Walking-Working Surfaces Program

Version 1 - 2021

The U-M Walking-Working Surfaces Safety Program is designed to increase the protection of employees exposed to hazards associated with walking-working surfaces. This program covers all walking-working surfaces, which include horizontal and vertical surfaces such as floors, walls, stairs, roofs, ramps, platforms, hoist areas, elevated walkways, as well as also ladders and the use of fall protection systems.

References

- Michigan Occupational Safety and Health Administration (MIOSHA) General Industry Safety and Health Standard Part 2. Walking-Working Surfaces
- MIOSHA General Industry Safety and Health Standard Part 33. Personal Protective Equipment
- MIOSHA General Industry Safety and Health Standard Part 53 Tree Trimming and Removal
- and within the Construction Industry under:
- MIOSHA General Construction Industry Standard Part 6. Personal Protective Equipment,
- MIOSHA General Construction Industry Standard Part 11. Fixed and Portable Ladders
- MIOSHA General Construction Industry Standard Part 45. Fall Protection
- Federal Occupational Safety and Health Administration (OSHA) General Industry, 29 CFR Part 1910 Subpart D Walking-Working Surfaces
- OSHA Construction Industry, 29 CFR Part 1926 Subpart L Scaffolding
- OSHA Construction Industry 29 CFR Part 1926 Subpart M Fall Protection
- OSHA Construction Industry 29 CFR part 1926 Subpart X Stairway and Ladders

17.2 RESPONSIBILITIES

Management

- Train new employees and periodically instruct all of their employees regarding provisions and requirements of this program. Training records shall be kept in accordance with the Safety Training Program.
- Enforce compliance of the Walking-Working Surfaces Program including the use of corrective disciplinary action when required. Compliance shall be enforced by annually evaluating authorized employees' use and knowledge of the program procedures.
- Each supervisor shall ensure that the devices required for compliance with the Walking-Working Program are provided to their employees and meet the requirements outlined within this program.

Employees

- Employees shall comply with the Walking-Working Surfaces Program.
- Employees shall consult with their supervisors or other appropriate knowledgeable management personnel whenever there are any questions regarding their protection.
- Employees shall report any job related injuries or illness to the supervisor and seek prompt medical treatment.

Environment, Health & Safety (EHS)

- Provide technical assistance when called upon and inspect walking-working surfaces as necessary, review and revise the Walking-Working Surfaces Program, and provide training, as necessary.

17.3 GENERAL PROCEDURES

All employees exposed to fall hazards must be trained on the nature, recognition and minimization of those hazards. Only trained and authorized employees shall be allowed install, inspect, operate, maintain, use and disassemble fall protection. As part of a Fall Arrest Rescue Plan, all work using fall arrest shall have at minimum, two employees on site within visual or audible contact with a means to contact emergency services.

All places of employment, passageways, storerooms, service rooms, and walking-working surfaces must be kept in a clean, orderly, and sanitary condition. Each walking-working surface must be able to support the maximum intended load for that surface. Each employee must use a safe means of access and egress to and from walking-working surfaces. Walking-working surfaces must be inspected, regularly and as necessary, and maintained in a safe condition.

17.4 LADDERS

- Ladder rungs, steps, and cleats are parallel, level, and uniformly spaced when the ladder is in position for use.
- Ladders are inspected before initial use in each work shift.
- Employees must face the ladder when climbing up or down it.
- Employees must use at least one hand to grasp the ladder when climbing up and down it.
- Employees must not carry any object or load that could cause the employee to lose balance and fall while climbing up or down the ladder.

Portable Ladders

- Ladders must not be loaded beyond the maximum intended load. The maximum intended load includes the total load (weight and force) of the employee and all tools, equipment, and materials being carried.
- Ladders must only be used only on stable and level surfaces unless they are secured or stabilized to prevent accidental displacement.
- No ladder must be moved, shifted, or extended while an employee is on it.
- The cap (if equipped) and top step of a stepladder are not used as steps.
- Portable ladders used to gain access to an upper landing surface shall have side rails that extend at least 3 feet (0.9 m) above the upper landing surface.
- Ladders must not be placed on boxes, barrels, inside manlifts or other unstable bases to obtain additional height.

Fixed ladders

- Fixed ladders must be capable of supporting their maximum intended load.
- Grab bars or siderails must extend 42 inches (1.1 m) above the access level or landing platforms served by the ladder.
- For existing fixed ladders that extend more than 24 feet (7.3 m) above a lower level, the ladders shall be equipped with a personal fall arrest system, ladder safety system, cage, or well.
- New or replacement (after November 19, 2018) fixed ladders that extend more than 24 feet (7.3 m) above a lower level, shall be equipped with a personal fall arrest system or a ladder safety system.
- After November 18, 2036, all fixed ladders (old and new) must be equipped with a personal fall arrest system or a ladder safety system.

- Each ladder safety system must allow the employee to climb up and down using both hands and not require that the employee continuously hold, push, or pull any part of the system while climbing.

Mobile ladder stands and platforms

- Must meet the requirements of MIOSHA General Industry Standard Part 2, Walking-Working Surfaces.

Step Bolts and Manhole Steps

- Must meet the requirements of MIOSHA General Industry Standard Part 2, Walking-Working Surfaces.

17.5 STAIRWAYS

- Handrails, stair rail systems, and guardrail systems are provided in accordance with MIOSHA General Industry Standard Part 2, Walking-Working Surfaces.
- Each flight of stairs having at least 3 treads and at least 4 risers is equipped with stair rail systems and handrails.
- Stairs must have uniform riser heights and tread depths between landings.
- 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.
- 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 20” (51 cm) before January 17, 2017, and 22” (56 cm) after January 17, 2017.
- Stairs shall be installed at angles between 30 to 50 degrees from the horizontal.
- Each stair shall support at least five times the normal anticipated live load, but never less than a concentrated load of 1,000 pounds.
- The requirements below do not apply to standard stairs installed prior to January 17, 2017. Stairs will be considered in compliance if they meet the dimension requirements specified in Table D-1, MIOSHA General Industry Standard Part 2, Walking-Working Surfaces.
    - Stairs shall have a maximum riser height of 9.5 inches (24 cm).
    - Stairs shall have a minimum tread depth of 9.5 inches (24 cm).
    - Stairs shall have a minimum width of 22 inches (56 cm).

17.6 DOCKBOARDS

- Dockboards must be capable of supporting their maximum intended load.
- Dockboards put into initial service on or after January 17, 2017 must be designed, constructed, and maintained to prevent transfer vehicles from running off the dockboard edge.
- Portable dockboards must be secured by anchoring them in place or using equipment or devices that prevent the dockboard from moving out of a safe position.
- Portable dockboards must be equipped with handholds or other means to permit safe handling of dockboards.
- Measures, such as wheel chocks or sand shoes, must be used to prevent the transport vehicle (e.g. a truck, semitrailer, trailer, or rail car) on which a dockboard is placed, from moving while employees are on the dockboard.

17.7 ROPE DESCENT SYSTEMS

- Rope descent systems must meet the requirements of MIOSHA General Industry Standard Part 2, Walking-Working Surfaces.
- Before any rope descent system is used, the building owner must inform users, in writing that the building owner has identified, tested, certified, and maintained each anchorage so it is capable of supporting at least 5,000 pounds (268 kg), in any direction, for each employee attached. The information must be based on an annual inspection by a qualified person and certification of each anchorage by a qualified person, as necessary, and at least every 10 years.
- Each employee using a rope descent system 4 feet (1.2 m) or more above a lower level is protected from falling by a personal fall arrest system.

17.8 SCAFFOLDS

All scaffolds erected or dismantled will be supported scaffolds. Suspended scaffolds will not be used unless specific prior coordination has been done with EHS. The standard supported scaffolds used will be the fabricated frame type. A different type of scaffold will not be used without specific prior coordination with EHS.

Employees shall not use scaffolding until they have successfully completed the Scaffold User Training. Employees shall not inspect or erect fabricated frame scaffolding unless they have completed the Scaffold Competent Person Basic Fabricated Frame course. **These employees may erect supported scaffold two sections high, not to exceed 10 feet in height.** Only individuals who have completed Scaffold Competent Person Advanced Fabricated Frame, Tube and Clamp, and System training or a qualified contractor may erect fabricated frame scaffold greater than two sections high, and tube and clamp/system and inspect tube and clamp/system scaffolds.

A Scaffold Tagging System will be applied to all scaffolds before use. A Scaffold Tagging System will be applied and adhered to during all phases of scaffold erecting, dismantling and use: **Green Tag**: This scaffold was built to MIOSHA scaffold regulations and this safety program; **Yellow Tag**: This scaffold cannot be equipped with a standard top rail, mid rail and toe board built greater than 6 feet. A personal fall arrest system (PFAS) shall be used. **Red Tag "Do Not Use"**: This scaffold is not complete and not safe for use. Scaffolds being constructed, torn down or which are found to be defective. If there is not a tag on the scaffold, the scaffold shall be considered red tagged and shall not be used.

Do not load scaffolds with loads beyond their capacity to hold safely. Always keep scaffolds a safe working distance from power lines (at least 10 feet). Keep scaffolds clean of debris, excessive amounts of materials or tools, ice, snow, or other slippery materials. Do not allow workers on scaffolds during bad weather or high winds (20 mph recommended) unless assess by a qualified person. Do not use lean-to scaffolds. Do not use ladders, or other similar devices, on scaffolds to increase the working level height of employees. Vertical cross bracing will not be used as a ladder, or to access the working levels of the scaffold. Use control or tag lines to control swinging loads of materials or equipment being lifted to a scaffold with an overhead cable or rope. Stilts shall be used Stilts shall be used only if floors are level and all floor holes are securely covered.

Scaffolds must have fall protection, preferably a guard rail system, whenever the scaffold is built higher than 6 feet. When a guard rail system is not used, a personal fall arrest system must be used. Consult with EHS Rep. to determine a solution when the fall protection methods identified are not feasible or will create a greater hazard.

A hard hat is required during all erecting and dismantling of scaffolds. When there is a falling object hazard from any elevated walking/working surface (including scaffolds), employees will wear a hard hat and one of the following techniques will be used to reduce the falling object hazard:

- Toeboards at least 3.5 inches high will be installed on all elevated walking/working surfaces;
- A canopy of sufficient strength to catch all falling objects will be erected below all elevated walking/working surfaces; or
- A barricade will be built to keep people out of the falling object hazard area.
- Construction of Scaffolds

All supported scaffolds must be capable of supporting 4 times their rated load. Planking will consist of specifically designed hook on platforms or scaffold grade lumber. Lumber planking will extend over the end support at least 6 inches, but not more than 12 inches, unless protected by a guard rail. All scaffold platforms and walkways will be at least 18 inches wide and have guardrails on all sides, unless the work being done or safety considerations preclude it. Personal fall arrest systems must be used when guardrails are not present. Don't coat or cover the surfaces of the planking so as to obscure the surface from inspection. All working levels of scaffolds will be fully planked between the guardrails, unless the work being done or safety considerations preclude it. Any time a scaffold's working level cannot be fully planked, personal fall arrest systems must be worn.

Scaffold components made by different manufacturers will not be mixed together on a single scaffold, unless specifically designed to be interchangeable. Do not physically modify any scaffold components.

Guys, tie offs, and braces shall be installed according to the scaffold manufacturer's recommendations or at the lowest horizontal member closest to the height which is 4 times the smallest base dimension (i.e., just below 4 times the width of the base), and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds 3 feet wide or less, and every 26 feet or less thereafter for scaffolds greater than 3 feet wide. The top guy, tie or brace of completed scaffolds shall be placed no higher than 4 times the smallest base dimension (width) from the top. Such guys, tie offs and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet.

The base of a scaffold will be on a level, rigid surface capable of supporting the weight of the scaffold and its workload, without settling or moving. Unstable objects will not be used as, or to support, a scaffold base or work platform. All legs will be placed on and secured to base plates. All base plates on surfaces not capable of supporting the load shall have mud sills attached.

Erecting, Moving and Dismantling Scaffolds

All scaffold erecting and dismantling activities will be done under the direct supervision of a competent person that has completed the training outlined in this program and has the responsibility and knowledge to take prompt corrective action to eliminate hazards. All scaffolds

must be properly tagged while erection is in process, when erection is completed and prior to use.

All workers erecting, moving or dismantling a scaffold will be experienced and trained in these activities, and protected from falling hazards. This protection will be the best feasible or practical as determined by the competent person in charge of the procedure.

Standard scaffold access methods will be added to the scaffold as soon as safely possible during the erecting process. Diagonal cross bracing will not be used to support workers or as access to the scaffold.

The existing platform where the erectors/dismantlers are working from, will be left in place and fully planked until the next level of vertical posts are placed, braced and fully planked.

Vertical cross bracing will be installed in both directions on both sides of the scaffold, so as to form an "X". Cross bracing will be installed as often as possible and in sufficient amount to ensure the structural integrity of the scaffold. Mobile scaffolds will use horizontal diagonal bracing as needed to ensure structural integrity.

If portable ladders are used to access working levels of a scaffold, they will be secured from moving by tying at the top and bottom of the ladder.

Ladders, hand holds or railings will extend at least 36 inches above the landing where the worker gets off of the ladder or stairs.

Integrated prefabricated scaffold access frames (i.e., the vertical scaffold ends designed to be used as a ladder to climb the scaffold) can act as the access to the working levels of a scaffold as long as the ladder rungs are lined up on the same vertical line, and rest platforms are supplied every 35 feet.

All scaffolds will be inspected by a competent person before each work shift, and after any incident that could affect the structural integrity of the scaffold.

Scaffolds must be fully grounded when electric welding is being done on the scaffold. This grounding must also include possible current pathways through structures the scaffolds is attached to, and any current pathways created through cables or other material/equipment hoisting operations.

Mobile scaffolds will be locked or otherwise secured from moving while occupied, unless all of the following conditions exist:

- The floor or surface is within 3 degrees of level and is free from pits, holes, or obstructions.
- The minimum base dimension of the scaffold when moved is not less than 1/2 of the height.
- The casters are equipped with rubber or similar resilient wheels.
- All tools and materials are secured or removed from the platform before the mobile scaffold is moved.
- The scaffold is equipped with guardrails on all sides.
- Before a scaffold is moved, each employee on the scaffold is made aware of the move.

- Overhead clearance from power lines or other possible safety hazards must be checked before moving a mobile scaffold.

Forklifts, front loaders, or other heavy equipment will not be used as scaffolds, or to support a scaffold, unless specifically designed for it.

Fall Protection on Scaffolds.
Unless specifically exempted by this program, all workers must be protected from falling hazards anytime they work on a scaffold higher than 6 feet. Standard fall protection on any scaffold will consist of a guardrail system with a top rail capable of supporting and protecting a weight of at least 200 lb., a midrail, and toeboards.

Guardrail systems will be installed on all open sides of the scaffold. Have a top rail which is located not less than 38 inches, nor more than 45 inches. Have a midrail which is installed at mid-height between the top rail and walking/working platform and which is constructed to withstand a 150-pound side thrust. Have a toeboard which is not less than 3.5 inches and which is installed not more than 1/4 of an inch above the platform, and around the entire periphery of the work platform. If the platform has a gate, then the toeboard shall be installed on the gate. A cross brace may be used as part of the guardrail system:

- If the cross brace pivot point occurs from 36 inches to 48 inches above the platform, then a midrail shall be added midway between the platform and the brace pivot point.
- If the cross brace pivot point occurs from 18 inches above the platform, but less than 36 inches, then a top rail shall be added.
- If the cross brace pivot point occurs less than 18 inches or more than 48 inches above the platform, then both a top rail and midrail shall be installed.

If a scaffold cannot be fully planked or guarded using a guardrail system~~,~~ a personal fall arrest system (body harness and lanyard) must be used to protect employees from falling hazards. The use of personal fall arrest systems will be restricted to the specific areas of the scaffold where guardrails cannot be used, and guardrails will be used in all other areas.

A competent person will determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Fall protection is required where the installation and use of such protection is feasible and does not create a greater hazard.

17.9 FALL PROTECTION AND FALLING OBJECT PROTECTION

This section does not apply to portable ladders, entertainment stages, rail station platforms, powered platforms, aerial lifts and employees inspecting, investigating or assessing workplace conditions or work to be performed prior to the start of work or after all work has been completed; unless fall prevention/protection has been installed and are available for workers to use.

Fall Protection will be used on all unprotected sides and edges include but are not limited to: hoist areas, holes (skylights, hatchways, chutes etc.), dockboards, runways, stairways, wall openings and roofs.

Each employee on a walking-working surface with an unprotected side or edge shall be protected from falling by guardrail systems, safety net systems or a personal fall arrest system

when performing construction work 6 feet (1.83m) or more above lower levels or all other work tasks that are 4 feet (1.2 m) or more above a lower level.

Guardrail systems meet the following requirements:

- Top edge 42" +/- 3"
- Midrails are installed between top edge and the walking-working surface.
- Intermediate vertical members (such as balusters, where no midrail is in place) are installed no more than 19 inches (48 cm) apart.
- Guardrail systems are capable of withstanding a force of at least 200 pounds applied in a downward or outward direction within 2 inches (5 cm) of the top edge.
- When the 200-pound 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".
- Top rails and mid-rails are at least 0.25-inches (0.6 cm) in diameter or in thickness.

Handrail and stair rail systems must meet the following requirements:

- 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.
- The height of stair rail systems installed before January 17, 2017 is not less than 30 inches (76 cm) and not less than 42 inches (107 cm) if installed after January 17, 2017 from the leading edge of the stair tread to the top surface of the top rail.
- The top rail of a stair rail system may serve as a handrail only when 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.
- No opening in a stair rail system shall exceed 19 inches (48 cm) at its least dimension.
- The ends of handrails and stair rail systems do not present any projection hazards.
- 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.

Each employee must be protected from falling into a ladder-way floor hole or ladder-way platform hole by a guardrail system with toeboards erected on all exposed sides, except at the entrance to the hole, where a self-closing gate or an offset must be used.

Each employee less than 4 feet (1.2 m) above dangerous equipment must be protected from falling into or onto the dangerous equipment by a guardrail system or a travel restraint system.

17.10 WORK ON LOW-SLOPED ROOFS

When work is performed less than 6 feet (1.6 m) from an unprotected/unguarded roof edge, employees shall be protected from falling by a guardrail system, safety net system, travel restraint system, or personal fall arrest system.

When work is performed at least 6 feet (1.6 m) but less than 15 feet (4.6 m) from an unprotected/unguarded roof edge, the employee shall be protected from falling by using a guardrail system, safety net system, travel restraint system, personal fall arrest system, or you may use a designated safety area when performing work that is both infrequent and temporary.

When work is performed 15 feet (4.6 m) or more from an unprotected/unguarded roof edge, fall protection is not required, provided the work is both infrequent and temporary and a work rule is implemented and enforced prohibiting employees from going within 15 feet of the roof edge without using a guardrail system, safety net system, travel restraint system, or personal fall arrest system or a designated safety area.

When using a designated safety area, the employee must:

- Remain within the designated safety area while work operations are underway.
- Delineate the perimeter of the designated area with a warning line consisting of a rope, wire, tape, or chain that meets the requirements of MIOSHA General Industry Standard Part 2, Walking-Working Surfaces.

17.11 WARNING LINES

- Must have a minimum breaking strength of 200 pounds (0.89 kN).
- Must be installed so its lowest point, including sag, is not less than 34 inches (86 cm) and not more than 39 inches (99 cm) above the walking-working surface.
- Must be supported in such a manner that pulling on one section of the line will not result in slack being taken up in adjacent sections causing the line to fall more than 3 inches.
- Must be erected not less than 6 feet (1.8 m) from the roof edge for work that is both temporary and infrequent, or not less than 15 feet (4.6 m) for other work.

17.12 PROTECTION FROM FALLING OBJECTS

- To reduce the potential for objects falling to lower levels, objects with a potential to fall to lower levels shall be kept far enough from an edge, hole, or opening to prevent them from falling to a lower level. Employees potentially exposed to falling objects shall wear head protection.
- In situations where objects can fall to a lower level, toeboards, screens or guardrail systems to prevent objects from falling must be in place.
- As an alternative to using toeboards, screens or guardrail systems for falling object prevention, a canopy structure may be installed.
- Another alternative to using toeboards, screens or guardrail systems for falling object prevention is to barricade the area into which objects could fall, prohibiting employees from entering the barricaded area.

17.13 PERSONAL FALL ARREST SYSTEMS

Body belts, harnesses, and other components used in personal fall arrest systems, work positioning systems, and travel restraint systems must meet the requirements of MIOSHA General Industry Standard Part 2, Walking-Working Surfaces. Body belts are not to be used as part of a personal fall arrest system.

17.14 TRAINING

Before any employee is exposed to a fall hazard, the department must provide training for each employee who uses personal fall protection systems or who is required to be trained as specified elsewhere in this subpart.

A qualified person must train each employee in at least the following topics:

- The nature of the fall hazards in the work area and how to recognize them.

- The procedures to be followed to minimize those hazards.
- The correct procedures for installing, inspecting, operating, maintaining, and disassembling the personal fall arrest systems.
- The correct use of personal fall arrest systems and equipment including, but not limited to, proper hook-up, anchoring, and tie-off techniques, and methods of equipment inspection and storage, as specified by the manufacturer.
- The proper care, inspection, storage, and use of fall protection systems and equipment.

Scaffold Training

Scaffold users and erector/dismantlers are to be trained on the following topics:

- The proper use of the scaffold types used and the maximum intended load capacity of these scaffolds.
- The electrical, fall, and falling object hazards of erecting, working on, and dismantling scaffolds, and the procedures and equipment used to control these hazards.
- The procedures for erecting, dismantling, moving, operating, inspecting, maintaining and repairing the scaffold.
- The relevant parts of the scaffold standard.
- The erecting of overhead protection and protection from falling objects.
- The employees limitations for using, inspecting, erecting and altering scaffolds.
- The use of the scaffold tagging system.

All employees whose duties require them to use or erect scaffold must have the appropriate training. Below are the following categories of training:

- Scaffold User Training
- Scaffold Competent Person Basic Fabricated Frame
- Scaffold Competent Person Advanced Fabricated Frame, Tube and Clamp, and System

Scaffold User Training and Scaffold Competent Person Fabricated Frame will be conducted by EHS during new hire orientation and upon request. Scaffold Competent Person Tube and Clamp/System shall be conducted by an outside vendor or in-house employee who has successfully completed such vendor led train-the-trainer course.

Retraining

The department must retrain an employee when the supervisor has reason to believe the employee does not have the understanding and skills related to fall and equipment hazards noted above.

17.15 SCAFFOLD TAGS

ACCUFORM

Status Alert Tag, Plastic, Height: 5-3/4", Width: 3-1/4", Green

- Grainger Item # 43Z261
- Mfr. Model # TRS328PTP
- Catalog Page # N/A
- UNSPSC # 55121503
- $40.14 per pkg of 25

ACCUFORM

Caution Tag, Plastic, Height: 5-7/8", Width: 3-3/8"

- Grainger Item # 3YYT7
- Mfr. Model # TSS102PTP
- Catalog Page # N/A
- UNSPSC # 55121503
- $38.17 per pkg of 25

ACCUFORM

Danger Tag, Plastic, Height: 5-7/8", Width: 3-3/8"

- Grainger Item # 3YYT5
- Mfr. Model # TSS101PTP
- Catalog Page # N/A
- UNSPSC # 55121503
- $38.25 per pkg of 25