enclosure for an abrasive wheel consisting of a peripheral and two side members. Its purpose and design is to effectively retain the pieces of the wheel should the wheel break in operation. (Formerly 33-20-6)

## USE, MOUNTING, AND GUARDING

### Use

**437-81-2723** Non-portable type grinding machines shall be securely mounted on substantial floors, benches, foundations, or other adequate structures. (Formerly 33-20-7)

**437-81-2726** Abrasive wheels shall be maintained so as to be true and balanced. The use of grinders or abrasive wheels which vibrate or are out of balance shall be discontinued until the cause of the vibration or unbalanced condition is rectified. (Formerly 33-20-8)

**437-81-2729** Wheels which are out of round or out of balance shall not be used. (Formerly 33-20-9)

**437-81-2733** Off-hand grinding machines shall be equipped with work rests to support work. Work rests shall:

- (1) Be of rigid construction and designed to be adjustable to compensate for wheel wear.
- (2) Be kept adjusted to within  $\frac{1}{8}$ " of the wheel to prevent work from being jammed between the wheel and the rest.
- (3) Be securely clamped after each adjustment.
- (4) Not be adjusted with the wheel in motion. (Formerly 33-20-10)

**437-81-2736** Side grinding shall only be performed with wheels designed for this purpose. (Formerly 33-20-11)

NOTE: Dressing on the side of straight wheels may be permitted only when very delicate pressure is applied.

### Mounting

**437-81-2739** Grinding wheels shall fit freely but not loosely on the spindle, sleeves or adaptors, and remain free under all grinding conditions. (Formerly 33-20-12)

**437-81-2743** An abrasive wheel which is designed to be held by flanges shall not be operated unless it is properly mounted between suitable flanges. Except for those types requiring flanges of a special design, flanges shall be at least  $\frac{1}{2}$  the diameter of the wheel. (Formerly 33-20-13)

**437-81-2746** Facings of compressible material shall be interposed between the abrasive wheel and its flanges to insure uniform distribution of flange pressure. (Formerly 33-20-14)

**437-81-2749** After mounting an abrasive wheel it shall be run at operating speed with safety guard in place or in a protected enclosure for at least one minute before applying work, during which time no one shall stand in front of or in line with the wheel. (Formerly 33-20-15)

**437-81-2753** Wheels larger than those for which the machine or the guard is designed, shall not be mounted on a grinder. (Formerly 33-20-16)

**437-81-2756** After mounting a wheel, care shall be taken to properly position the safety guard before starting the wheel. (Formerly 33-20-17)

**Safety Guards**

**437-81-2759** Abrasive wheels larger than 2" in diameter shall be used only on machines provided with safety guards, except for those specially-shaped abrasive wheels mounted in mandrel-type bench or floor stands and used for and commonly known as "sickle grinding stones or wheels". Guards for abrasive wheels used where the work itself provides full protection may be removed or omitted only while the wheel is contained within the area of protection.

NOTE: Abrasive wheel safety guards shall meet the design specifications of the ANSI Code for the Use, Care, and Protection of Abrasive Wheels (ANSI B7.1970). Interested persons may obtain information on how to obtain a copy of this standard from

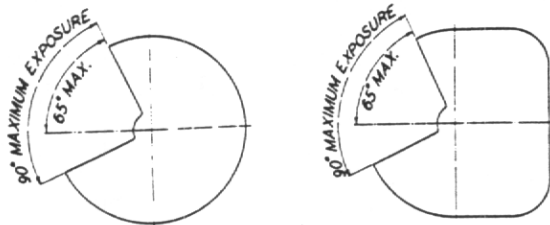
Technical Services Section  
 APD-WCB  
 Labor & Industries Bldg.  
 Salem, Oregon 97310

(Formerly 33-20-18)

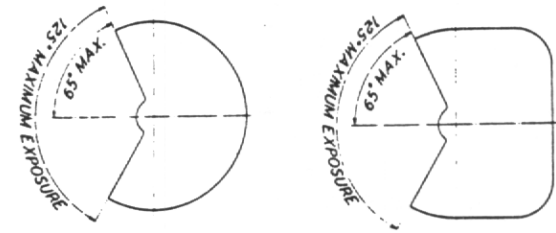
**437-81-2763** Guards for abrasive wheels shall cover the spindle end, nut, and outer flange projection of the wheel. The guard shall cover the sides and periphery of the wheel except for that degree of exposure as permitted below:

(1) Bench and floor stands;

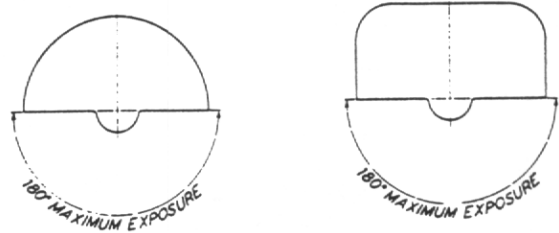
(a) The maximum permissible angle of exposure is 90°. This exposure shall begin at a point not more than 65° above the horizontal plane of the wheel spindle.



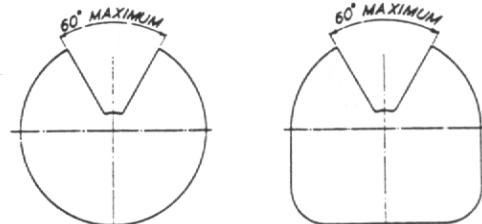
(b) Wherever the nature of the work requires contact with the wheel below the horizontal plane of the spindle, the exposure shall not exceed 125°. This exposure shall begin at a point not more than 65° above the horizontal plane of the wheel spindle.



(2) Swing frame grinders: The maximum permissible angle of exposure is 180°, and the top half of the wheel shall be enclosed at all times.

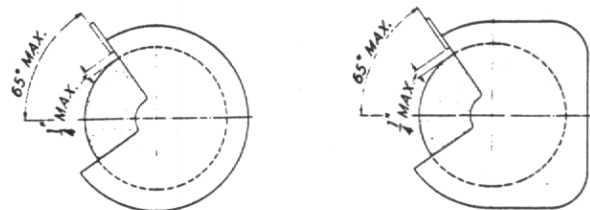


(3) Top grinding: Where the work is applied to the top of the wheel the exposure of the grinding wheel periphery shall not exceed 60°.



(4) Portable Grinders: The requirements for guarding portable grinders are prescribed in Rule 437-81-949. (Formerly 33-20-19)

**437-81-2766** Where the operator may stand in front of the opening, safety guards shall be constructed so that the peripheral protecting member can be adjusted to compensate for wheel wear. The distance between the wheel periphery and the adjustable tongue or the guard above the wheel shall not exceed 1/4".



(Formerly 33-20-20)

## COMMUNICATIONS WORK

**437-81-2769** Employment in connection with communications work is outside the scope of agricultural employment. (Formerly 33-21-1)

## OCCUPATIONAL HEALTH AND FIRST AID

**437-81-2773** The Occupational Health Rules of the Board (OAR Chapter 437, Part 22) shall apply to and shall be complied with so far as applicable in all places of agricultural employment in the State of Oregon. A copy of the current Occupational Health Rules may be obtained from the Workmen's Compensation Board, Labor and Industries Building, Salem, Oregon 97310. (Formerly 33-22-1)

NOTE: Additional occupational health regulations relating to radiation adopted by the Oregon Health Division apply to and shall be complied with so far as applicable in all places of agricultural employment in the State of Oregon. A copy of the Radiation Regulations may be obtained by writing to:

Radiation Section  
Health Division—Department of Human Resources  
State Office Building  
1400 S. W. 5th Avenue  
Portland, Oregon 97201

### OAR 437, Rule 22-65 MEDICAL SERVICES AND FIRST AID

As noted in this regulation, employers and employes should be cognizant of the possibility of a hazardous situation that may result from confusing first aid with medical treatment.

**FIRST AID** is the immediate and/or emergency care of a person who is injured or who has been taken suddenly ill.

**FIRST AID SUPPLIES** are those supplies necessary to the purpose of first aid which is to prevent death or further injury such as in control of bleeding; restoration of breathing and cardiac function; prevention of shock; alleviation of pain as in splinting of a fracture or application of cold wet packs to a burn; prevention of infection by use of clean dressings and correct cleansing; and proper transportation of the recipient of first aid.

**MEDICAL SERVICES** are those services rendered by recognized medical professionals such as physicians or registered professional nurses.

**MEDICAL TREATMENT ITEMS** are drug items available over the counter or by prescription and includes oral medications such as aspirin, cold tablets, motion sickness remedies, etc. and topical medications that are applied locally to the body, such as alcohol, hydrogen peroxide, burn ointments, antiseptics, etc. Each of these are based on a chemical formulation.

Professional organizations responsible for first aid do not recommend medical treatment items without the express supervision of a medical authority, and, in addition, state the necessity for consulta-

tion with a physician for direction before any medical treatment item is employed.

Inclusion of medical treatment items in first aid supplies should be carefully considered in light of the above information and rules 22-65-0(a) and 22-65-3(a).

### Section 65 MEDICAL SERVICES AND FIRST AID

#### 22-65-0 Scope and Application.

(a) These rules require every place of employment having more than one (1) employe to have an Emergency Medical Plan (22-65-6). They also require every employer to have first aid supplies and a first aid attendant available to (not necessarily at) every place of employment. Employers are advised that the use of first aid or medical items other than those listed below (22-65-3) may create a hazardous situation for the ill or injured employe.

(b) Decisions relative to availability of medical services and first aid supplies will be made by the Compliance Officer on a case-by-case basis. The Compliance Officer will make the determination by considering factors such as the job hazard environment, injury record, location and distance from emergency care service.

#### 22-65-1 Definitions.

(a) *Qualified first aid person* means a person with evidence to show first aid training by Red Cross or equivalent within the past three years.

(b) *Readily accessible* is defined as having an ambulance with qualified attendants at the victim's side in not more than thirty minutes.

(c) *In proximity* is defined as that which is available immediately in the event of need and is not to be confused with readily accessible.

(d) *Emergency care service* is the provision of care by a medically trained person, whether this service is provided by a hospital, clinic, ambulance, disaster car, or rescue vehicle.

(e) *Immediate care* covers two areas:

(1) The care given those with major injuries or illness until medical care can be obtained, such as control of excessive bleeding, restoration of respiratory function and treatment of shock.

(2) It also includes the first aid treatment that is given those with scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care.

#### 22-65-2 Employers shall provide for the immediate and emergency care of ill or injured employes.

#### 22-65-3 First Aid Supplies.

(a) The following minimum first aid supplies shall be in proximity to all employes. The quantities



of each item listed are minimum amounts to be available. Either bulk pack or unit pack supplies are acceptable. There are nonprescription drugs and/or medicines which are contra-indicated for certain work operations. Such items should not be included in the first aid supplies.

(b) Minimum First Aid Supplies.

(1) Eight gauze pads individually wrapped (3" x 3" at least).

(2) Two large gauze pads which are or can be folded to an approximate size of 8" x 10", or equivalent.

(3) One box adhesive bandages.

(4) One package gauze roller bandage at least 2" wide or equivalent.

(5) Two triangular bandages.

(6) Wound-cleaning agent, such as sealed, moistened towelettes, or soap and water.

(7) Scissors.

(8) One blanket or equivalent.

(c) First aid supplies from other states will be acceptable if such supplies are the reasonable equivalent of those required by these rules.

(d) First aid supplies must be stored in containers adequate to protect the contents from damage, deterioration, or contamination. The container shall be clearly marked, available when needed and must not be locked, but may be sealed. Soap and water, and the blanket, may be stored separately but shall be in proximity to each workplace.

(e) When employers are subject to both federal and state occupational health regulations, the first aid supply list deemed the strictest shall apply.

(f) The employer shall insure that the minimum first aid supplies are available for each shift.

(g) Minimum first aid supplies, as approved in writing by the firm's consulting physician, may be provided in lieu of those minimum first aid supplies specified in 22-065(3)(b).

(Adopted 4-2-76 by WCB Admin. Order, Safety 4-1976, filed 4-5-76; effective 4-15-76.)

NOTE: The Safety Code for Motor Vehicle Transportation of Workers (Rule 81-070) published by the Motor Vehicles Division of the Department of Transportation contains requirements for the first aid kit which is required when school busses are used temporarily to transport workers. In addition, the Public Utilities Commission has adopted Federal Motor Carrier Safety Regulations which apply to for-hire busses.

#### 22-65-4 Personnel.

(a) A qualified first aid person shall be available to any place of employment which is not in proximity to an emergency care service to render first aid as well as to insure that the emergency medical plan is carried out, unless a physician approves a first aid and medical plan which does not include the requirements for a first aid person.

(b) The name of the first aid person(s) and the location of the first aid supplies shall be posted in conspicuous areas at permanent places of employment.

(c) Places of employment with lone employes are exempt from 4(a) above.

(d) If an emergency care service which is used for the treatment of all injured employes is in proximity to the workplace, then a qualified first aid person will not be required. This does not relieve the employer of the responsibility of providing an emergency medical plan.

#### 22-65-5 Lie Down Space.

(a) Space shall be designated to permit an ill or injured employe to lie down until disposition of need. Cots, beds, stretchers, or pads are acceptable for this purpose. Space shall not be used for a storage area or any other purpose that would make it unavailable for immediate use in rendering prompt first aid care.

(b) At temporary work locations, in lieu of (a) above, provisions shall be made to protect a sick or injured employe from the elements.

#### 22-65-6 Emergency Medical Plan.

An emergency medical plan to insure the rapid provision of medical care to employes with major illnesses and injuries shall be developed. In such cases, the employer shall determine that such service will be available in an emergency.

(a) If a physician or an ambulance with Emergency Medical Technicians is readily accessible to the place of employment, then the minimum emergency medical plan must contain the following elements which shall be posted conspicuously at the place of employment:

(1) Name of ambulance service, telephone number of ambulance service.

(2) Name of hospital, telephone number of hospital.

(b) If the place of employment is not readily accessible to a physician or an ambulance with Emergency Medical Technicians, then the employer shall have, in addition to the information required in 6(a)(1), a definite plan of action to be followed in the event of serious injury to an employe. This plan of action shall consist of the arrangements for:

(1) Communication. Two-way radio, telephone, or provision for emergency communication to contact an ambulance, physician, or hospital.

(2) Transportation. Availability of transportation to a point where an ambulance can be met or to the nearest suitable medical facility. Vehicles provided for this purpose shall be available at all times, shall have right-of-way over all vehicles or equip-

ment under the control of the employer, and shall be equipped so that due consideration can be given to the proper care and comfort of the injured employe.

(3) Qualified medical personnel at destination.

(c) All employes shall be knowledgeable concern-

ing the first aid requirements and emergency medical plans.

(Rules contained in OAR 437, 22-65, excluding 22-65(3)(g), were adopted temporarily 7-7-75 by WCB Admin. Order No. 13-1975; filed 7-7-75; effective 7-7-75. Adopted permanently 10-6-75 by WCB Admin. Order, Safety 4-1975; filed 10-6-75; effective 11-1-75.)

## PILE DRIVING

**437-81-2776** The rules contained in Division 83, Construction, of the Oregon Occupational Safety and Health Code shall apply to all pile driving work.  
(Formerly 33-23-1)

## MINING, TUNNELING

**437-81-2779** The rules contained in Chapter 24 (Division 85), Mining, Tunneling and Quarrying of the Oregon Occupational Safety and Health Code shall apply to all mining and tunneling work. (Formerly 33-24-1)

## COMMERCIAL DIVING

437-81-2783 The rules contained in Chapter 25, (Division 86) Commercial Diving of the Oregon Occupational Safety and Health Code shall apply to all commercial diving work. (Formerly 33-25-1)

**MOTOR VEHICLE  
TRANSPORTATION  
OF WORKERS**

**437-81-2786** The rules contained in Division 57 (formerly Chapter 26) Motor Vehicle Transportation of Workers, of the Oregon Occupational Safety and Health Code shall apply to all practices and equipment peculiar to and inherent in the transportation of workers by motor vehicle in all places of agricultural employment. (Formerly 33-26-1)

## COMPRESSED GAS CYLINDERS AND TANKS

### Purpose

**437-81-2789** Rules 437-81-2789 thru 437-81-2799 prescribe safety standards for compressed gas cylinders and tanks used in places of agricultural employment. (Formerly 33-27-1)

### Definitions

**437-81-2793** The following definitions apply to Rules 437-81-2789 thru 437-81-2799.

(1) Container—A cylinder or tank containing compressed gas. (Formerly 33-27-2)

(2) Dents—Deformation in the wall of the container caused by the cylinder coming into contact with a blunt object in such a way that the thickness of the metal is not materially impaired. (Formerly 33-27-3)

(3) Cuts, gouges, or digs—Deformations in the wall of the container caused by contact with a sharp object in such a way as to cut or upset the metal of the cylinder, decreasing the wall thickness at that point. (Formerly 33-27-4)

(4) Corrosion or pitting—Corrosion or pitting in a cylinder involving the loss of wall thickness by corrosive media. (Formerly 33-27-5)

### Inspection of Compressed Gas Cylinders and Tanks

**437-81-2796** Each employer shall determine that the compressed gas cylinders and tanks under

his control are in a safe condition to the extent that this can be determined by visual inspection. (Formerly 33-27-6)

**437-81-2799** Should a compressed gas cylinder or tank exhibit any of the following conditions, or any other condition occur which may impair the safety of the container, it shall be withdrawn from service. It shall not be returned to service until it has been completely and thoroughly inspected according to Division 62 (Formerly Chapter 27) Compressed Gas, Compressed Air Equipment and Pressure Vessels of the Oregon Occupational Safety and Health Code, by a person specially qualified to do so, and found to be in a safe condition.

(1) Corrosion or pitting which reduces the wall thickness.

(2) Cuts, gouges, or digs.

(3) Dents, bulges, or other distortion or unsymmetrical condition or appearance.

(4) Distortion, looseness, or failure of welds in the cylinder rings.

(5) Evidence of having been burned or exposed to fire, or arc or torch burns.

(6) Damage to cylinder neck threads or inability to obtain a gas-tight seal by reasonable methods. (Formerly 33-27-7)

NOTE: A proper and complete inspection of compressed gas cylinders and tanks is an undertaking that requires special qualifications, experience, tools, and facilities normally beyond the scope of agricultural employment. However, the conditions listed in (1) through (6) above, are readily apparent to the user. Such conditions require the withdrawal of the container from service until a comprehensive inspection by a person qualified to do so determines that the cylinder or tank is safe to use.

## EXCAVATION

### Definitions

**437-81-2803** The following definition applies to Rule 437-81-2806.

(1) **Excavation**—A cavity or hole in the earth made by removing the soil, rock, or other material beyond a depth of 4'. (Formerly 33-28-1)

**437-81-2806** The rules contained in Rules 437-83-3416 thru 437-83-3593 of the Oregon Occupational Safety and Health Code shall apply and be complied with in all work in or involving excavations. (Formerly 33-28-2).



## ROLL-OVER PROTECTIVE STRUCTURES (ROPS) FOR TRACTORS USED IN AGRICULTURAL OPERATIONS

### Definitions

**437-81-2809** The following definitions apply to Rules 437-81-2809 thru 437-81-2943.

(1) **Agricultural tractor**—A two or four-wheel drive type vehicle, or track vehicle, of more than 20 engine horsepower, designed to furnish the power to pull, carry, propel, or drive implements that are designed for agriculture. All self-propelled implements are excluded.

(2) **Low profile tractor**—A wheeled tractor possessing the following characteristics:

(a) The front wheel spacing is equal to the rear wheel spacing, as measured from the centerline of each right wheel to the centerline of the corresponding left wheel;

(b) The clearance from the bottom of the tractor chassis to the ground does not exceed 18";

(c) The highest point of the hood does not exceed 60"; and

(d) The tractor is designed so that the operator straddles the transmission when seated.

(3) **Tractor weight**—Includes the protective frame or enclosure, all fuels, and other components required for normal use of the tractor. Ballast shall be added as necessary to achieve a minimum total weight of 110 lbs. (50.0 kilograms) per maximum power take-off horsepower at the rated engine speed or the maximum gross vehicle weight specified by the manufacturer, whichever is the greatest. Front end weight shall be at least 25% of the tractor test weight. In case power take-off horsepower is not available, 95% of net engine flywheel horsepower shall be used. (Formerly 33-29-0)

### General Requirements

**437-81-2813** Agricultural tractors manufactured after October 25, 1976, shall meet the following requirements:

(1) **Roll-over protective structure.** A roll-over protective structure (ROPS) shall be provided by the employer for each tractor operated by an employee;

(2) Except as provided in Rule 437-81-2829, ROPS used on wheel type tractors shall meet the test and performance requirements of Rules 437-81-2843 thru 437-81-2943, and ROPS used on track type tractors shall meet the test and performance requirements of Rules 437-83-5299 thru 437-83-5339. (Formerly 33-29-1)

**437-81-2816** Seatbelts. Where ROPS are required by Rules 437-81-2809 thru 437-81-2943 the employer shall:

(1) Provide each tractor with a seatbelt which meets the requirements of this rule;

(2) Ensure that each employe uses such seatbelt while the tractor is moving; and

(3) Ensure that each employe tightens the seatbelt sufficiently to confine the employe to the protective area provided by the ROPS. (Formerly 33-29-2)

**437-81-2819** Each seatbelt shall meet the requirements set forth in Society of Automotive Engineers Standard SAE J4C, 1965 Motor Vehicle Seat Belt Assemblies, except as noted hereafter:

(1) Where a suspended seat is used, the seatbelt shall be fastened to the movable portion of the seat to accommodate a ride motion of the operator;

(2) The seatbelt anchorage shall be capable of withstanding a static tensile load of 1,000 lbs. (453.6 kilograms) at 45 degrees to the horizontal equally divided between the anchorages. The seat mounting shall be capable of withstanding this load plus a load equal to four times the weight of all applicable seat components applied at 45° to the horizontal in a forward and upward direction. In addition, the seat mounting shall be capable of withstanding a 500 lb. (226.8 kilograms) belt load plus two times the weight of all applicable seat components both applied at 45° to the horizontal in an upward and rearward direction. Floor and seat deformation is acceptable provided there is not structure failure or release of the seat adjusted mechanism or other locking device;

(3) The seatbelt webbing material shall have a resistance to acids, alkalis, mildew, aging, moisture, and sunlight equal to or better than that of untreated polyester fiber. (Formerly 33-29-3)

NOTE: Copies may be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

**437-81-2823** Protection from spillage. Batteries, fuel tanks, oil reservoirs, and cooling systems shall be constructed and located or sealed to assure that spillage will not occur which may come in contact with the operator in the event of an upset. (Formerly 33-29-4)

**437-81-2826** Protection from sharp surfaces. All sharp edges and corners at the operator's station shall be designed to minimize operator injury in the event of an upset. (Formerly 33-29-5)

**437-81-2829** Exempted uses. Rules 437-81-2813 and 437-81-2819 do not apply to the following uses:

(1) "Low profile" tractors while they are used in orchards, vineyards or hop yards where the vertical clearance requirements would substantially inter-

ere with normal operations, and while their use is incidental to the work performed therein;

(2) "Low profile" tractors while used inside a farm building or greenhouse in which the vertical clearance is insufficient to allow a ROPS equipped tractor to operate, and while their use is incidental to the work performed therein;

(3) Tractors while used with mounted equipment which is incompatible with ROPS (e.g. cornpickers, cotton strippers, vegetable pickers and fruit harvesters);

(4) Track-type agricultural tractors whose overall width (as measured between the outside edges of the tracks) is at least three times the height of their rated center of gravity, and whose rated maximum speed in either forward or reverse is not greater than 7 mph, when used only for tillage or harvesting operations and while their use is incidental thereto, and which:

(a) Does not involve operating on slopes in excess of 40% from horizontal, and

(b) Does not involve operating on piled crop products or residue, as for example, silage in stacks or pits, and

(c) Does not involve operating in close proximity to irrigation ditches, or other excavations more than 2' deep which contain slopes more than 40% from the horizontal; and

(d) Does not involve construction-type operations, such as bulldozing, grading or land clearing. (Formerly 33-29-6)

Hist: WCB Admin. Order, Safety 22-1976, f. 7/20/76, ef. 9/15/76.  
WCD Admin. Order, Safety 2-1981, f. 4/20/81, ef. 6/1/81.

**437-81-2833 Remounting.** Where ROPS are removed for any reason, they shall be remounted so as to meet the requirements of Rules 437-81-2813 thru 437-81-2839. (Formerly 33-29-7)

**437-81-2836 Labeling.** Each ROPS shall have a label permanently affixed to the structure, which states:

(1) Manufacturer's or fabricator's name and address;

(2) ROPS model number, if any;

(3) Tractor makes, models, or series numbers that the structure is designed to fit; and

(4) That the ROPS model was tested in accordance with the requirements of Rules 437-81-2809 thru 437-81-2943. (Formerly 33-29-8)

### Employe Operating Instructions

**437-81-2839** Every employe who operates an agricultural tractor shall be informed of the operating practices listed below and of any other practices dictated by the work environment. Such information shall be provided at the time of initial assignment and at least annually thereafter.

(1) Securely fasten your seat belt if the tractor has a ROPS.

(2) Where possible, avoid operating the tractor near ditches, embankments, and holes.

(3) Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.

(4) Stay off slopes too steep for safe operation.

(5) Watch where you are going, especially at row ends, on roads, and around trees.

(6) Do not permit others to ride.

(7) Operate the tractor smoothly—no jerky turns, starts, or stops.

(8) Hitch only to the drawbar and hitch points recommended by tractor manufacturers.

(9) When tractor is stopped, set brakes securely and use park lock if available. (Formerly 32-29-9)

### Test Procedures and Performance Requirements

**437-81-2843 Purpose.** The purpose of Rules 437-81-2843 thru 437-81-2859 is to establish the test and performance requirements for a ROPS designed for wheel-type agricultural tractors to minimize the frequency and severity of operator injury resulting from accidental upsets. General requirements for the protection of operators are specified in Rules 437-81-2809 thru 437-81-2839. (Formerly 33-29-20)

**437-81-2846 Types of tests.** All protective frames for wheel type agricultural tractors shall be of a model which has been tested as follows:

(1) Laboratory test. A laboratory energy absorption test, either static or dynamic, under repeatable and controlled loading, to permit analysis of the ROPS for compliance with the performance requirements of these rules;

(2) Field upset test. A field upset test under controlled conditions, both to the side and rear, to verify effectiveness of the protective system under actual dynamic conditions. Such test may be omitted where:

(a) The analysis of the ROPS static energy absorption test results indicates that both FERis and FERir (as defined in Rule 437-81-2893(4)), exceed 1.15; or

(b) the analysis of the ROPS dynamic energy absorption test results indicates that the frame can withstand an impact of 15% greater than the impact it is required to withstand for the tractor weight as shown in Figure C-7. (Formerly 33-29-21)

**437-81-2849 Description—protective frame.** A protective frame is a ROPS comprised of uprights mounted to the tractor, extending above the operator's seat. A typical 2-post frame is shown in Figure C-1. (Figures C-1 through C-16). (Formerly 33-29-22)

**437-81-2853 Overhead weather shield.** If an overhead weather shield is available for attachment to the protective frame, it may be in place during tests provided it does not contribute to the strength of the protective frame. (Formerly 33-29-23)

**437-81-2856** Overhead falling object protection. If an overhead falling object protection device is available for attachment to the protective frame, it may be in place during tests provided it does not contribute to the strength of the protective frame. (Formerly 33-29-24)

**437-81-2859** Description—protective enclosure. A protective enclosure is a ROPS comprising a frame or enclosure mounted to the tractor. A typical enclosure is shown in Figure C-12. (Formerly 33-29-25)

### General Test Procedures

**437-81-2863** The tractor weight used shall be that of the heaviest tractor model on which the ROPS is to be used. (Formerly 33-29-30)

**437-81-2866** Each test required under Rules 437-81-2863 thru 437-81-2889 shall be performed on a new ROPS. Mounting connections of the same design shall be used during each such test. (Formerly 33-29-31)

**437-81-2869** Instantaneous deflection shall be measured and recorded for each segment of the test. See Rule 437-81-2923 for permissible deflection. (Formerly 33-29-32)

**437-81-2873** Seat reference point (SRP) is that point where the vertical line that is tangent to the most forward point at the longitudinal seat centerline of the seat back, and the horizontal line that is tangent to the highest point of the seat cushion intersect in the longitudinal seat section. The seat reference point shall be determined with the seat unloaded and adjusted to the highest and most rearward position provided for seated operation of the tractor (see Figure C-3 for the SRP of a protective frame; Figure C-14 for the SRP of a protective enclosure). (Formerly 33-29-33)

**437-81-2876** Where the centerline of the seat is off the longitudinal center, the frame loading shall be on the side with the least space between the centerline of seat and the ROPS. (Formerly 33-29-34)

**437-81-2879** Low temperature characteristics of the ROPS or its material shall be demonstrated as specified in Rule 437-81-2926. (Formerly 33-29-35)

**437-81-2883** Rear input energy tests (static, dynamic, or field upset) need not be performed on frames mounted to tractors having 4 driven wheels and more than 1/2 their unbalanced weight on the front wheels. (Formerly 33-29-36)

**437-81-2886** Accuracy table:

Measurements	Accuracy
Deflection of frame, inches (millimeters)	$\pm 5\%$ of deflection measured
Vehicle weight, pounds (kilograms)	$\pm 5\%$ of the weight measured

Force applied to frame, pounds force (newtons)  
 $\pm 5\%$  of force measured  
Dimensions of critical zone, inches (millimeters)  
 $\pm 0.5$  inch (12.5 millimeters)

(Formerly 33-29-37)

**437-81-2889** Where movable or normally removable portions of the enclosure add to structural strength, they shall be placed in configurations that contribute least to the structural strength during the test. (Formerly 33-29-38)

### Static Test Procedure

**437-81-2893** The following static test conditions shall be met:

(1) The laboratory mounting base shall be the tractor chassis for which the ROPS is designed, or its equivalent;

(2) The ROPS shall be instrumented with the necessary equipment to obtain the required load deflection data at the locations and directions specified in Figures C-2 and C-3 for a protective frame and Figures C-13 and C-14 for a protective enclosure;

(3) If the protective frame is of a one or two upright design, mounting connections shall be instrumented with the necessary equipment to record the required force to be used in Rule 437-81-2903. Instrumentation shall be placed on mounting connections before installation load is applied;

(4) The following definitions shall apply:

$W$  = Tractor weight (see 437-81-2809) in lb. ( $W'$  in kg.).

$E_{is}$  = Energy input to be absorbed during side loading in ft-lb ( $E'_{is}$  in m-kg.).

$E_{is} = 723 + 0.4 W$  ( $E'_{is} = 100 + 0.12 W'$ ).

$E_{ir}$  = Energy input to be absorbed during rear loading in ft-lb ( $E'_{ir}$  in m-kg.).

$E_{ir} = 0.47 W$  ( $E'_{ir} = 0.14 W'$ ).

$L$  = Static load, lbf [pounds force], (N) [newtons].

$D$  = Deflection under  $L$ , in. (mm).

$L-D$  = Static load-deflection diagram.

$L_{max}$  = Maximum observed static load.

Load

Limit = Point on a continuous  $L-D$  curve where observed static load is 0.8  $L_{max}$  on down slope of curve (refer to Fig. C-5).

$E_u$  = Strain energy absorbed by the frame, ft-lb (m-kg).  
Area under  $L-D$  curve

$FER$  = Factor of energy ratio.

$$FER_{is} = \frac{E_u}{E_{is}}$$

$$FER_{ir} = \frac{E_u}{E_{ir}}$$

$P_b$  = Maximum observed force in mounting connection under static load,  $L$  lbf (N).

$P_u$  = Ultimate force capacity of mounting connection, lbf (N).

$FSB$  = Design margin for mounting connection.

$$FSB = \frac{P_u}{P_b}$$

(Formerly 33-29-40)

**437-81-2896** The static rear load test procedures shall be as follows:

(1) When testing a protective frame or ROPS in which the protective frame structure is *not* an integral part of the enclosure, apply the rear load in accordance with Figure C-3 and record L and D simultaneously; or

(2) When the protective frame structure is an integral part of the protective enclosure, apply the rear load in accordance with Figure C-14 and record L and D simultaneously.

(a) Rear load application shall be uniformly distributed on the frame over an area perpendicular to the direction of load application, no greater than 160 sq. in. (1032 square centimeters) in size, with the greater dimension no greater than 27" (686 millimeters).

(b) The load shall be applied to the upper extremity of the frame at the point which is midway between the center of the frame and the inside of the frame upright. If no structural cross member exists at the rear of the frame, a substitute test beam which does not add strength to the frame may be utilized to complete this test procedure.

(3) The test shall be stopped when:

(a) The strain energy absorbed by the frame is equal to or greater than the required input energy  $E_{ir}$ , or

(b) Deflection of the frame exceeds the allowable deflection (see Rule 437-81-2903), or

(c) Frame load limit (see Figure C-5) occurs before the allowable deflection is reached in rear load.

(4) Using data obtained in Rule 437-81-2896(1) and (2), construct the L-D diagram as shown typically in Figure C-5.

(5) Calculate  $E_{ir}$ .

(6) Calculate  $FER_{ir}$ .

(7) Calculate FSB where required by Rule 437-81-2893(3). (Formerly 33-29-41)

**437-81-2903** The static side load test procedures shall be as follows:

(1) When testing a protective frame or ROPS in which the protective frame structure is *not* an integral part of the enclosure, apply the side load test on the same frame and record L and D simultaneously.

(a) Side load application shall be at the upper extremity of the frame at a 90° angle to the center line of the vehicle.

(b) The side load shall be applied to the longitudinal side farthest from the point of rear load application.

(c) Apply side load L as shown in Figure C-2; or

(2) When the protective frame structures are an integral part of the enclosure, apply the side load in

accordance with Figure C-13 and record L and D simultaneously.

(a) Static side load application shall be uniformly distributed on the frame over an area perpendicular to the direction of load application, and no greater than 160 sq. in. (1032 square centimeters) in size, with a largest dimension no greater than 27" (686 millimeters).

(b) Side load application shall be at a 90° angle to the center line of the vehicle.

(c) The center of side load application shall be located between a point "k", 24" (610 millimeters) forward; and point "l" 12" (305 millimeters) rearward of the seat reference point to best utilize the structural strength (see Figure C-13).

(d) This side load shall be applied to the longitudinal side farthest from the point of rear load application.

(3) The test shall be stopped when:

(a) The strain energy absorbed by the frame is equal to or greater than the required input energy  $E_{is}$ , or

(b) Deflection of the frame exceeds the allowable deflection (See Rule 437-81-2923), or

(c) Frame load limit (see Figure C-5) occurs before the allowable deflection is reached in side load.

(4) Using data obtained in Rule 437-81-2903(1), construct the L-D diagram as shown typically in Figure C-5.

(5) Calculate  $E_{is}$ .

(6) Calculate  $FER_{is}$ .

(7) Calculate FSB where required by Rule 437-81-2893(3). (Formerly 33-29-42)

### Dynamic Test Procedure

**437-81-2906** The following dynamic test conditions shall be met:

(1) The ROPS and tractor shall be tested at the weight as defined in Rule 437-81-2809(3).

(2) The dynamic loading shall be accomplished by use of a 4410 lbs. (2000 kilogram) weight acting as a pendulum. The impact face of the weight shall be  $27 \pm 1''$  by  $27 \pm 1''$  ( $686 \pm 25$  millimeters) and shall be constructed so that its center of gravity is within 1" (25.4 millimeters) of its geometric center. The weight shall be suspended from a pivot point 18 to 22' (5.5-6.7 meters) above the point of impact on the ROPS and shall be conveniently and safely adjustable for height (see Figure C-6).

(3) For each phase of testing, the tractor shall be restrained from moving when the dynamic load is applied. The restraining members shall have strength no less than, and elasticity no greater than, that of 0.50" (12.7 millimeters) steel cable. Points of attachment of restraining members shall be located an appropriate distance behind the rear axle and in

front of the front axle to provide a 15 to 30° angle between a restraining cable and the horizontal. For the impact from the rear, the restraining cables shall be located in the plane in which the center of gravity of the pendulum will swing, or alternatively, two sets of symmetrically located cables may be used at lateral locations on the tractor. For impact from the side, restraining cables shall be used as shown in Figures C-8 and C-9 for data on protective frames and Figures C-15 and C-16 for data on protective enclosures.

(4) The front and rear wheel tread settings, where adjustable, shall be at the position nearest to halfway between the minimum and maximum settings obtainable on the vehicle. Where only two settings are obtainable, the minimum setting shall be used. The tires shall have no liquid ballast and shall be inflated to the maximum operating pressure recommended by the manufacturer. With specified tire inflation, the restraining cable shall be tightened to provide tire deflection of 6 to 8% of nominal tire section width. After the vehicle is properly restrained, a wooden beam no less than 6 x 6" (150 x 150 centimeters) cross section shall be driven tightly against the appropriate wheels and clamped. For the test to the side, an additional wooden beam shall be placed as a prop against the wheel nearest the operator's station and shall be secured to the base so that it is held tightly against the wheel rim during impact. The length of this beam shall be chosen so that it is at an angle of 25 to 40° to the horizontal when it is positioned against the wheel rim. It shall have a length 20 to 25 times its depth and a width 2 to 3 times its depth (see Figures C-8 and C-9).

(5) Means shall be provided for indicating the maximum instantaneous deflection along the line of impact. A simple friction device is illustrated in Figure C-4.

(6) No repairs or adjustments shall be made during the test.

(7) If any cables, props, or blocking shift or break during the test, the test shall be repeated. (Formerly 33-29-43)

**437-81-2909** H=Vertical height of center of gravity of 4410 lbs. (2000 kilograms) weight in inches (H' in millimeters). The weight shall be pulled back so that the height of its center of gravity above the point of impact is:

$$H = 4.92 + 0.00190 W \text{ or } H' = 125 + 0.170 W'$$

(Figure C-7) (Formerly 33-29-44)

**437-81-2913** The test procedure shall be as follows:

(1) The ROPS shall be evaluated by imposing dynamic loading from the rear followed by a load to the side on the same frame. The pendulum swinging from the height determined by Rule 437-81-2906 shall be used to impose the dynamic load. The

position of the pendulum shall be so selected that the initial point of impact on the frame is in line with the arc of travel of the center of gravity of the pendulum. Where a quick release mechanism is used, it shall not influence the attitude of the block.

(2) Impact at rear: The tractor shall be properly restrained in accordance with Rules 437-81-2906(3) and (4). The tractor shall be positioned with respect to the pivot point of the pendulum is 20° from the vertical prior to impact as shown in Figure C-8. The impact shall be applied to the upper extremity of the frame at the point which is midway between the center line of the frame and the inside of the frame upright. If no structural cross member exists at the rear of the frame, a substitute test beam which does not add to the strength of the frame may be utilized to complete the test procedure.

(3) Impact at side: The blocking and restraining shall conform to Rules 437-81-2906(3) and (4). The point of impact on a protective frame shall be at the upper extremity of the frame at a point most likely to hit the ground first and at a 90° angle to the center line of the vehicle as shown in Figure C-9. The side impact shall be applied to the longitudinal side farthest from the point of rear impact. The center point of impact on a protective enclosure shall be at the upper extremity of the enclosure at a 90° angle to the centerline of the vehicle and located between a point "k", 24" (610 millimeters) forward, and a point "l", 12" (305 millimeters) rearward of the seat reference point, to best utilize the structural strength (see Figure C-13). The side impact shall be applied to the longitudinal side farthest from the point of rear impact. (Formerly 33-29-45)

### Field Upset Test Procedure

**437-81-2916** The following field upset test conditions shall be met:

(1) The tractor shall be tested at the weight as defined in Rule 437-81-2809(3).

(2) The test shall be conducted on a dry, firm soil bank. The soil in the impact area shall have an average cone index in the 0 to 6" (0 to 152 millimeters) layer of not less than 150. Cone index shall be determined in accordance with American Society of Agricultural Engineers Recommendation ASAE R313.1, Soil Cone Penetrometer (1971). The path of vehicle travel shall be 12±° to the top edge of bank.

(3) An 18" (457 millimeter) high ramp as described in Figure C-10 shall be used to assist in upsetting the vehicle to the side.

(4) The front and rear wheel tread settings, where adjustable, shall be at the position nearest to halfway between the minimum and maximum settings obtainable on the vehicle. Where only two

settings are obtainable, the minimum setting shall be used.

NOTE: Copies may be obtained from American Society of Agricultural Engineers, 2950 Nils Road, St. Joseph, Michigan 49085.

(Formerly 33-29-46)

**437-81-2919** Field upsets shall be induced to the rear and side.

(1) Rear upset shall be induced by engine power with the tractor operating in a gear to obtain 3 to 5 mph (4.8 to 8.0 kilometers per hour) at maximum governed engine rpm by driving forward directly up a minimum slope of  $60^\circ \pm 5^\circ$  as shown in Figure C-11 or by an alternate equivalent means. The engine clutch may be used to aid in inducing the upset.

(2) To induce side upset, the tractor shall be driven under its own power along the specified path of travel at a minimum speed of 10 mph (16 kilometers per hour), or at maximum vehicle speed if under 10 mph (16 kilometers per hour), and over the ramps described in Rule 437-81-2916(3). (Formerly 33-29-47)

### General Performance Requirements

**437-81-2923** The ROPS, overhead weather shield, fenders, or other parts in the operator area may be deformed in these tests but shall not shatter or leave sharp edges exposed to the operator.

(1) No part shall encroach on the dimensions shown in Figures C-2 and C-3 for a protective frame.

(2) No part shall encroach on a transverse plane passing through points d and f within the projected area defined by dimensions d, e, and g or on the dimensions shown in Figures C-13 and C-14 for a protective enclosure.

(3) The following dimensions shall apply to Rules 437-81-2923 (1) and (2).

d = 2" (51 mm) inside of protective structure to vertical centerline of seat.

e = 30" (762 mm) at the longitudinal centerline.

f = Not greater than 4 inches (102 mm) measured forward of the seat reference point (SRP) at the longitudinal centerline as shown in Figure C-14.

g = 24" (610 mm) minimum.

h = 17.5" (445 mm) minimum.

i = 2.0" (51 mm) measured from outer periphery of steering wheel.

m = Not greater than 12" (305 mm) measured from SRP to forward edge of crossbar. (Formerly 33-29-48)

**437-81-2926** The ROPS and connecting fasteners must pass the static or dynamic tests described in Rules 437-81-2893 thru 437-81-2919 at a metal temperature of 0° fahrenheit or below, or exhibit Charpy V-notch impact strengths as follows:

10 mm x 10 mm specimen: 8 ft.-lb. at -20° F.

10 mm x 7.5 mm specimen: 7 ft.-lb. at -20° F.

10 mm x 5 mm specimen: 5.5 ft.-lb. at -20° F.

10 mm x 2.5 mm specimen: 4 ft.-lb. at -20° F.

Specimens shall be longitudinal and taken from flat stock, tubular, or structural sections before forming or welding for use in the protective enclosure. Specimens from tubular or structural sections shall be taken from the middle of the side of greatest dimension, not to include welds. (Formerly 33-29-49)

**437-81-2929** Glazing shall conform to the requirements contained in Society of Automotive Engineers Standard SAE J674, Safety Glazing Materials (1963). (Formerly 33-29-50)

NOTE: Copies may be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

**437-81-2933** Two or more operator exits shall be provided and positioned to avoid the possibility of both being blocked by the same accident. (Formerly 33-29-51)

**437-81-2936** Static test performance requirements. In addition to meeting the requirements of Rules 437-81-2923 and 437-81-2926 in both side and rear loads, FERis and FERir shall be greater than 1, and where the ROPS contains 1 or 2 upright frames only, FSB shall be greater than 1.3. (Formerly 33-29-52)

**437-81-2939** Dynamic test performance requirements. The structural requirements will be met where the dimensions in Rules 437-81-2923 and 437-81-2926 are adhered to in both side and rear loads. (Formerly 33-29-53)

**437-81-2943** Field upset test performance requirements. The requirements of Rule 437-81-2923 and 437-81-2926 shall be met in both side and rear upsets. (Formerly 33-29-54)

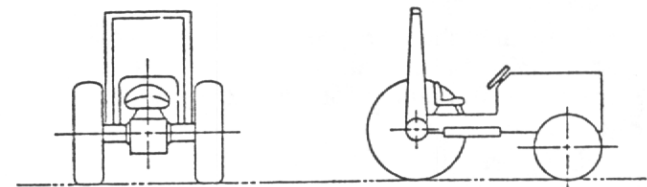


Figure C-1. Tractor with Typical Protective Frame.

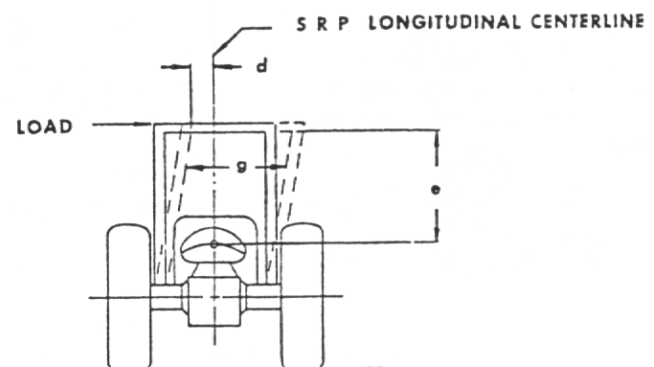


Figure C-2. Side Load Application.

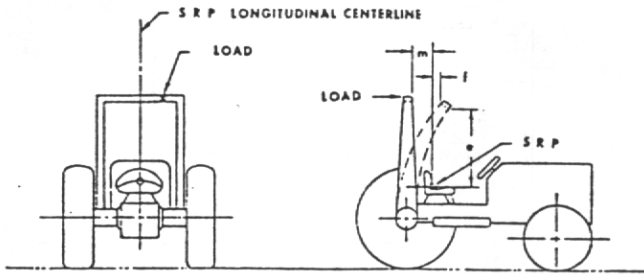


Figure C-3. Rear Load Application.

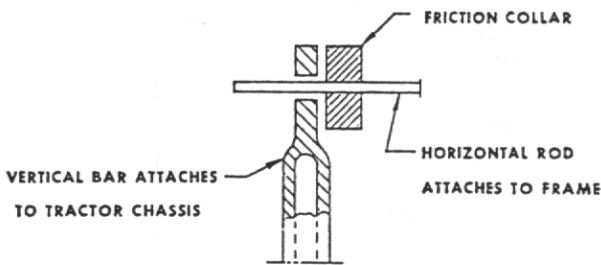


Figure C-4. Typical Method of Measuring Deflection.

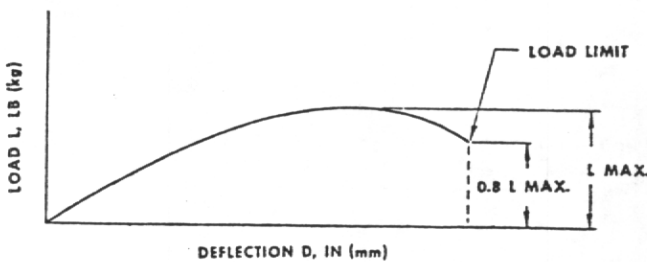


Figure C-5. Typical L-D Diagram.

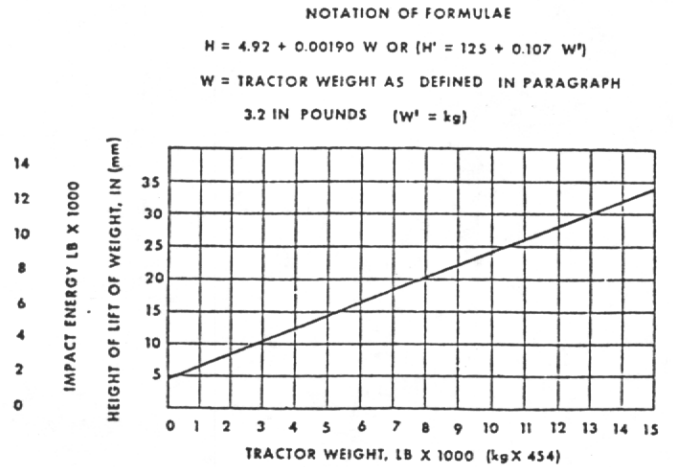


Figure C-7. Impact Energy and Corresponding Lift Height of 4410 lb (2000 kg) Weight.

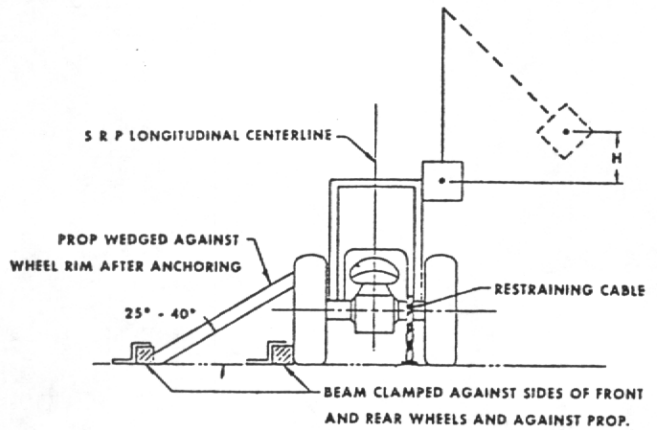


Figure C-8. Rear Impact Application.

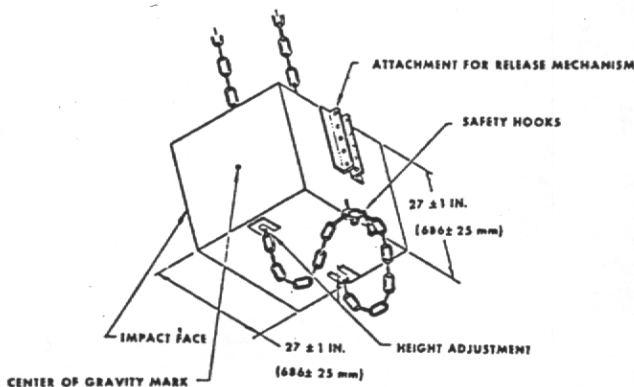


Figure C-6. Pendulum.

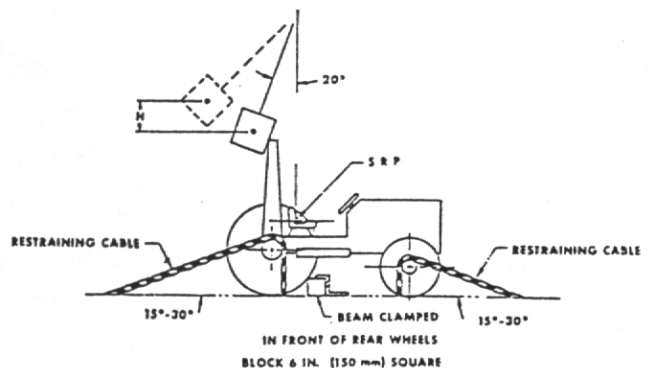


Figure C-9. Side Impact Application.

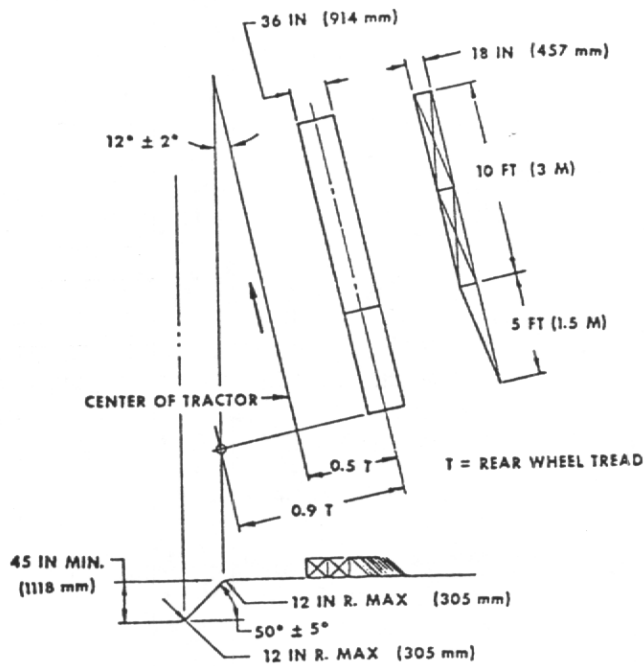


Figure C-10. Side Overturn Bank and Ramp.

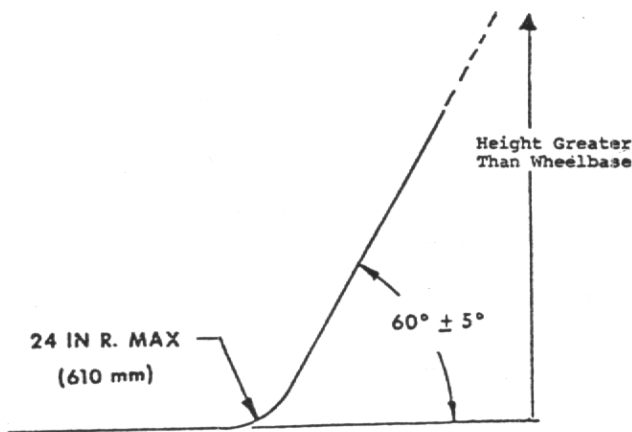


Figure C-11. Typical Rear Overturn Bank.

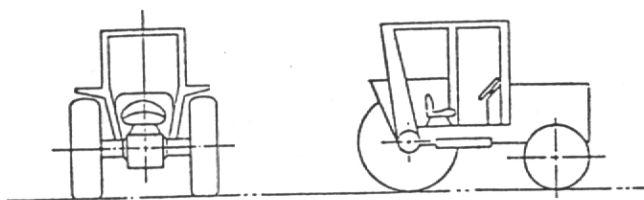


Figure C-12. Tractor with Typical Protective Enclosure.

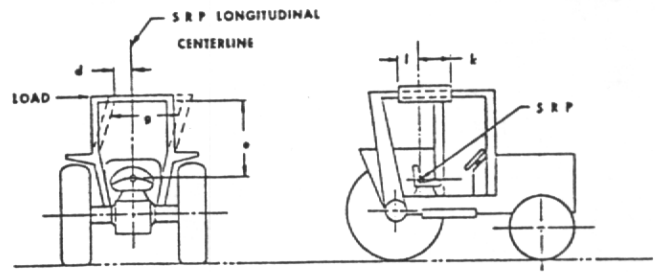


Figure C-13. Side Load Application.

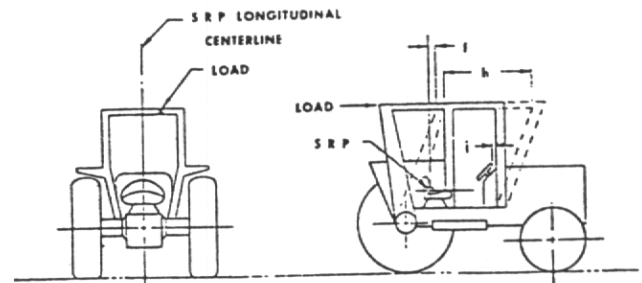


Figure C-14. Rear Load Application.

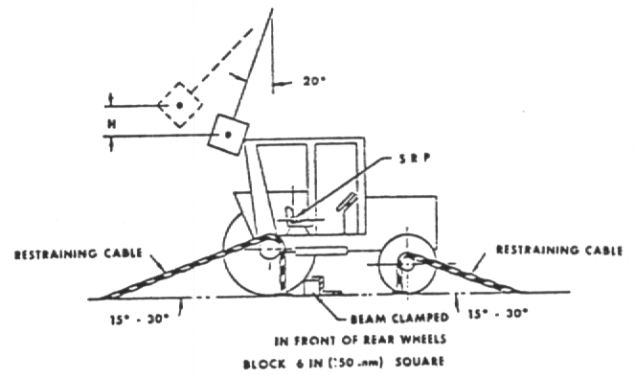


Figure C-15. Rear Impact Application.

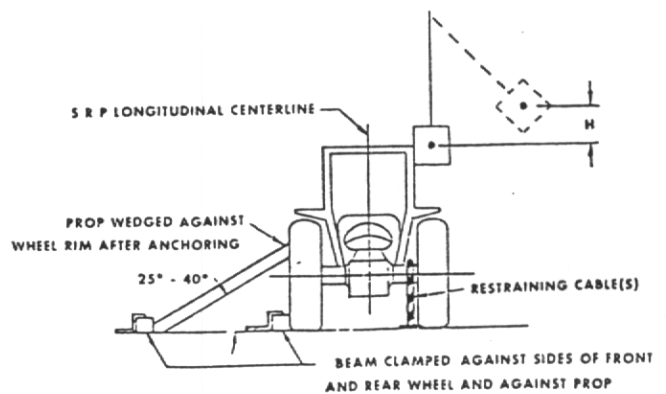


Figure C-16. Side Impact Application.



## FIELD SANITATION

### Scope

**437-81-2950** (1) OAR 437-81-2950 through 437-81-2990 shall apply to any agricultural establishment where employees are engaged in hand-labor operations in the field.

(2) These rules **do not** apply to:

(a) Logging operations;

(b) The care or feeding of livestock;

(c) Hand-labor operations in permanent structures (e.g., canning facilities or packing houses); or

(d) Machine operators working entirely separate from hand-labor operations.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### Definitions

**437-81-2955** (1) "**Agricultural employer**" - means any person, corporation, association, or other legal entity that:

(a) Owns or operates an agricultural establishment;

(b) Contracts with the owner or operator of an agricultural establishment in advance of production for the purchase of a crop and exercises substantial control over production; or

(c) Recruits and supervises employees or is responsible for the management and condition of an agricultural establishment.

(2) "**Agricultural establishment**" - is a business operation that uses employees in the production of food, fiber, or other materials such as seed, seedlings, plants, or parts of plants.

(3) "**Hand-labor operation**" - means agricultural activities or agricultural operations performed by hand or with hand tools, including:

(a) Hand-cultivation, hand-weeding, hand-planting, and hand-harvesting of vegetables, nuts, fruits, seedlings, or other crops (including mushrooms);

(b) Hand packing or sorting, whether done on the ground, on a moving machine, or in a temporary packing shed located in the field; and

(c) Except for purposes of OAR 437-81-2970(7), operation of vehicles or machinery, when such activity is performed in conjunction with other hand-labor operations.

(4) "**Handwashing facility**" - means a facility providing either a basin, container, or outlet with an adequate supply of potable water, soap, and single-use towels.

(5) "**Potable water**" - means water which meets the quality standards prescribed in 42 CFR Part 72, U.S. Public Health Service Drinking Water Standards, or water which is approved for drinking purposes by the state or local authority having jurisdiction, or water which meets the quality standards contained in OAR 437, Division 112, Water and Sanitation OAR 437-112-020 through 040. (formerly 437-148-005(4))

(6) "**Toilet facility**" - means a fixed or portable facility designed for the purpose of adequate collection and containment of the products of both defecation and urination which is supplied with toilet paper adequate to employee needs. Toilet facility includes biological, chemical, flush, and combustion toilets and sanitary privies.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### General Requirements

**437-81-2960** Agricultural employers shall provide the requirements in OAR 437-81-2965 through 437-81-2990 for employees engaged in hand-labor operations in the field, without cost to the employee.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### Potable Drinking Water

**437-81-2965** (1) Potable water shall be provided and shall be placed in locations that are available immediately to all employees.

(2) The water shall be suitably cool and in sufficient amounts, taking into account the air temperature, humidity, and the nature of the work performed, to meet the needs of all employees.

(3) The water shall be dispensed in single-use drinking cups or by angle jet fountains. The use of common drinking cups or dippers is prohibited.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### Toilet and Handwashing Facilities

**437-81-2970** (1) One toilet facility and one handwashing facility shall be provided for each twenty (20) employees or fraction thereof.

(2) Toilet facilities shall be adequately ventilated, appropriately screened, have self-closing doors that can be closed and latched from the inside and shall be constructed to ensure privacy.

(3) Privies and portable toilets shall be maintained as follows:

(a) Structures shall be free of hazards, maintained in good repair and be stable.

(b) Except for urinals, multiple units shall be provided with separate compartments fitted with doors which have inside latches to ensure privacy.

(c) Seats shall be fitted with lids that can be raised to allow use as urinals.

(4) Privies and portable toilets constructed after the effective date of these rules shall be constructed in accordance with the rules of the Department of Environmental Quality.

(5) Where practicable, toilet facilities shall be provided for each sex. They shall be distinctly marked for "women" and "men" in English and in the native language of employees expected to work in the fields or marked with easily understood pictures or symbols.

(6) The employer shall ensure that for each toilet facility:

(a) Toilet paper is supplied in sufficient quantity to meet the workers' needs during the work shift; and

(b) Toilet paper holders or dispensers are provided for each seat. (formerly 437-148-015(7))

(7) Toilet and handwashing facilities shall be adjacent to each other and in a location that is no more than a five-minute or a one-quarter-mile (1320 feet) unobstructed walk from each hand laborer's place of work in the field.

(8) Where, due to terrain, it is not feasible to locate facilities as required above, the facilities shall be located at the point of closest vehicular access.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### Maintenance

**437-81-2975** Potable drinking water and toilet and handwashing facilities shall be maintained in accordance with appropriate public health sanitation practices, including the following:

(1) Drinking water containers shall be constructed of materials that maintain water quality, shall be refilled daily or more often as necessary, shall be kept covered, and shall be regularly cleaned;

(2) Toilet facilities shall be operational and maintained in a clean, sanitary and safe condition;

(3) Chemical toilets shall be emptied and recharged prior to the start of each season of operation and at least every six months thereafter during use or when the tank is three-quarters full, whichever occurs first;. (formerly 437-148-015(l))

(4) Where crops intended for human consumption are produced, toilets shall be designed and constructed to prevent crop contamination; (formerly 437-148-015(5))

(5) Handwashing facilities shall be refilled with potable water as necessary to ensure an adequate supply and shall be maintained in a clean and sanitary condition; and

(6) Disposal of wastes from facilities, including handwashing water and towels, shall not cause unsanitary conditions or contamination of crops.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### Field Sanitation Notice

**437-81-2985** Employers engaged in the production of food crops for human consumption shall ensure that a notice describing the requirements of these rules (OAR 437-81-2950 through 437-81-2990) and advising where workers may file complaints regarding field sanitation matters, is conspicuously posted and shall be printed in the language of the majority of the workers. (formerly 437-148-025)

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

### Reasonable Use

**437-81-2990** The employer shall notify each employee of the location of the sanitation facilities and water, and shall allow each employee reasonable opportunities during the workday to use them. The employer also shall inform each employee of the importance of the following good hygiene practices to minimize exposure to the hazards in the field of heat, communicable diseases, retention of urine and agricultural residues:

(1) Using the water and facilities provided for drinking, handwashing, and elimination;

(2) Drinking water frequently and especially on hot days;

(3) Urinating as frequently as necessary;

(4) Washing hands both before and after using the toilet; and

(5) Washing hands before eating and smoking.

**Hist:** APD Admin. Order 20-1988, f. 12/5/88, ef. 1/1/89.

Oregon Occupational Safety and Health Code  
(Division 81, Agricultural Operations and Farming)

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**Historical Note:** The following is a list of rules which were once part of OAR 437, Division 148, Field Sanitation. When Division 148, Field Sanitation, was repealed on 1/1/89 by APD Admin. Order 20-1988, these rules were revised and included as part of Field Sanitation rules in Division 81, Agricultural Operations and Farming:

OAR 437-81-2955(5) was formerly OAR 437-148-005(4)  
OAR 437-81-2970(6) was formerly OAR 437-148-015(7)  
OAR 437-81-2975(3) was formerly OAR 437-148-015(2)(1)  
OAR 437-81-2975(4) was formerly OAR 437-148-015(5)  
OAR 437-81-2985 was formerly part of OAR 437-148-025



**APPENDIX**  
**LISTING OF AGRICULTURAL**  
**PRODUCTION;**  
**ENTERPRISES WHICH COMPRISE**  
**THE FARMING INDUSTRY**

(THIS LISTING IS EXTRACTED FROM STANDARD  
INDUSTRIAL CLASSIFICATION MANUAL 1972)

**AGRICULTURE**

The classification of agricultural production covers establishments (farms, ranches, dairies, greenhouses, nurseries, orchards, hatcheries, etc.) primarily engaged in the production of crops, plants, vines, or trees (excluding forestry operations); and the keeping, grazing, or feeding of livestock for the sale of livestock or livestock products (including serums), for livestock increase, or for value increase. Livestock as used here includes cattle, sheep, goats, hogs, and poultry. Also included are animal specialties such as horses, rabbits, bees, pets, fur-bearing animals in captivity and fish in captivity. Agricultural production also includes establishments primarily engaged in the operation of sod farms, mushroom cellars, cranberry bogs, poultry hatcheries, and in the production of bulbs, flower seeds, and vegetable seeds.

Farms are the establishment units generally utilized for the purpose of industrial classification of agricultural production. A farm may consist of a single tract of land, or a number of separate tracts which may be held under different tenures. For example, one tract may be owned by the farmer and another rented by him. It may be operated by the operator alone or with the assistance of members of his household or hired employes, or it may be operated by a partnership, corporation, or other type of organization. When a landowner has one or more tenants, renters, croppers, or managers, the land operated by each is considered a farm.

The classification of agricultural services includes establishments primarily engaged in supplying soil preparation services, crop services, landscape and horticultural services, veterinary and other animal services, and farm labor and management services.

**STANDARD INDUSTRIAL CLASSIFICATION**  
**MAJOR GROUP 01. AGRICULTURAL PRODUCTION—CROPS**  
**THE MAJOR GROUP AS A WHOLE**

This major group includes establishments (farms, orchards, greenhouses, nurseries, etc.) primarily engaged in the production of crops or plants, vines and trees (excluding forestry operations). This ma-

jor group also includes establishments primarily engaged in the operation of sod farms, mushroom cellars, cranberry bogs, and in the production of bulbs, flower seeds, and vegetable seeds.

Group No.	Industry No.
011	<b>CASH GRAINS</b>
0111	Wheat Establishments primarily engaged in the production of wheat. Wheat farms
0112	Rice Establishments primarily engaged in the production of rice. Rice Farms
0115	Corn Establishments primarily engaged in the production of corn for grain. Corn farms (field corn)
0116	Soybeans Establishments primarily engaged in the production of soybeans. Soybean farms
0119	Cash Grains, Not Elsewhere Classified Establishments primarily engaged in the production of cash grains, not elsewhere classified. Barley farms Bean (dry field and seed) farms Buckwheat farms Cash grain farms: except wheat, rice, corn, and soybeans Cowpea farms Emmer farms Feed grain farms Flaxseed farms Grain farms: except wheat, rice, corn, and soybeans
013	<b>FIELD CROPS, EXCEPT CASH GRAINS</b>
0131	Cotton Establishments primarily engaged in the production of cotton and cottonseed. Cotton farms Cottonseed farms
0132	Tobacco Establishments primarily engaged in the production of tobacco. Tobacco farms

Group No.	Industry No.
0133	Sugar Crops Establishments primarily engaged in the production of sugarcane and sugar beets. Beet (sugar) farms Cane (sugar) farms Sugar beet farms Sugar cane farms
0134	Irish Potatoes Establishments primarily engaged in the production of Irish potatoes. Potato (Irish) farms
0139	Field Crops, except Cash Grains, Not Elsewhere Classified Establishments primarily engaged in the production of field crops, except cash grains, not elsewhere classified. Alfalfa farms Broomcorn farms Clover farms Field crop farms: except cotton, tobacco, potatoes, sugar, and cash grain Flax farms, except for flaxseed Hay farms Hop farms Mint farms Peanut farms Sweet potato farms Timothy farms
016	<b>VEGETABLES AND MELONS</b>
0161	Vegetables and melons Establishments primarily engaged in the production of vegetables and melons in the open. Asparagus farms Beet farms, except sugar beet Cabbage farms Cantaloupe and other melon farms Celery farms Cucumber farms English pea farms Green lima bean farms Green pea farms Lettuce and romaine farms Market Gardens Melon farms Onion farms Snap bean farms (bush and pole) Squash farms Sweet corn farms Sweet pepper farms Tomato farms Truck farms Vegetable farms Watermelon farms
017	<b>FRUITS AND TREE NUTS</b>
0171	Berry Crops Establishments primarily engaged in the production of caneberries, bushberries and strawberries. Berry farms Blackberry farms Blueberry farms Cranberry bogs Dewberry farms Loganberry farms Raspberry farms Strawberry farms

Group No.	Industry No.	
0172	Grapes	
	Establishments primarily engaged in the production of grapes.	
	Grape farms	Vineyards
0173	Tree Nuts	
	Establishments primarily engaged in the production of tree nuts.	
	Almond groves and farms	Tree nut groves and farms
	Chestnut groves and farms	Tung nut groves and farms
	Pecan groves and farms	Walnut groves and farms
0174	Citrus Fruits	
	Establishments primarily engaged in the production of citrus fruits.	
	Citrus groves and farms	Lime groves and farms
	Grapefruit groves and farms	Orange groves and farms
	Lemon groves and farms	Tangerine groves and farms
0175	Deciduous Tree Fruits	
	Establishments primarily engaged in the production of deciduous tree fruits.	
	Apple orchards and farms	Persimmon orchards and farms
	Apricot orchards and farms	Plum orchards and farms
	Cherry orchards and farms	Pomegranate orchards and farms
	Nectarine orchards and farms	Prune orchards and farms
	Peach orchards and farms	Quince orchards and farms
	Pear orchards and farms	
0179	Fruits and Tree Nuts, Not Elsewhere Classified	
	Establishments primarily engaged in the production of fruit and nuts, not elsewhere classified. This industry also includes establishments deriving 50 percent or more of their total value of sale of agricultural products from fruit and tree nuts (Industry Group 017), but less than 50 percent from products of any single industry.	
	Avacado orchards and farms	Fig orchards and farms
	Date orchards and farms	Olive groves and farms
		Pineapple farms
		Tropical fruit farms

Group No.	Industry No.	
018	HORTICULTURAL SPECIALTIES	
0181	Ornamental Floriculture and Nursery Products	
	Establishments primarily engaged in the production of ornamental plants and other nursery products, such as bulbs, florists' greens, flowers, shrubbery, flower and vegetable seeds and plants, and sod. These products may be grown under cover (greenhouse, frame, cloth house, lath house) or outdoors.	
	Bulbs, growing of	Nursery stock, growing of
	Field nurseries: growing of flowers and shrubbery, except forest shrubbery	Plants, ornamental: growing of
	Florists' greens, cultivated: growing of	Plants, potted: growing of
	Flowers, growing of	Rose growers
	Fruit stocks, growing of	Seed, flower and vegetable: growing of
	Greenhouses for floral products	Shrubberies, except forest shrubbery:
	Mats, preseeded: soil erosion—growing of	growing of
		Sod farms
0182	Food Crops Grown Under Cover	
	Establishments primarily engaged in the production of fruits and vegetables grown under cover.	
	Fruits grown under cover	Rhubarb grown under cover
	Greenhouses for food crops	Tomatoes grown under cover
	Mushroom cellars	Vegetables grown under cover
	Mushroom spawn, production of	
0189	Horticultural Specialties, Not Elsewhere Classified	
	Establishments primarily engaged in the production of horticultural specialties, not elsewhere classified.	
019	GENERAL FARMS, PRIMARILY CROPS	
0191	General Farms, Primarily Crop	
	Crop farms, general	

**MAJOR GROUP 02.  
AGRICULTURAL PRODUCTION—  
LIVESTOCK  
THE MAJOR GROUP AS A WHOLE**

This major group includes establishments (farms, ranches, dairies, feedlots, egg production facilities, broiler facilities, poultry hatcheries, apiaries, etc.) primarily engaged in the keeping, grazing, or feeding of livestock for the sale of livestock or livestock products (including serums), for livestock increase,

or for value increase. Livestock, as used here includes cattle, hogs, sheep, goats, and poultry of all kinds; also included are animal specialties, such as horses, rabbits, bees, pets, fish in captivity, and fur-bearing animals in captivity.

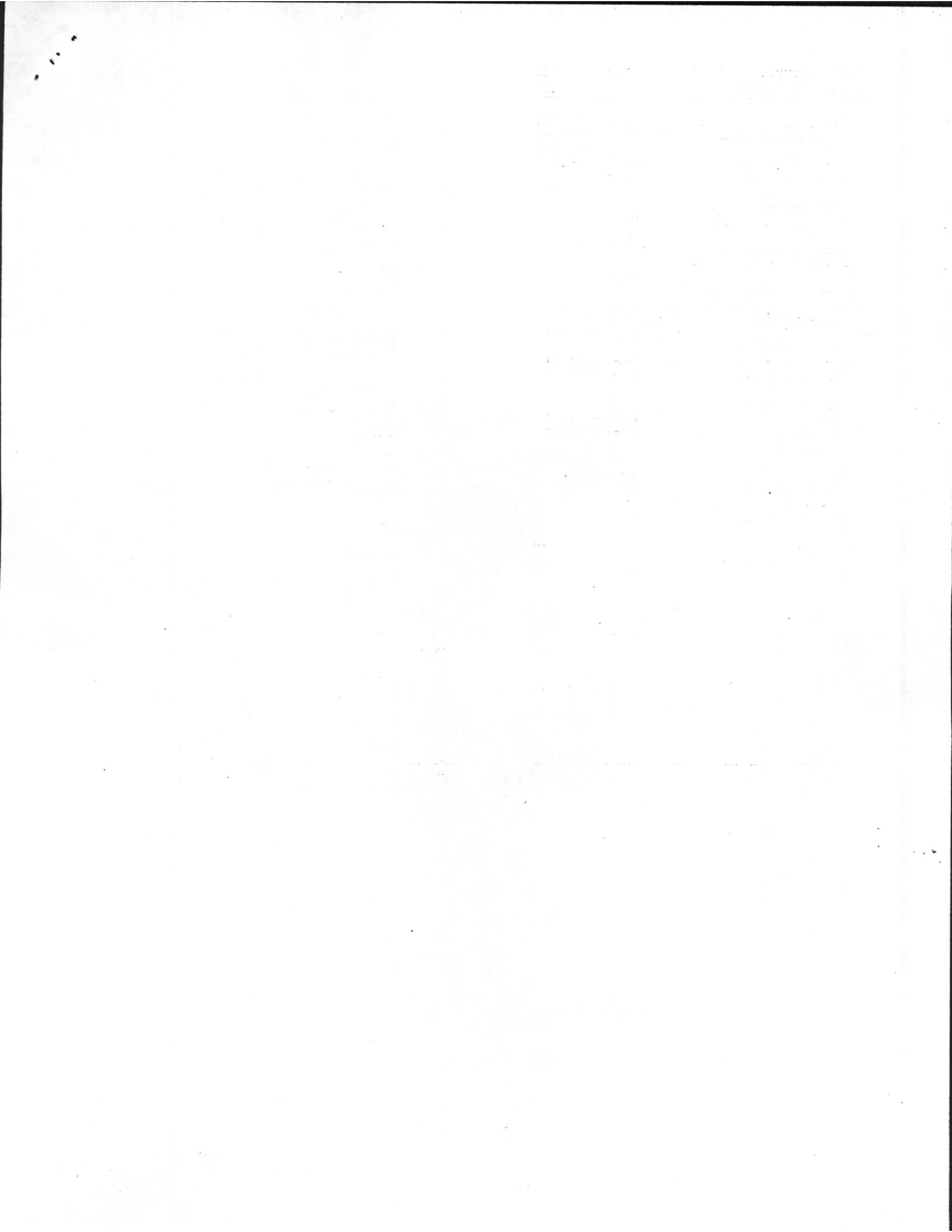
**Group Industry  
No. No.**

- 021 LIVESTOCK, EXCEPT DAIRY, POULTRY, AND ANIMAL SPECIALTIES**
- 0211 Beef Cattle Feedlots**  
Establishments primarily engaged in the fattening of beef cattle in a confined area for a period of at least 30 days, on their own account or on a fee or contract basis. Feedlot operations that are an integral part of the breeding, raising, or grazing of beef cattle are classified in Industry 0212.  
Beef cattle feedlots      Feedlots, cattle  
Cattle feeding farms      Stockyards, exclusively for fattening cattle  
Cattle feedlot operation
- 0212 Beef Cattle, Except Feedlots**  
Establishments primarily engaged in the production or feeding of beef cattle, except feedlots.  
Beef cattle farms,      Cattle raising farms  
except feedlots      Cattle ranches
- 0213 Hogs**  
Establishments primarily engaged in the production of feeding of hogs on their own account or on a fee or contract basis.  
Feedlots, hog      Hog farms
- 0214 Sheep and Goats**  
Establishments primarily engaged in the production of sheep, lambs, goats, goat's milk, wool and mohair, including the operation of lamb feedlots on their own account or on a fee or contract basis.  
Feedlots, lamb      Sheep feeding farms and ranches  
Goat farms      Sheep raising farms and ranches  
Goat's milk production      and ranches  
Mohair production      Wool production
- 0219 General Livestock, Except Dairy, Poultry, and Animal Specialties**  
Establishments deriving 50 percent or more of their total value of sales of agricultural products from livestock products classified in Industry Group 021, but less than 50 percent from products of any single industry.
- 024 DAIRY FARMS**
- 0241 Dairy Farms**  
Establishments primarily engaged in the produc-

**Group Industry  
No. No.**

- tion of cows' milk and other dairy products and in raising dairy heifer replacements. Such farms may process and bottle milk on the farm and sell at wholesale or retail. However, the processing and/or distribution of milk from a separate establishment not on the farm is classified in manufacturing or trade. Establishments primarily producing goat's milk are classified in Industry 0214.  
Dairy farms      Dairy heifer replacement farms  
Milk production
- 025 POULTRY AND EGGS**
- 0251 Broiler, Fryer, and Roaster Chickens**  
Establishments primarily engaged in the production of chickens for slaughter, including those grown under contract.  
Broiler chickens, raising of      Cornish hen farms  
Chicken farms or ranches (raising for laughter)      Frying chickens, raising of  
Roasting chickens, raising of
- 0252 Chicken Eggs**  
Establishments primarily engaged in the production of chicken eggs, including table eggs and hatching eggs and in the sale of cull hens.  
Chicken egg farms      Egg (chicken) farms and ranches  
Starter pullet farms
- 0253 Turkeys and Turkey Eggs**  
Establishments primarily engaged in the production of turkeys and turkey eggs.  
Turkey egg farms and ranches      Turkey farms and ranches
- 0254 Poultry Hatcheries**  
Establishments primarily engaged in operating poultry hatcheries on their own account or on a fee or contract basis.  
Chicken hatcheries      Egg hatcheries (poultry)  
Poultry hatcheries
- 0259 Poultry and Eggs, Not Elsewhere Classified**  
Establishments primarily engaged in the production of poultry and eggs, not elsewhere classified.  
Duck farms      Pigeon farms  
Geese farms      Quail farms  
Pheasant farms





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Group No.	Industry No.		Group No.	Industry No.	
		dentistry, or surgery for cattle, hogs, sheep, goats, and poultry.			Training of pets and other animal specialties
		Animal hospitals for livestock, except animal specialties			Vaccinating pets and other animal specialties, except by veterinarians
		Veterinarians for livestock, except animal specialties			
		Veterinary services for livestock, except animal specialties	076		FARM LABOR AND MANAGEMENT SERVICES
0742		Veterinary Services for Animal Specialties	0761		Farm Labor Contractors and Crew Leaders
		Establishments for licensed practitioners primarily engaged in the practice of veterinary medicine, dentistry, or surgery, for animal specialties. Animal specialties include horses, bees, fish, fur-bearing animals, rabbits, dogs, cats, and other pets and birds except poultry.			Establishments primarily engaged in supplying labor for agricultural production or harvesting. Crew leaders, farm labor: contract
		Animal hospitals for pets and other animal specialties			Farm labor contractors
		Veterinarians for pets and other animal specialties			0762 Farm Management Services
		Veterinary services for pets and other animal specialties			Establishments primarily engaged in providing farm management services, including management or complete maintenance of citrus groves, orchards, and vineyards.
075		ANIMAL SERVICES, EXCEPT VETERINARY			Citrus grove management and maintenance, with or without crop service
0751		Livestock Services, Except Services for Animal Specialties			Orchard management and maintenance, with or without crop service
		Establishments primarily engaged in performing services, except veterinary, for cattle, hogs, sheep, goats, and poultry. Dairy herd improvement associations are also included in this industry.			Vineyard management and maintenance, with or without crop services
		Artificial insemination			078
		Breeding of livestock, except animal specialties			LANDSCAPE AND HORTICULTURAL SERVICES
		Catching poultry, with no hauling			0781 Landscape Counseling and Planning
		Cattle spraying			Establishments primarily engaged in performing landscape planning, architectural, and counseling services.
		Cleaning poultry coops			Garden planning
		Dairy herd improvement associations			Horticultural advisory or counseling services
		Livestock breeding services, except for animal specialties			Landscape architects
		Milk testing, for butterfat, etc.			Landscape counseling
					Landscape planning
					0782 Lawn and Garden Services
					Establishments primarily engaged in performing a variety of lawn and garden services.
					Bermuda sprigging services
					Lawn mowing services
					Lawn spraying services
					Cemetery upkeep, independent
					Lawn sprigging services
					Garden maintenance
					Mowing highway center strips and edges
					Lawn care
					Lawn fertilizing services
0752		Animal Specialty Services			0783 Ornamental Shrub and Tree Services
		Establishments primarily engaged in performing services, except veterinary, for pets, equines, and other animal specialties.			Establishments primarily engaged in performing a variety of ornamental shrub and tree services.
		Boarding kennels			Arborist services
		Boarding or training horses (including race horses)			Ornamental bush planting, pruning, bracing, spraying, and surgery
		Breeding of animals other than cattle, hogs, sheep, goats, and poultry			Ornamental tree planting, pruning, bracing, spraying, and surgery
		Dog grooming			Tree trimming for public utility lines
					Utility line tree trimming services

**MAJOR GROUP 07.**  
**AGRICULTURAL SERVICES—**  
**THE MAJOR GROUP AS A WHOLE**

This major group includes establishments primarily engaged in performing soil preparation services, crop services, veterinary services, other animal

services, farm labor and management services, and landscape and horticultural services, for others on a fee or contract basis.

Group Industry  
No. No.

071 SOIL PREPARATION SERVICES

0711 Soil Preparation Services  
Establishments primarily engaged in land breaking, plowing, application of fertilizer, seed bed preparation, and other operations for improving the soil.

Chemical treatment of soil	Plowing
Fertilizer application	Seed bed preparation
Lime spreading	Weed control, before planting

072 CROP SERVICES

0721 Crop Planting, Cultivating, and Protection  
Establishments primarily engaged in performing a variety of crop planting, cultivating, and protection operations.

Aerial dusting and spraying	Planting, with/without fertilizing
Bracing of orchard trees and vines	Pollinating
Citrus grove cultivation	Pruning of orchard trees and vines
Cultivation, mechanical and flame	Seeding crops, with/without fertilizing
Cultivation of sprouts, twigs, etc.	Seeding of sprouts, twigs, etc.
Detasseling of corn	Spraying crops, with/without fertilizing
Disease control for crops, with/without fertilizing	Surgery on orchard trees and vines
Dusting crops, with/without fertilizing	Thinning of crops, mechanical and chemical
Entomological service	Weed control, after planting
Hoing	
Insect control for crops, with/without fertilizing	

0722 Crop Harvesting, Primarily by Machine  
Establishments primarily engaged in mechanical harvesting, picking, and combining of crops, and related activities, using machinery provided by the service firm.

Berries, machine harvesting of	Cotton, machine harvesting of
Chopping and silo filling	Fruits and vegetables, machine harvesting of
Combining	

Group Industry  
No. No.

Grain, machine harvesting of	Sugarcane, machine harvesting of
Hay mowing, raking, baling, and chopping	Threshing service
Peanuts, machine harvesting of	Tree nuts, machine harvesting of

0723 Crop Preparation Services for Market: Except Cotton Ginning

Establishments primarily engaged in performing a variety of operations on crops subsequent to their harvest, with the intention of preparing them for market or further manufacture.

Alfalfa cubing	Milling of flour, feed, grain: custom
Bean cleaning	Moss ginning
Corn shelling	Packaging fresh or farm-dried fruits and vegetables
Cotton seed delinting	Potato curing
Drying of corn, rice, hay fruits, and vegetables	Sorting, grading, and packaging of fruits and vegetables
Flax decorticating and retting	Sweet potato curing
Fruit precooling, not in connection with transportation	Tobacco grading
Grain cleaning	Tree nut hulling and shelling
Grain grinding, custom	Vegetable precooling, not in connection with transportation
Grist mills, custom	
Hay baling	
Hay cubing	

0724 Cotton Ginning

Cotton ginning	Cotton pickery
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0729 General Crop Services

Establishments primarily engaged in providing a combination of services from soil preparation through harvest, except farm labor and management services which are classified in Group 076. Crop services, general

074

VETERINARY SERVICES

0741 Veterinary Services for Livestock, Except Animal Specialties

Establishments of licensed practitioners primarily engaged in the practice of veterinary medicine,

Group Industry  
 No. No.

027

ANIMAL SPECIALTIES

0271 Fur-Bearing Animals and Rabbits  
 Establishments primarily engaged in the production of fur-bearing animals and rabbits.  
 Chinchilla farms            Game farms (fur-bearing animals)  
 Fox farms                    Mink farms  
 Fur farms                    Rabbit farms

0272 Horses and other equines  
 Establishments primarily engaged in the production of horses and other equines.  
 Burro farms                Mule farms  
 Donkey farms              Pony farms  
 Horse farms

0279 Animal Specialties, Not elsewhere Classified  
 Establishments primarily engaged in the production of animal specialties, not elsewhere classified,

Group Industry  
 No. No.

such as pets, bees, fish in captivity except fish hatcheries, worms, and laboratory animals.  
 Alligator farms            Gold fish farms  
 Animal specialty farms    Honey production  
                                  Kennels, breeding and raising own stock  
 Apiaries                    Laboratory animal farms (rats, mice, guinea pigs, etc.)  
 Aviaries (parakeet, canary, love birds, etc.)  
 Bee farms                    Minnow farms  
 Cat farms                    Rattlesnake farms  
 Catfish farms              Silk (raw) production and silkworm farms  
 Dog farms                    Trout farms  
 Earthworm hatcheries    Worm farms  
 Fish farms  
 Frog farms

029

GENERAL FARMS, PRIMARILY LIVESTOCK

0291 General Farms, Primarily Livestock  
 Livestock farms, general