MODULE 00109-09
INTRODUCTION TO MATERIALS HANDLING
(00109 LESSON 1 of 1)
SLIDE PRESENTATION
When you have completed this module, you will be able to do the following:

1. Define a load.
2. Establish a pretask plan prior to moving a load.
3. Use proper materials-handling techniques.
4. Choose appropriate materials-handling equipment for the task.
5. Recognize hazards and follow safety procedures required for materials handling.
1.0.0 INTRODUCTION

• Manual material handling is a common task on most construction sites.
• Most tasks performed in construction involve handling some type of material or load such as lumber, bricks, or pipes.
• A load is defined as the quantity of materials able to be transported by a machine, vehicle, or person.
To reduce the risk of injury when manually handling materials, plan the task, wear the appropriate PPE, and follow proper lifting procedures.

You must be both mentally and physically fit before attempting to handle materials.

Before attempting to move any material, check to make sure the load is manageable, and make sure it does not have any protruding nails, wires, or sharp edges.

It is important to wear the appropriate PPE when moving or handling equipment.

Wear gloves that fit properly. Tight gloves may increase hand fatigue. Loose gloves reduce grip strength.
To reduce the risk of back injuries, you must use proper lifting techniques.

To lift an object, grasp it firmly and bend your knees. Lift with your legs while keeping your back straight and your head up.

Long or cumbersome objects may have to be secured so that they can be handled without a problem.

Overhead loads must be lowered properly to avoid injuries. Reaching above shoulder height can cause stress to the shoulders and back.

Exercising regularly, maintaining a healthy weight, and maintaining good posture are all steps that you can take to strengthen your body to minimize back injuries.

Play video on Slide 4B.

*Figure 1* Proper lifting procedures.
2.0.0 MATERIALS-HANDLING BASICS

Click here to watch.
When working on a job site, you must ensure that you, your materials, and your equipment are safe from any unexpected movement.

In order to work efficiently, workers should properly stack and secure materials.

When stacking and storing materials, never stack cartons higher than the height listed on the carton.

Figure 2 Properly stacked cartons.
3.0.0 MATERIALS-HANDLING

SAFETY

- Stack pipe and fittings according to size so that you do not have to dig to find the right size.

Figure 3 Properly stacked pipes.
• Stack bagged materials by stepping back the layers and cross-keying the bags.
3.0.0 MATERIALS-HANDLING SAFETY

- Stack bricks no higher than 7’—taper brick stacks back 2” for every foot above 4’.

*Figure 5* Properly stacked bricks.
• Taper masonry blocks back one-half block per tier above 6’.

**Figure 6** Properly stacked masonry blocks.
Moving materials to a higher location requires planning and safety awareness.

When climbing up or down a ladder, check your pockets and tool belt to ensure that no objects will fall from them.

To move tools to a higher level, place them in a bucket and have them hoisted up by rope.

Cables must be pulled properly to avoid injury.

Use only low-stretch rope such as multi-ply and double-braided polyester for cable pulling.

Wrap up the pulling rope after use to prevent others from tripping over it.
Materials-handling devices are used on the job to increase productivity and reduce muscle stress on the body. Materials-handling devices can be nonmotorized or motorized.

There are many different manual (nonmotorized) materials-handling devices used in construction.

For safe operation of a materials-handling device, always inspect the device before using it to ensure it is functional.

When using the device to move something, place the heaviest load on the bottom to lower the center of gravity and to make the load easier to handle.

If your view is blocked when moving an item, request a spotter to walk in front of you to make sure the path is clear.
A material cart, often called a platform truck, is a wheeled, horizontal platform used to transport materials around a job site.

Use caution when moving a cart on an inclined or declined surface, and never load a cart past its weight capacity.

Figure 7 Material cart.
Hand trucks are two-wheeled carts that are used to transport large, heavy loads such as gas cylinders and drums.

Figure 8 Hand truck.
• Roller skids move materials by pushing them on a table surface that is placed on top of two, three, or four roller skids.
• Some of the table surfaces come equipped with a rotating table surface, some have spikes on the table surface for better grip, and some simply have a plain surface.

Figure 9  Roller skids.
A wheelbarrow is a one- or two-wheeled vehicle with handles at the rear used to carry small loads.

**Figure 10** Wheelbarrow.
SLIDE 16

4.0.0 MATERIALS-HANDLING EQUIPMENT

• A pipe mule is a two-wheeled device used to transport medium-length pieces of pipe.

Figure 11 Pipe mule.
A pipe transport is similar to a pipe mule but is used to move larger pieces of pipe.

Figure 12 Pipe transport.
A jack is a portable device used to raise heavy objects by means of a force applied with a lever, screw, or hydraulic press.

When using a jack, never leave it under a load without first blocking the load.

Figure 13 Jack.
A pallet jack, often called a pallet truck, is a device that uses hydraulics to lift and move heavy or stacked pallets.

Figure 14 Pallet jack.
Motorized materials-handling equipment is powered by gasoline or electric motors. You must be trained, certified, and authorized to operate motorized materials-handling equipment.

When using motorized materials-handling equipment, know the weight of the object to be handled, know the capacity of the material handler, and ensure that the handling equipment is in good working order.

A powered wheelbarrow, also called a power buggy, is nothing more than a wheelbarrow with a gas or electric motor.

Figure 15 Powered wheelbarrow.
A concrete mule is a wheeled device used when a concrete pour is in a place that a concrete delivery truck or pump cannot reach.

Before operating a concrete mule, ensure that all controls and operating systems are functioning properly.

Figure 16 Concrete mule.
Industrial forklifts are vehicles equipped with pronged platforms that are used to raise or lower heavy loads. They are typically used in areas where the floor or operating surface is smooth.

Workers must stay clear of the forklift’s **fall zone**. This area includes a diameter twice the height of the object being lifted.

Before operating a forklift, ensure that all controls and operating systems are functioning properly.

*Figure 17* Industrial forklift.
A rough-terrain forklift is designed to be used on rough surfaces such as might be encountered at an unpaved construction site.

Figure 18 Rough terrain forklift.
Freight elevators are used to transport materials from floor to floor at a construction site.

**Figure 19** Freight elevator.
The noise generated by motorized materials-handling equipment and the noise inherent at construction sites create the need to use hand signals for directions rather than verbal directions.

Standard hand signals allow both parties to communicate during the lifting or moving process without misunderstandings and resultant accidents.

When using hand signals, make sure to maintain eye contact with the equipment operator at all times.

**Figure 20** Common forklift hand signals.
End of Presentation