# Ladder Safety

## Overview

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|---|---|
| **Purpose** | The purpose of this instruction is to provide safe use requirements for ladder usage while preventing the use of faulty ladders; improper use and set-up of a ladder and finally incorrect inspection of ladders at Marathon, Los Angeles Refinery (LAR). |
| **Scope** | This standing instruction is intended to be a guide in demonstrating the safety requirements and level of safety controls that shall be used to ensure safety compliance to Marathon, LAR safety, governmental and industrial standard. |
| **Out of Scope** | Fixed Ladder Requirements as they are captured by engineering. |
| **Records Retention** | Printed copies of this document should not be retained more than 12 months. Any revision to this document will be retained a maximum of 10 years following the revision. |
| **Supersedes** | This document is replacing all previous version of HSS 007 Ladder Safety |

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# 1.0 References

**1.1 Refining References**

The table below lists the Refining references used with this document.

| Number | Description |
|---|---|
| SAF 049 | Fall Protection |
| FS 790 | Fall Protection and Prevention |
| SAF 060 | Scaffolding |
| FS 510 | Scaffolds |

**1.2 Industry References**

The table below lists the industry references used with this document.

| Number | Description |
|---|---|
| ANSI 14.1 | Wood Ladders- Safety Requirements |
| ANSI 14.2 | Portable Metal - Safety Requirements |
| ANSI 14.4 | Safety Requirements for Job-Made Wooden Ladders |
| ANSI 14.5 | Portable Reinforced Plastic Safety Requirements |
| ANSI 14.7 | Mobile Ladder Stands and Mobile Ladder Stand Platforms |
| ASC A14 | American Ladder Institute |

**1.3 Regulatory References**

The table below lists the regulatory references used with this document.

| Number | Description |
|---|---|
| OSHA 1910.22&23 | General Requirements and Ladders |
| OSHA 1926.1053 | Ladders |
| Cal-OSHA 3276 | GISO-Portable Ladders |
| Cal OSHA 1676 | Job-Made Ladders. |

**1.4 Terms**

The following terms are used in this document:

- A.1 Angle of Inclination
- A.2 Base
- A.3 Chain or Cable Ladder (Jacob's Ladder)
- A.4 Cleats
- A.5 Duty Rating
- A.6 Extension Ladder
- A.7 Fixed Ladder
- A.8 Job Made Ladder
- A.9 Ladder
- A.10 Ladder Foot/Shoe
- A.11 Ladder Safety System
- A.12 Trolley Ladder (aka Mobile Ladder)
- A.13 Platform Ladder
- A.14 Portable Ladder
- A.15 Qualified Person
- A.16 Remove from Field Service (RFS)
- A.17 Safety Feet
- A.18 Sectional Ladder
- A.19 Step Ladder
- A.20 Step Stool (ladder type)
- A.21 Single Rail Ladder
- A.22 Three Points Rule
- A.23 Twin Portable Ladder
- A.24 Side Rails

**Reference**: For details, see Appendix A: Terms and Definitions.

# 2.0 Roles and Responsibilities

**2.1 Roles and Responsibilities**

The table below describes the roles and responsibilities related to this document.

| Roles | Responsibilities |
|---|---|
| Qualified Person | means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project. |
| User | Means the individual actively using the ladder. |

# 3.0 General Ladder Safety

**3.1 Requirements for Ladder Use**

**3.1.1** All ladders used in Marathon LAR facilities shall be visually inspected prior to use by the user

**3.1.2** Ladders shall not be used as a brace, skid, guy or gin pole, gangway, or for other uses than that for which they were intended, unless specifically recommended for use by the manufacturer.

**3.1.3** All non-self-supporting portable ladders must be secured (e.g. strap, rope, #9 wire, blocked etc.) prior to use (NO EXCEPTIONS).

**3.1.4** Never use a portable ladder as a fall protection anchor point.

**3.1.5** Whenever ladders are used to access a roofline, platform, step off point or point of support, the ladder shall extend at least 3 feet beyond (vertically) the edge of the roofline.

**3.1.6** Ladders shall not be used on scaffold platforms to increase working level height. Any deviation requires Safety Manager's review and approval.

**3.1.7** When ascending or descending always face the ladder, using the "three points of contact rule" (always see Figure 5 - Use of Three (3) Points of Contact): 1 hand, 2 feet or 2 hands, 1 foot.

**3.1.8** Stay within safe limits of balance by keeping the centerline of your body between the ladder side rails while working (see Figure 4 - Over Reaching the Ladder's Center Position).

**3.1.9** Never try to shift a ladder while you are on it.

**3.1.10** Ladders used in a location that can be affected by pedestrian, mobile equipment or motor vehicle traffic shall be protected from contact by a spotter, barricades, or traffic cones.

**3.1.11** Do not leave tools or equipment on ladders where they may fall.

**3.1.12** Do not ascend or descend a ladder with tools or material in your hands.

**3.1.13** Do not stand or work any higher than the top 3 rungs of a straight, extension or single ladder.

**3.1.14** Do not stand on the top-cap or the step below the top-cap of a stepladder.

**3.1.15** Only one person shall be on a ladder at any given time. Exception: Unless specifically designed for multi-person use.

**3.1.16** Areas around the top and bottom of a ladder in service shall be kept clear Exception: Construction and removal of scaffolding only.

**3.1.17** Scaffold ladders shall not be used in place of portable ladders.

**3.1.18** Metal ladders are never to be used near electrical hazards or during inclement weather (e.g. transformer, conductors, thunder/lightning or heavy rainstorms as identified by NOAA).

**3.1.19** Electrical workers (Electricians) shall use only non-conductive (e.g. wooden or fiberglass without conductive framing) type ladders.

**3.1.20** Ladders shall be free of oil, grease, or slippery materials to avoid slipping.

**3.1.21** When using portable ladders which present a fall hazard of 6 feet or greater, a hazard assessment shall be conducted. Consideration shall be given to:

- Alternative to ladders, such as scaffolding, aerial lifts, etc.
- Duration of exposure
- Task involved
- Ability to use personal fall arrest systems.

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**3.2 Contractor Ladder Use**

1. Contractors using ladder inside of Marathon LAR facilities shall meet (or exceed) this standard.
2. Contractors using ladder inside of Marathon LAR facilities shall comply with periodic audit of ladders used in Marathon LAR to ensure compliance with this standard.

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# 4.0 Portable Ladder Selection

**4.1 Ladder Use**

The following methods shall be used prior to selecting a portable ladder for use.

**4.2 Selection of a Portable Ladder**

**4.2.1** Must be the purpose for which the ladder was designed to be used.
**4.2.2** Know the specific job and work being performed using the ladder.
**4.2.3** Identify and avoid uneven/unstable ground, slippery conditions, clearance, etc.
**4.2.4** Know and understand the height of work surface to be reached for work.
**4.2.5** Know the workload (weight) to be put on the ladder.
**4.2.6** Understand worker position in relation to the task.
**4.2.7** Identify required ladder length, duty rating and overlapped length
**4.2.8** Ensure that ladder has a current inspection tag before use.

**4.3 Ladder Workload**

**4.3.1** Ladder user shall know and understand ladder work load your ladder will be supporting prior to use. The user shall add the amounts of weights to get the total amount of weight your ladder will be supporting, (i.e. workload). Add the following:

- Your Weight; plus
- The Weight of Your Clothing and Protective Equipment; plus
- The Weight of Tools and Supplies You Are Carrying; plus
- The Weight of Tools and Supplies Stored on the Ladder.

**4.4 Ladder Duty Rating**

| Table 1 | Ladder Duty Rating Table | |
|---|---|---|
| **Duty Rating** | **Ladder Type** | **Working Load (lbs.)** |
| Special Duty | IAA | 375 |
| Extra Heavy-Duty | IA | 300 |
| Heavy-Duty | I | 250 |
| Medium-Duty | II | 225 |
| Light-Duty | III | 200 |

**Note:**

- Ladders used inside of the Marathon LAR Refinery production areas shall be rated Type IAA or IA.
- Ladder work performed inside of any of the administrative building may use a ladder with a heavy duty I-rating (e.g. Main Office Building (MOB), Field Office Building (FOB)).
- Do not assume that a longer ladder has a higher weight capacity. There is no relationship between ladder length and weight capacity.

**4.5 Two Section Extension Ladder Overlap**

| **Table 2** | **Two Section Extension Ladders** |
|---|---|
| Two section extension ladders shall not be used when the overlap between the sections is less than the following minimum overlap: | |
| **Ladder Size (Feet)** | **Minimum Overlap (Inches)** |
| Up to and including 32 | 36 |
| Over 32, up to and including 36 | 46 |
| Over 36, up to and including 48 | 58 |
| Over 48, up to and including 60 | 70 |

**4.6 Specific Portable Ladder Restrictions**

| **Table 3** | **All Portable Ladders** |
|---|---|
| Ladder Type shall not exceed the following maximum lengths. | Maximum Length (Feet) |
| Step ladder | 20 |
| Two-section extension ladder (wood) | 60 |
| Two-section extension ladder (metal) | 48 |
| Three-section extension ladder (metal) | 60 |
| Two-section extension ladder (reinforced plastic) | 72 |
| Trestle ladder | 20 |
| Extension trestle ladder base section | 20 |
| Extension trestle ladder extension section | 20 |
| Painter's step ladder | 12 |
| Mason's ladder | 40 |
| Cleat ladder | 30 |
| Trolley/Platform ladder or side-rolling ladder | 20 |
| Single ladder | 30 |
| Step ladder | 20 |

**4.7 Portable Ladder Set-Up**

**4.7.1 Straight or extension ladders**

- Place the base of your ladder on a firm and level surface
  - Make sure that both feet are on level surface/ground.
  - On wet or unstable ground, brace the base to keep it in place, (e.g. nail a two-by-four to the ground.)
- Set up your ladder at the required angle
  - Use the 4-to-1 Rule: For every 4 feet up, place the base of your ladder 1 foot from the wall or upper support that it rests against.
- Position and secure your ladder for safe access
  - Extension/single ladder set up is a two-man job, e.g. one person holding the ladder the other person securing the ladder.
  - If you will be getting off the top of your ladder to access your work area, your ladder's side rails must extend at least 3 feet above the level or upper landing you are accessing.
  - Tie off your ladder's using both of the side rails at the top inside positions.
  - Tie off point shall be 4" in diameter or greater.
  - Never use hot piping or process equipment to tie off ladders
- Place the top of your ladder against a stable surface
  - Make sure both side rails are equally supported and stable unless your ladder is equipped with a single-support attachment.

**4.7.2 Stepladders**

- Place the base on a firm and level surface, making sure that all four feet are on the ground.
- Open and lock the spreader bars.

**4.8 Ladder Securing (Tie-Off) Methods**

**4.8.1** All ladder securing methods (e.g. straps, ropes, 9-wire, claps etc.) shall be inspected prior to ladder use.

**4.8.2** Ladder stability (i.e. level footing) must be established prior to use of a securing ladder method.

# 5.0 Ladder Types Specific Requirements

**5.1 Portable Ladders**

Portable ladders are generally designed for one-person use; to meet the requirements of the person, the task, and the environment. There are different types of portable (mobile) ladders the following is a list of the most used portable ladders at Marathon LAR.

### 5.1.1 Chain/Cable Ladder Use

Marathon LAR employees using chain or cable rope ladder shall wear a safety harness that is attached to a rescue retrieval system at all times while on the equipment. While in use, the chain or cable rope ladder shall be:

- Secured at the top to an anchorage, as described in the equipment use plan and at the bottom, to a substantial anchorage.
- ONLY EXCEPTION: During installation or retrieval of the chain or wire rope access equipment.
- Only one person shall be on the equipment at a time.
- The user shall not hand-carry tools, equipment or other materials while climbing on the equipment.
- Three points of contact shall be maintained at all times while climbing on the equipment.
- The equipment (Chain/Cable Ladder) shall not be used where the user or equipment may contact energized electrical equipment (e.g. transformers, conductors, etc.).
- The equipment shall be kept free of oil, grease, or other slippery materials.

### 5.1.2 Chain/Cable Ladder Use Plan

A Chain/Cable Ladder Use Plan shall be provided in writing when the use of a Chain or wire ladder is used. This Plan shall be approved by the Safety Manager or designee and shall contain the following:

- A description of the specific locations where chain or wire rope access equipment is to be used.
- A description of tasks requiring access using chain or wire rope access equipment.
- A justification as to why the use of fixed or portable ladders is not feasible for each location identified for equipment use. (A single justification may be used for multiple locations that have substantially the same characteristics).
- A description of the way the equipment is to be secured at the top to an anchorage.

- Installation details for each location. (A single set of details may be provided for multiple locations that have substantially the same characteristics).
- Inspection instructions.
- Maintenance instructions.
- Maintenance log.
- Email completed plan to: LAR-SafetyCompliance@Marathonpetroleum.com

#### 5.1.3 Extension Ladder

- Extension ladder must be used as intended, not as a single or fixed ladder.
- Angle of extension ladder should be four-to-one, which means, for every four feet up, the base is one foot out (see Figure 1 - Basic Ladder Set Up).
- Extension ladders shall not be used horizontally as a scaffold, platform, or runway.
- Extension ladders shall not be separated and used separately. Cleat feet must be on the base.
- Extension ladders accessing platforms or landings must have side rails extending three feet above platform.
- If an extension ladder must be repositioned after being properly placed, "YOU MUST UN-TIE" the extension ladder before repositioning.
- Extension ladders must not exceed 60 feet with proper overlap (see section 6.5 Table 2).
- Another worker shall hold the extension ladder until the ladder can be secured or tied off.

#### 5.1.4 Job Made Wooden Ladder

When constructing a Job Made Wooden Ladder, all repairs shall be completed by a qualified person. Repair materials and finished products shall follow the appropriate Cal-OSHA 8 CCR §3276 & 1676 ladder regulation.

#### 5.1.5 Platform/Mobile Ladder

- Ensure the ladder is placed on dry, firm, level ground/floor before using. Uneven footing may cause the ladder to rock. If this occurs reposition the ladder until all feet have firm contact with the floor.
- Always check there is no rocking movement before climbing the ladder.
- If castors are fitted to the ladder, ensure rubber feet have firm contact with the floor when the springs are depressed.
- Ensure the ladder is fully opened and the spreader bar is locked into position. Check for overhead obstructions before climbing.

- Do not lift heavy weights that can unbalance the ladder.
- Never stand or sit on the top cap or use the rails around the top as a step. It is not designed to be used as a tread/seat or step. Always stand in the center of the platform.
- Do not overreach while using the ladder. Maintain most of your body weight inside the perimeter of the platform.
- Do not "walk" the ladder while on it. Always get off to shift position.
- Before moving a ladder, take care to ensure that all tools and other items have been removed.
- Keep ladders away from exposed electrical components in accordance with the approach distance table in RSP-1162 and as indicated below:

**Appendix C: Approach Distances**

**C.1 Approach Distance Table**

The following table shows the minimum approach distances to exposed energized electrical parts for Shock Protection for Alternating-Current Systems.

**Note:** All dimensions are distance from energized electrical conductor or circuit parts to employee.

| Nominal Voltage Voltage Rating Phase-to-Phase | Arc Flash Boundary | Limited Approach Boundary (1) | | Restricted Approach Boundary (2) |
|---|---|---|---|---|
| | | Exposed Movable Conductor | Exposed Fixed Circuit Part | Standard Inadvertent Movement |
| | *Energized Part to Employee (distance in feet - inches)* | | | |
| 50V - 150V | See Equipment Arc Flash Label | 10' – 0" | 3' – 6" | Avoid Contact |
| 151V - 750V | | 10' – 0" | 3' – 6" | 1' – 0" |
| 751V - 15kV | | 10' – 0" | 5' – 0" | 2' – 2" |
| 15.1kV - 36kV | | 10' – 0" | 6' – 0" | 2' – 7" |
| 36.1kV - 46kV | | 10' – 0" | 8' – 0" | 2' – 9" |
| 46.1kV - 72.5kV | | 10' – 0" | 8' – 0" | 3' – 6" |
| 72.6kV – 121kV | | 10' – 8" | 8' – 0" | 3' – 6" |
| 138kV - 145kV | | 11' – 0" | 10' – 0" | 3' – 10" |
| 161kV - 169kV | | 11' – 8" | 11' – 8" | 4' – 3" |
| 230kV - 242kV | | 13' – 0" | 13' – 0" | 5' – 8" |
| 345kV - 362kV | | 15' – 4" | 15' – 4" | 9' – 2" |
| 500kV - 550kV | | 19' – 0" | 19' – 0" | 11' – 8" |
| 765kV - 800kV | | 23' – 9" | 23' – 9" | 15' – 11" |

**Notes:**

(1) Unless permitted, no unqualified person shall enter the limited approach boundary. Where permitted, a qualified person shall advise of the possible hazards and continuously escort the unqualified person while inside the limited approach boundary.

(2) Only qualified persons shall be permitted to enter the restricted approach boundary.

- When transporting your ladder check for overhead power lines, live wires, service cabling, electrical hazards, ceiling fans or electrical hazards.
- Joints between steps and side rails tight, all fittings secure, moving parts operate freely.

### 5.1.6 Sectional Ladder

Sectional ladders are rung-type, portable non-self-supporting ladders made in even-length sections (usually 6 feet) that are joined for use at the desired height. The maximum height of sectional ladders is 30 feet

- A sectional ladder shall be placed so that the side rails have a secure footing. A straight sectional or extension ladder shall have safety feet.
- A sectional ladder should be erected at a pitch of 75 ½ degrees for maximum balance and strength. This may be accomplished by placing the base out from the wall or other support ¼ of the working length of the ladder.
- Angle of a section ladder should be four-to-one (4:1 Ratio), which means, for every four feet up, the base is one foot out (see Figure 1 - Basic Ladder Set Up).
- Ladders shall not be tied or fastened together to provide longer sections other than with the hardware provided by the manufacturer.

### 5.1.7 Stepladder

- Planks shall not be used on the top step or top cap of step ladders.
- Step ladders shall not be used as single ladders or in the partially closed position.
- When working from an A-frame ladder, the user's waist should not be any higher than the top rung.
- A-frame ladders shall not exceed 20 feet in length. Ladders must not be spliced together or placed on boxes, barrels, or other unstable bases to obtain additional height.
- Never use an A-frame ladder as a straight ladder.
- Ensure that the metal spreader or locking device is fully engaged prior to using an A-frame ladder.
- Never use the brace on the rear of an A-frame ladder for climbing.

# 6.0 Types of Ladder Attachments

**6.1 Ascending or Descending Platform**

- Landing platform every 30 feet or fraction thereof for ladders with cages or in wells.
- Landing platform every 20 feet or fraction thereof if no cage, well, or ladder climb safety device is provided.
- All landing platforms shall be equipped with standard railings and toe-boards, so arranged as to give safe access to the ladder. Platforms shall be not less than 24 inches in width and 30 inches in length.
- Each ladder section shall be offset from adjacent sections. Where installation conditions (even for a short, unbroken length) require that adjacent sections be offset, landing platforms shall be provided at each offset. (see Figure 2 Use of Two or More Separate Ladder Sections).

**6.2 Ladder Safety Feet**

- A straight, sectional, or extension ladder shall have safety feet.
- A ladder including its safety feet shall be kept free of oil, grease, mud or any similar slippery substances.
- Safety feet shall be placed securely on the ground, grade or surface prior to use.

**6.3 Ladder Safety Devices (ascending/descending)**

- All ladder safety devices must be activated within 2 feet after a fall occurs and limit the descending velocity of an employee to 7 feet/second or less.
- All ladder safety device shall be used with a harness, a connector that is no more than 9 inches in length between the attachment point on the harness and the point of attachment to the grab device, and a grab device compatible to the wire rope or rail used or with a harness and a self-retracting lanyard anchored above the ladder.

# 7.0 Inspections

**7.1 General User Inspection Steps**

**7.1.1** Prior to ladder use, all users shall have Ladder Awareness Training.

**7.1.2** All ladder users shall perform a visual inspection before each use per manufacturer's directions.

**7.1.3** All Marathon LAR departments who issue work ladders to employees shall have ladders inspected monthly by a Building Trades (LAR-C) or Safety Issue (LAR-W) qualified person.

**7.1.4** Building Trades (LAR-C) or Safety Issue (LAR-W) qualified person will complete the Monthly Ladder Inspection Checklist by using the hard copy or Intelatrac and tagging the ladder with an inspection tag indicating the date of its completed inspection.

**7.1.5** All Marathon LAR departments and contract companies who issue work ladders to employees shall maintain all inspection and maintenance records for ladders issued for one (1) year.

**7.1.6** Ladders should not have any damage, lack of structural integrity, missing components or loose parts.

**7.1.7** The steps or rungs must be tight and secure to the side rails.

**7.1.8** All hardware and fittings need to be properly and securely attached.

**7.1.9** Movable parts must be tested to see that they operate without binding or without too much free play.

**7.1.10** All labels should be intact and readable stating rated capacity of the ladders and manufactured in accordance with ANSI standards.

**7.1.11** Ladders shall be free of oil, grease, or slippery materials.

**7.1.12** A ladder that has been damaged, e.g. fire, chemicals or physical damage, shall be tagged "Dangerous: Do Not Use" and removed from field service.

**7.1.13** All accessories such as leg levelers, paint shelves, stand-off shelves, etc. are in good condition.

**7.1.14** The ladder base shall be placed on a secure and level footing.

**7.1.15** The ladder base must have the slip resistant material.

**7.1.16** Ladders shall not be mechanically altered/modified in any way from their original manufacturer design. Any alterations including welding, drilling, adding wheels, attachments, or any other design changes are prohibited. Attachments specifically designed by the manufacturer are allowed.

**7.2 Specific Ladder Inspection Steps**

**7.2.1 For extensions ladders**

- Ropes and pulleys are in good condition
- Ladder extension locks move freely and lock correctly
- Rung locks are on the rails of the top section to ensure the top section will not fall
- Extension guide brackets are secure and in place.

**7.2.2 For Metal ladders**

- Loose rungs, bolts screws and other metal parts
- Dented rungs or rails
- Sharp edges, corners and burrs
- Damage from corrosion
- Bends and breaks
- Tags or stickers reading "CAUTION-Do Not Use around Electrical Equipment" or similar wording

**7.2.3 For Wooden Ladders**

- Integrity of rungs and rails
- Chips, splits, cracks and splinters in the rails
- Holes and knots
- Loose / wiggly parts
- Painted wooden parts (transparent paint is OK)

**7.2.4 Fiberglass or Plastic Ladders**

- Cracks, chips and splinters
- Deformed rails or rungs from heat, chemical or environmental exposure
- Bends and breaks

**7.2.5 Chain/Cable Ladder Inspection and Load Test**

- All chain and cable ladders shall be static load tested and documented annually by a competent person.
- All chain/cable ladders shall be visually inspected before every use by a competent person for the following:
- Broken or split rungs.
- Broken or split chains or cables in the stringer.
- Damaged sections, appearance of corrosion, or sharp/rough edges.
- Any hardware or fittings that is not secure.
- Bent or dented rungs or rails.
- Grease, oil or other slip hazards on the ladder rungs

**7.3 Defects**

**7.3.1** If a ladder is found to be defective complete the following:

- Immediately remove that ladder from service and attach a red tag to the ladder which indicates "Dangerous: Do Not Use".
- If the ladder is a Marathon LAR ladder, then send it to the appropriate department (LAR-C Building Trade or LAR-W Safety Issue) to receive maintenance repair or be replaced.
- Building Trades (LAR-C) or Safety Issue (LAR-W) qualified person will complete the Ladder Maintenance Log in Intelatrac or hard copy.
- If the ladder is a contractor ladder, send it back to the contractor to be replaced.
- All ladder maintenance repairs (e.g. ladder feet, extension rope etc.) shall be completed by a qualified person.
- Structural ladder defects (ladders in need of structural repair: i.e. fixing rungs, side rails etc.) are identified; the ladder will be destroyed, and a replacement ordered (as required)

# 8.0 Training

All Marathon LAR employees and contractors who will utilize a ladder shall be given ladder awareness (competent person) training to cover the following requirements prior to utilizing any ladder at Marathon LAR.:

**8.1 User Ladder Training**

**8.1.1** Employees shall be trained in the safe use of ladders before using them.

**8.1.2** The training may be provided as part of the contractor's IIP Program.

**8.1.3** The training shall address the following topics, unless the employer demonstrates that a topic is not applicable to the workplace or work scope:

1) Importance of using ladders safely including injuries due to falls from ladders.
2) Selection of ladders, including types, proper length, maximum working loads, and electrical hazards.
3) Maintenance, inspection, and removal of damaged ladders from service.
4) Erecting ladders including:
    a. level footing support,
    b. top support,
    c. securing, and
    d. angle of inclination.

5) Climbing and working on ladders including user's position and points of contact with the ladder.
6) Causes of falls, including haste, sudden movement, lack of attention, footwear, and user's physical condition.
7) Prohibited uses including climbing on cross bracing, uses other than designed, exceeding maximum lengths, and not meeting minimum overlap requirements or using ladder in function other than what is recommended by manufacturer.

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# Appendix A: Terms and Definitions

| | |
|---|---|
| **A.1 Angle of Inclination** | The preferred pitch for portable non-self-supporting ladders. |
| **A.2 Base** | The end of the ladder that is placed against the ground when the ladder is to be raised (or heel of the ladder) or set-up. |
| **A.3 Chain or Cable Ladder (Jacob's Ladder)** | A ladder that consists of two chain or cable stringers, spacer, rungs, and lashing rings and fittings. |
| **A.4 Cleats** | Cleats are ladder crosspieces of rectangular cross section placed on edge on which a person may step in ascending or descending. |
| **A.5 Duty Rating** | An indication of the maximum weight capacity the ladder can safely carry. |
| **A.6 Extension Ladder** | A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. |
| **A.7 Fixed Ladder** | A ladder permanently attached to a structure, building or equipment. |
| **A.8 Job Made Ladder** | A non-self-supporting ladder usually constructed of wood that are built to fit specific job situations during construction or demolition operations. Their primary purpose is to provide access to or egress from a work area only. |
| **A.9 Ladder** | A device consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step, for ascending or descending. |
| **A.10 Ladder Foot/Shoe** | That component of ladder support that is in contact with the lower supporting surface, i.e. slip-resistant bearing surface. |

| | |
|---|---|
| **A.11 Ladder Safety System** | An assembly of components whose function is to arrest the fall of a user, including the carrier and its associated attachment elements (brackets, fasteners, etc.) safety sleeve, full body harness and connectors, wherein the carrier is permanently attached to the climbing face of the ladder or immediately adjacent to the structure. |
| **A.12 Trolley Ladder (aka Mobile Ladder)** | A Trolley Ladder Stand is a movable (this ladder has wheels), fixed height, self-supporting ladder, with steps which give access to a platform. |
| **A.13 Platform Ladder** | A self-supporting portable ladder, non-adjustable in height, with generally rungs that give access to a wider step or platform. |
| **A.14 Portable Ladder** | A ladder that is easily portable, (self-supporting or non-self-supporting), which can be of various types (e.g. step, straight, combination and extension etc.). |
| **A.15 Qualified Person** | Means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project. |
| **A.16 Remove from Field Service (RFS)** | To remove a defective ladder from field service for repair or destruction. |
| **A.17 Safety Feet** | Attachment to the bottom foot of a ladder to prevent ladder slippage |
| **A.18 Sectional Ladder** | A sectional ladder is a non-self-supporting portable ladder, nonadjustable in length, consisting of two or more sections of ladder so constructed that the sections may be combined to function as a single ladder. |
| **A.19 Step Ladder** | A step ladder is a self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. |

| | |
|---|---|
| **A.20 Step Stool (ladder type)** | A self-supporting, foldable, portable ladder, nonadjustable in length, 32 inches or less in length, with flat steps and without a pail shelf, designed so that the ladder top cap as well as all steps can be climbed on. |
| **A.21 Single Rail Ladder** | A portable ladder with cross pieces mounted on a single rail, Use in Marathon LAR is prohibited. |
| **A.22 Three Points Rule** | Refers to the maintain points of contact, that are required at Marathon LAR at all times, while on a ladder (e.g. two feet, one hand or two hands, one foot). |
| **A.23 Twin Portable Ladder** | A variation of the trestle ladder design, double front ladders are also known as “two-way,” “twin,” or “double” ladders. A portable double front ladder is designed to be climbed by two people at the same time, one on each side (front). |
| **A.24 Side Rails** | Side rails which might be used as a climbing aid shall be of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs. |

# Appendix B: Ladder Safety Photos

**Figure 1** **Basic Ladder Set Up**

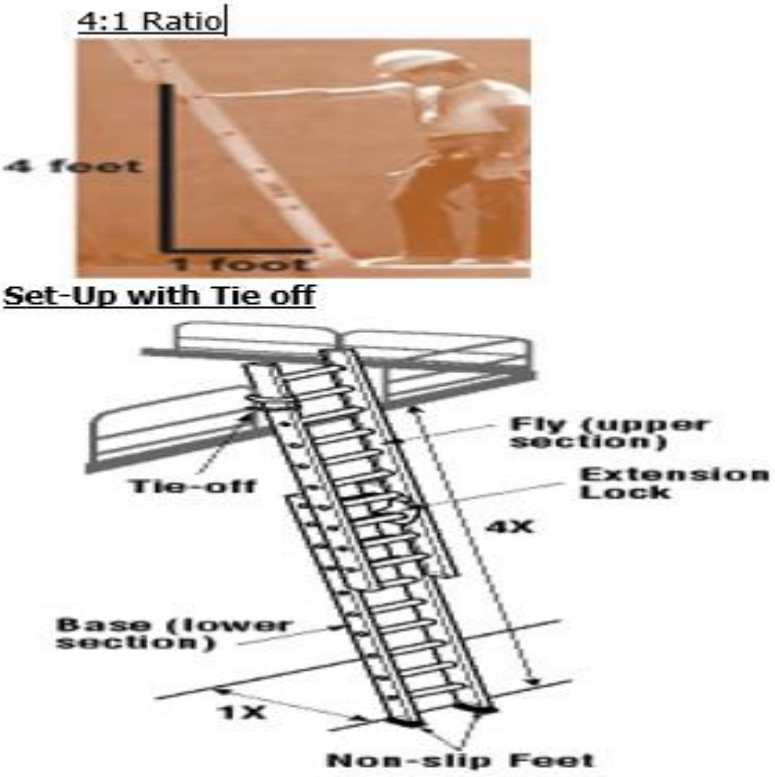



**Figure 2** **Use of Two or More Separate Ladder Sections**

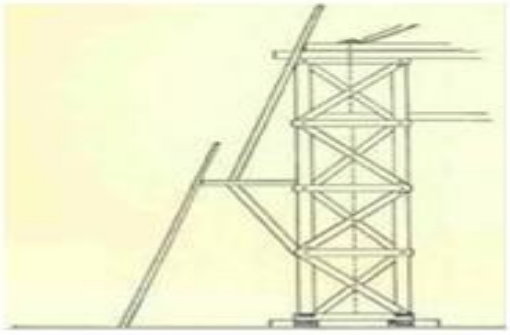


**Figure 3 Minimum Ladder Overlap**

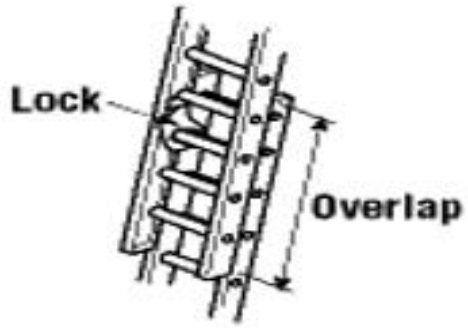
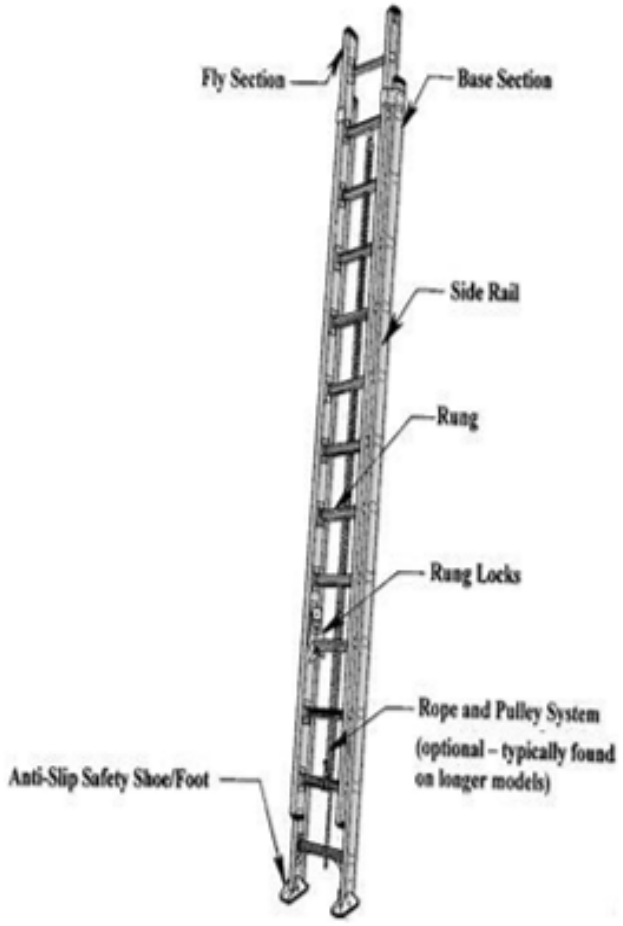



**Figure 4 Over Reaching the Ladder's Center Position**

**Figure 5 Use of Three (3) Points of Contact**

# Appendix C: Daily User Extension/Single Ladder Things to Look for during Daily Use Inspection

- ✓ Inspect the ladder for visible defects on check out and on check in.
- ✓ If it has worn, damaged or missing components remove from service.
- ✓ If it is not free of slippery materials, oil or grease **Red Tag** it for cleaning.
- ✓ If it is clean and free of any visible defects check mark the **OK** box
- ✓ Red Tag the ladder if found needing repairs and
- ✓ Place the ladder in the Out of Service section of the ladder rack.




**Shoes:** Worn, Broken or Missing Rubber

**Rungs:** Dirty, Loose, Bent or Missing

**Rungs Locks:** Loose, Broken or Missing

**Rails:** Dirty, Cracked, Bent or Split

**Labels:** Missing or Not Readable

**Rope & Pulley:** Bent, Broken or Missing

**Hardware:** Loose, Missing, Bolts or Rivets

# Appendix D: Daily User A-Frame Ladder Things to Look for during Daily Use Inspection

- ✓ Inspect the ladder for visible defects on check out and on check in.
- ✓ If it has worn, damaged or missing components check mark the **Red Tag** box.
- ✓ If it is not free of slippery materials, oil or grease **Red Tag** it for cleaning.
- ✓ If it is clean and free of any visible defects check mark the **OK** box
- ✓ Red Tag the ladder if found needing repairs and
- ✓ Place the ladder in the Out of Service section of the ladder rack.


**Stepladder**

**Shoes:** Worn, Broken or Missing Rubber

**Steps:** Loose, Cracked, Bent or Missing

**Top Cap:** Loose, Cracked or Missing

**Rails:** Cracked, Bent, Split or Frayed

**Labels:** Missing or Not Readable

**Spreader:** Loose, Bent, Broken or Missing

**Hardware:** Loose, Missing, Bolts or Rivets

# Appendix E: Monthly Ladder Inspection Checklist

## MONTHLY LADDER INSPECTION CHECKLIST

| Department: | Date: |
|---|---|
| Shop: | Inspected By (Print): |
| • Feet are intact and grip solidly<br>• Steps / Rungs are clean and free of dust, oil or other surface contaminants.<br>• Steps/Rungs are secure to rails<br>• Ladder type has Identification Number<br>• Hinges are secure<br>• Locking mechanisms are intact<br>• Rails are not cracked or separated from feet, hinges or rungs<br>• For Articulated and Step ladders, the two front legs are the same length and the two rear legs are the same length | • Labels are intact and readable<br>• Ladder is not painted<br>• Extension Ladder: Locks are in operable condition<br>• Extension Ladder: Pulleys are secure and operable<br>• Extension Ladder: Rope secured to attachment points and in good condition<br>• Extension Ladder: The sliding section(s) should overlap each other by at least the minimum distance indicated in section: 6.5-Two Section Extension Ladder Overlap<br>• Accessories (leg levelers, paint shelves, stand-off shelves) are in good condition |

**If any of the answers are NO, tag ladder and Remove the ladder from Field Service (RFS)**

| **List Ladder** | **Did the ladder pass inspection? Was inspection criteria used?** | | **If no, what is ladder R.F.S. status? Repaired or Destroyed** | |
|---|---|---|---|---|
| ID Number | Yes | No | Repaired | Destroyed |
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**Email completed monthly forms to: mailto:LAR-SafetyCompliance@Marathonpetroleum.com**

# Appendix F: Chain/Cable Ladder Equipment Use Plan

| **CHAIN/CABLE LADDER EQUIPMENT USE PLAN** | **Date:** |
|---|---|
| **Company:** | |
| **Prepared By:** | |
| **Supervisor:** | |
| **Specific Location/s:** | |
| **Description of Tasks Requiring Chain/Cable Ladder:** | |
| **Justification why alternative ladder cannot be used (a single justification may be used for multiple locations containing similar characteristics):** | |
| **Installation details for each location (a single detail may be used for multiple locations containing similar characteristics):** | |
| **How will the ladder be secured to the top and bottom:** | |
| **Inspection Instructions** | |
| **Maintenance Log and Instruction details:** | |
| **Marathon LAR Safety Manager Approval (Print):** | |
| **Marathon LAR Safety Manager Approval (Sign):** | |
| **Email completed Chain/Cable Ladder forms to:** mailto:LAR-SafetyCompliance@Marathonpetroleum.com | |

# Appendix G: Ladder Maintenance Log

## Ladder Maintenance Log

| Performed By (Print): | | | | Date: | |
|---|---|---|---|---|---|
| Unit/Department: | | | | Log Month: | |
| **Ladder ID** | | **Type of Defect/s** | **Repaired or Destroyed** | | **Return to Field** |
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| 30 | | | | | |
| 31 | | | | | |
| Email completed monthly forms to: mailto:LAR-SafetyCompliance@Marathonpetroleum.com | | | | | |

# Revision History

**Document Revision History**

Complete the following table for each document revision.

| Rev. No. | Description of Change | Author | Approved By | Rev. Date | Effective Date |
|---|---|---|---|---|---|
| 04 | Removed Fixed ladder section and updated the document to comply with current Cal OSHA and industry practice. | Johnny Maldonado | Safety Supervisor | 06/28/2021 | 07/09/2021 |