

Significant Changes in
EM 385-1-1, 2008
Section 21 Fall Protection

PRIMARY GOALS

- Place all Fall Protection related requirements in Section 21
- Incorporate new ANSI Z359-2007 Standard
- Improve flow and sequence of 21
- Place safe access related requirements in Section 24

Section 21.A Fall Protection

- 21.A.02 Hierarchy of Control
 - Elimination
 - Prevention
 - Platforms (movable or stationary)
 - Personal Protective Systems and Equipment
 - Administrative controls

Section 21.A Fall Protection

- 21.A General. Introduce in the beginning of section the requirement for protection at 6 feet or greater
 - Floating plant and vessels are covered in Sections 19.C, 19.D, and 19.E.
- 21.A.01 – All workers shall be protected. Sheet pile stirrups are prohibited.

Section 21.B Training

- Each worker trained by a Competent Person for Fall Protection
 - nature of fall hazards
 - equipment procedures
 - application limits, i.e. fall distance/clearance
 - rescue
 - hands-on training
 - applicable requirements

Section 21.C Fall Protection Program

- Duties for Competent and Qualified Persons
- Description of project or task
- Training rqmts.
- Anticipative hazards and controls
- Rescue plans/procedures
- Anchorages and systems
- Inspection, maint., and storage
- Incident investigations
- Evaluation of program effectiveness
- Inspection and oversight methods

Section 21.C Fall Prot. Pgm. (cont.)

- Each USACE-owned facility shall (if fall hazards present)
 - develop a written fall protection program
 - conduct a fall hazard survey
 - comply with fall protection program elements

Section 21.D Controlled Access Zones (CAZ)

Prohibited as a fall protection method

Section 21.E, F, & G

- 21.E Guardrail requirements, including toe-boards.
 - Floating plant – 19.D and 19.E
- 21.F Covers – clearly marked or color-coded.
- 21.G Safety Nets – tested in the presence of the GDA.

Section 21.H, Personal Fall Protection Systems

- Equipment must meet ANSI/ASSE Z359.1-2007
 - Existing snaphooks and carabiners meeting ANSI Z359.1-1992 (R1999) may be used for 2 years after date of publication of new EM 385-1-1.
- Full body harnesses meeting ANSI A10.14 shall not be used.

Section 21.H, Personal Fall Protection Systems (cont.)

- Frontal D-ring attachment point allowed if free fall distance does not exceed 2 feet and max. arresting force does not exceed 900 lbs.
- Restraint – anchorage shall be 3,000 lbs or designed by Qualified Person for two times the foreseeable force.

Section 21.I Ladder-climbing Devices (LCDs)

- Describes requirement for use of these devices.

Section 21.J Scaffolds, Aerial Lifts, and Movable Work Platforms

- Evaluation conducted to determine feasibility of providing fall protection during erection and dismantling.
 - AHA will detail rationale
 - Submitted to GDA for Acceptance

Section 21.J Scaffolds, Aerial Lifts, and Movable Work Platforms

- Scissor lifts, if equipped with lanyard anchor point, shall require restraint in addition to guardrails
 - Restraint lanyard shall be sufficiently “short” to prohibit worker from climbing out of basket.
- Aerial Lift Equipment. Lanyard shall be sufficiently “short” to prohibit worker from climbing out of basket.

Section 21.K Warning Line System (WLS)

- For Roofing Work, not less than 6 feet from roof edge.
- For other work (i.e. use of mechanical equipment), not less than 15 feet from edge of roof.

Section 21.L Safety Monitoring System (SMS)

Use of a SMS for fall protection is prohibited.

Section 21.M Rescue Plan and Procedures

- Plan requirements follow ANSI Z359.2 procedures.
- Plan shall include provision for self and assisted rescue.
- Site-specific.
- Workers using fall protection shall follow the “buddy system” by utilizing a spotter.

Section 21.N Work Over Water

21.N WORKING OVER OR NEAR WATER

(piers, wharves, quay walls, barges, aerial lifts, crane-supported work platforms, etc).

PFDs are required for all work over or near water unless detailed below.

- > **All USACE and contractor workers, to include divers, shall comply with the below requirements.**

Section 21.N Work Over Water

21.N.01 When continuous fall protection is used without exception to prevent workers from falling into the water, the employer has effectively removed the drowning hazard and PFDs are not required.

- > When using safety nets as fall protection, USCG-approved PFDs are usually required.

Section 21.N Work Over Water

21.N.02 When working over or near water and the distance from walking/working surface to the water's surface is 25 ft (7.6 m) or more, workers shall be protected from falling by the use of a fall protection system and PFDs are not required.

Section 21.N Work Over Water

21.N.03 When working over or near water where the distance from the walking/working surface to the water's surface is less than 25 ft (7.6 m) and the water depth is less than 10 ft (3.05 m), or hazards from currents, intakes, machinery or barges, etc., are present, fall protection shall be required and PFDs are not required.

Section 21.N Work Over Water

21.N.04 When working over water, PFD, lifesaving equipment and safety skiffs meeting the requirements of this EM shall be used.

End of Section 21

Changes

Chapter 22

Work Platforms and Scaffolding

In many cases the changes are not given verbatim to preserve your sanity
Underlined text is verbatim



22.A.02.a

References 21.A
Fall Protection -
6 foot rule for fall
protection



Corrected omission of 1 word

22.A.02.b

References:

21.E - Fall protection systems

&

21.H - Personal fall protection systems



22.A.03

- Added:

For specific guidance related to erecting and disassembling scaffolds, see paragraph 21.J.02

21.J.02 is a new requirement that permits the use of OSHA's exemption for fall protection

“For workers erecting and dismantling scaffolds, an evaluation shall be conducted by a Competent Person for fall protection to determine the feasibility and safety of providing fall protection if fall protection is not feasible. An AHA detailing rationale shall be submitted and accepted by the GDA.”

22.A.06 New requirement

- Contractors shall have scaffolds tagged by the competent person for scaffolding
 - Tags shall be color coded; green - safe, red - unsafe.
 - Tags shall be readily visible, legible, & able to withstand the environment
 - Tags shall include:
 - a. Name & signature of competent person
 - b. dates of initial and last inspection.

22.A.09 New requirement

Anyone erecting, disassembling, moving, operating, using, repairing, maintaining or inspecting a scaffold shall be trained by a competent person

Proof of training shall be available upon request.

22.B.01.b Rephrased for clarity

Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, shall be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or 1.5 (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

Existing requirements moved to different sections

Was	Is
21.A.06	22.B.02c
21.A.07	22.B.03
21.A.08	22.B.04
21.A.09	22.B.05
Table 21-1	Table 22-1
Table 21-2	Table 22-2
21.A.10	22.B.11

Renumbered

Was	Is
22.B.03	22.B.06
22.B.04	22.B.07
22.B.05	22.B.08
22.B.06	22.B.09
22.B.07	22.B.10
22.B.08	22.B.13
22.B.09	22.B.14
22.B.10	22.B.15
22.B.11	22.B.16
22.B.05	22.B.08

22.B.09.c Reworded for clarity

For outrigger scaffolds, the platform will be nailed or bolted to the outriggers and shall extend to within 3 inches (7.6 cm) of the building wall.

22.B.09.f

"Planks shall be maintained in good condition. When cracks exceed 1.5 times the width of the board the plank will not be used. Planks with notches deeper than 1/3 the width of the plank will not be used. Planks with saw kerfs shall not be used."

New requirement added to provide practical means of determining what is considered “good condition”.

22.B.13d

Where end frames are designed to be used as a ladder or where bolted-on ladders are used, the maximum height will be limited to 20 feet unless fall protection is used. The distance between rungs shall not exceed 12 inches and shall be uniform throughout the length of the ladder. The minimum clear length of the rungs shall be 16 inches.



New requirement to address climbing of end frames,
OSHA allows climbing up to 34 feet w/out fall protection

22.B.17

Other types of scaffolding not included in ANSI A10.8 may be approved by the GDA provided the design is approved by a professional engineer or they meet a nationally recognized design standard.

New requirement to allow scaffolds other than those specified in ANSI A10.8

22.C.06.b Tightens existing requirement

Manually propelled mobile scaffolds.

- b. All Casters or wheels shall be locked when a scaffold is occupied.

Section 22.D

Wood Pole Scaffolds

- Errors in tables were corrected and are now consistent with OSHA
- Metric conversions were added where some were missing
- Numbering of tables was changed due to requirements moving from section 21 to section 22

Old 22.F

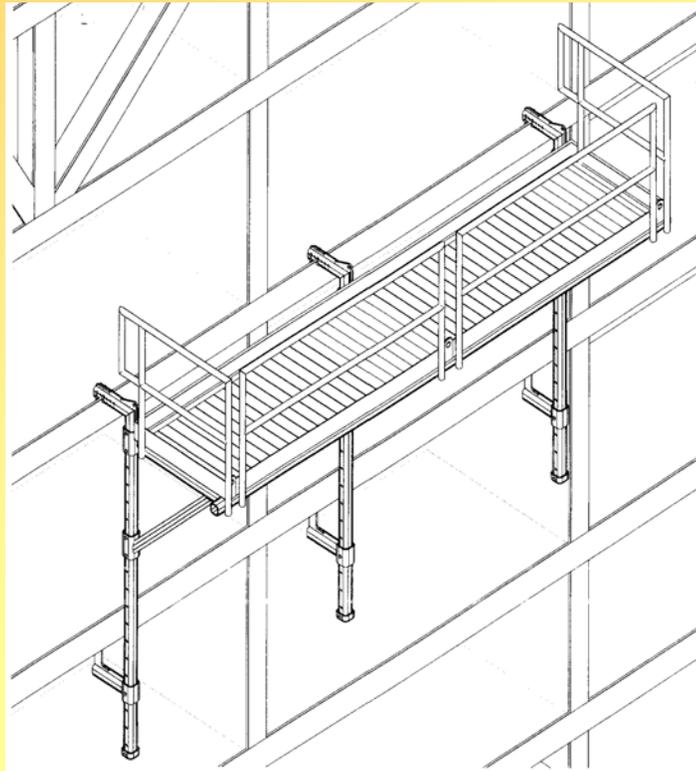
Crane-supported Work Platforms

Moved to section 16



22.F HANGING SCAFFOLDS

Complete new section based on the recommendations of Board of Investigation where civilian fatality occurred



Was 22.J

Elevating Work Platforms

Renumbered: Now 22.L

22.L.02.c. Height to base width ratio of the scaffold during movement is 2:1 or less, or per manufacturer's instructions.

New requirement

22.J

Adjustable Scaffolds



New section that addresses some hazards specific to this type of scaffolding

22.M.01

Vehicle-mounted elevating and rotating work platforms (aerial lifts, to include articulating boom platforms/lifts (knuckle boom lifts), trailer-mounted boom lifts) shall be designed and constructed per ANSI/SIA A92.2.

Clarified the scope

22.M.01.e

All required safety decals, labels and signs shall be in place and readable. If the rating plate, signs, labels are not present or are not readable, equipment shall not be used.

New requirement

22.M.05

Operating practices.

- a. Brakes shall be set and outriggers, when used, shall be on pads or a solid surface.
- b. Wheel chocks required on an incline.
- c. Lift controls shall be tested each day prior to use.
- e. Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls.
 - (1) Upper controls shall be in or beside the platform within easy reach of the operator.
 - (2) Lower controls shall provide for overriding the upper controls.
 - (3) Controls shall be plainly marked as to their function.
 - (4) Lower level controls shall not be operated unless permission has been obtained from the employee in the lift except in case of emergency.
- f. Climbers shall not be worn while performing work from an aerial lift.
- g. The insulated portion of an aerial lift shall not be altered in any manner that might reduce its insulating value.

New requirements

22.L is now 22.N

Mast climbing Work Platforms



22.L.01

Mast Climbing work platforms shall be erected, used, inspected, tested, maintained, and repaired in accordance with ANSI A 92.9 and the manufacturer's recommendations as outlined in the operating manual.

Added reference to ANSI standard

22.L.11

Climbing of braces and guardrails is prohibited. When access ladders, including masts designed as ladders, exceed 20 ft in height positive fall protection shall be used.

Masts can get well above the typical 20 foot limit of a “fixed ladder” above which fall protection is needed

22.0

Roofing brackets

- Formerly 27.H.15 a & b
now 22.O.01-22.O.03
- 22.O.01 Added: Nails will be driven into a rafter or beam; not just into the decking. Fasteners will be selected in accordance with the manufacturer's recommendations.
- 22.O.02 no change
- New requirement: 22.O.03 Positive fall protection will be used when working at heights over six feet.



New requirements

22.P - Stilts

- 22.P.01 Stilts shall not be used on scaffolds.
 - 22.P.02 Surfaces on which stilts are used shall be flat and free of pits, holes, obstructions, debris and other tripping or slipping hazards.
- New requirements



22.P - Stilts

- 22.P.03 Stilts shall be properly maintained. Any alteration of the equipment shall be approved by the manufacturer.
- 22.P.04 Stilts shall not be used on stairs. When used adjacent to stairs or ramps where a fall to a different level could occur, guardrails or other fall protection shall be provided (increased in height by an amount equal to the height of the stilts).
- 22.P.05 Employees shall be trained in the proper use of stilts.
- 22.P.06 When using stilts exposes workers to a fall of 6 ft (1.8 m) or more in areas protected by guardrails, the height of the guardrail must be raised accordingly to maintain a protective height of 42 in (107cm) above the stilt. See 21.E.06.

New requirements

Questions?



Section 23 Demolition (1 minor change)

23.A.01 Demolition activities shall be performed in accordance with ANSI Standard A10.6, Safety Requirements for Demolition.

Section 24 Safe Access, Floor/Wall Openings, Stairs, and Ladders

- Section 24.A General Safe Access
- No major changes from 2003 version of EM 385-1-1.

Section 24.B Ladders

- Appendix J has been eliminated as it dealt with fixed ladder design.
- Ladders shall be secured at top, bottom, and intermediate as “necessary”.
 - old text stated as “required”
- Step across distance requirement imported from Appendix J into 24.B.08.g.

Section 24.B Ladders

- 24.B.09.e. requires three-points of contact at all times on ladders
- Job made ladders shall conform to ANSI A14.4

Section 24.C Handrails

- 24.C.05 The height of handrails shall be not more than 38 in (86.3 cm) nor less than 34 in (76.2 cm) from upper surface of handrail to surface of tread, in line with face of riser or to surface of ramp.
- Existing installations need not be modified.

Section 24.D Floor, Wall and Roof Holes and Openings

- Floor and roof holes are any that measure over 2 in (51mm). This new dimension is from ANSI A1264.1 – 2007, Walking/Working surfaces.
- Workers are prohibited from standing or walking on skylights.

Section 24.E, Stairways

- The height of stair rails shall be 42+/- 3 in (cm) from the upper surface of the top rail to surface of tread in line with face of riser at forward edge of tread.
- Existing installations need not be modified.

Section 24.F and 24.G

- 24.F Ramps, runways, and trestles – no major changes
- 24.G Personnel Hoists and Elevators – no major changes



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SECTION 25

- Requires Written Excavation/ Trenching Plan
 - Identifies Competencies for Competent Person for Excavation & Trenching
 - Rescue Equipment & Procedures (Confined Space)
 - Defines Soil Classifications
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