



Lusail Real Estate Development Company

Health, Safety, Security, Environment, Logistics & Quality Department

Lusail Construction Safety Management Procedure – Ladders

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1. Description

This element of the LCSMP provides requirements for ladders; including portable step and extension ladders, and fixed ladder systems. This element applies to all Lusail personnel, Contractors, Developers, Consultants and Subcontractors working on the Lusail Development Project.

This element of the LCSMP does not cover personal fall arrest or fall restraint systems, which are covered in [LUS-HSE-WG3-446-022](#), Fall Protection. Although this element addresses fixed ladders used in scaffolding systems, it does not cover scaffolding systems safety requirements, which are included in [LUS-HSE-WG3-446-020](#), Scaffolding Systems.

2. Definitions

Term	Description
Job Hazards Analysis (JHA)	A process used to identify the hazards or potential hazards associated with each step of a particular job or work plan. Purpose is to identify associated hazards and then eliminate, control, or remove them before the work is started.
Cleats	Ladder crosspieces of rectangular cross section placed on edge on which a person may step when ascending or descending a ladder.
Competent Person	One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. One must have specific training in, and be knowledgeable about, ladders, the use of ladders, and the requirements of the applicable standards.
Single Cleat Ladder	A ladder that consists of a pair of side rails, usually parallel, but with flared side rails permissible, connected together with cleats that are joined to the side rails at regular intervals.
Double Cleat Ladder	A ladder that is similar to a single cleat ladder, but wider, with an additional center rail allowing two-way traffic for workers ascending and descending.
Extension ladder	A nonself-supporting portable ladder of adjustable length. It consists of two or more sections traveling in guides or brackets arranged to permit length adjustment. Its size is determined by the sum of the lengths of the sections measured along the side rails.
Portable ladder	A ladder that can readily moved or carried
Fixed ladder	A ladder permanently attached to a structure, building, or equipment.
Fly section	The movable part of the extension ladder that extends. A ladder may have more than one fly section.
Job-made ladder	A ladder that is fabricated by employees, typically at the construction site, and is not commercially manufactured. This definition does not apply to any individual rung/step ladders.
One-Quarter Rule or 4-to-1 Ratio	The bottom of the ladder must be 1 foot away from the wall for every 4 feet to the upper support point, which requires the ladder to be approximately 1 foot longer than the height of structures 20 to 40 feet high.

Term	Description
Runner	The lengthwise horizontal bracing or bearing members, or both.
Stepladder	A stepladder is a self-supporting portable ladder of nonadjustable length, having flat steps and a hinged back. Its size is determined by the overall length of the ladder measured along the front edge of the side rails.
Working Load	Load imposed by men, materials, and equipment.

3. Responsibilities

The Contractor is fully responsible for the pre-planning, development of Method Statements, Job Hazard Analyses, overall safe work planning and implementation. The Contractor's Project Management is responsible for the assurance that all work is planned and conducted according to the pre-planning document, Contractor and Lusail Health Safety & Environment (HSE) procedures and the Qatar Construction Specifications 2010. Should a conflict occur between procedures/ standards or requirements the more stringent shall apply.

4. Ladder Selection

Match work tasks to appropriate ladders. Consider whether other elevated work platforms, such as scaffolds or aerial lift equipment, may be better suited for the task. Consider the weight of supplies and equipment (working load) when using a ladder. Portable ladders have a duty rating based on the maximum weight capacity (see Table A below).

Table A – Safe Ladder Working Loads

Type	Duty Rating	Working Load (Maximum lb)
IAA	Industrial	Special duty: 375
IA	Industrial	Heavy duty industrial: 300
I	Industrial	Heavy duty: 250
II	Commercial	Medium duty: 225
III	Household	Light duty: 200

Do not use portable metal ladders for electrical work or where they might come into contact with electrical conductors or energized wiring. To perform electrical work, use ladders made of wood or fiberglass. Wooden ladders can be treated with a protective coating, but they must not be painted or treated in a way that could hide defects, labels or markings.

Ladders must be surfaced to prevent snagging of clothing and injury from punctures or lacerations.

Use the appropriate length of ladder based on the following standards:

- Use single ladders less than or equal to 9.1 meters (30') long
- Use 2-section extension ladders less than or equal to 18.3 meters (60') long
- Stepladders must not be longer than 6.1 meters (20').
- Fixed ladders must not be longer than 6.1 meters (20') unless equipped with a cage or other ladder safety device
- If a fixed ladder is equipped with a cage, then it may extend for 9.1 meters (30') without additional fall protection devices
- Fixed ladders with cages that exceed 9.1 meters (30') must have offset rest platforms at least every 9.1 meters (30') or must be equipped with a fall protection device.

Manufactured portable wood ladders must be in accordance with ANSI/ASC A14.1-2007 and A14.2-2007.

Fixed ladders must meet the provisions of ANSI A14.3-2002.

5. Job-Made Ladders

Job-made ladders must be designed for specific jobs to provide access or egress from a work area; not as workstations. They are used only until a work phase is complete or until permanent stairways or fixed ladders are ready for use.

- Job-made ladders must be constructed to conform to all applicable ladder specifications
- Do not tie or fasten ladder sections together to make longer ladders (unless the ladder manufacturer endorses this type of use, and you have hardware fittings specifically designed for this use)
- Shorter sections cannot be spliced to make longer sections
- Ladders cannot be made by fastening cleats across a single rail.

Lumber for siderails must be as specified in Acceptable Stress-Grade Lumber for Job-Made

Ladders (Attachment [LUS-HSE-FM4-446-040](#)) and stamped with an American Lumber Standards Committee-approved grademark or equivalent. The minimum fiber stress in bending for siderails must be 1,200 psi.

6. Ladder Placement

- Before setting up a ladder, clear the worksite of potential hazards, including debris and obstructions. The areas around the top and base of ladders must be free of tripping hazards such as loose materials, trash, cords, hoses and leads
- If ladders project into passageways or doorways where they could be displaced or struck by personnel, moving equipment, or materials being handled, protect them by barricades or guards
- Provide clearance of at least 15 inches each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary
- Do not place ladders against movable objects
- Do not lean an extension ladder against an unsecured foundation, such as a pile of boxes
- Ensure that portable ladders are tied at the top, blocked, and otherwise secured to prevent displacement. Ensure that both rails are supported and tied off at the top unless the ladder has a single support attachment. Another person must hold the ladder while the top is being tied off
- Place portable ladder feet on a substantial base. Place ladders on a firm, even surface whenever possible. If a ladder must be placed on an uneven surface, use a ladder leveler. Do not use boxes or boards to level out the ladder or to achieve additional height
- Attach rubber feet to ladders that are used on concrete or smooth surfaces
- Ensure that the base section of portable ladders has secure footing and is tied off
- Tie a rung of the ladder fly section to a rung of the base section if the working height is over 4.9 meters (16')
- If either the top or bottom of the ladder cannot be secured, another person must hold the ladder
- Stepladders must have the spreaders opened and locked. Do not use a stepladder as a straight ladder by leaning it against a structure
- If the ladder has a safe angle guide on the side, use it to establish the proper pitch. The long leg of the "L" should be straight up and down, with the short leg parallel to the ground
- The base of straight or extension ladders must follow the one-quarter rule (4-to-1 ratio), at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter of the working length of the ladder. The pitch of a properly placed ladder is 75.5 degrees from the horizontal.

Siderails on ladders used for access to a floor or platform must extend at least 1 meter (3') above the landing if you intend to climb onto the structure. When this is not practical, install grab-rails to provide a secure grip for anyone moving to or from the point of access.

Ensure that two-section extension ladders overlap as indicated in the Table B below. The fly and base sections must overlap approximately 1/12 of the total working height of the ladder.

Table B – Safe Ladder Working Loads

Extension Ladder Section Length (feet)	Minimum Overlap (feet)
Less than 35	3
36 - 48	4
49 - 60	5

7. Ladder Use

- Use ladders only for their intended purpose. Do not use ladders in the horizontal position as platforms, runways, or scaffolds. Do not use ladders as guys, braces, or skids
- Be sure that shoes are free of mud, grease, or other substances that could cause a slip or fall
- Do not carry heavy or bulky objects up a ladder. Use a towline or a tool belt instead
- Do not rush up or down a ladder
- When ascending or descending, maintain three points of contact: two hands and a foot or two feet and a hand
- Always face the ladder and ensure that latches are in place before climbing an extension ladder
- Do not lift heavy materials or conduct tasks requiring substantial exertion while stationed on a ladder
- Do not move, shift, or extend ladders while they are in use
- Always move the ladder to avoid overreaching. Keep your belt buckles between the side rails
- Do not stand on the top two steps of a stepladder
- Ensure that ladders with metal-reinforced rails are used with the reinforcement on the underside to avoid hazards such as tripping and electrocution
- Do not support more than one section of planking per ladder rung. Do not allow more than two persons on one section of planking at a time
- When using a portable wooden ladder greater than 7.6 meters (25') above the ground
- Do not perform work that requires the use of both hands unless wearing a harness and lanyard secured to the adjacent structure
- Do not perform work requiring eye protection, respirators and/or pressure equipment if 9.1 meters (30') above the ground
- When using wooden stepladders
 - Do not climb on the bracing or the back legs
 - Do not use as single ladders
 - Do not stand or step higher than the third step from the top (NEVER step or sit on the top two steps), if working 1.5 meters (5') or higher from the ground.

8. Fall Protection

- Use 100% fall protection in accordance with [LUS-HSE-WG3-446-022](#), Fall Protection
- Use a personal fall arrest system (harness and lanyard) when working 1.8 meters (6') or higher from the floor AND one of the following conditions exists:

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- The work requires you to be “outside the confines of the ladder,” i.e., if your belt buckle is not between the side rails
 - The work requires application of sufficient force that could lead to loss of balance, e.g., leaning into a pipe wrench in a way that may cause a fall if you slip or the fitting suddenly breaks loose.
 - Personal fall arrest systems are not required when climbing up and down the ladder
 - Tie off lanyards to an appropriate anchor point. The ladder is not an appropriate anchor point
 - In accordance with [LUS-HSE-WG3-446-018](#), Walking/Working Surfaces, provide appropriate platforms where ladders are used to climb:
 - Heights greater than 6.1 meters (20')
 - If you must step greater than 12 inches from the center of the ladder to the nearest edge
 - Use cages, wells, or other ladder safety devices on fixed ladders longer than 6.1 meters (20'). Cages must start 7' – 8' above the ladder base and extend 42 inches above the top landing, unless other acceptable protection is provided.

9. Inspections

9.1 Daily Inspection

- Before initiating any work using a portable ladder, the employee who intends to use the ladder performs a visual inspection
- If an employee identifies a defective ladder, he immediately marks it in a manner that readily identifies it as defective
- The supervisor removes the ladder from service until the ladder is made safe for use or is destroyed and disposed
- Conduct an immediate inspection if a ladder is involved in an accident, tips over, or is exposed to chemicals or oil

9.2 Monthly Inspection

- The competent person performs a monthly inspection in accordance with the Ladder Inspection Checklist (Attachment [LUS-HSE-FM4-446-041](#)). One inspection form may be used per year as long as the ladder stays in good repair. If a defect occurs and the ladder is discarded or repaired, note the disposition of the ladder, and start a new inspection sheet.
- After completion of a satisfactory inspection, the competent person places a ladder inspection sticker on the ladder with their initials and date of inspection.
- Submit the completed monthly inspection forms to the Site Safety and Health Officer each month. The Site Safety and Health Officer reviews the inspection forms and monitors the safe use of ladders on projects.

10. Ladder Storage

Store all ladders in a well-ventilated area away from extreme heat or cold. When transporting a ladder, secure both ends to prevent road shock that could damage the ladder.

Do not store items on top of a ladder. Keep loose tools off the steps and top platform of ladders

11. Training

The Contractor trains affected and authorized employees in potential hazards, correct ladder selection, placement, and use. Subcontractors must train their own employees.

The Safety and Health Officer arranges employee training by a competent person at the time of the employee's initial assignment. Ladder safety training may be concurrent with fall protection training. Employees are trained on:

- Potential fall hazards in the work area
- Procedures to erect, maintain, and disassemble fall protection systems
- Maximum intended load-carrying capacities of ladders

During daily huddles, supervisors review with employees the relevant AHAs conducted for jobs that include ladder activities.

Retraining is conducted when there are deviations from or inadequacies in the employee's knowledge or use of ladders. The retraining re-establishes employee proficiency.

Using an acceptable training form, the records custodian maintains a record of all training or instruction given to employees.

12. Documentation

The HSE Representative maintains project records at the site for the duration of the project and archives them for a minimum retention time of 10 years from creation date.

13. References

Qatar Construction Specifications 2010 Section 11 Part 1.3 "Working at Heights"

ANSI/ASC A14.1-2007, Safety Code for Portable Wood Ladders

ANSI/ASC A14.2-2007, Safety Code for Portable Metal Ladders

ANSI A14.3-2002, Safety Code for Fixed Ladders

14. Attachments

[LUS-HSE-FM4-446-040](#) Acceptable Stress-Grade Lumber for Job-Made Ladders

[LUS-HSE-FM4-446-041](#) Ladder Inspection Checklist