

Hazards are ever-present in the steel plant environment, and a heightened awareness and emphasis on safety is a necessary priority for our industry. This monthly column, written by members of the AIST Safety & Health Technology Committee, focuses on procedures and practices to promote a safe working environment for everyone.

Handling Long Steel Products Proves to Be a Balancing Act

Handling long steel products safely can be challenging. Long steel products are defined as rail, channel, angles, rebar, pipe, beams or similar products. In the flat roll world, 30,000pound steel coil can be moved with one crane movement or one lift move. But moving an equivalent amount of weight in long steel products takes multiple moves. With more moves and the use of more and bigger equipment, the risk of an accident increases. The results of this scenario are no different than adding additional vehicles to an already crowded and busy street.

Performing a hazard assessment for each job is very important because each situation is different, and employees may be exposed to unidentified risks. The goal for each job is to identify the most efficient way to handle the steel, identify all the hazards and determine the best way to control them.

Most long steel products can be handled or transported by conveyor, lift truck, crane or railcar. Each mode of transport, however, poses various hazards.

Lift Trucks

When handling long steel products with a lift truck, operators must always know the load capacity of the truck, which is readily available on the truck's data plate. In addition, operators must know the truck's load center (center of gravity) information to keep it stable. For example, a 30,000-poundcapacity lift truck with a 24-inch load center will be stable only if the load center is within 24 inches of the front face of the forks. If the center of gravity is outside the load center, the lift truck's capacity is reduced, and it can become unstable and tip over (Figure 1).

If the lift truck is stable while moving the load, operators must also be aware that the lift truck could be overloaded because of forces created while operating the truck. These forces could come from acceleration, braking, the shifting of the load or driving on uneven ground.

Another hazard to carrying loads with a lift truck is the need for a wider operation field. Lift truck operators may need to lift a load higher to carry it over objects (but never people). Operators must remember that raising a load may cause the truck to become unstable and possibly tip. Overloading the lift truck can also cause structural failure.

Operators must always be aware of people in the area. Long loads create the need for wider views for operators; so the area must be controlled, and only authorized personnel should be allowed access to the area. Operators must be extremely cognizant of truck drivers while loading long steel products, since most drivers are unfamiliar with steel operations and don't understand the hazards created by lift trucks carrying long loads. It is also imperative operators know where truck drivers are at all times.

Refer to OSHA standard 1910.178 for additional information on lift truck safety.

Conveyors/Roll Tables

While conveyors may appear to be the easiest way to transport long steel products, they are not always the safest.



When steel is transported on a conveyor/roll table, pinch points are created from either the steel making contact with the guides, by the moving rollers or by other moving parts. Rollers, motors, driveshafts and other moving parts must all be guarded. Barrier guarding, which is a guardrail that prevents employees from placing their hands near the point of operation, must be installed to protect employees from the pinch points.

Another safety issue with conveyors/roller tables is personnel accessing the opposite side of the table. Some conveyors/ roller tables are designed with walk-throughs. Walk-throughs must protect personnel from moving steel, which means proximity switches and light curtains are required. The best way for personnel to cross over the conveyor/roller table, however, is to construct crossovers specifically for this purpose.

Refer to OSHA standard 1910.211–222 for additional guarding information, and refer to OSHA standard 1910.22 for additional information on walking/working surfaces.

Cranes

Bridge cranes are probably the most dangerous piece of equipment used to handle long steel products, because even the crane's smallest movements are magnified by the long load. Some crane systems are designed to handle long products, and these systems are much safer than bridge cranes. Bridge cranes only handle steel products less than 80 feet in length. Two bridge cranes working in tandem to handle steel products longer than 80 feet require perfect communication between the crane operators. Handling a 240-foot piece of rail with two bridge cranes in unison is very dangerous, as the steel is very difficult to control.

Another safety issue with handling long steel products with bridge cranes is connecting the load to the crane. Using a magnet does not require the load to be attached to the crane. But this is still a serious hazard because magnets can fail, and sometimes loads may not have a strong bond to the magnet, which can also result in a falling load.

Using tongs or grabs to hook the load to the crane requires a worker to manually attach the load. This exposes employees to the hazards of working under a spreader bar. In some instances, a spreader bar may be considered part of the crane