

Material Handling and Storage

Module 2

Special Warehouse
Worker Hazards
in Structural Steel
Fabricating and
Supply Companies



Material Handling and Storage

Module 2

OSHA Grant Information

This material was produced under grant number SH-26316-SH4 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trades names, commercial products, or organizations imply endorsement by the U.S. Government.

Material Handling and Storage

Module 2

Program Development

This program was developed by faculty and students in the School of Planning, Design and Construction at Michigan State University in conjunction with the American Institute of Steel Construction - Safety Committee and the University of Puerto Rico

March 2015



Material Handling and Storage

Module 2

Learning Outcomes: Participants shall be able to:

- Identify key material handling hazards
- Recognize hazards associated with material handling equipment
- Identify methods to abate, avoid, and prevent accidents when moving material

Material Handling Equipment

Module 2

Material Handling Equipment Addressed:

- Workers and ergonomics
- Overhead cranes
- Mobile cranes
- Trucks for receiving and shipping
- Powered Industrial Trucks (Forklifts)
- Carts
- Industrial magnetic lifting devices
- Slings, wire ropes, and alloy chains
- Lifting hardware
- Loading docks

Material Handling Equipment

Module 2

Workers

- ❑ Workers are a key part of the material handling chain
- ❑ Use of equipment to help make the job easier can lead to certain injuries
- ❑ Use proper lifting techniques to avoid injury (Module 5)



Workers working on fabrication

Material Handling Equipment

Module 2

Workers

- Obtain training on each piece of equipment you use
- Use equipment properly
- Pay attention to what you and others around you are doing
- Use Personal Protective Equipment (PPE) specifically required for the task you are performing

Material Handling Equipment

Module 2

Personal Protective Equipment

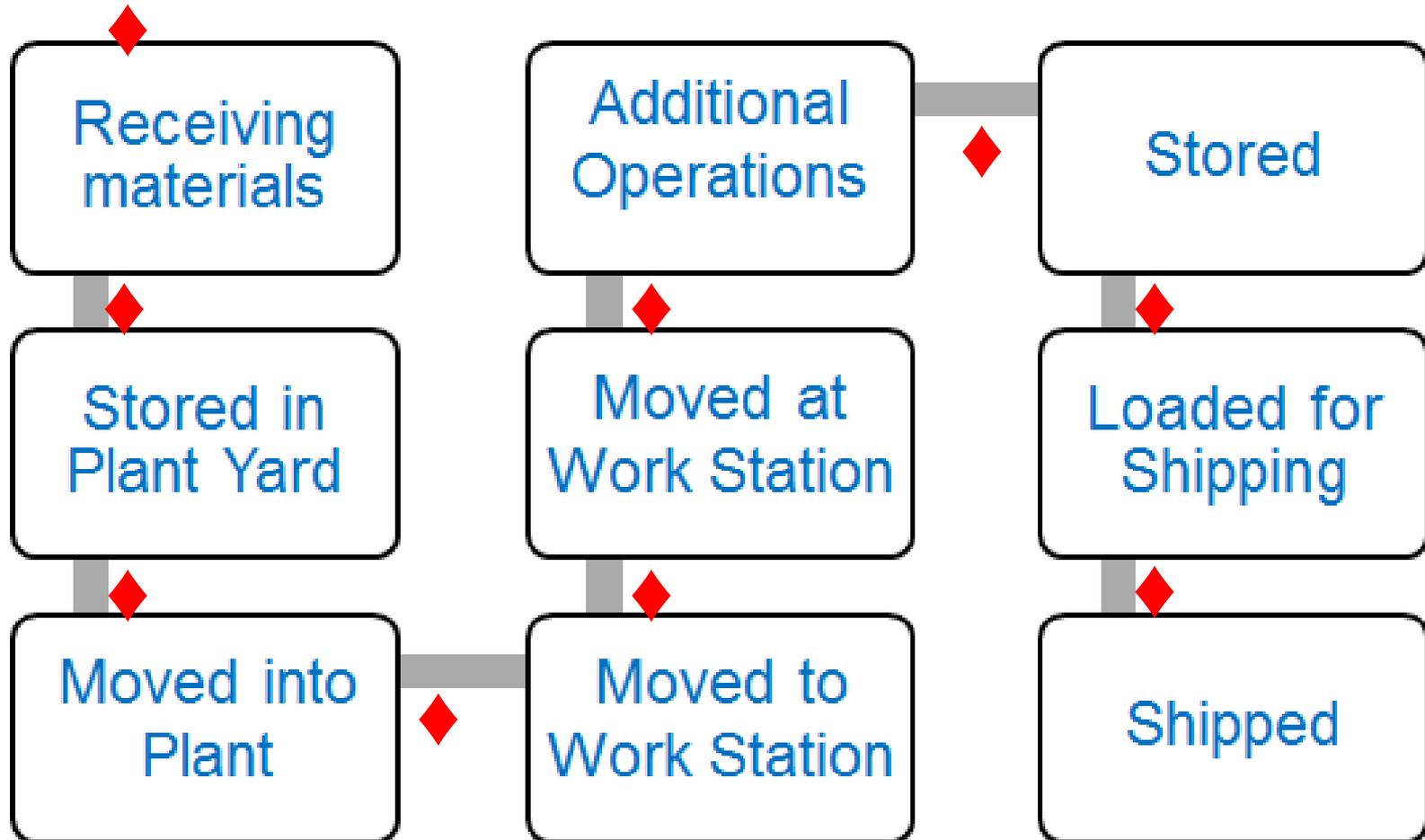
- ❑ For loads with sharp or rough edges, wear gloves or other hand and forearm protection
- ❑ Steel-toed or composite toed safety shoes to prevent foot injuries if work is dropped
- ❑ Wear a hard hat with a good suspension system
- ❑ Eye Protection
- ❑ Hearing protection



Material Handling and Storage

Module 2

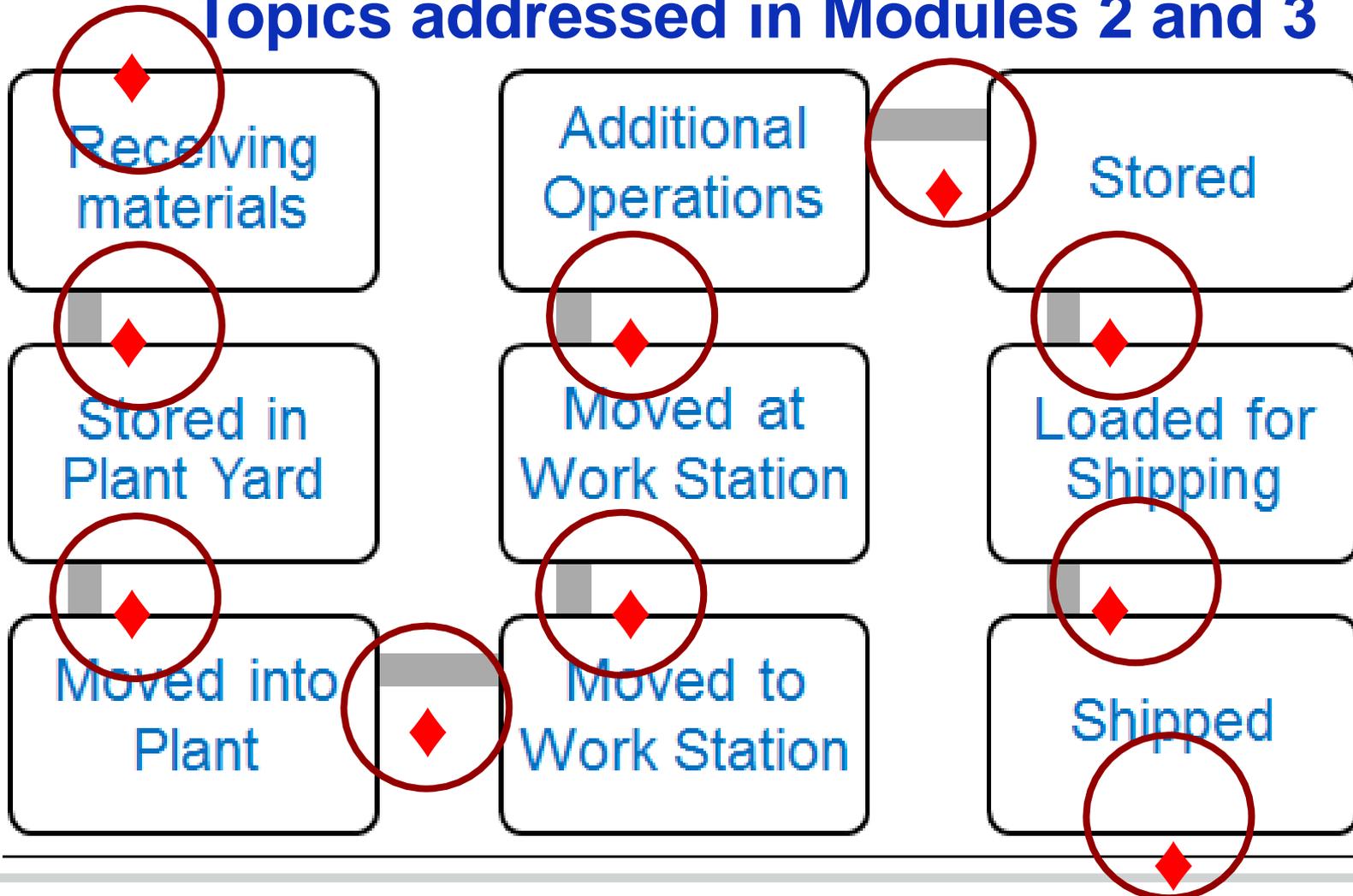
Equipment Use-Identifying Points of Risk



Material Handling and Storage

Module 2

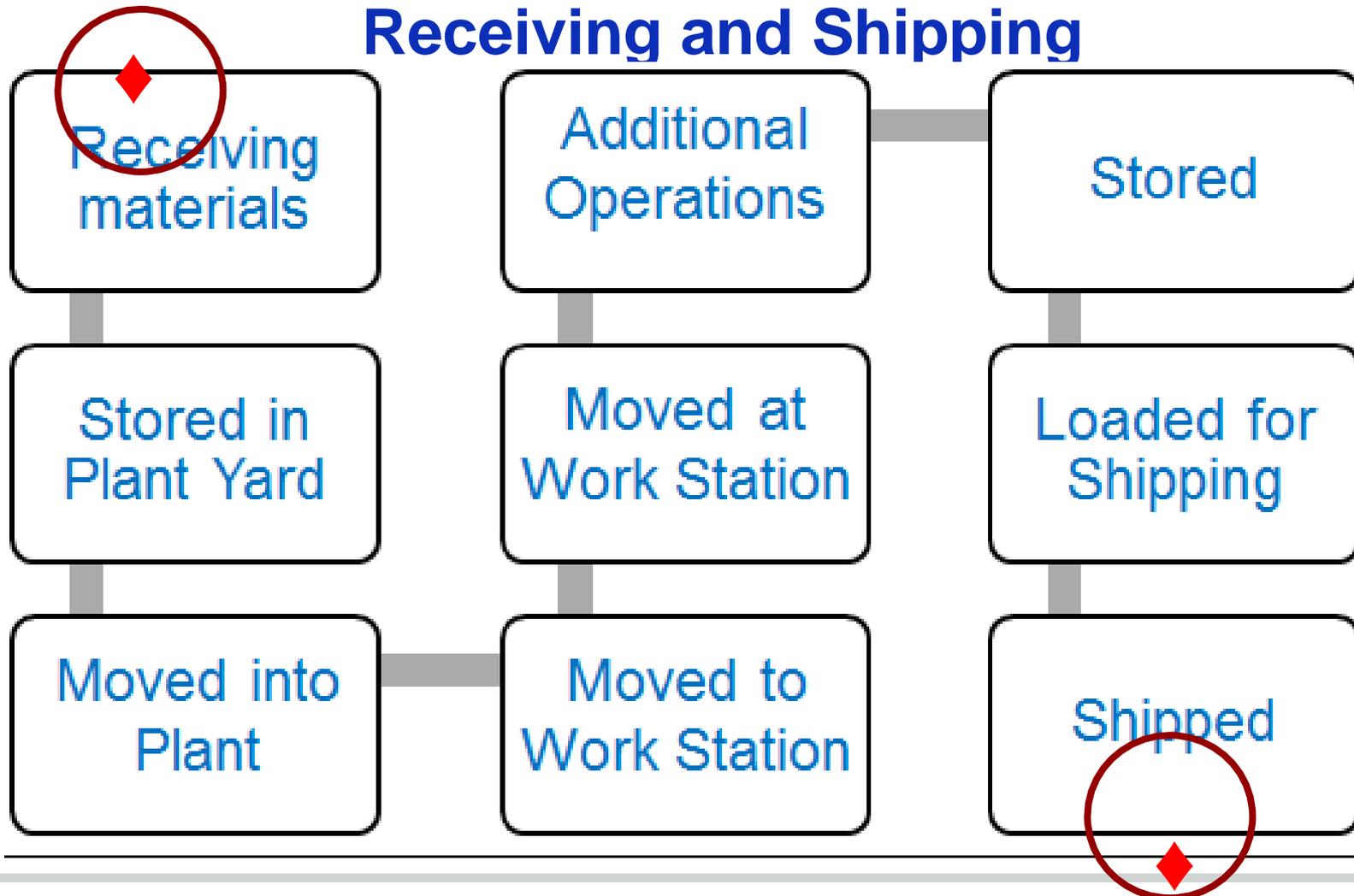
Topics addressed in Modules 2 and 3



Material Handling and Storage

Module 2

Receiving and Shipping



Material Handling and Storage

Module 2

Receiving and Shipping-Key Topics

- Rail
- Trucks
- Removing strapping
- PPE
- Loading Docks

Material Handling and Storage

Module 2

Receiving material at the shop

- Material typically delivered by rail or trucks
- Offloaded with overhead cranes or mobile cranes
- Smaller items may be offloaded with Powered Industrial Trucks (Forklifts)
- Smaller items may be off loaded to loading docks

Material Handling and Storage

Module 2

Receiving material at the shop



Steel arriving from the mill

Material Handling Equipment

Module 2

Trucks for Receiving and Shipping



Receiving material



Fabricated shapes loaded for shipping

Material Handling and Storage

Module 2

Loaded for shipping



Fabricated shapes loaded and ready for shipping



Loads must be secured

Material Handling and Storage

Module 2

Potential Hazard: Moving vehicle/equipment accidents

- ❑ Struck-by and caught-between accidents

Hazard Avoidance

- ✓ Clear surfaces of ice and snow
- ✓ Direct traffic movement and drivers with hand signals
- ✓ Use trained “spotters”
- ✓ Personnel should use personnel doors rather than doors intended for vehicles
- ✓ Use backing-up audible warnings, lights and flashers
- ✓ Stand clear of moving vehicles
- ✓ Do not stand between vehicles and obstructions
- ✓ Maintain clearances

Material Handling and Storage

Module 2

Potential Hazard: Moving vehicle/equipment accidents

- ❑ Struck-by and caught-between accidents

Hazard Avoidance

- ✓ Set brakes of trucks to prevent trucks from moving during loading and unloading
- ✓ Block/chock wheels to prevent movement
- ✓ Follow company policy on whether drivers can remain in trucks during loading and off loading
- ✓ Maintain guards at dropped loading areas

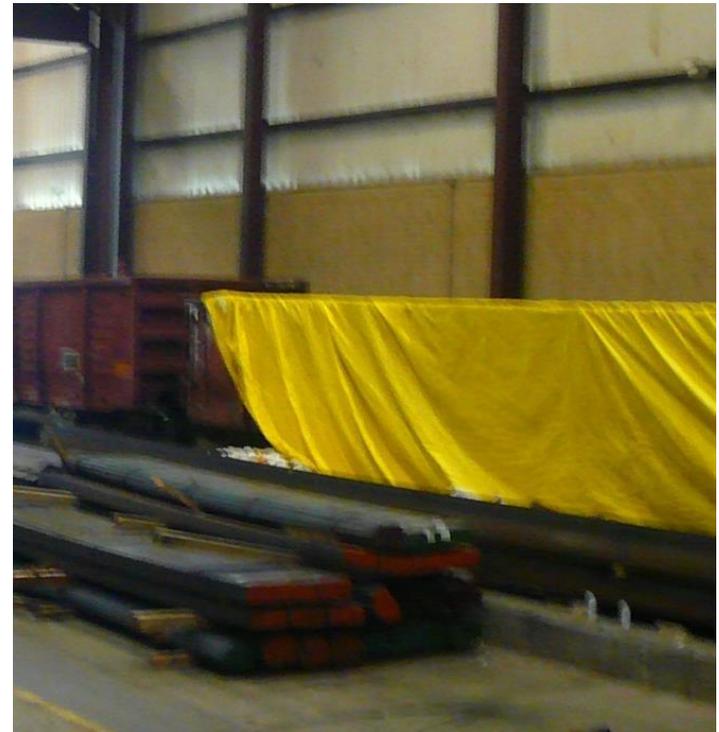
Other methods to avoid hazards that you use?

Material Handling Equipment

Module 2

Rail for Receiving and Shipping

- ❑ OSHA 1910.178 (k) requires wheel stops or other recognized positive protection to prevent rail cars from moving during loading or unloading

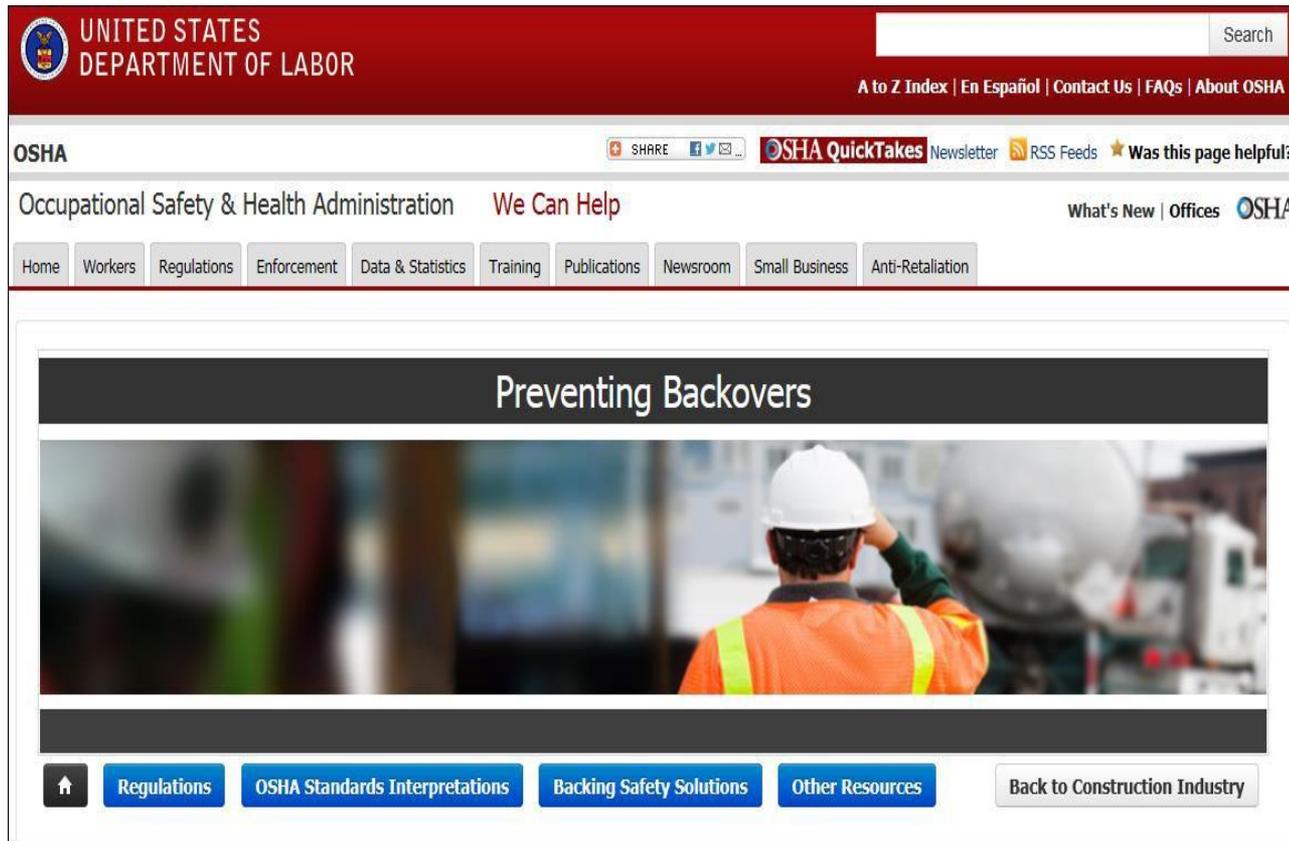


Rail cars used for delivery of steel

Material Handling and Storage

Module 2

Use of Spotters



The screenshot shows the OSHA website interface. At the top, there is a red header with the United States Department of Labor logo and a search bar. Below the header, the OSHA logo is displayed, along with social media sharing options and a 'Was this page helpful?' feedback button. The main navigation bar includes 'Occupational Safety & Health Administration' and 'We Can Help', with a 'What's New | Offices' link. A secondary navigation bar lists various categories: Home, Workers, Regulations, Enforcement, Data & Statistics, Training, Publications, Newsroom, Small Business, and Anti-Retaliation. The main content area features a large banner with the title 'Preventing Backovers' and a photograph of a worker in an orange safety vest and white hard hat. Below the banner, there are several blue buttons: 'Regulations', 'OSHA Standards Interpretations', 'Backing Safety Solutions', and 'Other Resources'. A 'Back to Construction Industry' button is also present.

<https://www.osha.gov/doc/topics/backover/spotter.html>

Material Handling and Storage

Module 2

Use of Spotters - Backing Safety Solutions

“Spotters are a proven method of protecting employees on foot behind vehicles with an obstructed view, but spotters themselves can be at risk for injury or even death.”

Material Handling and Storage

Module 2

Use of Spotters - Backing Safety Solutions

- Spotters and drivers agree on hand signals before backing
- Spotters should maintain visual contact with the driver
- Drivers should stop backing immediately if they lose sight of the spotter
- Spotters should not have additional duties while they are acting as spotters
- Spotters should not to use personal mobile phones, personal headphones, or other items which could pose a distraction during spotting activities
- Spotters should wear high-visibility clothing, especially during night operations

Material Handling Equipment

Module 2

Hand Signals

- ❑ Use hand signals to direct drivers

The screenshot shows the OSHA website page for 'Preventing Backovers'. The page includes a navigation menu, a search bar, and a main content area with a video player and a list of suggested spotting signals. The signals are illustrated with icons of a worker in a high-visibility vest and hard hat.

Preventing Backovers

Backover Safety Solutions

Spotter

Spotters are a proven method of protecting employees on job sites and vehicles with an attached rear, full backover. Spotters should be used on all job functions where backover is required. The following solutions help keep workers safe:

- Spots that spotters and drivers agree on hand signals before backing up.
- Instruct spotters to always maintain visual contact with the driver until the vehicle is backing.
- Instruct drivers to slow backing immediately if they see a spotter's signal.
- Instruct spotters additional duties while they are acting as spotters.
- Instruct spotters not to use personal mobile phones, personal headphones, or other items that could cause a distraction during spotting activities.
- Practice spotters with high-visibility vesting, especially during night operations.

Suggested Spotting Signals

Vehicle Causing the Most Backover Incidents 2008-2010*	
Crane/Tractor	87
Excavator/Tractor	60
Truck	30
Harvester	21
Backhoe/Truck	20
Platform Truck	18

*See employer management system web.

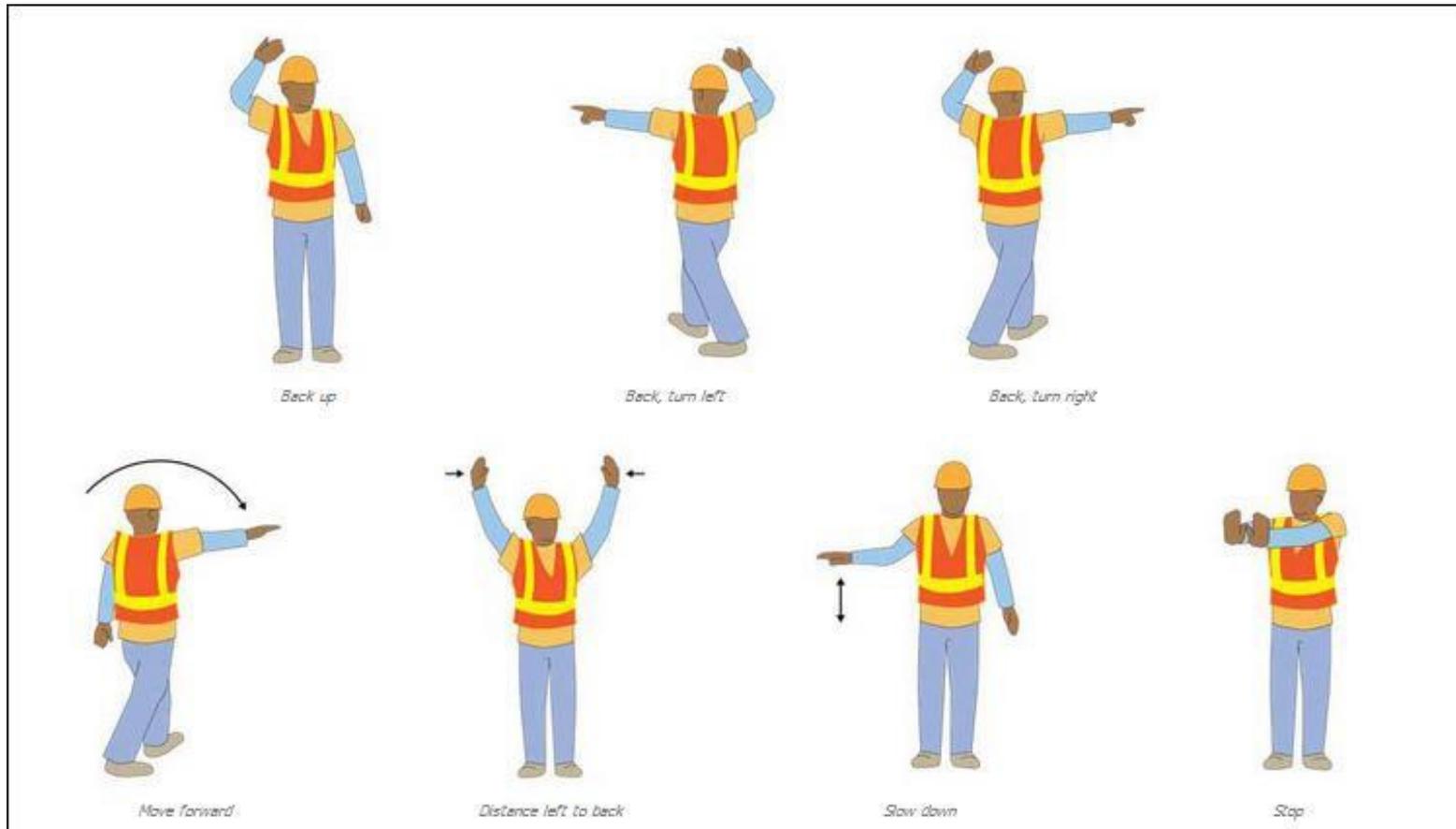
Suggested Spotting Signals:

- Back up
- Back, Limited
- Back, Limited 2
- Stop Backing
- Move Forward
- Continue on to Next
- Stop Back
- Stop

Material Handling Equipment

Module 2

Hand signals



Material Handling Equipment

Module 2

Truck Hand Signals

In-class activity - Instructor to demonstrate with student proper hand signals

Each attendee to demonstrate one hand signal

Material Handling and Storage

Module 2

Hazard Potential: Slips, falls and trips from equipment or in storage yard

- ❑ Slips, falls and trips may occur from equipment or in the storage yard due to slippery surfaces from inclement weather or obstructed walking paths

Hazard Avoidance:

- ✓ Clear surfaces of ice and snow
- ✓ Use proper foot-ware with treaded soles
- ✓ Keep walkways clear of debris
- ✓ Do not work fatigued
- ✓ Use protection from falls when working on platforms above 4 feet

Material Handling and Storage

Module 2

Potential Hazard-Unstable loads due to shifting during transport

- ❑ Loads may shift or otherwise become unstable during transport or during unloading

Hazard Avoidance

- ✓ Observe and evaluate load upon arrival and during unloading
- ✓ Stabilize and re-secure loads
- ✓ Stand clear of unstable loads

Material Handling and Storage

Module 2

Potential Hazard - Cuts, scrapes, bumps, pinches and contact injuries from material sharp edges and being caught between materials



Fabricated material and material from the mill will have sharp edges. Always wear proper clothing and PPE.

Material Handling and Storage

Module 2

Potential Hazard-Cuts and scrapes from material sharp edges

Hazard Avoidance:

- ✓ Wear appropriate personal protective clothing
- ✓ Handle materials properly
- ✓ Use tools properly



Material Handling and Storage

Module 2

Potential Hazard-Injuries from removing metal banding

☐ Cuts and eye injuries

Hazard Avoidance-removing metal material banding

- ✓ Wear appropriate personal protective clothing:
- ✓ Use the right tools such as long handled shears
- ✓ Do not use tools like crowbars or claw hammers



Material Handling and Storage

Module 2

Hazard Avoidance - removing metal material banding

- ✓ Plan the job. Cut the band farthest away first.
- ✓ Other personnel should stand clear
- ✓ Make cuts squarely
- ✓ Stay away from the area that straps springs to when cut
- ✓ Clean up straps after cutting the straps, do not leave them laying around

Adapted from wyomingworkforce.org/Documents/OSHA/.../SteelStrapping.pdf
date visited December 8, 2014,

Material Handling Equipment

Module 2

Potential Hazard-Loading docks

- ❑ Injuries happen when forklifts run off the dock, products fall on employees or equipment strikes a person.

Hazard Avoidance:

- ✓ Do not stand between a truck and a fixed surface
- ✓ Block/chock wheels of trucks
- ✓ Guide trucks with hand signals
- ✓ Drive forklifts slowly around docks
- ✓ Check if dock plates can safely support loads
- ✓ Do not back up forklifts to dock edge
- ✓ Avoid dock edges



Careful use of forklifts in areas of loading docks is needed to prevent fall-offs

Source OSHA 3220-10N 2004

Material Handling Equipment

Module 2

Potential Hazard-Loading docks

- ❑ Injuries happen when forklifts run off the dock, products fall on employees or equipment strikes a person.

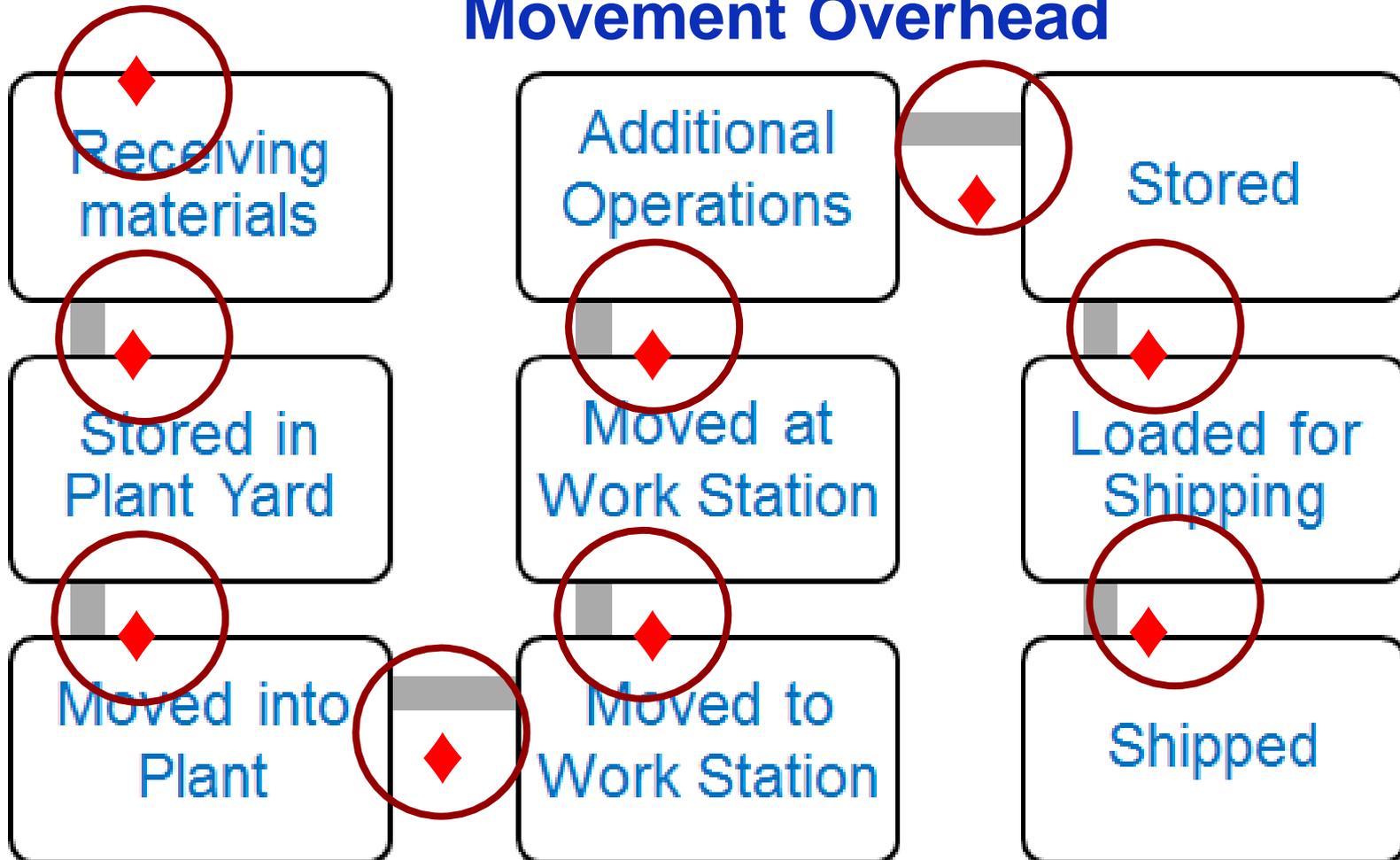
Hazard Avoidance:

- ✓ “Provide visual warnings near dock edges”
- ✓ “Prohibit “ dock jumping ” by employees”
- ✓ Use non-slip surfaces and keep surfaces clean
- ✓ Paint the edges of the loading dock to improve visibility
- ✓ Meet OSHA standards for dock ladders, stairs, and guardrails

Material Handling and Storage

Module 2

Movement Overhead



Material Handling and Storage

Module 2

Movement Overhead - Key Topics

- Overhead Cranes
- Mobile Cranes
- Slings

Material Handling and Storage

Module 2

Cranes - Moving material in the yard

- Typically by overhead crane or mobile crane



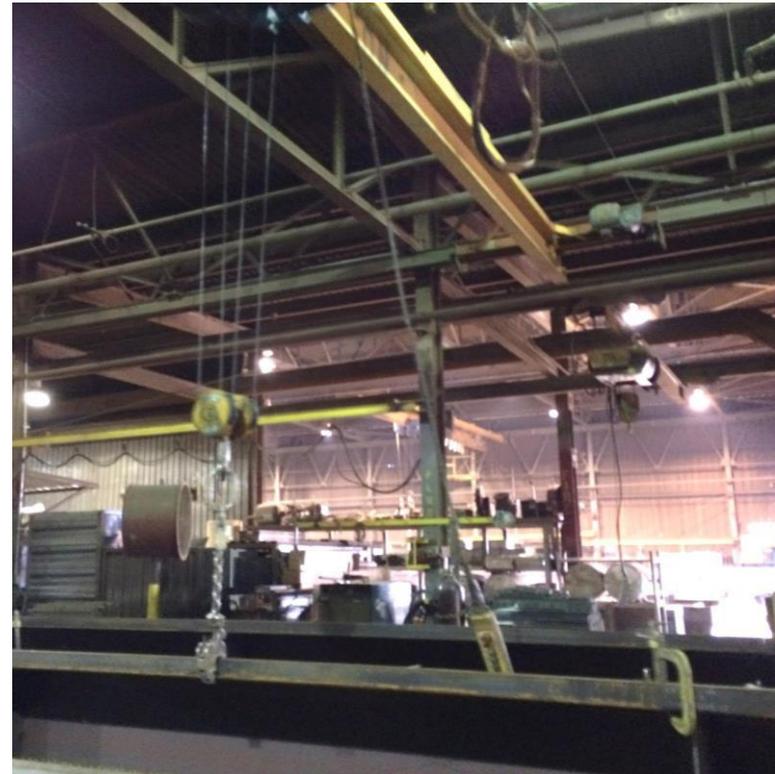
Overhead crane in material yard

Material Handling and Storage

Module 2

Cranes - Moving material within the shop

- Typically material is moved within the shop with overhead, gantry or jib cranes



Overhead crane for moving material in shop

Material Handling Equipment

Module 2

Overhead Cranes

- ❑ 1910.179 Overhead and gantry cranes



Photo from OSHA 3341-03N 2008

Material Handling and Storage

Module 2

Potential Hazard: Dropped loads

- ❑ Loads carried by overhead cranes can be dropped or workers can be struck or caught between objects

Hazard Avoidance:

- ✓ Do not work under loads being moved or suspended overhead
- ✓ Maintain safe distances from loads being moved overhead
- ✓ Use only trained operators
- ✓ Use “Spotters” when operator cannot see the load and a clear path
- ✓ Operate cranes within load rating limits

Material Handling and Storage

Module 2

Potential Hazard: Dropped loads

- ❑ Loads carried by overhead cranes can be dropped

Hazard Avoidance:

- ✓ Maintain crane equipment
- ✓ Conduct required safety inspections of lifting equipment
- ✓ Use proper rigging hardware, slings, alloy chains and wire ropes free of defects and properly sized
- ✓ Inspect slings, chains, wire ropes and hardware for defects, corrosion and degradation. Discard if damaged.

Material Handling and Storage

Module 2

Safety measures for cranes:

- Know the weight of the material that is being lifted
- Always check the crane's rated capacity to make sure that the crane will not be overloaded
- Plan lifts before starting them to make sure that they are safe.
- Know the “weakest” link in the lift, often rigging. Plan the path of travel, clear landing area, notify others in the area, etc.

Material Handling and Storage

Module 2

Safety measures employers should take with cranes:

- ❑ Inspected at least quarterly “by persons thoroughly familiar with the crane, the methods of inspecting the crane, and what can make the crane unserviceable. Crane activity, the severity of use, and environmental conditions determine more frequent inspection schedules.”
- ❑ “Ensure that the critical parts of a crane—such as crane operating mechanisms, hooks, air, or hydraulic system components and other load-carrying components—are inspected daily for any maladjustment, deterioration, leakage, deformation, or other damage.”

Material Handling Equipment

Module 2

Mobile Cranes

1910.180 Crawler, locomotive, and truck cranes



Mobile crane being used
in yard to load trucks

Material Handling and Storage

Module 2

Safety measures with mobile cranes:

- ❑ Only thoroughly trained and competent workers should operate cranes
- ❑ Cranes operators must be National Commission of the Certification of Crane Operators (NCCCO) certified if operating cranes on a construction jobsite, although it is not mandated for work in the shop
- ❑ Operators should know what they are lifting and what it weighs. Rated capacity of mobile cranes vary with boom length and radius

Material Handling and Storage

Module 2

Safety measures with mobile cranes:

- ❑ To minimize the risks of crane use, employers shall take the following precautions:
 - ❑ Equip all cranes with boom angle indicators
 - ❑ “Provide cranes with telescoping booms with some means to determine boom lengths unless the load rating is independent of the boom length.”
 - ❑ “Post load rating charts in the cab of cab-operated cranes. (All cranes do not have uniform capacities for the same boom length and radius in all directions around the chassis of the vehicle.)”

Material Handling and Storage

Module 2

Safety measures with mobile cranes:

- Know that there are regulations and limitations that operators need to know before working close to power lines
- Outriggers if used must rest on firm ground, timbers, or cribbing to spread the crane weight and load over a large enough area

Material Handling Equipment

Module 2

Cranes Reminders*

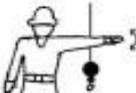
- Check the load chart in the cab
- Frequently inspect
- Lift people only when permitted by OSHA Standards
- Check overhead power lines if outdoors
- Ensure area of travel is clear

Material Handling Equipment

Module 2

Mobile Cranes

- Use hand signals when necessary to guide load placement

HAND SIGNALS FOR CRANE OPERATION		
When there is a lot of traffic at a worksite, it is essential for workers to be able to use hand signals. Here are some standard hand signals for crane operation.		
 <p>STOP – With arm extended horizontally to the side, palm down, arm is swung back and forth.</p>	 <p>EMERGENCY STOP – With both arms extended horizontally to the side, palms down, arms are swung back and forth.</p>	 <p>HOIST – With upper arm extended to the side, forearm and index finger pointing straight up, hand and finger make small circles.</p>
 <p>RAISE BOOM – With arm extended horizontally to the side, thumb points up with other fingers closed.</p>	 <p>SWING – With arm extended horizontally, index finger points in direction that boom is to swing.</p>	 <p>RETRACT TELESCOPING BOOM – With hands to the front at waist level, thumbs point in each other with other fingers closed.</p>
 <p>RAISE THE BOOM AND LOWER THE LOAD – With arm extended horizontally to the side and thumb pointing up, fingers open and close while load movement is desired.</p>	 <p>DOG EVERYTHING – Hands held together at waist level.</p>	 <p>LOWER – With arm and index finger pointing down, hand and finger make small circles.</p>
 <p>LOWER BOOM – With arm extended horizontally to the side, thumb points down with other fingers closed.</p>	 <p>EXTEND TELESCOPING BOOM – With hands to the front at waist level, thumbs point outward with other fingers closed.</p>	 <p>TRAVEL/TOWER TRAVEL – With all fingers pointing up, arm is extended horizontally out and back to make a pushing motion in the direction of travel.</p>

Material Handling Equipment

Module 2

Mobile Cranes

□ Hand signals continued

HAND SIGNALS FOR CRANE OPERATION—continued		
 <p>LOWER THE BOOM AND RAISE THE LOAD – With arm extended horizontally to the side and thumb pointing down, fingers open and close while load movement is desired.</p>	 <p>MOVE SLOWLY – A hand is placed in front of the hand that is giving the action signal.</p>	 <p>USE AUXILIARY HOIST (whipline) – With arm bent at elbow and forearm vertical, elbow is tapped with other hand. Then regular signal is used to indicate desired action.</p>
 <p>CRAWLER CRANE TRAVEL, BOTH TRACKS – Rotate fists around each other in front of body; direction of rotation away from body indicates travel forward; rotation towards body indicates travel backward.</p>	 <p>USE MAIN HOIST – A hand taps on top of the head. Then regular signal is given to indicate desired action.</p>	 <p>CRAWLER CRANE TRAVEL, ONE TRACK – Indicate track to be locked by raising fist on that side. Rotate other fist in front of body in direction that other track is to travel.</p>
 <p>TROLLEY TRAVEL – With palm up, fingers closed and thumb pointing in direction of motion, hand is jerked horizontally in direction trolley is to travel.</p>		

Source for hand signals: OSHA 29 CFR 1926, Subpart CC, Appendix A

Material Handling Equipment

Module 2

Crane Hand Signals

In-class activity - Instructor to demonstrate with student proper crane signals used by spotters

Each attendee to demonstrate one hand signal

Material Handling Equipment

Module 2

Mobile Cranes

- ❑ AISC has a sample daily inspection checklist available on its safety channel

DAILY INSPECTION MOBILE CRANE					
CRANE:	Model :	SERIAL #:	CAPACITY:		
DATE:					
INSPECTION ITEMS			O.K.	NO	N/A
LOAD CAPACITY CHART POSTED IN CAB					
ALL CONTROLS IDENTIFIED					
ELECTRICAL HAZARD WARNING SIGNS POSTED					
WARNING HORN & BACK UP ALARM WORKING					
CAB GLASS AND WIPERS IN GOOD CONDITION					
CHARGED FIRE EXTINGUISHER					
OPERATOR'S MANUAL IN THE CAB					
BOOM ANGLE INDICATOR					
BOOM LENGTH INDICATOR (TELESCOPIC BOOM)					
WIND SPEED INDICATOR					
ALL FLUID LEVELS O.K.					
MAIN HOIST / WIRE ROPE / DRUM / SHEAVES / BRAKES / CLUTCH					
AUX HOIST / WIRE ROPE / DRUM / SHEAVES / BRAKES / CLUTCH					
BOOM HOIST / WIRE ROPE / DRUM / SHEAVES / BRAKES / CLUTCH					
BOOM PENDANTS / GANTRY / BAILS / PINS / KEEPERS					
TELESCOPING BOOM / STRUCTURE / WEAR PADS / LIFT CYLINDER					
LATTICE BOOM STRUCTURE & COMPONENTS					
ALL WEDGE SOCKETS & WIRE ROPE CLIPS					
SWING SYSTEM					
BOOM STOPS / BOOM KICK-OUTS / PAWL					
ANTI-TWO-BLOCK DEVICES OPERATIONAL					
LOAD INDICATOR SYSTEM OPERATIONAL					
ALL MACHINERY GUARDS IN PLACE					
OUT RIGGER BEAMS / RAMS / FLOATS / PINS / LOCKS					
CRAWLER PADS / PINS / ROLLERS / SPROCKETS / CHAINS					
TIRE PRESSURE & CONDITION					
HANDRAILS / STEPS / LADDERS / GRAB RAILS					
LOAD BLOCKS / HEADACHE BALL & HOOKS					
GAUGES AND INDICATORS					
PROPER REEVING - ALL SYSTEMS					
PROPER SPOOLING - ALL SYSTEMS					
PROPER COUNTERWEIGHT					
GANTRY / MAST IN PROPER POSITION					
HYDRAULIC SYSTEM CONDITION					
AIR SYSTEMS CONDITION					
ALL LINKAGE & KEEPERS					
DRUM ROTATION INDICATORS					
OTHER					

CHECK ALL CONTROLS AND SAFETY DEVICES, CHECK GROUND SUPPORT & CRIBBING IN PLACE, CRANE LEVEL
CHECK ALL BRAKES / CLUTCHES FOR PROPER ADJUSTMENT, CHECK FOR POWER LINES AND KEEP A 6 FOOT
CLEARANCE FROM THE BUILDING. DO NOT OPERATE CRANE IN AN UNSAFE MANNER OR CONDITION. TAKE OUT
OF SERVICE IF DEFECTIVE. Turn inspections in at the end of the shift

Material Handling Equipment

Module 2

Mobile Cranes

AISC has two useful crane webinars available for viewing at its safety channel site for additional information

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
FOUNDED 1921

THERE'S ALWAYS A SOLUTION IN STEEL.

Join Now | User Login | SEARCH AISC

ABOUT US | JOIN AISC | MY AISC | BOOKSTORE | NEWS | EVENTS | FIND A COMPANY / PERSON | CONTACT US | CHANNELS

SAFETY

Go back to: [Home](#) | [Channels](#) | [Safety](#) | [Resources](#) | [Printer Friendly Version](#) | [Send to a friend](#)

Safety Webinars

Crane/Rigging Safety: What You Need to Know to Keep Your Employees Safe During Hoisting Operations
Part 1 date: Wednesday October 1, 2014
Watch the free recording here. (Note: the recording loads slowly. Once opened, press pause and wait 1 minute before pushing play.)
View the presentation slides here.

Part 2 date: Wednesday October 8, 2014
Watch the free recording here.
View the presentation slides here.

Arc Welding Safety: Understand and Follow the Fundamentals
Date: Friday, February 28, 2014
Watch the free recording here.
View the presentation slides here.

Hazard Communication and the Globally Harmonized System (GHS) for Fabricators and Erectors
Date: Wednesday, October 30, 2013
Watch the free recording here.
View the presentation slides here.

SAFETY

RESOURCES

- Publications and Other Safety-Related Documents
- Sample Safety Forms
- Top 10 Federal OSHA Citations
- Relevant OSHA Interpretations
- Reviews for Safety Products and Training Videos
- Links
- Articles
- Safety Details
- Safety Ideas Contest

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices



Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices



Permanent magnet



Using magnet to lift plate

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

1910.179(a)(47)"Magnet" means an electromagnetic device carried on a crane hook to pick up loads magnetically.

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

The American Society of Mechanical Engineers has developed the **ASME B30.20-20-3 Below-the-Hook Lifting Devices-** Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings which addresses permanent and electric-rated lifting magnets and their operation.

<http://www.thefabricator.com/article/materialhandling/understanding-lift-magnet-compliance>

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

ASME B30.20-20-3 addresses safety of magnetic lifting devices including:

- User qualifications
- Training
- Operation practices

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

Three main types of magnets:

- Electromagnets
- Permanent magnets
- Electro-permanent magnets

All three can be used to lift ferrous metals such as plate, structural shapes, coils etc.

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

- ❑ Permanent magnets typically will have “on” position and “off” position. The operator engages the magnet using the “on” position
- ❑ Safety pins are engaged to protect against accidental switching to the “off” position and disengaging the magnet
- ❑ May also include safety lifting features that can be used to test the load before a lift

Material Handling and Storage

Module 2

Potential Hazard Magnets: Dropped loads

- “Caught between” injuries can range from pinching, crushing to amputations (caught between) due to:
 - Dropped loads
 - “Struck by” caused by material being moved
 - Attracting unintended surrounding tools, material etc. due to magnetic force

Hazard Avoidance:

- Never work under the path of the load
- Maintain safe distances from loads being moved overhead
- Never put your fingers under the load when guiding loads
- Use same precautions as crane hazard avoidance discussed previously

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

- ❑ Dropped loads can occur from factors such as
 - ❑ Instantaneous loss of power
 - ❑ Loss of magnetism of permanent magnets
 - ❑ Irregular surfaces which may prevent the magnet from being fully engaged with the material being moved

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

- ❑ Follow Manufacturer's instruction for safe operation
- ❑ Magnets should have legible labels showing magnet lifting capacity
- ❑ Lifting charts can be hard to read on magnets, and hard to keep legible. These charts can be enlarged and posted in the facility (as long as employees know where to find the information)
- ❑ Remove from service defective equipment or when missing tags.

Material Handling Equipment

Module 2

Industrial Magnetic Lifting Devices

- ❑ “Strong magnet warnings” should be placed in areas when lifting magnets are used
- ❑ Strong magnets can attract unwanted materials such as tools, adjacent materials, table etc.
- ❑ Remember magnets depending on their design can lift from several hundred lbs to 10,000 lbs

Material Handling Equipment

Module 2

Module 2

Q and A

Material Handling Equipment

Module 2

Take a Break!