

FESHM 7070: LADDER & SCAFFOLD SAFETY

Revision History

Author	Description of Change	Revision Date
A. Aparicio	Clarified blanket 6-foot fall protection rule for construction activities, including scaffold erection, use and dismantlement	February 2021
A. Aparicio E. Schlatter	Revised ladder and scaffold content to meet revised OSHA Walking Working Surfaces regulations, including: <ul style="list-style-type: none">• Adding documented annual ladder inspection requirement• Adding training requirements for ladder and scaffold users, and scaffold erectors• Changes to fixed ladder safety systems	November 2019
M. Bonkalski	Initial Release. This chapter provides guidance regarding actions needed to use a ladder and assembly and disassembly of scaffolding.	November 2015

TABLE OF CONTENTS

1.0	INTRODUCTION AND SCOPE.....	2
2.0	DEFINITIONS	2
3.0	RESPONSIBILITIES.....	3
3.1	Division/Section/Project Heads.....	3
3.2	Supervisors/Department Managers	4
3.3	Ladder Users.....	4
3.4	Qualified Ladder Inspector.....	4
3.5	Competent Person (Scaffolding)	5
3.6	Scaffold Erectors	5
3.7	Scaffold Users	5
3.8	Task Manager/Construction Coordinator/Service Coordinator	5
4.0	LADDER PROGRAM DESCRIPTION	6
5.0	SCAFFOLD PROGRAM DESCRIPTION.....	7
6.0	REFERENCES.....	10
7.0	TECHNICAL APPENDICES	11
7.1	General Safe Use and Care of Ladders	11
7.2	Ladder Inspection Form	14
7.3	General Scaffold Safe Work Practices	15
7.4	Mobile (Rolling) Scaffold Guidance.....	17
7.5	Pump Jack Scaffold Guidance.....	18
7.6	Scaffold Access/Egress Requirements	19

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1.0 INTRODUCTION AND SCOPE

It is the intent of this chapter to provide guidance regarding actions needed to use a ladder and to assemble, use, and disassemble scaffolding. Standards to follow when assembling and disassembling scaffolding can be found in the Code of Federal Regulations 29 CFR 1926 Subpart L, Scaffolds. This chapter also excludes suspension scaffolds. This chapter applies to all ladder use and scaffolding erection, use and dismantlement on the Fermilab site. It also applies to activities in Fermilab-leased spaces.

2.0 DEFINITIONS

- **Bakers Type Scaffold** – Platform that is easily transportable, typically narrow in design and typically has casters for mobility.
- **Base Plate** – A plate used to distribute the load of a leg/post/frame/upright.
- **Competent Person (Scaffold)** – One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. For the purposes of this program, an employee is considered a Competent Person after they have successfully completed FN000389/CR/01 Scaffolding Competent Person training.
- **Construction Coordinator** – A person specifically assigned to oversee the work of a construction subcontract for conformance to the subcontract agreements/documents. Construction Coordinators serve as the primary construction point of the contract between the Subcontractor and the laboratory.
- **Fixed Ladder** – Is a stationary vertical set of rungs to form a ladder mounted permanently to a structure and commonly made of metal. These ladders are primarily used to access roofs or other structures.
- **Guardrail System** – A vertical barrier consisting of, but not limited to, top rails, midrails, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.
- **Ladder Inspector** – An individual designated by their D/S/P as a qualified ladder inspector and who has completed Fermilab Ladder User training.
- **Ladder Jack Scaffold** – Platform supported by vertical poles and movable supported brackets.
- **Ladder Safety System** – a system designed to eliminate or reduce the possibility of falling from a ladder. A ladder safety system usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness. Cages and wells are not ladder safety systems.
- **Mobile Ladder Stand** – A mobile, fixed-height, self-supporting ladder that usually consists of wheels or casters on a rigid base and steps leading to a top step. A mobile ladder stand also may have handrails and is designed for use by one employee at a time.
- **Mobile Ladder Stand Platform** – A mobile, fixed-height, self-supporting unit having one or more standing platforms that are provided with means of access or egress.

- **Mudsill** – Devices used to uniformly distribute the scaffold load over a larger area than that distributed by the base plate alone in order to prevent a scaffold from settling into the earth.
- **Outriggers** – Devices that increase the stability of the scaffold.
- **Portable Ladder** – Is a mobile vertical or inclined set of rungs to form a ladder and commonly made of metal, wood, or fiberglass.
- **Pump Jack Scaffold** – Platform supported by vertical poles and movable support brackets.
- **Qualified Person** – One who by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.
- **Scaffold Erector** – A person who is responsible for the erection and disassembly of scaffolding.
- **Scaffold User** – A person who utilizes a scaffold to perform work.
- **Service Coordinator** – The Fermilab point of contact between the subcontractor and the laboratory for specific work related to service subcontracts.
- **Suspended Scaffold** – Are platforms suspended by ropes, or other non-rigid means, from an overhead structure.
 - Single Point Adjustable – Platform suspended by one rope or other non-rigid means, to permit the platform to move to desire working levels.
 - Two point (swing stage) – Platform suspended by two ropes or other non-rigid means, to permit the platform to be raised and lowered.
 - Multi-Point Adjustable – Platform suspended by more than two ropes or other non-rigid means, to permit the platform to be raised and lowered.
- **Task Manager** – A division/section designated individual specifically assigned to oversee and direct a work activity. The Task Manager has primary responsibility for developing hazard assessments for the work, as prescribed by FESHM 2060 – Work Planning and Hazard Analysis. An approved TM list indicating individual experience and competency to direct specific work activities can be found at: <https://esh-docdbcert.fnal.gov/cgi-bin/cert/ShowDocument?docid=75>
- **Toe-Board** – A horizontal barrier that is erected along the exposed edges of an elevated surface to prevent materials, tools or equipment from falling. Must be at least 3.5 inches high.
- **Tube and Coupler Type Scaffold** – Platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers and runners. Casters may be used for mobility.
- **Tubular Welded Frame Scaffold** – Platform system using prefabricated welded sections that serve as posts and horizontal bearers. The deck platform can be built with (stamped) scaffold grade lumber or manufactured deck boards spanning the end-frames.

3.0 RESPONSIBILITIES

A responsibilities section is included only if there are any responsibilities which are unusual, i.e., different than those indicated in [FESHM 1010](#).

3.1 Division/Section/Project Heads

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- Ensure a qualified person is identified within their Division/Section to inspect the Division/Section's ladders at least annually.
 - Ensure the Division/Section has access to a Scaffold Competent Person when scaffolding will be used in their Division/Section.

3.2 Supervisors/Department Managers

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- Ensure all employees/users under their supervision, who may have occasion to use any type of ladder during the performance of their work, have read and understood this chapter and have completed the required ladder user training.
 - Assure that all ladders used by their personnel, and those ladders for which they have maintenance responsibility, are free from defects and in proper working order or are removed from service until repaired/replaced.
 - Ensure ladders under their responsibility are inspected annually by a qualified person.
 - Ensure all personnel required to erect and/or use scaffolding receive the appropriate level of training.
 - Ensure only trained and qualified individuals use or erect scaffolds.
 - Verify personnel compliance with the principles and practices outlined in this Ladder & Scaffold Safety Chapter.
 - Observe the use of scaffolds and ladders and correct unsafe behaviors and practices.
 - Provide specific familiarization for each type of scaffold.
 - Ensure the Competent Person completes the daily inspection of the scaffold before workers use it.
 - Keep records of repairs to scaffolds that are in the department's inventory.

3.3 Ladder Users

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- Receive ladder user training.
 - Read and comply with the Ladder & Scaffold Safety Chapter.
 - Inspect, set-up, use, and store ladders in accordance with manufacturer's instructions and Fermilab's requirements.
 - If repair/maintenance is necessary, tag the ladder out of service and contact your supervisor or Division Safety Officer (DSO).
 - Placement of ladder in vicinity of exposed or outside overhead electrical power is not permitted without proper LOTO.

3.4 Qualified Ladder Inspector

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- Receive ladder user training.
 - Read and comply with the Ladder & Scaffold Safety Chapter.
 - Inspect ladders in their area of responsibility at least annually. The inspection must be documented on the ladder inspection tag that will be attached to the ladder. Points of inspection are covered in the ladder user training and in the checklist in Section 7.2 of this chapter.
 - Tag any ladder that does not pass inspection and notify the owner (department head).

131 3.5 Competent Person (Scaffolding)

- 132 • Complete the equivalent FN000389/CR/01 Scaffolding – Competent Person training.
- 133 • Read and comply with the Ladder & Scaffold Safety Chapter.
- 134 • Ensure assigned Scaffold Erectors and Users are trained and/or qualified.
- 135 • Provide Scaffold Erectors with the hazard mitigation training associated with the assigned
- 136 scaffold.
- 137 • Plan, select, inspect, and maintain scaffold equipment in accordance with manufacture’s
- 138 specifications.
- 139 • Explain the assembly procedure to Scaffold Erectors.
- 140 • Monitor scaffold assembly.
- 141 • Inspect completed scaffold and components before initial use and prior to each work shift
- 142 thereafter.
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144 3.6 Scaffold Erectors

- 145 • Receive scaffold user training, hands-on scaffold erector training and assemble/work on
- 146 scaffolds accordingly.
- 147 • Read and comply with the Ladder & Scaffold Safety Chapter.
- 148 • Abide by all manufacturer recommendations.
- 149 • Placement of scaffold in vicinity of exposed or outside overhead electrical power is not
- 150 permitted without proper LOTO.
- 151 • Inspect all scaffold components prior to assembly to ensure that components used are of similar
- 152 material and in good condition before becoming part of the completed scaffold.
- 153 • Maintaining fall protection requirements while erecting/dismantling scaffolds.
- 154 • Prior to occupation, scaffold erectors must notify the competent person that the scaffold has
- 155 been erected and is ready to be inspected.
- 156 • Notify Competent Person, supervisor or DSO if there is a concern regarding the erection of the
- 157 scaffold.
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159 3.7 Scaffold Users

- 160 • Receive scaffold user training and work on scaffolds accordingly.
- 161 • Read and comply with the Ladder & Scaffold Safety Chapter.
- 162 • Examine the scaffold tag (which should be affixed near the access point) to verify that a
- 163 Competent Person has deemed the scaffold safe for use. This must be done prior to initial use
- 164 of the scaffold each shift.
- 165 • Notify Competent Person, supervisor or DSO of any deficiencies or unsafe conditions noted
- 166 during inspection or use of scaffolds.
- 167 • Do not attempt to alter or repair any scaffold without proper training and authorization.
- 168 • Keep scaffold area clean and clear of debris & unnecessary tools, material, and equipment.
- 169 • Follow the work practices described in this chapter, including the use of appropriate protective
- 170 equipment and conducting pre-use inspections.
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172 3.8 Task Manager/Construction Coordinator/Service Coordinator

- 173 • Inspect ladders visually. If ladder fails inspection, the ladder must be tagged out immediately
- 174 with Danger: Do Not Use tag and removed from service.
- 175 • Review and if adequate, accept equivalent training qualifications documentation or train
- 176 workers in the appropriate scaffold assembly and disassembly.
- 177 • Review scaffold safety requirements with workers in area.
- 178 • Ensure scaffolding is selected, used, and stored in accordance with manufacturer's
- 179 requirements.
- 180 • Verify that a competent person supervises the erection and dismantlement of scaffolds, and
- 181 that a competent person has inspected the scaffold before each shift.
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184 **4.0 LADDER PROGRAM DESCRIPTION**

186 **4.1 Inspection and Maintenance of Ladders**

- 187 • All employees and users who use ladders must inspect them for visible defects such as breaks,
- 188 cracks, looseness and other possible hazards before ladder work begins. Ladders with loose
- 189 parts or faulty rungs should be taken out of service immediately.
- 190 • Remove damaged ladders from the work area and tag "Do Not Use." Notify the department
- 191 supervisor.
- 192 • Step ladders should sit square on a level surface.
- 193 • Make sure rungs and steps are kept clear of grease, oil, wet paint, snow and ice.
- 194 • Maintain moving parts. Lubricate shoe joints, extension locks.
- 195 • Replace worn or broken non-skid rubber ladder safety shoes.
- 196 • Store ladders where they will not be exposed to the elements.
- 197 • Secure ladders when stored with proper supports (hooks, chains, lying flat).
- 198 • All ladders (including step ladders, extension ladders, and mobile ladder stands/mobile stairs
- 199 having 4 or more steps) shall have an annual inspection by a qualified person. After the
- 200 inspection is completed, the ladders will be marked with an inspection tag indicating the year
- 201 of inspection and Fermilab ID number of the inspector.
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203 **4.2 Training Requirements**

- 204 • All workers who use ladders or rolling stairs with 3 or more rungs must complete Ladder User
- 205 training.
- 206 • Training shall cover the following:
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 - 208 ○ Choosing the right ladder for the job;
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 - 210 ■ Ratings
 - 211 ■ Types of ladders
 - 212 ○ How to inspect ladders, what to do when a defect is found;
 - 213 ○ Required safety labeling;
 - 214 ○ Safe usage and safe storage.
- 215 • Retraining is not required unless there are observed repeated discrepancies or understanding
- 216 of ladder safety is not retained.

216 **4.3 Safe Use of Ladders**

- See Technical Appendix 7.1.

5.0 SCAFFOLD PROGRAM DESCRIPTION

5.1 General Requirements

- All scaffolds shall be designed by a Qualified Person or manufacturer, and shall be erected, loaded and used in accordance with that design or manufacturer's specifications.
- Scaffolds may only be erected, altered, moved, or dismantled by trained Scaffold Erectors, under the supervision of a Competent Person.
- When the working height of a scaffold reaches 6 feet, fall protection shall be addressed by the installation of a guardrail system on all open sides or use of a personal fall arrest system.
- Scaffolds shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load.
- All scaffold work platforms must be completely decked between the uprights and/or guardrail supports.
- Scaffold platforms shall be a minimum of 18 inches wide.
 - Where scaffolds must be used in areas that are so narrow that platforms and walkways cannot be at least 18 inches (46 cm) wide, such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.
- All scaffold decking shall be Scaffold Grade, or equivalent.
- The footing or anchorage for all scaffolds shall be sound, rigid and capable of supporting the loaded scaffold without settling or displacement. Unstable objects will not be used to support scaffolds. Mud sill's 8" x 8" and base plates are required when scaffolds are supported on the ground surface.
- Manufactured scaffold components shall not be modified. Scaffold components manufactured by different manufacturers or of dissimilar metals shall not be intermixed unless the components fit together without force, modification and the scaffold's structural integrity is maintained as determined by a Competent Person.
- The maximum work level height (work platform) must not exceed a height to base ratio of 4 to 1. Where the scaffold does not meet this requirement, outriggers must be employed to achieve this base dimension or provisions must be made to guy or brace the unit against tipping, per the manufacturer specifications.
- Hardhats must be worn by all personnel erecting, dismantling, using and those working in close proximity to the scaffold.

5.2 Training

- Training must be completed prior to using or erecting a scaffold.
- Training can be conducted by a Competent Person.
- To be considered a Competent Person, the individual must complete the FN000389/CR/01 Scaffolding – Competent Person training.
- Personnel who only perform work on scaffolds (do not erect) must complete User Training consisting of the following:

- 261 ○ The nature of any electrical hazards, fall hazards and falling object hazards in the work
- 262 area;
- 263 ○ The correct procedures for dealing with electrical hazards and for erecting, maintaining,
- 264 and disassembling the fall protection systems and falling object protection being used;
- 265 ○ The proper use of the scaffold, and the proper handling of materials;
- 266 ○ The maximum intended load and the load-carrying capacities of the scaffold;
- 267 ○ Aware of the protocol regarding inspecting the scaffold.
- 268 ● Personnel who erect/disassemble scaffolding must also complete Hands-on Scaffold Erector
- 269 Training, in addition to Scaffold User training, consisting of the following:
- 270 ○ The correct procedures for erecting, disassembling, moving, operating, repairing,
- 271 inspecting and maintaining the type of scaffold in question.
- 272 ● Refresher training in relevant topics will be provided when any of the following occur:
- 273 ○ An employee/user is observed using the scaffold in an unsafe manner;
- 274 ○ An accident or a near-miss incident occurs;
- 275 ○ Changes in the types of scaffold, fall protection, falling object protection, or other
- 276 equipment present a hazard that an employee has not previously been trained on;
- 277 ○ Changes in the worksite present a hazard that an employee/user has not previously been
- 278 trained on.
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280 5.3 Scaffold Pre-Assembly

- 281 ● A Competent Person will evaluate the work required, and:
- 282 ○ Inspect the location;
- 283 ○ Determine the type of scaffold and location;
- 284 ○ Develop work plan and hazard analysis;
- 285 ○ Reviews scaffold manufacturer's requirements including toe board on platforms over
- 286 6-feet in height;
- 287 ○ Verifies acceptance with Fermilab's Fire Department when wood scaffolding is used
- 288 indoors;
- 289 ○ Conducts a pre-brief job meeting and job walk down prior to assembling scaffolding.
- 290 ○ Determines who will need to use the scaffolding and training requirements to erect,
- 291 use, maintain, modify, dismantle.
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293 5.4 Scaffold Assembly

- 294 ● A Competent Person conducts a pre-brief job meeting prior to assembling scaffolding;
- 295 ● Supervises scaffold assembly to ensure standards and regulatory requirements are met;
- 296 ● Supervises scaffold assembly by authorized erectors to ensure standards and regulatory
- 297 requirements are met;
- 298 ● As soon as scaffold is self-supporting, inspects the scaffold before being released and attaches
- 299 the appropriate tag (see 5.5 *Scaffold Inspection*) at the access point(s).
- 300 ● Tags must include scaffold capacity, light duty 25 pounds per square foot, medium duty 50
- 301 pounds per square foot, heavy duty 75 pounds per square foot, and special greater than 75
- 302 pounds per square foot.
- 303 ● Providing access either by built-in or attached ladder for workers to access scaffold.
- 304 ● Provide swing gate as required.

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- 306 **5.5 Scaffold Inspection**
- 307 • Each scaffold must undergo a documented pre-use safety inspection by a Competent Person
- 308 prior to use on each shift, and after any occurrence which could affect a scaffold's structural
- 309 integrity. (Manually propelled mobile scaffolds do not need to be re-inspected after each
- 310 movement.)
- 311 ○ Inspections must be documented on the appropriate tag, shall list any deficiencies, any
- 312 special instructions or limitations:
- 313 ▪ Red – DO NOT USE
- 314 ▪ Yellow – SCAFFOLD DOES NOT MEET OSHA REQUIREMENTS.
- 315 WORKERS MUST USE FALL PROTECTION WHEN WORKING FROM
- 316 THIS SCAFFOLD
- 317 ▪ Green – SCAFFOLD IS APPROVED FOR USE
- 318 ○ Inspect all scaffold components before erecting, prior to use on each shift and during
- 319 dismantling. Those components found with defects must be repaired or replaced
- 320 immediately.
- 321 ▪ Handrails, mid-rails, cross bracing and steel tubing shall be inspected for nicks,
- 322 especially near center span, and indications where a welding arc has struck.
- 323 ▪ Scaffold components shall be straight and free from bends, kinks, dents, and
- 324 severe rusting.
- 325 ▪ Scaffold weld zones shall be inspected for cracks and ends of tubing for splitting
- 326 or cracking.
- 327 ▪ Manufactured decking shall be inspected for loose bolt or rivet connections and
- 328 bent, kinked, or dented frames. Plywood surfaces should be checked for
- 329 softening due to rot or wear and peeling or delaminated layers at the edges.
- 330 Scaffold boards should be inspected for rot, cracks, notches, and other damage.
- 331 Inspect cleats if they are used.
- 332 ▪ Each quick-connecting device, whether spring, threaded connection or toggle
- 333 pin arrangement should be inspected to see that it operates properly.
- 334 ▪ Casters, if used, should be inspected for smooth rolling surfaces, free turning,
- 335 free acting swivel and to be sure that the locking mechanism is in good working
- 336 order.
- 337 • The scaffold shall be removed from service if a deficiency is found. In order to remove a
- 338 scaffold from service, a Red – DO NOT USE tag shall be placed at the scaffold access point(s).
- 339 The supervisor is then responsible for ensuring the necessary arrangements are made for
- 340 replacement or repair.
- 341 • Scaffold users shall immediately report any unsafe condition to their supervisor.
- 342 • Fermilab personnel are not permitted to repair damaged parts. Only qualified personnel
- 343 (vendor/manufacturer) shall perform scaffold repairs.
- 344 • All replacement parts shall be the same design as the original or an equivalent design as
- 345 designated by the manufacturer.

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- 347 **5.6 Scaffold Disassembly**
- 348 • A Competent Person conducts a pre-brief job meeting prior to disassembling scaffolding;

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- Supervises scaffold disassembly to ensure standards and regulatory requirements are met;
 - Supervises scaffold is disassembled by authorized workers to ensure standards and regulatory requirements are met;
 - Ensures the work site is left in a clean and safe condition.

5.7 Scaffold Recordkeeping

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- The following records must be maintained by each supervisor in order to meet the requirements of this program:
 - A listing of all scaffolds used by the department/work group.
 - Copies of all pre-use inspection records for one year after completion.

6.0 REFERENCES

- 360
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- 370
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- 29 CFR 1910.22, General Requirements
 - 29 CFR 1910.23, Ladders
 - 29 CFR 1910.27, Scaffolds and rope descent systems
 - 29 CFR 1910.28, Duty to have fall protection and falling object protection
 - 29 CFR 1910.29, Fall protection systems and falling object protection-criteria and practices
 - 29 CFR 1910.30, Training requirements
 - 29 CFR 1926, Subpart L, Scaffolds
 - 29 CFR 1926.1053, Ladders
 - American National Standards Institute (ANSI) A10.8 Safety Requirements for Scaffolding, 2011 Edition.
 - American National Standards Institute (ANSI) A14.3 Fixed Ladders, 2008 Edition.
 - Fermilab ES&H Manual (FESHM) Chapter 7010, ES&H Program for Construction
 - FESHM Chapter 7020, ES&H Program for Subcontractor Safety Other Than Construction
 - FESHM Chapter 7060, Fall Protection

378 7.0 TECHNICAL APPENDICES

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 380 Please use this same sort of formatting (font, headers/footers and headings) for Technical Appendices.
 381 Simply cut and paste the outline and fill in with the headings/text you wish.
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383 7.1 General Safe Use and Care of Ladders

- 384 • On step ladders, make certain the spreader is locked.
- 385 • Only one person on a ladder at a time (except for specially constructed, double-sided, step
- 386 ladders or mobile ladder stand platforms).
- 387 • Face the ladder when ascending or descending (exception: when the slope of the steps on a
- 388 fixed ladder or mobile ladder stand or platform, is 50 degrees or less above the horizontal).
- 389 • Maintain three-points of contact when climbing up or down a ladder.
- 390 • Avoid carrying materials or tools when climbing/descending a ladder. Use a tool belt or hand
- 391 line to raise or lower equipment or tools.
- 392 • Do not store or hang materials or equipment on/from the steps or platform of a unit.
- 393 • Place the ladder close to the work. Climb or stand on a ladder with your feet in the center of
- 394 the rung. Do not lean out/over the ladder rails (keep belt buckle area inside the rails).
- 395 • Use ladders made from fiberglass or wood if working near electrical hazards.
- 396 • Do not exceed the ladder load label rating.
- 397 • Do not sit on ladders.
- 398 • Use safety shoes or other rubber sole shoes when climbing a ladder.
- 399 • Do not use a ladder on a scaffold.
- 400 • Do not try to rock a ladder to move it.
- 401 • Do not move a ladder while someone is on it.
- 402 • Do not paint wood ladders, as paint could hide potentially dangerous defects.

403 Ladder Setup

- 404 • Set up ladder on solid and level base. If necessary, make the base solid and level.
- 405 • Do not set ladders on boxes, blocks or other objects that might move.
- 406 • Secure ladders whenever there is a danger of slippage.
- 407 • Avoid using ladders outdoors in high wind or during inclement weather conditions.
- 408 • Never set up ladders in front of or around doors, unless the door is posted and locked.
- 409 • Place warning signs or setup barriers around a ladder before use. Use warning cones in high
- 410 traffic areas.
- 411 • Never use ladders with metal side rails near exposed electrical wires or inside an electrical
- 412 work boundary.

413 Mobile Ladder Stand and Mobile Ladder Stand Platform

- 414 • Shall meet the American National Standard Institute (ANSI) 14.7 Mobile ladder Stands and
- 415 Mobile Ladder Stand Platforms and shall be heavy duty 250 pounds or greater.
- 416 • Inspect mobile ladder stand for damage and unusual wear, deterioration, or corrosion. If
- 417 necessary, tighten loose bolts, nuts, or connections; and secure with locking hardware.
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- 420 • Ensure rubber foot pads are present and free of wear and tear. When under load, rubber foot
- 421 pads should prevent horizontal movement.
- 422 • Secure all lockable wheels and casters before ascending the ladder to prevent horizontal
- 423 movement.
- 424 • Never load beyond their rated load capacity.
- 425 • Only stand on steps or platforms.
- 426 • All exposed surfaces are free from sharp edges and burrs.
- 427 • Keep the steps and platforms clear of debris.
- 428 • Mobile ladders must never be moved while occupied.
- 429 • Non-locking wheels or casters vertically retract when under load allowing the feet to make
- 430 contact with the ground to prevent horizontal movement.
- 431 • Access to or egress from a mobile ladder stand from any other elevated surface is prohibited
- 432 unless the unit has been positively secured against movement.
- 433 • Handrails, when provided, must be used while ascending or descending. The user must face
- 434 the steps while ascending or descending, except when the slope of the steps is 50 degrees or
- 435 less above the horizontal.
- 436 • General maintenance of a mobile ladder stand includes cleaning, lubrication, and the
- 437 replacement of on-product labels and markings as well as wheels, casters and rubber pads.
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439 **Step Ladders**

- 440 • Shall meet ANSI 14.5 Portable Reinforced Ladders and shall be heavy duty 250 pounds or
- 441 greater.
- 442 • Never use a stepladder over 20 feet in length.
- 443 • The highest point of use is two steps down from the top unless otherwise indicated on the
- 444 ladder's identification label. Best practice is the belt buckle should not be above the top step.
- 445 • Ensure label is in place and legible indicating duty rating.
- 446 • Ensure you can access the work from no higher than two steps from the top of the ladder. (Step
- 447 ladders, four feet or less in height, may be designed for standing closer to the top. Refer to the
- 448 manufacturer's instructions.)
- 449 • Fully expand, and lock supports prior to use. (Do not use folded or propped up against a vertical
- 450 surface.)
- 451 • Use on a level surface, free of debris or obstacles.
- 452 • Do not straddle a stepladder.
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454 **Single and Extension Ladders**

- 455 • Shall meet ANSI 14.5 Portable Reinforced Ladders and shall be heavy duty 250 pounds or
- 456 greater.
- 457 • Use the ladder only on a stable and level surface, unless it has been secured to prevent
- 458 displacement. Use a second person to brace the ladder until it can be secured.
- 459 • Place the base a distance from the vertical wall equal to one-fourth the working length of the
- 460 ladder plus the horizontal distance of the overhang (eave).
- 461 • The highest standing level is four rungs down from the top.
- 462 • Ensure extension ladders are sufficiently long enough to allow for:

- 463 • enough length for proper setup,
- 464 • overlap of ladder sections (per the manufacturer requirements),
- 465 • height restrictions of the highest standing level, and
- 466 • where appropriate, the extension of the ladder to be above the roof line.
- 467 • Ensure that the ladder extends at least three feet beyond the point of support (e.g. roof line).
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Table 1 - Extension Ladder Setup

Height to Gutter or Top Support Point	Ladder Height	Maximum Reach
9' max.	16'	15'
9' to 13'	20'	19'
13' to 17'	24'	23'
17' to 21'	28'	27'
21' to 25'	32'	31'
25' to 28'	36'	34'
28' to 31'	40'	37'

- 470
- 471 **Field Constructed Ladders**
 - 472 • Use on a level surface, free of debris or obstacles
 - 473 • Ensure rungs are secure and cleaned of debris.
 - 474 • Walk through rails at the top section of the ladder.
 - 475 • Inspection by Competent Person at initial use and weekly thereafter.
 - 476 • Job-made ladders shall comply with 29 CFR 1926.1053.
- 477
- 478 **Fixed Ladders**
 - 479 • Shall meet ANSI 14.3 Fixed Ladders
 - 480 • All new or modified fixed ladders at or over 24 feet must be equipped with a ladder safety system, which usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness.
 - 481
 - 482
 - 483 ○ Use of personal fall arrest equipment, like the ladder safety system, requires Fall Protection training and a written hazard analysis with fall rescue plan.
 - 484
 - 485 • All existing fixed ladders at or over 24 feet must be outfitted with ladder safety systems before November 2036.
 - 486
 - 487 • When not in use, exterior fixed ladders must be secured with a swing gate, chain, cage, or well-guard.
 - 488
 - 489 • Interior fixed ladder use may be controlled per the landlord's discretion.
 - 490 • Grab bars shall extend 42 inches above the access level or landing served by the ladder.
- 491
- 492

493 **7.2 Ladder Inspection Form**

494 You may utilize the Werner Ladder Inspection Checklist:

495 [https://www.wernerco.com/docs/default-source/literature/ladder-safety-inspection-](https://www.wernerco.com/docs/default-source/literature/ladder-safety-inspection-form.pdf?sfvrsn=ff6cdfd_0)
496 [form.pdf?sfvrsn=ff6cdfd_0](https://www.wernerco.com/docs/default-source/literature/ladder-safety-inspection-form.pdf?sfvrsn=ff6cdfd_0)

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500 Document the inspection using a ladder inspection tag, available in the stockroom 2650-401600. The
501 inspector must include their Fermilab ID number and the inspection date.

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506 **7.3 General Scaffold Safe Work Practices**

507

 508 **Before use**

- 509
- Follow all instructions from the manufacturer for erecting.
 - Consideration shall be given to the amount of wind. Follow the manufacturer’s instruction regarding operation in windy conditions. As a general rule, scaffolds shall not be used in winds exceeding 25 MPH.
 - Modifications and additions that may affect the capacity or safe operation are prohibited.
 - Welding operations completed while using scaffolds shall be conducted per the Fermilab Hot Work Permit Program.
 - Inspect the scaffold. If the scaffold fails inspection or becomes unsafe, a “do not use” tag or equivalent shall be attached to the access points in a conspicuous location.
 - Scaffolds with noted/reported deficiencies shall not be used until the deficiencies are corrected and the scaffold is re-inspected.

520

 521 **During use**

- 522
- Hard hats are required PPE when working on or in near proximity.
 - Ensure fall protection is in place, when required (e.g. guardrails).
 - Non-skid shoes shall be worn when working on a scaffold.
 - Scaffolds may never be overloaded. Only tools and materials which are needed may be stored on the scaffold.
 - Special consideration is needed to ensure no overloading or tipping of the scaffold occurs when utilizing add-ons such as pulleys for lifting materials/tools and shelves that attach to the scaffold to hold materials/tools.
 - Cross bracing shall not be used as a ladder or to access the working levels of the scaffold.
 - Mobile scaffolds may not be moved while occupied by personnel. Wheels must be locked when scaffolds are in use.
 - Control or tag lines shall be used to control the swinging of materials or equipment during transport onto the scaffold.
 - Ladders or other similar devices shall not be used on scaffolds to increase the working height of employees.
 - Sitting or climbing on the guardrails is prohibited.
 - Scaffold shall be kept clean of debris, excessive amounts of materials or tools, ice, snow, or other slippery substances.
 - Consideration shall be given to the protection of bystanders via barricading, or other equivalent means.
 - The following approach distances to energized electrical lines must be maintained:

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance (feet)
0 to 300V	Avoid Contact
300V to 50 KV	10
>50KV to 200KV	15
>200KV to 350KV	20

>350KV to 500KV	25
>500KV to 750KV	35
>750KV to 1000KV	45

- 543
544 **After use**
545 • All equipment and debris must be removed from scaffolds at the end of the shift. Items may not
546 be thrown off the scaffold. Items are to be lowered with a rope/bucket or handed off.
547 • Steps must be taken to protect against unauthorized use of scaffolds. (This may be necessary
548 when a scaffold is located outdoors or in a high pedestrian traffic area).
549 ▪ Options include but aren't limited to:
550 • Dismantling the scaffold at the end of the shift;
551 • Securing the worksite so that access to the scaffold is prohibited;
552 • Barricading the scaffold;
553 • Covering access points with fencing or other adequate item that will prevent climbing on
554 the scaffold;
555 • Removing the access ladder;
556 • Placing caution/danger tape around the scaffold.
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558 7.4 Mobile (Rolling) Scaffold Guidance

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- Mobile scaffolds shall be used only on level, smooth surfaces free of major defects.
 - Mobile scaffolds shall be braced by cross, horizontal or diagonal braces or a combination thereof to prevent racking or collapse of the scaffold and to ensure scaffolds remain plumb, level and squared at all times. All brace connections shall be secured.
 - No one is to ride on any part of a scaffold that is being moved.
 - All casters used with mobile scaffolding shall be provided with a positive locking device to hold the scaffold in position when the scaffold is stationary or while employees are on the scaffold.
 - Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
 - Manual force used to propel the scaffold shall be applied as close to the base as possible, and never more than 5 feet above the supporting surface.
 - The maximum work level height (work platform) must not exceed a height to base ratio of 4 to 1. Where the basic mobile unit does not meet this requirement, outriggers must be employed to achieve this base dimension or provisions must be made to guy or brace the unit against tipping, per the manufacturer.
 - Outrigger frames, when used, are installed on both sides of the scaffold, and would be included in the base/height limit calculations.
 - Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks or other similar motorized vehicles shall not be used to move scaffolds, unless the scaffold is specifically designed to be moved in that manner.

582 7.5 Pump Jack Scaffold Guidance

583 A pump jack scaffold is a platform supported by moveable brackets on vertical poles. Pump jacks
 584 are relatively inexpensive and useful when it's necessary to work at various heights. Pump jacks are
 585 also practical for work where two buildings are so close together that a ladder jack scaffold cannot
 586 be installed at the proper angle. There are two basic types: steel and aluminum. Steel pump jacks are
 587 made of pressed metal and are designed for use on double-thick two-inch by four-inch wood poles.
 588 Aluminum pump jacks are made of aluminum extrusions and are designed for special four-inch by
 589 four-inch aluminum poles. Steel pump jack components and aluminum pump jack components can't
 590 be interchanged.

- 591
- 592 • Pump jack brackets, braces, and accessories must be fabricated from metal plates and angles.
 - 593 • Each pump jack bracket must have two positive gripping mechanisms to prevent any failure
 - 594 or slippage.
 - 595 • When guardrails are used for fall protection, a workbench may be used as the top rail only if
 - 596 it meets all requirements of paragraphs 29 CFR 1926.451(g)(4)(ii), 29 CFR
 - 597 1926.451(g)(4)(vii), (viii) and 29 CFR 1926.451(g)(4)(xiii).
 - 598 • Work benches must not be used as scaffold platforms.
 - 599 • Poles must be secured to the structure by rigid triangular bracing, or equivalent, at the:
 - 600 ○ Bottom
 - 601 ○ Top
 - 602 ○ Other points as necessary
 - 603 • When bracing already installed must be removed so the pump jack can pass, an additional
 - 604 brace must be installed approximately 4 feet above the original brace before it is removed.
 - 605 The additional brace must be left in place until the pump jack has been moved and the
 - 606 original brace reinstalled.
 - 607 • When poles are made of wood, the pole lumber must be:
 - 608 ○ Straight-grained
 - 609 ○ Free of shakes
 - 610 ○ Free of large loose or dead knots, and other defects that might impair strength.
 - 611 • When wood poles of two continuous lengths are joined together, the seam must be parallel to
 - 612 the bracket.
 - 613 • To develop full strength when two-by-fours are spliced to make a pole, mending plates must
 - 614 be installed at all splices.
 - 615 • Wood poles may not exceed 30 feet in height.
 - 616 • When 2 x 4s are spliced together to make a 4 x 4-inch wood pole, they must be:
 - 617 ○ Spliced with 10 penny common nails no more than 12 inches center to center.
 - 618 ○ Staggered uniformly from the opposite outside edges.
 - 619 • Maximum intended load for pump jack scaffolds is 500 pounds, applied at the center of the
 - 620 platform span.
 - 621 • Not more than two employees may be on a pump jack scaffold between any two supports at
 - 622 one time.
 - 623

624 7.6 Scaffold Access/Egress Requirements

625 Climbing the structural cross-braces of a scaffold is *unsafe*, and *specifically forbidden* by federal
 626 regulations. However, OSHA permits direct access from another scaffold, structure, or personnel
 627 hoist.

628
 629 If such access is not possible, portable ladders, hook-on ladders, attachable ladders, stair towers,
 630 stairway-type ladders, ramps, walkways, or built-in ladders must be used, under the following
 631 regulations:

632 **Portable, Hook-on, and Attachable Ladders**

- 634 ▪ Must be positioned so as not to tip the scaffold.

635 **Hook-on and Attachable Ladders**

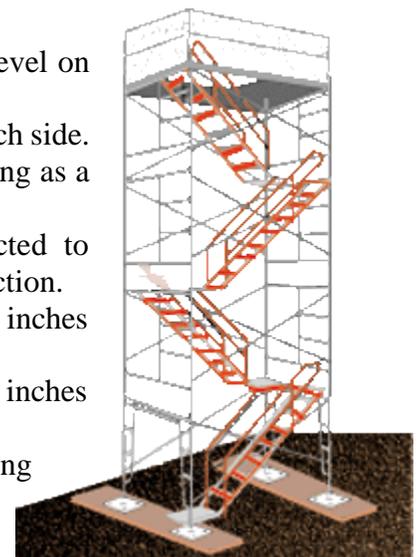
- 637 ▪ Must be specifically designed for the type of scaffold with which they are used.
- 638 ▪ Must have their lowest rung no more than 24 inches above the level on which the scaffold is
 639 supported.
- 640 ▪ When used on a supported scaffold more than 35 feet high, must have rest platforms at 35-
 641 foot maximum intervals.
- 642 ▪ Must have a minimum rung length of 11½ inches, and a maximum space between rungs of
 643 16¾ inches.

644 **Stairway-type Ladders**

- 646 ▪ Must have their bottom step no more than 24 inches above the level on which the scaffold is
 647 supported.
- 648 ▪ Must have rest platforms at 12-foot maximum intervals.
- 649 ▪ Must have a minimum step width of 16 inches, except that mobile stairway-type ladders shall
 650 have a minimum step width of 11½ inches.
- 651 ▪ Must have slip-resistant treads on all steps and landings.

652 **Stair Towers**

- 654 ▪ Must have their bottom step no more than 24 inches above the level on
 655 which the scaffold is supported.
- 656 ▪ Must have a stair-rail, consisting of a top-rail and a mid-rail, on each side.
 - 657 ○ The top-rail of each stair-rail must also be capable of serving as a
 658 handrail, unless a separate handrail is provided.
 - 659 ○ Stair-rails and handrails must be designed and constructed to
 660 prevent punctures, lacerations, snagged clothing, and projection.
 - 661 ○ Handrails, and top-rails used as handrails, must be at least 3 inches
 662 from other objects.
 - 663 ○ Stair-rails must not be less than 28 inches nor more than 37 inches
 664 from the surface of the tread.
- 665 ▪ Must be at least 18 inches wide between stair-rails and have a landing
 666 platform at least 18 inches wide by at least 18 inches long at each
 667 level.



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- Must have slip-resistant surfaces on all treads and landings.
 - Must be installed between 40 degrees and 60 degrees from the horizontal.
 - Must have uniform riser height, within ¼ inch, for each flight of stairs, except for the top and bottom steps of the *entire system*.
 - Must have uniform tread depth, within ¼ inch, for each flight of stairs.

Built-in Scaffold Ladders

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- Must be specifically designed and constructed for use as ladder rungs.
 - Must have a rung length of at least 8 inches.
 - Must not be used as work platforms when rungs are less than 11½ inches, unless each employee uses [fall protection](#) or a positioning device.
 - Must be uniformly spaced within each frame section.
 - Must have rest platforms at 35-foot maximum intervals on all supported scaffolds more than 35 feet high.
 - Must have a maximum space between rungs of 16¾ inches.

683 **Steps and rungs of ladders and stairways must line up vertically with each other between rest**

684 **platforms.**

685

Ramps and Walkways

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- 693
- Must have [guardrails](#) which comply with [29 CFR 1926.502\(b\)](#) and [29 CFR 1926 Subpart M](#) if more than 6 feet above lower levels.
 - Must have a slope of no more than 1 vertical to 3 horizontal degrees (20 degrees above the horizontal).
 - Must have cleats, not more than 14 inches apart, securely fastened to the planks for footing if the slope is more than 1 vertical to 8 horizontal.

Direct Access

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- Direct access to or from another surface shall only be used when the scaffold is not more than 14 inches horizontally and 24 inches vertically from the other surface.

