

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)
This table compares the rescinded rules for floor and wall openings, stairways, and skylights in old GI Part 2 with the new rules in GI Part 2, Walking-Working Surfaces. The first column contains the rescinded rule (struckthrough). The second column contains the corresponding, comparable new rule(s) that could be used to address the same hazard. In some cases there may be more than one applicable rule in the new regulations. Which new rule would be used, and whether it could be used, depends as always on the circumstances. Under the new regulations, broad performance-based standards replace old specification standards thus giving the employer more flexibility on how to meet a requirement but also expanding the situations under which the regulation would apply.	
R 408.10201 Scope.	
Rule 201. This part is intended to provide safety of life and limb in all places of employment where there is a danger of persons falling from, into, or through walking or working surfaces, vats, or skylights or while gaining access to other elevations and places of employment where employees would be injured from materials falling from walking or working surfaces. This part applies to temporary or emergency conditions and permanent conditions; however, where a specific rule is set forth in another general industry safety standard, the otherwise applicable rule of this part is preempted.	1910.21 SCOPE AND DEFINITIONS (a) Scope. This subpart applies to all general industry workplaces. It covers all walking-working surfaces unless specifically excluded by an individual section of this subpart.
R 408.10205 Definitions; D to F.	
Rule 205. (1) "Detour guard" means a barrier or other device used to direct employees from contact with hazards.	
(2) "Fixed industrial stairs" means a series of steps leading from 1 level or floor to provide limited access for maintenance or operating employees.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Alternating tread-type stair means a type of stairway consisting of a series of treads that usually are attached to a center support in an alternating manner such that an employee typically does not have both feet on the same level while using the stairway. Ship stair (ship ladder) means a stairway that is equipped with treads, stair rails, and open risers, and has a slope that is between 50 and 70 degrees from the horizontal. Spiral stairs means a series of treads attached to a vertical pole in a winding fashion, usually within a cylindrical space. Stairway (stairs) means risers and treads that connect one level with another, and includes any landings and platforms in between those levels. Stairways include standard, spiral, alternating tread-type, and ship stairs. Standard stairs means a fixed or permanently installed stairway. Ship, spiral, and alternating tread-type stairs are not considered standard stairs.
(3) "Floor hole" means an opening measuring less than 12 inches but more than 1 inch in its least dimension, in a floor, platform, pavement or yard, through or into which persons, materials, or equipment may fall, such as a belt hole, pipe opening or slot opening.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Hole means a gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.
(4) "Floor opening" means an opening measuring 12 inches or more in its least dimension, in a floor, platform, pavement or yard, through or into which persons, materials, or equipment may fall, including, but not limited to, a hatchway, stair or ladder opening, pit or large manhole. A floor opening occupied by an elevator or dumbwaiter is excluded from this part as it is covered by the elevator law, Act No. 227 of the Public Acts of 1967, being SS408.801 to 408.824 of the Michigan Compiled Laws.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Hole means a gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.
R 408.10206 Definitions; H to R.	
Rule 206. (1) "Handrail" means a single member which is supported on brackets from a wall or partition, as on a stairway or ramp, and which is provided to furnish persons with a handhold.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Handrail means a rail used to provide employees with a handhold for support.
(2) "Hazardous substance" means a substance or mixture of substances which is toxic, corrosive, an irritant, a strong sensitizer, or flammable or which generates pressure through decomposition, heat, or other means, if the	

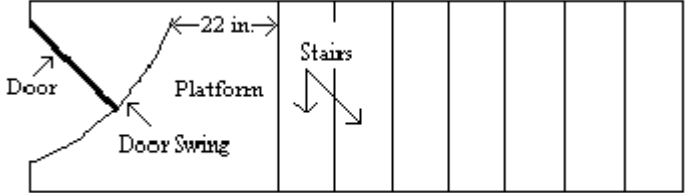
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substance or mixture of substances is likely to cause clinical evidence of personal injury or illness during, or as a direct result of, a customary or reasonable anticipated handling or use.	
(3) "Means of egress" means a continuous path of travel from any point in a building to the open air outside at ground level and consists of 3 separate and distinct parts: the exit access, the exit, and the exit discharge. A means of egress comprises both vertical and horizontal means of travel.	
(4) "Platform" means a working surface for 1 or more employees which is elevated above the surrounding floor or ground level, such as a balcony or elevated surface for the operation of machinery and equipment or storage.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Platform means a walking-working surface that is elevated above the surrounding area.
(5) "Removable standard barrier" means a standard barrier that must be either removed or installed because of specific work operations.	Note: the new federal rules make no distinction between removable and fixed guardrail systems in the definitions. 1910.21 SCOPE AND DEFINITIONS (b) Definitions Guardrail system means a barrier erected along an unprotected or exposed side, edge, or other area of a walking-working surface to prevent employees from falling to a lower level.
(6) "Runway" means a passageway for persons which is elevated above the surrounding floor or ground level, such as a footwalk along shafting or a walkway between buildings.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Runway means an elevated walking-working surface, such as a catwalk, a foot walk along shafting, or an elevated walkway between buildings.
R 408.10207 Definitions; S.	
Rule 207. (1) "Skylight" means an opening in a roof or floor covered by a translucent or transparent material not capable of supporting 300 pounds applied perpendicularly on any 1 area.	Note: the new federal rules have no definition for skylight. A skylight is considered a hole under the new federal rules. 1910.21 SCOPE AND DEFINITIONS (b) Definitions Hole means a gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.
(2) "Stair railing" means a barrier erected in conjunction with a stairway to prevent falls of persons.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Stair rail or stair rail system means a barrier erected along the exposed or open side of stairways to prevent employees from falling to a lower level.
(3) "Stairway" means a flight of stairs of 4 or more risers.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Stairway (stairs) means risers and treads that connect one level with another, and includes any landings and platforms in between those levels. Stairways include standard, spiral, alternating tread-type, and ship stairs.
(4) "Standard barrier" means a barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons or material.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Guardrail system means a barrier erected along an unprotected or exposed side, edge, or other area of a walking-working surface to prevent employees from falling to a lower level.
R 408.10208 Definitions; T, W.	
Rule 208. (1) "Temporary barrier" means a portable barrier to shield and identify a floor opening.	Note: the new federal rules make no distinction between temporary and fixed guardrail systems in the definitions. There is only a definition for guardrail system.
(2) "Toeboard" means a barrier at floor level that is erected along exposed edges of a floor opening, wall opening, platform runway, ramp, or a wall hole to prevent materials from falling.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Toeboard means a low protective barrier that is designed to prevent materials, tools, and equipment from falling to a

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	lower level, and protect employees from falling.
(3) "Wall hole" means an opening in a wall or partition which is less than 30 inches but more than 1 inch but less than 18 inches wide and of unrestricted height.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Opening means a gap or open space in a wall, partition, vertical walking-working surface, or similar surface that is at least 30 inches (76 cm) high and at least 18 inches (46 cm) wide, through which an employee can fall to a lower level.
(4) "Wall opening" means an opening in a wall or partition which is not less than 30 inches high and 18 inches wide and through or into which persons may fall.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Opening means a gap or open space in a wall, partition, vertical walking-working surface, or similar surface that is at least 30 inches (76 cm) high and at least 18 inches (46 cm) wide, through which an employee can fall to a lower level.
(5) "Walking or working surface" means the floor which an employee walks, climbs, or stands on or otherwise uses in his or her place of employment.	1910.21 SCOPE AND DEFINITIONS (b) Definitions Walking-working surface means any horizontal or vertical surface on or through which an employee walks, works, or gains access to a work area or workplace location.
R 408.10211 Guards for stairway openings.	
Rule 211. (1) A stairway floor opening shall be guarded by a standard barrier as specified in R 408.10231 to R 408.10236. It shall be provided on all exposed sides, except at the entrance to the stairway. A standard toeboard shall be installed where activities present the probability of objects or materials falling or rolling over the edge of the opening.	Guardrail: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards (3) Holes (iii) Each employee is protected from falling into a stairway floor hole by a fixed guardrail system on all exposed sides, except at the stairway entrance. However, for any stairway used less than once per day where traffic across the stairway floor hole prevents the use of a fixed guardrail system (e.g., holes located in aisle spaces), the employer may protect employees from falling into the hole by using a hinged floor hole cover that meets the criteria in §1910.29 and a removable guardrail system on all exposed sides, except at the entrance to the stairway. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level; (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(2) For a stairway where traffic across the opening prevents the use of a fixed standard barrier such as when located in an aisle space, the barrier shall consist of a hinged floor opening cover as specified in R 408.10239 and removable standard barriers on all exposed sides, except at the entrance to the stairway. The removable	Guardrail: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards (3) Holes

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barriers should be hinged or mounted so as to come into use automatically with the opening of the cover.	(iii) Each employee is protected from falling into a stairway floor hole by a fixed guardrail system on all exposed sides, except at the stairway entrance. However, for any stairway used less than once per day where traffic across the stairway floor hole prevents the use of a fixed guardrail system (e.g., holes located in aisle spaces), the employer may protect employees from falling into the hole by using a hinged floor hole cover that meets the criteria in §1910.29 and a removable guardrail system on all exposed sides, except at the entrance to the stairway.
(3) Where a door or gate opens directly on a stairway, a platform shall be provided, and the swing of the door or gate shall not reduce the floor area leading to the stairs to a width less than 20 inches.	1910.25 STAIRWAYS (b) General requirements (5) When a door or a gate opens directly on a stairway, a platform is provided, and the swing of the door or gate does not reduce the platform's effective usable depth to: (i) Less than 20 inches (51 cm) for platforms installed before January 17, 2017; and (ii) Less than 22 inches (56 cm) for platforms installed on or after January 17, 2017 (see Figure D-7 of this section).  Figure D-7 -- Door or Gate Opening on Stairway
R 408.10213 Guards for open-sided floors, platforms, and runways.	
Rule 213. (1) Regardless of height, and open-sided floor, walkway, platform, or runway above or adjacent to dangerous equipment shall be guarded with a standard barrier and toeboard as specified in R 408.10231(1) and R 408.10233(2).	Guardrail: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards (6) Dangerous equipment. The employer must ensure: (i) Each employee less than 4 feet (1.2 m) above dangerous equipment is protected from falling into or onto the dangerous equipment by a guardrail system or a travel restraint system, unless the equipment is covered or guarded to eliminate the hazard. (ii) Each employee 4 feet (1.2 m) or more above dangerous equipment must be protected from falling by: (A) Guardrail systems; (B) Safety net systems; (C) Travel restraint systems; or (D) Personal fall arrest systems. Note: the new federal rules for toeboards and falling object protection are intended to protect employees at the lower level from falling objects. They have no provision to protect equipment, including dangerous equipment, from falling objects. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level; (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall,

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	prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(2) An open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard barrier as specified in R 408.10231 on all open sides, except where there is entrance to a ramp, stairway, or fixed ladder. The barrier shall be provided with a toeboard as specified in R 408.10233(2) where, beneath the open sides,	Guardrail: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards (1) Unprotected sides and edges (i) Except as provided elsewhere in this section, the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: (A) Guardrail systems; (B) Safety net systems; or (C) Personal fall protection systems, such as personal fall arrest, travel restraint, or positioning systems. (iii) When the employer can demonstrate that the use of fall protection systems is not feasible on the working side of a platform used at a loading rack, loading dock, or teeming platform, the work may be done without a fall protection system, provided: (A) The work operation for which fall protection is infeasible is in process; (B) Access to the platform is limited to authorized employees; and, (C) The authorized employees are trained in accordance with §1910.30.
(a) persons can pass,	Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level; (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(b) there is moving machinery, or	
(c) there is equipment with which falling materials could create a hazard. The intermediate sections of the barrier and the toeboard may be eliminated when materials are regularly passed over the end of the floor, as in lumber storage. A stationary elevated platform secured to a	

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building or structure used exclusively for the service and maintenance of overhead bridge cranes and similar mobile equipment may be equipped with standard barriers and toeboards that are removable in lieu of fixed standard barriers and toeboards on the side adjacent to the machinery, if such barriers and toeboards are secured against falling when they are not serving as protective barriers.	
(3) Guards shall be provided for a platform or runway of gratings used as a working area, which will prevent tools or materials from falling on persons below.	Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level; (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(4) Open sides of a loading or storage platform which is used primarily for loading or unloading railroad cars or trucks, and open hearth pouring platforms are exempt from the provisions of this part.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards (1) Unprotected sides and edges (iii) When the employer can demonstrate that the use of fall protection systems is not feasible on the working side of a platform used at a loading rack, loading dock, or teeming platform, the work may be done without a fall protection system, provided: (A) The work operation for which fall protection is infeasible is in process; (B) Access to the platform is limited to authorized employees; and, (C) The authorized employees are trained in accordance with §1910.30.

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(5) A runway shall be guarded by a standard barrier and toeboard as specified in R 408.10231 and R 408.10233 on all open sides 4 feet or more above floor or ground level. The barrier and toeboard on 1 side of a runway used exclusively for special purposes, including but not limited to oiling, servicing, or filling tank cars, may be omitted if the runway is not less than 18 inches wide.	Standard barrier: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards (5) Runways and similar walkways. (i) The employer must ensure each employee on a runway or similar walkway is protected from falling 4 feet (1.2 m) or more to a lower level by a guardrail system. (ii) When the employer can demonstrate that it is not feasible to have guardrails on both sides of a runway used exclusively for a special purpose, the employer may omit the guardrail on one side of the runway, provided the employer ensures: (A) The runway is at least 18 inches (46 cm) wide; and (B) Each employee is provided with and uses a personal fall arrest system or travel restraint system. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. (14) Guardrail systems on ramps and runways are installed along each unprotected side or edge. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below. Note: the new federal standards have no exception for special-purpose runways.

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R 408.10215 Guards for other floor openings or platforms.	
Rule 215. (1) A ladderway floor opening or platform shall be guarded by a standard barrier with standard toeboard on all exposed sides and with the passage through the barrier either provided with a gate which swings away from the opening or so offset that a person cannot walk directly into the opening.	Standard barrier: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (3) Holes. The employer must ensure: (iv) Each employee is protected from falling into a ladder-way floor hole or ladder-way platform hole by a guardrail system and toeboards erected on all exposed sides, except at the entrance to the hole, where a self-closing gate or an offset must be used. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(2) A hatchway, floor opening, or floor hole into which persons may accidentally walk or through which material may fall shall be guarded by 1 of the following: (a) A hinged floor opening covered as specified in R 408.10239 and equipped with standard barriers permanently attached thereto so as to leave only 1 exposed side. If the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard barriers. (b) A removable standard barrier with toeboard on not more than 2 sides of the opening and fixed standard barriers with toeboards as specified in R 408.10231 and R 408.10233(2) on all other exposed sides. The removable standard barriers shall be kept in place when the opening is not in use and should preferably be hinged or mounted so as to be conveniently replaceable. A barrier may be omitted around the perimeter of a pit used for vehicle servicing, if a yellow caution line is installed around the perimeter of the pit. The line shall be 12 inches wide and maintained so as to be clearly visible. (c) A floor opening cover as specified in R 408.10239.	Standard barrier: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (3) Holes. The employer must ensure: (i) Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following: (A) Covers; (B) Guardrail systems; (C) Travel restraint systems; or (D) Personal fall arrest systems. (ii) Each employee is protected from tripping into or stepping into or through any hole that is less than 4 feet (1.2 m) above a lower level by covers or guardrail systems. (v) Each employee is protected from falling through a hatchway and chute floor hole by: (A) A hinged floor-hole cover that meets the criteria in § 1910.29 and a fixed guardrail system that leaves only one exposed side. When the hole is not in use, the employer must ensure the cover is closed or a removable guardrail system is provided on the exposed sides; (B) A removable guardrail system and toeboards on not more than two sides of the hole and a fixed guardrail system on all other exposed sides. The employer must ensure the removable guardrail system is kept in place when the hole is not in use; or (C) A guardrail system or a travel restraint system when a work operation necessitates passing material through a hatchway or chute floor hole. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION

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	(c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below. Service pits: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (8) Repair pits, service pits, and assembly pits less than 10 feet in depth. The use of a fall protection system is not required for a repair pit, service pit, or assembly pit that is less than 10 feet (3 m) deep, provided the employer: (i) Limits access within 6 feet (1.8 m) of the edge of the pit to authorized employees trained in accordance with §1910.30; (ii) Applies floor markings at least 6 feet (1.8 m) from the edge of the pit in colors that contrast with the surrounding area; or places a warning line at least 6 feet (1.8 m) from the edge of the pit as well as stanchions that are capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion at a height of 30 inches (76 cm); or places a combination of floor markings and warning lines at least 6 feet (1.8 m) from the edge of the pit. When two or more pits in a common area are not more than 15 feet (4.5 m) apart, the employer may comply by placing contrasting floor markings at least 6 feet (1.8 m) from the pit edge around the entire area of the pits; and (iii) Posts readily visible caution signs that meet the requirements of §1910.145 and state "Caution—Open Pit." 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (v) Have a minimum height of 2.5 inches (6 cm) when used around vehicle repair, service, or assembly pits. Toeboards may be omitted around vehicle repair, service, or assembly pits when the employer can demonstrate that a toeboard would prevent access to a vehicle that is over the pit.
(3) Where operating conditions necessitate the feeding of material into a hatchway or chute opening, protection shall be provided to prevent a person from falling through the opening.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (3) Holes. The employer must ensure: (v) Each employee is protected from falling through a hatchway and chute floor hole by: (A) A hinged floor-hole cover that meets the criteria in § 1910.29 and a fixed guardrail system that leaves only one exposed side. When the hole is not in use, the employer must ensure the cover is closed or a removable guardrail system is provided on the exposed sides; (B) A removable guardrail system and toeboards on not more than two sides of the hole and a fixed guardrail system on all other exposed sides. The employer must ensure the removable guardrail system is kept in place

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	when the hole is not in use; or (C) A guardrail system or a travel restraint system when a work operation necessitates passing material through a hatchway or chute floor hole. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (10) When guardrail systems are used at hoist areas, a removable guardrail section, consisting of a top rail and midrail, are placed across the access opening between guardrail sections when employees are not performing hoisting operations. The employer may use chains or gates instead of a removable guardrail section at hoist areas if the employer demonstrates the chains or gates provide a level of safety equivalent to guardrails. (12) For guardrail systems used around holes through which materials may be passed: (i) When materials are being passed through the hole, not more than two sides of the guardrail system are removed; and (ii) When materials are not being passed through the hole, the hole must be guarded by a guardrail system along all unprotected sides or edges or closed over with a cover.
(4) A manhole floor opening shall be covered by a floor hole cover as prescribed in R 408.10239, which need not be hinged in place when secured or constructed to prevent accidental displacement. When the cover is not in place, the manhole opening shall be constantly attended by an employee or by an outside service, or shall be protected by temporary barriers.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (3) Holes. The employer must ensure: (i) Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following: (A) Covers; (B) Guardrail systems; (C) Travel restraint systems; or (D) Personal fall arrest systems. (ii) Each employee is protected from tripping into or stepping into or through any hole that is less than 4 feet (1.2 m) above a lower level by covers or guardrail systems.
(5) A temporary floor opening shall have a temporary barrier or shall be constantly attended by a person.	Note: the new federal standards make no distinction between permanent and temporary holes. The rules for holes apply both to temporary and permanent holes. 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (3) Holes. The employer must ensure: (i) Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following: (A) Covers; (B) Guardrail systems; (C) Travel restraint systems; or (D) Personal fall arrest systems. (ii) Each employee is protected from tripping into or stepping into or through any hole that is less than 4 feet (1.2 m) above a lower level by covers or guardrail systems.

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(6) A floor hole or floor opening into which persons cannot accidentally walk, on account of fixed machines, equipment, or walls, but tools or materials can fall on employees or equipment, shall be protected by a cover that leaves no openings more than 1 inch wide unless this opening is connected to a chute-type device. The cover shall be securely held in place to prevent tools or materials from falling through.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(7) An area below a floor hole or floor opening, or wall hole or wall opening, where material is being lowered shall be guarded by a standard fixed or temporary barrier, or attended by a person.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level; (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level.
(8) A skylight less than 36 inches above a roof or floor shall be guarded by a standard barrier or skylight guard, as prescribed in R 408.10231 or R 408.10240, on all exposed sides.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (3) Holes. The employer must ensure: (i) Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following: (A) Covers; (B) Guardrail systems; (C) Travel restraint systems; or (D) Personal fall arrest systems.

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R 408.10217 Guards for wall openings, holes, and pits above floor or ground level.	
Rule 217. (1) A wall opening from which there is a drop of more than 4 feet or where a person is likely to fall on or into a hazard shall be equipped with a standard barrier or a wall opening screen as specified in R 408.10231 and R 408.10237. Where there is exposure below to falling materials, a toeboard shall also be provided. If the barrier has to be removable, it should be hinged or mounted so as to be conveniently replaceable. When the opening is not in use for handling materials, the barrier shall be kept in position, even if there is a door covering the opening. Where a removable standard barrier is used, a grab handle, as specified in R 408.10237, shall be provided on each side of the opening, with its center approximately 4 feet above floor level.	Standard barrier: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (7) Openings. The employer must ensure that each employee on a walking-working surface near an opening, including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches (99 cm) above that walking-working surface and the outside bottom edge of the opening is 4 feet (1.2 m) or more above a lower level is protected from falling by the use of: (i) Guardrail systems; (ii) Safety net systems; (iii) Travel restraint systems; or, (iv) Personal fall arrest systems. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below. Note: for wall openings, the new federal standards do not have separate requirements for standard barriers that are removable.
(2) A chute wall opening from which there is a drop of more than 4 feet shall be guarded by a barrier as specified in R 408.10231.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (7) Openings. The employer must ensure that each employee on a walking-working surface near an opening, including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches (99 cm) above that walking-working surface and the outside bottom edge of the opening is 4 feet (1.2 m) or more above a lower level is protected from falling by the use of: (i) Guardrail systems; (ii) Safety net systems; (iii) Travel restraint systems; or, (iv) Personal fall arrest systems.
(3) A window wall opening which is along a stairway or at a stairway landing, floor, platform, or balcony and from which there is a drop of more than 4 feet and where the bottom of the opening is less than 3 feet above the stair tread, platform, floor, or landing shall be guarded by standard wall opening screens of a standard barrier as specified in R 408.10231 and R 408.10237. Where the	Standard barrier: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (7) Openings. The employer must ensure that each employee on a walking-working surface near an opening,

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window opening is less than 4 inches above the landing, floor, or platform, a standard toeboard shall be provided as specified in R 408.10233.	including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches (99 cm) above that walking-working surface and the outside bottom edge of the opening is 4 feet (1.2 m) or more above a lower level is protected from falling by the use of: (i) Guardrail systems; (ii) Safety net systems; (iii) Travel restraint systems; or, (iv) Personal fall arrest systems. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.

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(4) A temporary wall opening shall have barriers and toeboards as specified in R 408.10231 and R 408.10233.	Standard barrier: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (7) Openings. The employer must ensure that each employee on a walking-working surface near an opening, including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches (99 cm) above that walking-working surface and the outside bottom edge of the opening is 4 feet (1.2 m) or more above a lower level is protected from falling by the use of: (i) Guardrail systems; (ii) Safety net systems; (iii) Travel restraint systems; or, (iv) Personal fall arrest systems. Toeboard: 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.
(5) Where there is a hazard of materials falling through a wall hole, where the lower edge of the near side of the hole is less than 4 inches above the floor, and where the far side of the hole is more than 4 feet above the next lower level, the hole shall be protected by a standard toeboard or an enclosing screen either of solid construction or as specified in R 408.10233 and R 408.10237.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (c) Protection from falling objects. When an employee is exposed to falling objects, the employer must ensure that each employee wears head protection that meets the requirements of subpart I of this part. In addition, the employer must protect employees from falling objects by implementing one or more of the following: (1) Erecting toeboards, screens, or guardrail systems to prevent objects from falling to a lower level; (2) Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or (3) Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (i) Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect employees below.

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(6) If a wall hole has an unrestricted height of 48 inches or more, is more than 12 inches in width, the near side is less than 42 inches above the floor level, and the far side of the hole is more than 4 feet above the next lower level, the hole shall be protected to the height of a standard barrier.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (7) Openings. The employer must ensure that each employee on a walking-working surface near an opening, including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches (99 cm) above that walking-working surface and the outside bottom edge of the opening is 4 feet (1.2 m) or more above a lower level is protected from falling by the use of: (i) Guardrail systems; (ii) Safety net systems; (iii) Travel restraint systems; or, (iv) Personal fall arrest systems. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (1) The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D-11 of this section).
(7) Where a stairway or ladder landing ends in direct proximity to hazards, detour guards shall be installed or used to protect employees against contact with such hazards.	1910.22 GENERAL REQUIREMENTS (c) Access and egress. The employer must provide, and ensure each employee uses, a safe means of access and egress to and from walking-working surfaces. Note: the hazard would dictate the applicable rule. For example, if it is a fall hazard into dangerous equipment, the applicable rule is 1910.28(b)(6)(i) and(ii). If it is a fall hazard from an unprotected side or edge, the applicable rule is 1910.28(b)(1).
R 408.10219 Open tanks or vats. Rule 219. When the top of an open tank or vat that contains a hazardous substance is less than 36 inches from the floor, platform, or ground level and is not otherwise guarded to prevent an employee from falling into a tank or vat, it shall have a barrier erected to a height of not less than 36 inches above the floor, platform, or ground level on all exposed sides.	1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (6) Dangerous equipment. The employer must ensure: (i) Each employee less than 4 feet (1.2 m) above dangerous equipment is protected from falling into or onto the dangerous equipment by a guardrail system or a travel restraint system, unless the equipment is covered or guarded to eliminate the hazard. (ii) Each employee 4 feet (1.2 m) or more above dangerous equipment must be protected from falling by: (A) Guardrail systems; (B) Safety net systems; (C) Travel restraint systems; or (D) Personal fall arrest systems.
R 408.10220 Access to other elevations. Rule 220. (1) One of the following shall be used to gain access to another elevation of more than 16 inches: (a) Flight of stairs. (b) Fixed industrial stairs. (c) Ramp. (d) Fixed ladder. (e) A portable ladder, as prescribed in the occupational safety standards commission standard, Part 4. Portable Ladders, being R 408.10401 to R 408.10456 of the Michigan Administrative Code, may be used for temporary access to another elevation.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (7) Standard stairs are used to provide access from one walking-working surface to another when operations necessitate regular and routine travel between levels, including access to operating platforms for equipment. Winding stairways may be used on tanks and similar round structures when the diameter of the tank or structure is at least 5 feet (1.5 m).

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(2) After the effective date of this part, a winding stairway shall not be installed except for limited usage or secondary access. A winding stair may be installed on a tank or other round structure with a diameter of not less than 5 feet.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (7) Standard stairs are used to provide access from one walking-working surface to another when operations necessitate regular and routine travel between levels, including access to operating platforms for equipment. <u>Winding stairways</u> may be used on tanks and similar round structures when the diameter of the tank or structure is at least 5 feet (1.5 m).																																										
R 408.10221 Stairway railings and guards. Rule 221. (1) A stairway having 4 or more risers shall be equipped with handrails, as specified in R 408.10235 and R 408.10236, or a stair railing, as specified in R 408.10233 to R 408.10236, as follows: (a) On a stairway less than 44 inches wide, having both sides enclosed, at least 1 handrail, preferably on the right side when descending. (b) On a stairway less than 44 inches wide, having 1 side open, at least 1 stair railing on the open side. (c) On a stairway less than 44 inches wide, having both sides open, 1 stair railing on each side. (d) On a stairway 44 or more inches wide, but less than 88 inches wide, 1 handrail on each enclosed side and 1 stair railing on each open side. (e) On a stairway 88 or more inches wide, 1 handrail on each enclosed side, 1 stair railing on each open side, and 1 intermediate stair railing located approximately midway of the width.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (1) Handrails, stair rail systems, and guardrail systems are provided in accordance with § 1910.28. 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (11) Stairways. The employer must ensure: (ii) Each flight of stairs having at least 3 treads and at least 4 risers is equipped with stair rail systems and handrails as follows: <table><tr><th colspan="6">TABLE D-2 STAIRWAY HANDRAIL REQUIREMENTS</th></tr><tr><th>Stair Width</th><th>Enclosed</th><th>One Open Side</th><th>Two Open Sides</th><th colspan="2">With Earth Built Up on Both Sides</th></tr><tr><td>Less than 44 inches (1.1 m)</td><td>At least one handrail</td><td>One stair rail system with handrail on open side</td><td>One stair rail system each open side</td><td></td><td></td></tr><tr><td>44 Inches (1.1 m) to 88 inches (2.2 m)</td><td>One handrail on each enclosed side</td><td>One stair rail system with handrail on open side and one handrail on enclosed side</td><td>One stair rail system with handrail on each open side</td><td></td><td></td></tr><tr><td>Greater than 88 inches (2.2 m)</td><td>One handrail on each enclosed side and one intermediate handrail located in the middle of the stair</td><td>One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair</td><td>One side rail system with handrail on each open side and one intermediate handrail located in the middle of the stair</td><td></td><td>One handrail on at least one side</td></tr><tr><td>Exterior stairs less than 44 inches (1.1 m)</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td colspan="6">Note to Table: The width of the stair must be clear of all obstructions except handrails.</td></tr></table>	TABLE D-2 STAIRWAY HANDRAIL REQUIREMENTS						Stair Width	Enclosed	One Open Side	Two Open Sides	With Earth Built Up on Both Sides		Less than 44 inches (1.1 m)	At least one handrail	One stair rail system with handrail on open side	One stair rail system each open side			44 Inches (1.1 m) to 88 inches (2.2 m)	One handrail on each enclosed side	One stair rail system with handrail on open side and one handrail on enclosed side	One stair rail system with handrail on each open side			Greater than 88 inches (2.2 m)	One handrail on each enclosed side and one intermediate handrail located in the middle of the stair	One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair	One side rail system with handrail on each open side and one intermediate handrail located in the middle of the stair		One handrail on at least one side	Exterior stairs less than 44 inches (1.1 m)						Note to Table: The width of the stair must be clear of all obstructions except handrails.					
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(2) A winding stairway shall be equipped with a handrail offset to prevent walking on portions of the treads having a width of less than 6 inches. A winding stairway existing at the effective date of this rule is exempted from this requirement. Future alterations shall comply with this rule.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (9) When paragraph (b)(8) of this section allows the use of spiral, ship, or alternating tread type stairs, they are installed, used, and maintained in accordance with																																										

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	manufacturer's instructions.																																													
R 408.10223 Stairway slopes, treads, and risers.																																														
Rule 223. (1) A stairway or a fixed industrial stair shall not have a slope of more than 50 degrees or less than 30 degrees from the horizontal, except as prescribed in R 408.10228. Where the slope is less than 18 degrees, a ramp shall be used. Where the slope is more than 75 degrees, a fixed or portable ladder shall be used.	1910.25 STAIRWAYS (c) Standard stairs. In addition to paragraph (b) of this section, the employer must ensure standard stairs. (1) Are installed at angles between 30 to 50 degrees from the horizontal.																																													
(2) Each tread and riser shall be of uniform dimensions in each flight. The minimum tread run shall not be less than 8 inches. The sum of the tread run and riser shall be a minimum of 17 inches or a maximum of 18 inches. Tread run does not include the nosing.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (3) Stairs have uniform riser heights and tread depths between landings.; (c) Standard stairs. In addition to paragraph (b) of this section, the employer must ensure standard stairs: (2) Have a maximum riser height of 9.5 inches (24 cm); (3) Have a minimum tread depth of 9.5 inches (24 cm).																																													
(3) A stairway that exists on November 15, 1969, is exempt from this rule. Stairway alterations after November 15, 1969, shall comply with this rule.	1910.25 STAIRWAYS (c) Standard stairs. (5) Exception to paragraphs (c)(2) and (3) of this section. The requirements of paragraphs (c)(2) and (3) do not apply to standard stairs installed prior to January 17, 1017. OSHA will deem those stairs in compliance if they meet the dimension requirements specified in Table D-1 of this section or they use a combination that achieves the angle requirements of paragraph (c)(1) of this section. <table><tr><th colspan="3">Table D-1 STAIRWAY RISE AND TREAD DIMENSIONS</th></tr><tr><th>Angle to horizontal</th><th>Rise (in inches)</th><th>Tread run (in inches)</th></tr><tr><td>30 degree 35 feet</td><td>6 1/2</td><td>11</td></tr><tr><td>32 degree 8 feet</td><td>6 3/4</td><td>10 3/4</td></tr><tr><td>33 degree 41 feet</td><td>7</td><td>10 1/2</td></tr><tr><td>35 degree 16 feet</td><td>7 1/4</td><td>10 1/4</td></tr><tr><td>36 degree 52 feet</td><td>7 1/2</td><td>10</td></tr><tr><td>38 degree 29 feet</td><td>7 3/4</td><td>9 3/4</td></tr><tr><td>40 degree 8 feet</td><td>8</td><td>9 1/2</td></tr><tr><td>41 degree 44 feet</td><td>8 1/4</td><td>9 1/4</td></tr><tr><td>43 degree 22 feet</td><td>8 1/2</td><td>9</td></tr><tr><td>45 degree 00 feet</td><td>8 3/4</td><td>8 3/4</td></tr><tr><td>46 degree 38 feet</td><td>9</td><td>8 1/2</td></tr><tr><td>48 degree 16 feet</td><td>9 1/4</td><td>8 1/4</td></tr><tr><td>49 degree 54 feet</td><td>9 1/2</td><td>8</td></tr></table>	Table D-1 STAIRWAY RISE AND TREAD DIMENSIONS			Angle to horizontal	Rise (in inches)	Tread run (in inches)	30 degree 35 feet	6 1/2	11	32 degree 8 feet	6 3/4	10 3/4	33 degree 41 feet	7	10 1/2	35 degree 16 feet	7 1/4	10 1/4	36 degree 52 feet	7 1/2	10	38 degree 29 feet	7 3/4	9 3/4	40 degree 8 feet	8	9 1/2	41 degree 44 feet	8 1/4	9 1/4	43 degree 22 feet	8 1/2	9	45 degree 00 feet	8 3/4	8 3/4	46 degree 38 feet	9	8 1/2	48 degree 16 feet	9 1/4	8 1/4	49 degree 54 feet	9 1/2	8
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R 408.10227 Fixed industrial stairs and platforms.																																														
Rule 227. (1) A fixed industrial stair shall have:																																														
(a) Design and construction to carry a load of not less than 5 times the normal live load, but never less than 1,000 pounds.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (6) Each stair can support at least five times the normal anticipated live load, but never less than a concentrated load of 1,000 pounds (454 kg) applied at any point.																																													
(b) A minimum width of 22 inches.	1910.25 STAIRWAYS (c) Standard stairs. In addition to paragraph (b) of this section, the employer must ensure standard stairs: (4) Have a minimum width of 22 inches (56 cm) between vertical barriers (see Figure D-8 of this section).																																													
(c) A vertical clearance of not less than 7 feet from any tread nose to an overhead object. Projections such as pipes, raceways, air ducts, or fixtures between 5 and 7 feet above the tread nose are permissible if guarded and marked.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (2) Vertical clearance above any stair tread to any overhead obstruction is at least 6 feet, 8 inches (203 cm), as measured from the leading edge of the tread. Spiral stairs must meet the vertical clearance requirements in paragraph (d)(3) of this section.																																													
(d) The tread and riser as prescribed in subrule (2) of R 408.10223. A tread shall have a slip-resistant surface.	Note: the new federal rules eliminate the requirement for slip-resistant surfaces on stairs because OSHA believes the requirement is unnecessary if employers																																													

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)
	meet the requirement to maintain stairs free of slip hazards in 1910.22(a)(3). Slip-resistant surfaces: 1910.22 GENERAL REQUIREMENTS (a) Surface conditions. The employer must ensure: (3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice. Tread and riser: 1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (3) Stairs have uniform riser heights and tread depths between landings. (c) Standard stairs. In addition to paragraph (b) of this section, the employer must ensure standard stairs: (2) Have a maximum riser height of 9.5 inches (24 cm); (3) Have a minimum tread depth of 9.5 inches (24 cm).

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)																																										
(2) Where a stair platform is used, its width shall be not less than the width of the stair nor shall its length be less than 30 inches measured in the direction of travel.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (4) Stairway landings and platforms are at least the width of the stair and at least 30 inches (76 cm) in depth, as measured in the direction of travel.																																										
(3) A stair railing with intermediate rail shall be installed on any open side of a fixed industrial stair and platform. A handrail shall be installed on not less than 1 side of a closed fixed industrial stair, preferably on the right descending side. The railing and handrail shall be as prescribed in R 408.10233 and R 408.10236, and shall be installed on stairs of 4 or more risers.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (1) Handrails, stair rail systems, and guardrail systems are provided in accordance with § 1910.28. 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (11) Stairways. The employer must ensure: (ii) Each flight of stairs having at least 3 treads and at least 4 risers is equipped with stair rail systems and handrails as follows: <table><tr><th colspan="6">TABLE D-2 STAIRWAY HANDRAIL REQUIREMENTS</th></tr><tr><th>Stair Width</th><th>Enclosed</th><th>One Open Side</th><th>Two Open Sides</th><th colspan="2">With Earth Built Up on Both Sides</th></tr><tr><td>Less than 44 inches (1.1 m)</td><td>At least one handrail</td><td>One stair rail system with handrail on open side</td><td>One stair rail system each open side</td><td colspan="2"></td></tr><tr><td>44 Inches (1.1 m) to 88 inches (2.2 m)</td><td>One handrail on each enclosed side</td><td>One stair rail system with handrail on open side and one handrail on enclosed side</td><td>One stair rail system with handrail on each open side</td><td colspan="2"></td></tr><tr><td>Greater than 88 inches (2.2 m)</td><td>One handrail on each enclosed side and one intermediate handrail located in the middle of the stair</td><td>One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair</td><td>One side rail system with handrail on each open side and one intermediate handrail located in the middle of the stair</td><td colspan="2"></td></tr><tr><td>Exterior stairs less than 44 inches (1.1 m)</td><td></td><td></td><td></td><td colspan="2">One handrail on at least one side</td></tr><tr><td colspan="6">Note to Table: The width of the stair must be clear of all obstructions except handrails.</td></tr></table>	TABLE D-2 STAIRWAY HANDRAIL REQUIREMENTS						Stair Width	Enclosed	One Open Side	Two Open Sides	With Earth Built Up on Both Sides		Less than 44 inches (1.1 m)	At least one handrail	One stair rail system with handrail on open side	One stair rail system each open side			44 Inches (1.1 m) to 88 inches (2.2 m)	One handrail on each enclosed side	One stair rail system with handrail on open side and one handrail on enclosed side	One stair rail system with handrail on each open side			Greater than 88 inches (2.2 m)	One handrail on each enclosed side and one intermediate handrail located in the middle of the stair	One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair	One side rail system with handrail on each open side and one intermediate handrail located in the middle of the stair			Exterior stairs less than 44 inches (1.1 m)				One handrail on at least one side		Note to Table: The width of the stair must be clear of all obstructions except handrails.					
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(4) A flight of stairs installed after the effective date of this rule shall consist of not more than a 12-foot continuous rise. An intermediate platform as prescribed in subrule (2) shall be used to provide relief where more than a 12-foot rise is necessary to reach the next level.	Note: the old MIOSHA rule is duplicative of the Michigan Building Code. According to the LARA Bureau of Construction Codes, the Michigan Building Code requires a landing after 12 feet of vertical stair rise.																																										
R 408.10228 Alternating tread type fixed industrial stair.																																											
Rule 228. (1) An alternating tread type fixed industrial stair shall have a series of treads or steps attached to a center support rail in an alternating manner so that a user of the	1910.21 SCOPE AND DEFINITIONS (b) Definitions. The following definitions apply in this subpart:																																										

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)
stairs does not have both feet at the same level at the same time. The center support rail shall be installed at an angle of between 50 and 70 degrees from the horizontal.	Alternating tread-type stair means a type of stairway consisting of a series of treads that usually are attached to a center support in an alternating manner such that an employee typically does not have both feet on the same level while using the stairway. 1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (8) Spiral, ship, or alternating tread-type stairs are used only when the employer can demonstrate that it is not feasible to provide standard stairs. (f) Alternating tread-type stairs. In addition to paragraph (b) of this section, the employer must ensure alternating tread-type stairs: (1) Have a series of treads installed at a slope of 50 to 70 degrees from the horizontal.

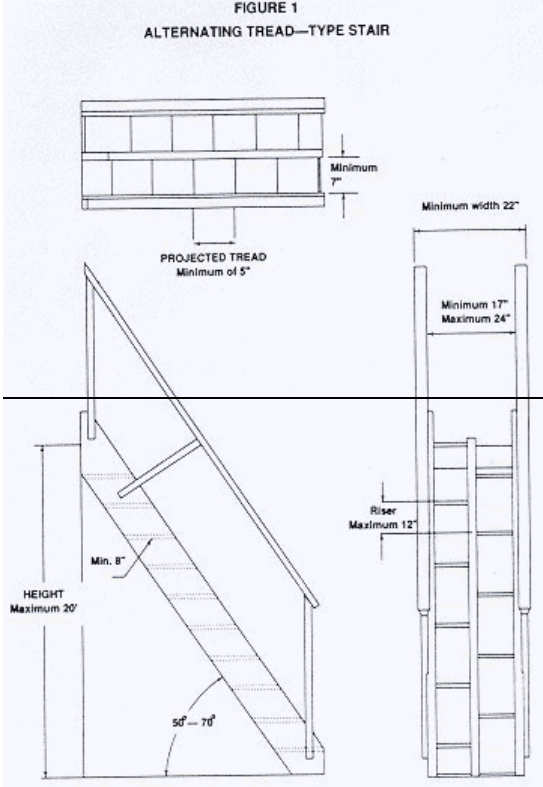
OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)																																			
(2) Stair rails shall be provided on both sides of alternating tread type stairs and be of such a configuration to provide an adequate handhold for an employee who grasps the rail or rails to avoid falling.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (1) Handrails, stair rail systems, and guardrail systems are provided in accordance with § 1910.28. 1910.28 DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION (b) Protection from fall hazards. (11) Stairways. The employer must ensure: (ii) Each flight of stairs having at least 3 treads and at least 4 risers is equipped with stair rail systems and handrails as follows: <table><tr><th colspan="5">TABLE D-2 STAIRWAY HANDRAIL REQUIREMENTS</th></tr><tr><th>Stair Width</th><th>Enclosed</th><th>One Open Side</th><th>Two Open Sides</th><th>With Earth Built Up on Both Sides</th></tr><tr><td>Less than 44 inches (1.1 m)</td><td>At least one handrail</td><td>One stair rail system with handrail on open side</td><td>One stair rail system each open side</td><td></td></tr><tr><td>44 Inches (1.1 m) to 88 inches (2.2 m)</td><td>One handrail on each enclosed side</td><td>One stair rail system with handrail on open side and one handrail on enclosed side</td><td>One stair rail system with handrail on each open side</td><td></td></tr><tr><td>Greater than 88 inches (2.2 m)</td><td>One handrail on each enclosed side and one intermediate handrail located in the middle of the stair</td><td>One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair</td><td>One side rail system with handrail on each open side and one intermediate handrail located in the middle of the stair</td><td></td></tr><tr><td>Exterior stairs less than 44 inches (1.1 m)</td><td></td><td></td><td></td><td>One handrail on at least one side</td></tr><tr><td colspan="5">Note to Table: The width of the stair must be clear of all obstructions except handrails.</td></tr></table> (iii) Each ship stairs and alternating tread type stairs is equipped with handrails on both sides.	TABLE D-2 STAIRWAY HANDRAIL REQUIREMENTS					Stair Width	Enclosed	One Open Side	Two Open Sides	With Earth Built Up on Both Sides	Less than 44 inches (1.1 m)	At least one handrail	One stair rail system with handrail on open side	One stair rail system each open side		44 Inches (1.1 m) to 88 inches (2.2 m)	One handrail on each enclosed side	One stair rail system with handrail on open side and one handrail on enclosed side	One stair rail system with handrail on each open side		Greater than 88 inches (2.2 m)	One handrail on each enclosed side and one intermediate handrail located in the middle of the stair	One stair rail system with handrail on open side, one handrail on enclosed side, and one intermediate handrail located in the middle of the stair	One side rail system with handrail on each open side and one intermediate handrail located in the middle of the stair		Exterior stairs less than 44 inches (1.1 m)				One handrail on at least one side	Note to Table: The width of the stair must be clear of all obstructions except handrails.				
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(3) A minimum distance of 6 inches shall be provided between the stair rail and any other object.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure: (2) Finger clearance. The minimum clearance between handrails and any other object is 2.25 inches (5.7 cm).																																			
(4) A minimum of 12 inches shall be provided between the stair rails of an adjacent alternating tread type stair.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (8) Spiral, ship, or alternating tread-type stairs are used only when the employer can demonstrate that it is not feasible to provide standard stairs. (9) When paragraph (b)(8) of this section allows the use of																																			

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)
	spiral, ship, or alternating tread-type stairs, they are installed, used, and maintained in accordance with manufacturer's instructions.
(5) An alternating tread-type stair shall comply with all of the following provisions:	
(a) Be designed and constructed to carry a load which is not less than 5 times the normal live load, but not less than 1,000 pounds.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (6) Each stair can support at least five times the normal anticipated live load, but never less than a concentrated load of 1,000 pounds (454 kg) applied at any point.
(b) Have a minimum overall width of 22 inches.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (8) Spiral, ship, or alternating tread-type stairs are used only when the employer can demonstrate that it is not feasible to provide standard stairs. (9) When paragraph (b)(8) of this section allows the use of spiral, ship, or alternating tread-type stairs, they are installed, used, and maintained in accordance with manufacturer's instructions.
(c) Have a minimum width of 17 inches, not to exceed 24 inches between the handrails.	1910.25 STAIRWAYS (f) Alternating tread-type stairs. In addition to paragraph (b) of this section, the employer must ensure alternating tread-type stairs: (2) Have a distance between handrails of 17 to 24 inches (51 to 61 cm).
(d) Each tread of an alternating tread-type stair shall have all of the following:	
(i) A minimum overall length of 8 inches.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (8) Spiral, ship, or alternating tread-type stairs are used only when the employer can demonstrate that it is not feasible to provide standard stairs. (9) When paragraph (b)(8) of this section allows the use of spiral, ship, or alternating tread-type stairs, they are installed, used, and maintained in accordance with manufacturer's instructions. 1910.25 STAIRWAYS (f) Alternating tread-type stairs. In addition to paragraph (b) of this section, the employer must ensure alternating tread-type stairs: (3) Have a minimum tread depth of 8.5 inches (22 cm); (4) Have open risers if the tread depth is less than 9.5 inches (24 cm); (5) Have a minimum tread width of 7 inches (18 cm), measured at the leading edge of the tread (i.e., nosing).
(ii) A minimum width of 7 inches at the nose.	
(iii) A maximum rise of 12 inches to the next tread surface of the alternating tread.	
(iv) A minimum of 5 inches of projected tread surface between consecutive treads. This projected distance shall be measured horizontally between the noses on consecutive stairs.	
(v) A slip-resistant surface.	
	Note: the new federal rules eliminate the requirement for slip-resistant surfaces on stairs because OSHA believes the requirement is unnecessary if employers meet the requirement to maintain stairs free of slip hazards in 1910.22(a)(3). 1910.22 GENERAL REQUIREMENTS (a) Surface conditions. The employer must ensure: (3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.
(e) Have a vertical clearance of not less than 7 feet from any tread nose to an overhead object. Projections such as pipes, raceways, air ducts, or fixtures between 5 and 7 feet above a tread nose are permissible if guarded and marked.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (2) Vertical clearance above any stair tread to any overhead obstruction is at least 6 feet, 8 inches (203 cm), as measured from the leading edge of the tread. Spiral stairs must meet the vertical clearance requirements in paragraph (d)(3) of this section.
(6) Where a stair platform or landing is used, its width shall not be less than the width of the stair or less than 30 inches in length measured in the direction of travel. The initial tread of the stair shall begin at the same elevation as the platform or landing.	1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (4) Stairway landings and platforms are at least the width of the stair and at least 30 inches (76 cm) in depth, as measured in the direction of travel.

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OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)
(7) A flight of alternating tread-type stairs shall consist of not more than a 20-foot continuous riser. An intermediate platform, as prescribed in subrule (6) of this rule, shall be used to provide relief where more than a 20-foot rise is necessary to reach the next level. (8) An example of an alternating tread-type stair is shown as follows: Figure for R 408.10228 	Note: the old MIOSHA rule is duplicative of the Michigan Building Code. According to the LARA Bureau of Construction Codes, the Michigan Building Code requires a landing after 12 feet of vertical stair rise. 1910.25 STAIRWAYS (b) General requirements. The employer must ensure: (8) Spiral, ship, or alternating tread-type stairs are used only when the employer can demonstrate that it is not feasible to provide standard stairs. (9) When paragraph (b)(8) of this section allows the use of spiral, ship, or alternating tread-type stairs, they are installed, used, and maintained in accordance with manufacturer's instructions.
R 408.10230 Removable standard barrier specifications. Rule 230. A removable standard barrier may be used in place of a standard barrier if the removable standard barrier, and any component thereof, is capable of withstanding a load of not less than 200 pounds applied in any direction, except vertically upward when a minimum lift of 6 inches is required for removal.	Note: the new federal standards do not have separate specifications for removable standard barriers. The requirements of guardrail systems apply to fixed and removable standard barriers. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (3) Guardrail systems are capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied in a downward or outward direction within 2 inches (5 cm) of the top edge, at any point along the top rail. (4) When the 200-pound (890-N) test load is applied in a downward direction, the top rail of the guardrail system must not deflect to a height of less than 39 inches (99 cm) above the walking-working surface.
R 408.10231 Standard barrier specifications. Rule 231. (1) A standard barrier shall consist of a vertical barrier that extends not less than 42 inches above the floor, ramp, platform, runway, or other walking or working surface. A standard barrier that is installed before August 29, 1973, to a height of not less than 36 inches is exempt from the 42-inch requirement, except that all future alterations shall comply with the 42-inch requirement.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (1) The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D-11 of this section).

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS -- COMPARISON TO NEW RULES

OLD GI PART 2, FLOOR AND WALL OPENINGS, STAIRWAYS AND SKYLIGHTS (RESCINDED)	NEW GI PART 2, WALKING-WORKING SURFACES (EFFECTIVE FEBRUARY 2, 2018)
(2) The top of a standard barrier used as a handrail or a stair rail shall have a smooth surface.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (6) Guardrail systems are smooth-surfaced to protect employees from injury, such as punctures or lacerations, and to prevent catching or snagging of clothing. (f) Handrails and stair rail systems. The employer must ensure: (3) Surfaces. Handrails and stair rail systems are smooth-surfaced to protect employees from injury, such as punctures or lacerations, and to prevent catching or snagging of clothing.
(3) The anchoring and framing of all members of a standard barrier shall be constructed so that the completed barrier is capable of withstanding a load of not less used between the top rail and than 200 pounds applied in any direction at any point. (4) Where a standard barrier is likely to receive heavy stresses from crowds, trucking, or materials, the standard barrier shall be constructed to withstand these loads.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (3) Guardrail systems are capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied in a downward or outward direction within 2 inches (5 cm) of the top edge, at any point along the top rail. (4) When the 200-pound (890-N) test load is applied in a downward direction, the top rail of the guardrail system must not deflect to a height of less than 39 inches (99 cm) above the walking-working surface. (5) Mid-rails, screens, mesh, intermediate vertical members, solid panels, and other equivalent intermediate members are capable of withstanding, without failure, a force of at least 150 pounds (667 N) applied in any downward or outward direction at any point along the intermediate member.
(5) A standard barrier shall not have protruding objects or sharp edges which might be hazardous.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (6) Guardrail systems are smooth-surfaced to protect employees from injury, such as punctures or lacerations, and to prevent catching or snagging of clothing.
(6) If a rail-type system is used as a standard barrier, all of the following requirements shall be complied with:	
(a) The barrier shall consist of a top rail, intermediate rail or rails, and supporting posts.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (1) The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D 11 of this section). (2) Mid rails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members are installed between the walking working surface and the top edge of the guardrail system as follows when there is not a wall or parapet that is at least 21 inches (53 cm) high: (i) Mid rails are installed at a height midway between the top edge of the guardrail system and the walking working surface; (ii) Screens and mesh extend from the walking working surface to the top rail and along the entire opening between top rail supports; (iii) Intermediate vertical members (such as balusters) are installed no more than 19 inches (48 cm) apart; and (iv) Other equivalent intermediate members (such as additional mid rails and architectural panels) are installed so that the openings are not more than 19 inches (48 cm) wide.
(b) The top rail shall be located not less than 42 inches above the floor, ramp, platform, runway, or other walking or working surface, except as provided in subrule (1) of	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure

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this rule.	guardrail systems meet the following requirements: (1) The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D-11 of this section).
(c) The top rail shall not overrun the terminal posts unless the overrun is not a hazard.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (7) The ends of top rails and mid-rails do not overhang the terminal posts, except where the overhang does not pose a projection hazard for employees.
(d) The intermediate rail shall be located halfway between the top rail and the floor, ramp, platform, runway, or other walking or working surface. If the distance between the top rail and the intermediate rail would be more than 24 inches, additional intermediate rails shall be installed to assure that the distances between the intermediate rails, the lowest intermediate rail and the walking or working surface, and the highest intermediate rail and the top rail are not more than 24 inches. (e) Screen, paneling, or other equivalent material of sufficient strength to meet the requirements of subrule (3) of this rule may be used between the top rail and the walking or working surface.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (2) Midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members are installed between the walking-working surface and the top edge of the guardrail system as follows when there is not a wall or parapet that is at least 21 inches (53 cm) high: (i) Midrails are installed at a height midway between the top edge of the guardrail system and the walking-working surface; (ii) Screens and mesh extend from the walking-working surface to the top rail and along the entire opening between top rail supports; (iii) Intermediate vertical members (such as balusters) are installed no more than 19 inches (48 cm) apart; and (iv) Other equivalent intermediate members (such as additional midrails and architectural panels) are installed so that the openings are not more than 19 inches (48 cm) wide. (3) Guardrail systems are capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied in a downward or outward direction within 2 inches (5 cm) of the top edge, at any point along the top rail. (5) Mid rails, screens, mesh, intermediate vertical members, solid panels, and other equivalent intermediate members are capable of withstanding, without failure, a force of at least 150 pounds (667 N) applied in any downward or outward direction at any point along the intermediate member.
R 408.10232 Temporary barriers.	
Rule 232. (1) A temporary barrier shall consist of a free-standing frame or stanchions 42 inches high with top and midrail of 2 x 4's, pipe, rope, or chain.	Note: the new federal standards do not have separate requirements for temporary barriers. They have the same requirements for guardrails whether they are permanent or temporary. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (1) The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3 inches (8 cm), above the walking-working surface. The top edge height may exceed 45 inches (114 cm), provided the guardrail system meets all other criteria of paragraph (b) of this section (see Figure D-11 of this section). (2) Mid-rails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members are installed between the walking-working surface and the top edge of the guardrail system as follows when there is not a wall or parapet that is at least 21 inches (53 cm) high: (i) Mid-rails are installed at a height midway between the top edge of the guardrail system and the walking-working surface; (ii) Screens and mesh extend from the walking-working

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	surface to the top rail and along the entire opening between top rail supports; (iii) Intermediate vertical members (such as balusters) are installed no more than 19 inches (48 cm) apart; and (iv) Other equivalent intermediate members (such as additional mid-rails and architectural panels) are installed so that the openings are not more than 19 inches (48 cm) wide. (8) Steel banding and plastic banding are not used for top rails or mid rails. (9) Top rails and mid rails are at least 0.25 inches (0.6 cm) in diameter or in thickness.
(2) A temporary barrier shall be identified by a warning device including, but not limited to, a light, flags, or colors to warn persons of a hazardous area.	Note: the new federal standards have no separate requirements for temporary barriers.
R 408.10233 Stair railing and toeboard specifications.	
Rule 233. (1) A stair railing shall be constructed in a similar manner to a standard barrier as required in R 408.10231, but the vertical height shall be not more than 34 inches nor less than 30 inches from the upper surface of the top rail to the surface of the tread in line with the face of the riser. The 34-inch requirement is modified to 38 inches for a stair railing that exists on November 15, 1969.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure: (1) Height criteria. (ii) The height of stair rail systems meets the following: (A) The height of stair rail systems installed before January 17, 2017 is not less than 30 inches (76 cm) from the leading edge of the stair tread to the top surface of the top rail; and (B) The height of stair rail systems installed on or after January 17, 2017 is not less than 42 inches (107 cm) from the leading edge of the stair tread to the top surface of the top rail.
(2) A standard toeboard shall be not less than 4 inches in vertical height from its top edge to the level of the walking or working surface. A toeboard shall be securely fastened in place with not more than 1/4 of an inch of clearance above the level of the walking or working surface. The toeboard shall be constructed of solid material or material that has openings that are not more than 1 inch in their greatest dimension.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (1) The employers must ensure toeboards used for falling object protection: (ii) Have a minimum vertical height of 3.5 inches (9 cm) as measured from the top edge of the toeboard to the level of the walking-working surface. (iii) Do not have more than a 0.25-inch (0.5-cm) clearance or opening above the walking-working surface. (iv) Are solid or do not have any opening that exceeds 1 inch (3 cm) at its greatest dimension. (v) Have a minimum height of 2.5 inches (6 cm) when used around vehicle repair, service, or assembly pits. Toeboards may be omitted around vehicle repair, service, or assembly pits when the employer can demonstrate that a toeboard would prevent access to a vehicle that is over the pit.
(3) Where material or tools are piled to such a height that a standard toeboard does not keep the material or tools from falling, paneling, screening, or other equivalent material shall be provided between the toeboard and the intermediate rail or the top rail or to a height necessary to retain the materials or tools. If the additional paneling, screening, or other equivalent material does not have openings of more than 1 inch in their greatest dimension, the standard toeboard may be eliminated.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (k) Protection from falling objects. (2) The employer must ensure: (i) Where tools, equipment, or materials are piled higher than the top of the toeboard, paneling or screening is installed from the toeboard to the midrail of the guardrail system and for a length that is sufficient to protect employees below. If the items are piled higher than the midrail, the employer also must install paneling or screening to the top rail and for a length that is sufficient to protect employees below; and (ii) All openings in guardrail systems are small enough to prevent objects from falling through the opening. Note: unlike the old GI Part 2, the new federal standards give no exemption from toeboards if there is paneling, screening, or other equivalent material.
R 408.10235 Handrail specifications.	
Rule 235. (1) A handrail shall consist of a lengthwise member that is mounted on a wall or partition in a manner which does not obstruct a smooth surface along the top and both sides of the handrail. The handrail shall be of a	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure:

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configuration that will furnish an adequate handhold for a person grasping it to avoid falling. The ends of the handrail shall be arranged so as not to constitute a hazard.	(3) Surfaces. Handrails and stair rail systems are smooth-surfaced to protect employees from injury, such as punctures or lacerations, and to prevent catching or snagging of clothing. (5) Handhold. Handrails have the shape and dimension necessary so that employees can grasp the handrail firmly. (6) Projection hazards. The ends of handrails and stair rail systems do not present any projection hazards.
(2) The handrail shall be not more than 34 inches and not less than 30 inches in height from the upper surface of the handrail vertically to the surface of the tread in line with the face of the riser or to the surface of the ramp. The 34-inch requirement is modified to 38 inches for a handrail that exists on November 15, 1969.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure: (1) Height criteria. (i) Handrails are not less than 30 inches (76 cm) and not more than 38 inches (97 cm), as measured from the leading edge of the stair tread to the top surface of the handrail (see Figure D-12 of this section). (ii) The height of stair rail systems meets the following: (A) The height of stair rail systems installed before January 17, 2017 is not less than 30 inches (76 cm) from the leading edge of the stair tread to the top surface of the top rail; and (B) The height of stair rail systems installed on or after January 17, 2017 is not less than 42 inches (107 cm) from the leading edge of the stair tread to the top surface of the top rail. (iii) The top rail of a stair rail system may serve as a handrail only when: (A) The height of the stair rail system is not less than 36 inches (91 cm) and not more than 38 inches (97 cm) as measured at the leading edge of the stair tread to the top surface of the top rail (see Figure D-13 of this section); and (B) The top rail of the stair rail system meets the other handrail requirements in paragraph (f) of this section.
(3) A handrail shall be of such size and so mounted that the completed structure is capable of withstanding a load of not less than 200 pounds applied in any direction at any point on the rail.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure: (7) Strength criteria. Handrails and the top rails of stair rail systems are capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied in any downward or outward direction within 2 inches (5 cm) of any point along the top edge of the rail.
R 408.10236 Clearance for handrail and stair railings.	
Rule 236. (1) A handrail, stair railing, and the top of a standard barrier used as a railing shall be provided with a clearance of not less than 1 1/2 inches between the handrail or railing and any other object.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure: (2) Finger clearance. The minimum clearance between handrails and any other object is 2.25 inches (5.7 cm).
(2) A handrail or stair railing that exists before the effective date of this part may have a clearance of not less than 1 1/4 inches between the handrail or stair railing and any other object.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (f) Handrails and stair rail systems. The employer must ensure: (2) Finger clearance. The minimum clearance between handrails and any other object is 2.25 inches (5.7 cm).
R 408.10237 Wall opening grab handles and screens.	
Rule 237. (1) A wall opening grab handle shall be not less than 12 inches in length and shall be mounted to give not less than 3 inches of clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle shall be such that the completed structure is capable of withstanding a load of not less than 200 pounds applied in any direction at any point on the handle.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (l) Grab handles. The employer must ensure each grab handle: (1) Is not less than 12 inches (30 cm) long; (2) Is mounted to provide at least 3 inches (8 cm) of clearance from the framing or opening; and (3) Is capable of withstanding a maximum horizontal pull-out force equal to two times the maximum intended load or 200 pounds (890 N), whichever is greater.
(2) A grab rail that exists before September 15, 1971, may have a clearance of less than 3 inches, but not less than 1	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES

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1/2 inches, between the grab rail and any other object.	(l) Grab handles. The employer must ensure each grab handle: (2) Is mounted to provide at least 3 inches (8 cm) of clearance from the framing or opening.
(3) A wall opening screen shall be constructed and mounted to withstand a static load of not less than 200 pounds applied horizontally at any point on the screen. The screen may be of solid construction, of grillwork with openings not more than 8 inches long, or of slatwork with openings not more than 4 inches wide and with length unrestricted.	Note: the new federal standards have no equivalent rule for size of openings for screens, grillwork, and slatwork. Instead, screens, grillwork, and slatwork must meet the new performance standard for strength requirements. 1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (b) Guardrail systems. The employer must ensure guardrail systems meet the following requirements: (5) Mid-rails, screens, mesh, intermediate vertical members, solid panels, and other equivalent intermediate members are capable of withstanding, without failure, a force of at least 150 pounds (667 N) applied in any downward or outward direction at any point along the intermediate member.
R 408.10239 Floor opening and floor hole covers.	
Rule 239. (1) A floor opening and floor hole cover shall be of any material or construction that will support at least 3 times the normal load, except that when located in a plant roadway, it shall be designed to carry a truck rear axle load of 24,000 pounds.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (e) Covers. The employer must ensure each cover for a hole in a walking-working surface: (1) Is capable of supporting without failure, at least twice the maximum intended load that may be imposed on the cover at any one time; and (2) Is secured to prevent accidental displacement.
(2) The top of a cover shall be of materials no more slippery than the surrounding floor surface and should be flush with the surface. A cover projection not more than 1 inch above the floor level may be used if all edges are chamfered to an angle with the horizontal of not more than 30 degrees.	1910.22 GENERAL REQUIREMENTS (a) Surface conditions. The employer must ensure: (3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.
(3) Hinges, handles, bolts, or other parts shall be set flush with the floor or cover surface.	1910.22 GENERAL REQUIREMENTS (a) Surface conditions. The employer must ensure: (3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.
R 408.10240 Skylight guards.	
Rule 240. (1) A skylight guard shall be designed and constructed to withstand a 200-pound load that is applied perpendicularly at any 1 area on the screen.	1910.29 FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION—CRITERIA AND PRACTICES (e) Covers. The employer must ensure each cover for a hole in a walking-working surface: (1) Is capable of supporting without failure, at least twice the maximum intended load that may be imposed on the cover at any one time; and (2) Is secured to prevent accidental displacement.
(2) The guard construction shall be of grillwork with openings not more than 4 inches long or slatwork with an opening not more than 2 inches wide with length unrestricted.	
Ordinary loads or impacts shall not deflect the material downward to break the skylight glass.	

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R 408.10241 Maintenance.	
Rule 241. Floors, platforms, stair treads, and landings shall be maintained free of broken, worn, splintered, or loose pieces that would constitute a tripping or falling hazard. Material used for repair of these components shall meet the design strength of the component.	Maintenance: 1910.22 GENERAL REQUIREMENTS (a) Surface conditions. The employer must ensure: (3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice. Strength: 1910.22 GENERAL REQUIREMENTS (b) Loads. The employer must ensure that each walking-working surface can support the maximum intended load for that surface. (d) Inspection, maintenance, and repair. The employer must ensure: (3) When any correction or repair involves the structural integrity of the walking-working surface, a qualified person performs or supervises the correction or repair.