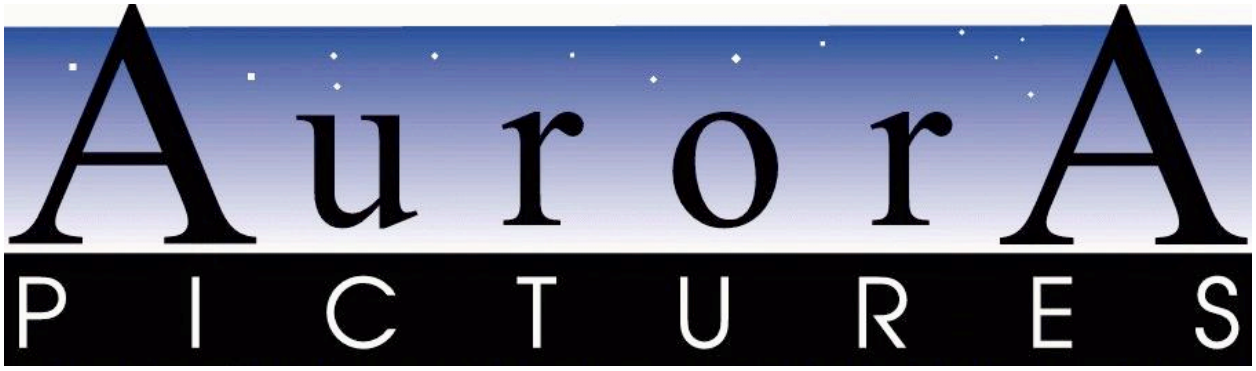


4395

Aerial Lifts in Industrial and Construction Environments

Leader's Guide

WARRANTY/DISCLAIMER

"This program has been created to assist companies that are endeavoring to educate their employees regarding good safety practices in a laboratory environment. The information contained in this program is the information available to the producers of the program at the time of its production. All information in this program should be reviewed for accuracy and appropriateness by companies using the program to assure that it conforms to their situation and recommended procedures, as well as to any state, federal or other laws, standards and regulations governing their operations. There is no warranty, expressed or implied, that the information in this program is accurate or appropriate for any particular company's environment."

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INTRODUCTION TO THE PROGRAM

Structure and Organization

Information in this program is presented in a definite order, so that employees will see the relationships between the various groups of information and can retain them more easily. The sections in this program include:

- The types of aerial lifts and the training needed to operate them.
- The hazards associated with using aerial lifts.
- "Pre-start" and "worksite" inspections.
- Setting up, operating and moving an aerial lift.
- Working on the ground near an aerial lift.

Each of the sections gives an overview of important information in one topic area, providing employees with the basis for understanding how aerial lifts operate and how to use them safely.

Background

Reaching high places can be challenging in many work environments. But whether you find yourself on a construction site, changing light bulbs in a warehouse or performing outdoor utility work, aerial lifts can help you reach work areas that would otherwise be almost impossible to get to.

OSHA describes an aerial lift as a "vehicle-mounted, boom-supported work platform used to elevate personnel to job sites that are above the ground."
They are mobile, and can usually be set up and operated by a single person.

This program will introduce employees to various types of aerial lifts, make them aware of the hazards that are associated with lifts, and give them the information that they'll need to work safely… whether they're using a lift or working around one.

Objectives

To help employees be prepared and use aerial lift safely, this education and training program is designed to present basic information in the following areas:

- Types of aerial lifts.

- Avoiding hazards associated with aerial lifts.
- Inspecting an aerial lift.
- What to do to prepare to use an aerial lift.
- Operating an aerial lift.
- Moving an aerial lift safely.

Reviewing the Program

As with any educational program, the "presenter" should go through the entire program at least once to become familiar with the content and make sure the program is consistent with company policy and directives. An "Outline of Major Program Points" section is included in this Presenter's Guide to help with this task and for general reference.

As part of this review process, you should determine how you, as the presenter, will conduct your session. The use of materials such as handouts, charts, etc., that may be available to you needs to be well thought out and integrated into the overall program presentation.

PREPARING FOR THE PRESENTATION

Structuring the Presentation

In conducting this education session, you should proceed with a friendly and helpful attitude. Remember that the "trainees" are looking to your experience and knowledge to help them relate to the situations shown in the program. It is important to let the trainees interact with you and each other during the training session. Stimulating conversation within the group is one of the best things you, as the presenter of the program, can do to help everyone get as much as possible from the session. Be alert for comments that could help in this area in future sessions and make note of them.

As the presenter, you also should:

- Keep the session related to the topic of aerial lifts.
- Relate discussions to how aerial lifts are used on your worksite.
- Prevent any one person or small group of employees in the session from doing all the talking.
- Get everyone involved. Ask questions of those who don't participate voluntarily.
- Clarify comments by relating them to the key points in the program.

Use the "Outline of Major Program Points" section in this guide, as well as the information included in the quiz, as the basis for answering any questions. If you don't know the answer, say so. Tragic results may occur should you provide incorrect or inaccurate information. Remember, this is a positive program on aerial lifts. Make sure your attitude and words reflect this and that the emphasis is always on providing the information needed by the attendees to improve their ability to work safely with aerial lifts.

Setting Up the Class and Classroom

Remember, there are a number of things that must be done to "set up" the class as well as the classroom. These fall into several groups of activities, and include:

- **Scheduling and Notification**
  - — Use the enclosed form to schedule employees into the session.
  - — Make sure that the session is scheduled so that it fits into your attendees' work day.
  - — Send out notification of the session well in advance, to give people enough time to incorporate it into their schedule for that day.
  - — If possible, post a notification on bulletin boards in the affected employees' areas.

- **The Classroom**
  - — Schedule the room well in advance.
  - — Make sure the room can accommodate the expected number of attendees.
  - — Check it again on the day of the program to make sure there is no conflict.
  - — Make sure the room can be darkened, and won't create a glare on the television screen.
  - — Locate the light controls and test them.
  - — Make sure the power for the DVD or videotape player you are using operates separately from the room light.
  - — See if you can control the room temperature.
  - — Know where the closest restrooms are.
  - — Assure that the room is free from distracting noises.
  - — Make sure emergency exits are marked and known to the attendees.

- **Seating**
  - — Make sure everyone can see the screen from their seat.
  - — Make sure everyone can hear the DVD/videotape and you (when you speak).
  - — Check to see that seating is such that writing can be done easily.
  - — Make sure the seating arrangement allows eye contact between attendees, and between you and attendees.

- **Equipment and Materials**
  - — Make sure the DVD or videotape player, monitor, and all appropriate cables and extension cords are available.
  - — Make sure a stand or table is available and is of appropriate height for all attendees to easily see the monitor.
  - — If you plan on using a chartpad, blackboard, or other writing board, make sure it is available, easy to see, and you have the proper writing implements.
  - — Make sure you have 6" x 8" index cards or other materials to be used as "name tents" for attendees.
  - — Make sure you have made up a sufficient number of copies of the quiz, as well as any other handouts you are using.

- "**Final Check"**
  - — Make sure equipment is in the room prior to the scheduled session.
  - — Make sure you have the right program, (look inside the three-ring binder).
  - — Check to see that the room is set up properly.
  - — Check equipment prior to the presentation to assure that it works.
  - — Make sure extension cords, etc. are "taped down", if need be, to avoid tripping.
  - — If you are using the videotape version of the program, run the "leader" up to the point where the program begins.

CONDUCTING THE SESSION

The Initial Steps

In conducting the session remember the positive nature of this presentation. Everyone is attending in order to learn more about Safety Data Sheets and how they should be used. Initially, you need to:

- Introduce yourself as the session leader.

- State the title of the program, "Aerial Lifts in Industrial and Construction Environments" and the purpose of the session (to learn about how to work safely with aerial lifts).

- Inform the attendees when there will be breaks (if you plan them) the location of exits and restrooms and if water, coffee, or other refreshments will be available.

- Make sure all of the attendees have "signed in" on your scheduling and attendance sheet. Remember, it is very important to document peoples' attendance at the session.

Once this housekeeping is done, it is time to move to the "meat" of the session. First, the attendees need to be informed about the objectives of the session (this is where you can use a flip chart or board to list the objectives, which should be done prior to the class starting). This listing should be preceded with some introductory remarks. Your own words are always best, but the remarks should include information such as the following paragraphs:

> "Reaching high places can be challenging in many work environments. But whether you find yourself on a construction site, changing light bulbs in a warehouse or performing outdoor utility work, aerial lifts can help you reach work areas that would otherwise be almost impossible to get to."
>
> "OSHA describes an aerial lift as a 'vehicle-mounted, boom-supported work platform used to elevate personnel to job sites that are above the ground.' They are mobile, and can usually be set up and operated by a single person."
>
> "The program we are going to watch today will introduce you to various types of aerial lifts, make you aware of the hazards that are associated with them, and give you the information that you'll need to work safely… whether you're using a lift or working around one."

To make this the most productive session possible we need to look at what we want to accomplish here today (verbally reference the 'Objectives' list from the first section in this guide, or point to the blackboard or chart where you have written them down)."

Once the objectives have been provided, you are ready to show the program. However, you do need to let the attendees know that they will be taking a quiz at the end of the session (if you are using it). It needs to be emphasized that they are not being "graded", but that the quiz is being used to see if the session is effectively transmitting information to them in a way they will remember.

Showing the Program

At this point, you need to introduce the title of the program once again, "Aerial Lifts in Industrial and Construction Environments", darken the lights if necessary, and begin the showing of the program.

If you are using the DVD version of the course you have several options as to how you can move through the program and what employees see.

The DVD menu has three "selection bars":

- **"**Play".
- "Scene Index".
- "Contact Info".

To just play the program from beginning to end, select "Play".

To view (or review) a specific section of the program, select "Scene Index". You will be presented with a group of buttons, each of which corresponds to a section of the program. You can then select the specific section that you want to view.

If you would like information on other programs and products that are available from MARCOM you can select "Contact Info" for information about how to contact us.

All of our DVDs are subtitled (similar to closed captioning). If there are hearing impaired employees participating in your training session, or you want people to be able to read the program narration as well as hear it, push the "subtitle" button on your DVD player's remote control or the player's control panel. A print version of the narration will then appear on the screen as the video plays.

Conducting the Discussion

After the program has been shown, it is time for the group discussion on the information contained in the session. Care must be taken to make sure that the discussion is kept to

the general topic of Aerial Lifts. There are several ways to conduct this discussion. These include:

- Calling for questions from the attendees and using these questions as the basis for the discussion.

- "Leading" the discussion through the points covered in the program using statements such as:
    - — "One of the sections that we saw in the program discussed having a variety of aerial lifts to choose from. Who can tell us some of the choices we have here on our site?"
    - — "The program discussed a number of things that we should look for when we inspect an aerial lift. Who can list some of those things for us?"

You should use the discussion format that you are most comfortable with. The Outline of Major Program Points" section in this guide, and the questions and answers in the master copies of the quiz can also be very useful as a basis for discussion.

Remember, you have allocated a limited amount of time in which this discussion can take place. It is important to blend the attendees' questions and areas of obvious interest with the objective of trying to touch on each major area within the session in the discussion. By touching on each area, the attendees are much more likely to retain the information presented in the session.

Concluding the Presentation

Once discussion has concluded, whether naturally or you have had to bring the discussion to a close in order to complete the session within the time allowed, it is time to give the quiz (if you are using it). Again, remind the attendees that the quiz is only meant to help determine how effective the presentation of the information is, and that they will not be graded on it. Let them know that they have approximately five minutes to complete the quiz.

At the end of the five minute period, remind the attendees to date and sign their quizzes, and then collect them. The attendees should be thanked for attending the session and reminded of any other sessions in the educational program that they may be attending. They can then be dismissed to return to their normal activities.

*(An alternative to this approach is to give the quiz immediately after showing the program, then use a review of the quiz as a basis for your group discussion.)

"Wrapping Up" the Paperwork

Before much time has passed, and the subject matter is fresh in your mind, several types of "paperwork" must be completed. First, check to make sure that all attendees signed the scheduling and attendance form. Next, make sure that you have a quiz from every attendee, dated and signed.

Also, depending upon what you have decided to do, a copy of the attendance sheet, along with the quiz for each attendee should be either filed in your files, or turned over to the attendee's department manager or the personnel office so that this paperwork can be included in their personnel file. The attendees' training logs should also be updated, and each attendee should be given a filled out and signed training certificate, signifying that they have successfully completed the course.

OUTLINE OF MAJOR PROGRAM POINTS

The following outline summarizes the major points of information presented in the program. The outline can be used to review the program before conducting a classroom session, as well as in preparing to lead a class discussion about the program.

- **Reaching high places can be challenging in many work environments.**
  - — But whether you find yourself on a construction site, changing light bulbs in a warehouse or performing outdoor utility work, aerial lifts can help you reach work areas that would otherwise be almost impossible to get to.

- **OSHA describes an aerial lift as a "vehicle-mounted, boom-supported work platform used to elevate personnel to job sites that are above the ground."**
  - — They are mobile, and can usually be set up and operated by a single person.

- **This program will introduce you to various types of aerial lifts, make you aware of the hazards that are associated with them, and give you the information that you'll need to work safely… whether you're using a lift or working around one.**

- **Depending on the work that you're doing, there are a variety of aerial lifts to choose from.**
  - — Extensible Boom Platforms use a single arm to lift their work platform to the desired height.
  - — Aerial Ladders consist of a single or multiple-section extendable ladder, such as the powered ladders on fire trucks.
  - — Articulating Boom Platforms contain two or more hinged boom sections, which allow the arm to maneuver into difficult to reach places.
  - — Vertical Towers are designed to elevate a platform straight into the air, using a mechanism such as a telescoping mast.

- **Most aerial lifts are made up of four major elements:**
  - — A "base", with supports for the lift's platform or bucket.
  - — A "lifting mechanism".
  - — The platform or bucket itself.
  - — Controls, which are often located on both the base and the platform.

- **The main difference between the various types of aerial lifts is in the mechanism that lifts the platform.**
    - — Typically it's hydraulic, pneumatic or driven by electrically powered gears.

- **In order to operate an aerial lift you need to be authorized and properly trained on the specific type of lift you'll be using. Much of the information that you'll need is included in this program, such as:**
    - — An examination of the electrical, "fall" and "falling object" hazards associated with using an aerial lift.
    - — Techniques for controlling, minimizing or eliminating these hazards.
    - — How to recognize and avoid unsafe conditions in the areas where you'll be using a lift.
    - — How to determine whether you're exceeding a lift's maximum load capacity.
    - — When and how you should inspect an aerial lift.
    - — How to operate a lift correctly.
    - — How to safely move a lift.

- **OSHA requires that anyone who works with or near aerial lifts be trained on the various hazards related to lift equipment, as well as on how to control or minimize these hazards.**
    - — One of the primary hazards related to working with aerial lifts is falling from the platform or bucket.

- **If you work on a lift, you must use appropriate fall protection.**
    - — Always inspect your equipment before using it.
    - — Make sure that there are no cuts, frayed edges or other damage.
    - — If the equipment is damaged, it must be removed from service and replaced.

- **Attach the fall protection equipment to the boom or bucket.**
    - — Never attach it to an adjacent beam or structure (if you do, you could find yourself pulled from the lift and left hanging if the lift moves or tips).

- **Another serious hazard you want to avoid is "tipping".**
    - — This can occur if a lift is overloaded or isn't properly stabilized.

- **To minimize the possibility of a tip-over, you should never exceed the load limit of the lift you're working with.**
    - — Be sure to take into account your own weight, plus the weight of any tools or other equipment that you'll have with you.

- **Proper placement of the lift will also help in avoiding a tip-over.**
    - — If your lift is equipped with outriggers, use them.
    - — Make sure that they're set up on stable ground.

- **"Falling objects" can be a hazard when you're using an aerial lift as well.**
    - — Even if you're careful, tools or materials can sometimes "leave" the platform and head earthward.

- **Protect people who are working around the lift by marking off the area with safety cones or tape.**
    - — If workers must be on the ground while a lift is being used, make sure they are wearing hard hats.

- **Your surroundings can also be hazardous when you're operating an aerial lift.**
    - — Overhead hazards can be especially troublesome.

- **If you're working indoors, you need to be aware of beams, rafters and ceiling heights.**
    - — Keep your eye out for HVAC ducts, piping and cable race-ways as well.

- **If you're outdoors, you want to pay attention to trees and light poles.**
    - — Stay a minimum of ten feet away from any of these hazards.

- **"High voltage power lines can be extremely dangerous, and have their own set of rules based on the amount of electricity that they're carrying.**
    - — If possible, the lines should be de-energized.
    - — If it's not possible to de-energize the lines, you should stay as far away from them as possible.

- **OSHA says that if you aren't a qualified electrical worker you and any conductive objects that you're holding should not come within 10 feet of a line carrying 50,000 volts.**
    - — For higher voltage lines you must stay even further away.

- **Before you use an aerial lift you want to make sure it's in good working order and there aren't any problems with the area where you'll be set up.**

- **There are two different inspections that must be performed before using a lift:**
  - — The "pre-start inspection".
  - — The "work site inspection".

- **You should inspect your lift prior to the start of every work shift.**
  - — This will ensure that nothing's happened to it while you've been away, and that it's still in good working condition.

- **You'll find a list of things to be inspected in the operator's manual.**
  - — It's been compiled by the equipment manufacturer and should be followed rigorously.

- **However, there are a number of things that you should look at on any lift.**
  - — Check that fluids are at their proper levels.
  - — Make sure wheels and tires are not damaged and are properly inflated.
  - — Verify that the battery and charger are in good working order.

- **Confirm that the controls operate correctly, and that the horn, gauges, lights and alarms work properly.**
  - — Test the steering and brakes as well.
- **Be sure to inspect all the "lift components", especially the power system, guardrails and other safety devices.**
  - — Never use a lift if any of its components are defective.
  - — Remove it from service until a qualified person has made repairs.

- **It's also important to inspect the work site where you'll be using an aerial lift.**
  - — Survey the work zone and eliminate any hazards before operating the lift.

- **If you're working outside, look for:**
  - — Drop-offs, holes or other potentially unstable surfaces.
  - — Slopes, ditches or bumps.
  - — Overhead power lines.
  - — High wind, rain and other hazardous weather conditions.

- **If you're working inside, look for:**
  - — Low ceilings, beams or rafters.
  - — Driving obstructions, such as other equipment or storage racks.
  - — Materials or debris on the floor.

- **Doing these pre-inspections on your equipment and your work area are essential, and will help you to avoid dangerous situations.**

- **Once you have ensured that your aerial lift will operate correctly and the area where you'll be working is safe, it’s time to set up your lift for use.**

- **First, position the lift where you want it.**
  - — If the lift has outriggers or other stabilizers are available, position them on a level, solid surface.
  - — If you're outdoors, you may need to move some earth or lay down "pads" to get a proper base.
  - — Make sure that the access gates and openings can be closed and locked.

- **Look through the Operator's Manual for any instructions or "tips" on using the lift.**
- **Review the signs and notices that are posted on the lift itself, including any warnings, cautions, restrictions, rated workload and maximum platform height.**

- **Set up work zone warnings, such as cones, tape or signs this will:**
  - — Restrict access and let others know that you're working in the area.

- **Examine your fall protection equipment prior to putting it on.**

- **Once you've determined that your lift is stable and everything is set up correctly, you're ready to go to work.**
  - — Climb into the platform or bucket, then close and lock any gates or doors.

- **Make sure your fall protection is attached to an appropriate point on the lift.**
  - — Never attach fall protection to adjacent structures.
  - — This could cause you to be pulled out of the lift if it tips or fall.

- **Remember to stand firmly with both feet flat on the platform's floor.**
  - — Don't lean on the guardrail or gate, and never sit or climb on the rails.

- **Test the controls to make sure the lift operates smoothly and will maneuver correctly.**

- **Some aerial lifts may have safety features built in, such as a "dead man's switch", that halts the machine if the operator is injured or incapacitated.**
  - — Make sure these are functioning as well.

- **Slowly raise yourself to the desired height and location.**
  - — It's important that you never try to use ladders, planks, stools or other devices on the lift to extend your reach, or to bridge gaps between the lift and the area where you want to work.

- **Be sure not to exceed the vertical or horizontal limits recommended by the manufacturer.**
  - — This information can be found in the operator's manual or on warning stickers affixed to the lift.

- **Never override hydraulic, mechanical, electrical or pneumatic safety devices.**
  - — These are in place to keep the machine operating safely.

- **If the lift can't take you to the work, you may need to move the lift, consider using another type of lift, or use a ladder or scaffold to reach your destination.**
  - — But never move a lift while it's raised, unless it's specifically designed for this purpose.

- **There may be times when you need to get off a lift to get your work done.**
  - — If you have to transfer from the lift to an adjacent structure, the platform must be within one foot of the structure.
  - — Use a "two lanyard" system, with one lanyard anchored to the platform and the other anchored to the structure.
  - — Once you've successfully moved to the structure, you can disconnect the lanyard from the platform.

- **Finally, remember that unless there is an emergency situation, lower-level controls should not be operated while the lift is raised unless the worker in the lift grants permission.**

- **Once your work on a lift is done, there are still things you need to do to break down and return your lift to its "home".**
    - — When you're ready to lower the lift, make sure that there are no tools, debris or people below.
    - — You may want to enlist the aid of a "spotter" to ensure that the area is clear.
    - — If you choose to use a spotter, be sure to work out the verbal instructions or hand signals that you'll be using to communicate.

- **Bring the lift down slowly and carefully, until it's resting on its supports.**
    - — Secure the platform or bucket to the supports, to prevent it from moving during transport.
    - — If you've used them, return and stow outriggers or other stabilizers.

- **Lastly, remove any warning signs, caution tape or safety cones from the work area.**

- **Even if you're not operating a lift, you may be affected by having one around.**
    - — If you're working in the vicinity of an aerial lift, be sure that you understand the hazards a lift can create.
    - — On the ground you can still face equipment "tip-overs", falling objects, even electrocution.

- **Whenever possible stay clear of the work area where the lift is located.**
    - — If you have to go into the area, wear appropriate personal protective equipment, including a hard hat.

- **Be on the lookout for other lifts that may be entering or exiting your work area.**
    - — Be aware of the lift's "blind spots" and make sure that the operator can see you.
    - — And be sure to stay clear of lifts that are raising or lowering their booms.

- **You may likely have to move a lift during the course of working with it.**
    - — Following "safe driving" practices is a must when transporting the lift any distance.
    - — Never drive a lift when the bucket or platform is up, unless the lift is specifically designed for that purpose.

- **Avoid reckless driving or "horseplay" when you're moving.**
  - — Even though they’re large, lifts can be easily damaged and expensive to repair.

- **Obey the posted speed limit at all times.**
  - — If there is no posted speed limit, maintain a slow, steady speed.
  - — Always give pedestrians the right of way.

- **Aerial lifts can help you to reach places that you'd never be able to reach safely without them.**
  - — But they can be dangerous if you don't know how to use or work around them properly.

* * * SUMMARY * * *

- **Make sure you're trained to use all of the aerial lifts you'll be working with.**

- **Know the hazards associated with aerial lifts and how to avoid them.**

- **Inspect an aerial lift for damage or unsafe conditions before you use it.**

- **When you're working on the ground, be aware of the hazards aerial lifts can present.**

- **Know how to properly set up and operate your lift, as well as how to break it down and return it to its "home".**

- **When your work requires you to go "above and beyond," aerial lifts can make your job a lot easier.**
  - — And with the proper training and safety precautions, you can avoid the hazards that can come with working off the ground!

AERIAL LIFTS IN INDUSTRIAL AND CONSTRUCTION ENVIRONMENTS

Review Quiz

Name_____ **Date**_____

1. When working outside on an aerial lift, what is the minimum amount of clearance that you should keep between yourself and any overhead hazards?
   - ____ 10 feet.
   - ____ 15 feet.
   - ____ 25 feet.

2. True or False?... An aerial lift that has any defective components must be removed from service until a qualified person has made repairs.
   - ____ True
   - ____ False

3. Where can you find information about how high you can safely extend an aerial lift?
   - ____ Labels on the equipment itself.
   - ____ In your company's operations manual.
   - ____ In the lift's operator's manual.

4. True or False?... When you're working on an aerial lift a good place to attach fall protection equipment is to the railing of the lift's platform.
   - ____ True
   - ____ False

5. True or False?....If you need to use a plank to bridge a gap between your aerial lift and the area where you want to work, the gap can be no more than 3 feet wide?
   - ____ True
   - ____ False

6. True or False?....Unlike with scissor lifts, when you are working on an aerial lift "falling objects" are typically not a hazard?
   ____ True
   ____ False

7. What is the purpose of a "dead man's switch" on an aerial lift?
   ____ To lock up the controls of the machine when it is not in use.
   ____ To stop the machine if the operator is injured or incapacitated.
   ____ To prevent the machine from moving when the lift is elevated.

Answer Key:

1. 10 feet
2. True
3. Labels on the equipment itself & In the lift's operator's manual
4. True
5. False
6. False
7. To stop the maching if the operator is injured or incapacitated