MATERIALS HANDLING SAFETY IN CONSTRUCTION ENVIRONMENTS

COURSE OUTLINE

- **"Materials handling" involves moving a load from one place to another.**
  - Sometimes you can do it manually, other times you need to use mechanical equipment to help you do the "heavy lifting".

- **It might seem pretty straightforward, but don't be fooled.**
  - Lifting and moving any type of material can be dangerous if you don't know what you're doing.

- **You can prevent accidents and injuries by preparing before you begin any materials handling task.**
  - Start by "checking in" with yourself.
  - If you're feeling the effects of drugs or alcohol, never try to lift or move a load.
  - Anything like this that might affect your balance or your judgment could get you or someone else hurt… even killed.

- **You're also not ready to work safely if you're in pain.**
  - An injured body is a weaker body, and it's an accident waiting to happen.

- **If you feel that you're mentally and physically ready to take on a materials handling job, you also need to make sure that you're "dressed for success".**
  - Putting on appropriate personal protective equipment can be the difference between walking away from an incident and ending up in the emergency room.

- **At a minimum, you will probably want to wear gloves and work boots with non-slip soles and steel toes.**
  - You might need other types of PPE as well, depending on the environment you are in.

- **For instance, if you're working on a jobsite with flying or falling objects, you'll want to wear a hard hat or helmet.**
  - Not sure what PPE you should use for the jobs that you do?
  - Don't guess… ask your supervisor.

- **Once you're "outfitted" correctly, you need to assess what it will take to move your load.**
  - How heavy is it?
  - Can you safely lift it on your own, or do you need the help of a coworker or some type of equipment?

- **When in doubt, get help!**
  - You don't want to over-extend yourself… that's how injuries occur.

- **Take a moment to inspect the load itself.**
  - Some loads have "handholds" that make lifting and carrying them easier.
  - Use them if you can.

- **You should also check to see if there are any warning labels on the load.**
  - They'll tell you about any special handling requirements or hazards you need to be aware of.

- **The last thing you need to do to prepare for a materials handling task is to survey the path you'll be taking if you're moving the load any distance.**
  - Even if you're ready and the load is manageable, your route could pose risks.

- **You need to identify any "obstacles" ahead of time.**
  - Remove any clutter from your path.
  - Watch out for puddles or spills.
  - If you can't remove an obstruction, change your route to avoid it.
  - Never try to carry a load through a cluttered or blocked area.

- **When you're working, no one expects you to have "super-human" strength.**
  - So to avoid hurting yourself, you need to understand your body's capabilities… and its limitations.

- **That's where "ergonomics" comes in.**
  - Ergonomics is all about designing tasks to fit your body, so you can get the job done easily and efficiently without putting yourself at risk.

- **"Ergonomic injuries" happen when you push your body to move in ways it's not designed or strong enough to move.**

- **So you should avoid working with your body in "unnatural" or extreme positions, such as…**
  - Leaning to the side while lifting a box onto a stack.
  - Turning at the waist and reaching back to grab a heavy tool behind you.
  - Reaching too far to pick something up.

- **Any time you feel like you're forcing yourself into a stressful position, stop.**
  - Then think about how you can get the task done without straining yourself.

- **For instance, you could…**
  - Shift your position so you can push a box without leaning.
  - Move your feet so you can grab something without turning.
  - Get as close to an object as possible before you lift it.

- **If you can't create a "stress-free" solution on your own, don't be afraid to ask for help from a coworker.**

- **How you position your body isn't the only thing that matters when you're moving materials.**
  - Another big risk is overexertion… when you try to do more than your body can handle.
  - This often happens when you're working with especially heavy materials.

- **Why are they dangerous?**
  - Because the heavier the load, the more stress it puts on your muscles, discs, and spine.
  - The more force you use, the harder it is to stay in control of a load as well.

- **So be realistic about your abilities. Don't try to take on jobs you can't handle. Remember…**
  - Pushing is usually safer than pulling.
  - Always use "handholds" if the item that you're lifting has them.
  - Stand up straight with the object close to your body when you lift.

- **Even if you are dealing with loads that you think you can handle, there's another potential problem to look out for… "repetitive motions".**
  - Some jobs involve making the same lifting, turning, stepping or lowering movements over and over again.

- **While each movement might feel easy initially, the repetition can wear your body down over time.**
  - You can guard against this by alternating tasks that use different types of movements and taking periodic rest breaks.

- **Every year, more than a million workers injure their backs, and it usually happens because they are trying to lift something the wrong way.**
  - Materials handling involves a lot of lifting, so you need to know and follow safe lifting protocols to avoid accidents and injuries.

- **First and foremost, think before you lift. Before you try to pick something up, ask yourself…**
  - Is it too heavy to lift easily?
  - Is it too bulky or oddly shaped to grip securely?
  - Will it be too large to see over after you pick it up?

- **If you answer "yes" to any of these questions, you shouldn't try to lift the object by yourself.**
  - Get help or use appropriate materials handling equipment to assist you.

- **Even when you can lift an object on your own, there are specific steps that you should take to ensure a safe lift.**
  - Stand close to the object, with your feet shoulder-width apart.
  - Lower yourself to grasp the object by bending your knees (do not bend at the waist… Keep your back straight).
  - Get a firm grip.
  - Lift the load with your legs by straightening your knees.
  - As you make a lift, hold the object close to your body.

- **But lifting is only half the job. Next, you need to carry your load to its destination.**
  - Keep your back straight, continuing to hold the object close to you.
  - Proceed carefully, with your head up and your eyes on your path.
  - Don’t try to carry anything that interferes with your field of vision.

- **As you move out with your load, remember twisting can hurt your muscles.**
  - So if you have to change direction while you're carrying it, don't twist at the waist.
  - Walk through the turn instead by moving your feet.

- **If something is too heavy to carry alone, ask a coworker to help you with it.**
  - Performing a safe "team lift" relies on the same principles that you use when lifting alone, but with teamwork.

- **To maintain control of the load, you and your coworker need to coordinate your actions.**
  - So agree on the direction you'll be moving in, how fast you'll go, and where your destination is before you lift anything.

- **You also need to pay attention to where you're putting the load.**
  - OSHA's Materials Handling Safety Regulations require you to stack and store materials in a way that doesn't create new hazards.
  - So anything stored in tiers *"... shall be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse"*.

- **When it's time to put the load down, go through the same steps you did to lift it, but in reverse.**
  - Keep your back straight.
  - Bend at the knees if necessary.
  - Use your legs.

- **You should avoid lifting a load over your head. That puts a severe strain on your neck and shoulders.**
  - Instead, use a step stool, ladder or platform to reach the height you need, so you won't have to lift the object above chest level.

- **Materials handling tasks can be very physically demanding.**
  - Fortunately, you don't have to take on all of the "weight" yourself.

- **There are several types of tools and equipment that can help you move things more easily... and safely.**
  - Two common examples of these "lifting and carrying aids" are two-wheel "hand trucks", and "dollies".

- **This equipment can be helpful.**
  - But it can also be dangerous if you don't know how to use it safely.

- **You should begin by putting on personal protective equipment.**
  - When you're working with hand trucks and dollies, at minimum, you should wear work gloves and steel-toed boots.

- **Then thoroughly inspect the equipment, looking for damaged, worn or missing parts.**
  - Check the tires to make sure they are in good condition.
  - Examine hard rubber wheels to make sure they don't have any "chunks" out of them that would cause them to wobble.
  - If you find problems and can't repair them, tag the equipment "Out-of-Service" and report it to your supervisor.

- **Once you're done inspecting the equipment you'll be using, you need to determine how to stack the load you're moving.**
  - For instance, two-wheeled hand trucks work on the "lever and fulcrum" principle.

- **They give you good lifting power and control.**
  - But you need to pay careful attention to how you load them.

- **To prevent materials from falling off…**
  - Position the load against the back of the truck.
  - Stack smaller, lighter objects on top of larger, heavier ones.
  - Don't stack items any higher than the truck's backrest.
  - You can hurt yourself trying to move too much weight, so be careful not to overload the truck.

- **Watch out for oddly shaped or unbalanced objects that could destabilize the load too.**
  - Some materials handling equipment comes with straps and chains to keep loads secure.
  - If yours has them, use them.

- **Once you've prepared the load, the next step is moving it. First, you need to tip the truck back. To do this safely…**
  - Stand behind it.
  - Hold the top of the load with one hand.
  - Rest one foot on the axle.
  - Use your other hand to gently tilt the truck back.
  - Then balance the weight of the load over the wheels.
  - Finally, grip the handholds firmly and push the truck away.

- **Remember, pulling a hand truck stresses both your arms and shoulders and can lead to an ergonomic injury.**
  - When you reach your destination, you can make a "controlled landing" going through the same steps you did when you tipped it back… but in reverse.

- **While two-wheeled equipment can be useful for moving stacked items…**
  - Four-wheeled dollies come in handy when you need to move something large and bulky.

- **They are rectangular platforms with four wheels that can swivel 360°.**
  - Because they are horizontal, they should only be used on even ground… never on stairs or rough surfaces.

- **There are two ways to load a four-wheeled dolly…**
  - The 45° method.
  - The deadlift method.

- **The "45° method" requires two people.**
  - One to tilt the object to the side while the other positions the dolly underneath it.
  - Then, the person holding the object slowly lowers the raised side down onto the dolly and positions it so that its weight is evenly distributed.

- **The "deadlift method" involves a similar process.**
  - But in this case two or more people lift the object that needs to be moved, while another person slides the dolly underneath the object.
  - Together, they then carefully position the object on the dolly.

- **Once the load is balanced, it can be safely rolled to its destination.**
  - Then, it can be unloaded using the 45° or deadlift method, but in reverse.

- **When you're dealing with a very heavy load, using equipment like platform trucks and carts can help you move it securely and safely.**
  - But it's important to pay attention to how you load them.
  - The materials you're moving must be stable and self-supporting, with their weight evenly distributed.

- **Be careful not to overload a truck or cart as well.**
  - They can be designed to hold anywhere from hundreds to thousands of pounds.
  - So always check their “rated load capacity”, which you can find on their equipment label or in their user’s manual.
  - They will tell you the maximum weight the equipment can carry safely.

- **There are two main ways to stack materials on carts and trucks securely.**
  - “Interlocking”, which involves stacking items like a “puzzle” to reduce their movement.
  - “Column stacking,” where you pile items vertically and symmetrically.

- **“Brick” and “Pinwheel” stacking are both examples of “Interlocking” methods.**
  - “Block” and “Split Block” are types of “column stacking”.

- **Once you have your materials secured, you want to move the cart or truck by pushing from behind.**
  - Use caution while you’re in motion.
  - They are usually large and can be heavily loaded, so it could be hard to stop.
  - Be careful to avoid pedestrians, as well as other equipment and materials.

- **When you arrive at your destination, you have to make sure you unload the materials safely, too.**
  - If you re-stack them in a way that leaves them unstable, they could fall and hurt someone.

- **After you finish, be sure to park carts and trucks in their designated storage areas.**
  - Leaving equipment where people don't expect it to be can result in accidents and injuries.

- **There may be times when you have to move materials that have been palletized.**
  - In these cases, you’ll need to use a "pallet jack".
  - But you'll want to keep a couple of things in mind when you do.

- **First, you need to "slide" the jack into the pallet.**
  - Make sure the jack's wheels are resting on the ground before you raise the forks.
  - If the wheels are on one of the pallet's slats, trying to raise it will tear the pallet apart!

- **A pallet jack can be tricky to control when you push it, because the wheels that steer it are located at the rear of the jack.**
  - So to avoid running into things, or people, it can be easier, and safer, to pull a loaded pallet jack.

- **But you will probably need to push the jack to position the pallet where you want it when you are putting the load down.**
  - So be sure you have complete control and don't have to strain yourself.
  - At that point, lower the forks and pull the jack out from under the pallet.

- **Remember, you should never store materials haphazardly.**
  - So make sure to leave loaded pallets where they are secure and stable.

- **There are many types of powered equipment on a jobsite that can help you with materials handling tasks.**
  - But they can also be dangerous when you're using them.
  - That's why following safe work practices is crucial.

- **On many jobsites, you can move various materials using…**
  - Forklifts.
  - Front-end loaders.
  - Skid steers.
  - Cranes.

- **When you're operating mobile equipment, you need to…**
  - Always wear your seatbelt.
  - Keep your hands and feet inside the vehicle.
  - Maintain a safe speed.
  - Keep to the right of traffic as well as pedestrians.

- **Keeping these basic safety rules in mind, when you're operating an "empty" forklift, front-end loader or skid steer, you should drive with your forks or bucket four to six inches above the ground.**
  - As you approach your load, you may need to dismount from your equipment to check its positioning.
  - For instance, you should see if the width of the forks on a forklift needs to be adjusted to accommodate the size of the pallet you're going to pick up.

- **Once you're positioned correctly, move forward until the forks or bucket are fully inserted into the load.**
  - Then, raise the load about a foot or so off the floor.
  - Then, tilt the mast back to stabilize the load.
  - If it remains stable and balanced, you can proceed… carefully.

- **Make sure you can see clearly in front of you as you take the load to its destination.**
  - If what you're carrying obstructs your view, run your equipment in reverse, looking over your shoulder.

- **Keep your eyes peeled for pedestrians and other moving equipment.**
  - And watch out for overhead obstructions.

- **To help prevent collisions, stop and sound your horn as you approach corners, intersections or doorways.**
  - Remember pedestrians always have the right of way.

- **If your equipment does collide with something, it could begin to tip over.**
  - In this case, do not try to jump out.
  - That can get you killed.

- **Instead you should…**
  - Brace your feet.
  - Lean in the opposite direction from the way the vehicle is tipping.
  - Hang on.

- **When you reach your destination…**
  - Straighten the mast or lower your bucket.
  - Carefully stack or dump the materials where they need to go.

- **If you're going to be using a crane there are some additional rules you need to follow.**
  - First, if you're using a mobile crane, such as a "boom crane", you need to drive with its mast lowered.

- **If you're using a fixed "boom crane", once it's in place you need to make sure that its "outriggers" are extended and resting on solid ground.**
  - These "legs" keep the equipment stable as you're operating it.

- **When you're ready to pick up your load, a coworker should attach the hook to the materials you're going to move.**
  - They will then signal you to lift the good.

- **If you're using an overhead or jib crane, you'll just need to rotate the arm and slowly lower your load to its destination.**

- **Even if you aren't operating any powered equipment, working around machines as a "pedestrian" can be dangerous.**
  - So always be aware of where the equipment in your work area is and keep a safe distance.

- **Don't "pop up" where the driver doesn't expect you.**
  - Use designated walkways whenever possible.
  - Keep to the right when you're walking in aisles.
  - Remember to wear a reflective vest.

- **Understanding how certain types of equipment move can help you stay safe as well.**
  - For instance, forklifts steer with their back wheels, so they turn very sharply and their back ends swing out.
  - So if you're working around a forklift, don't let this take you by surprise.

- **And remember…**
  - Always stay away from "attachments" like forks, buckets and hooks.
  - Don't get caught between a piece of powered equipment and a wall or other large object.
  - Never work, stand or walk under a raised load.

*** * * SUMMARY * * ***

- **Before you can begin any materials handling job, you have to prepare yourself, your equipment and your route.**

- **When you're lifting and carrying something, you need to work "ergonomically friendly", and avoid overexerting yourself.**

- **If you're using a hand truck or dolly, you should wear steel-toed boots and gloves, inspect your equipment before you use it, and keep your load stable at all times.**

- **When you're using carts, platform trucks and pallet jacks to move heavy or bulky loads, be sure that you choose the right stacking method for the materials you're handling.**

- **When you're operating powered equipment, be aware of your surroundings, handle your loads carefully and always sound your horn to make yourself known to pedestrians.**

- **Now that you know what you should do to handle materials safely, you can protect yourself, your equipment and your coworkers… every day!**