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Technical Article

Cleasby Manufacturing Inc.

Conveyor Safety

Safety Precautions for Truck-Mounted Conveyors

by Karen and John Cleasby, Western Roofing Magazine, July/August 2007

(Editor's Note: Karen and John Cleasby are a brother and sister team whom represent Cleasby Manufacturing's third generation of Cleasby's. Together, they share over 37 years of experience working at the manufacturing level. Product development, technical support, safety training, sales and marketing are just a few of the responsibilities they share. John or Karen may be reached at (800) 253-2729.)

"A picture is worth a thousand words," right? Yet, only one word came to mind when we were presented with a colored photo of a man loading a material cart onto a truck-mounted conveyor - HORROR!

Conveyors are made safer today than ever before, but they are still vulnerable to human error. Two of the most obvious and routinely warned against hazards also happen to be two of the more commonly violated: (1) loading anything other than roofing materials onto the conveyor, and (2) avoiding electrical lines. Neither is difficult, but for some reason equipment user confidence overrides standard safe-use practices. Following are several suggestions, legal requirements, and manufacturers requisites for operating a truck mounted conveyor.

Material Transportation

Under no circumstances should a conveyor ever be used to transport people, equipment, or anything else that is not considered a roofing material. Manufacturers clearly state that the intended use of a truck-mounted conveyor is "... to move a variety of roofing materials - not people or equipment, from the truck bed to an elevated location such as a rooftop." To do otherwise puts innocent people in harms way.

Electricity and Conveyors

We have all learned that like electricity and water, electricity and conveyors don't mix. Electricity constantly seeks the ground to complete its circuit and to do so, it will take the fastest and easiest path. As it travels, it passes through some materials more easily than others. These materials are said to be efficient "conductors." A metal conveyor is an excellent conductor of electricity, whereas, materials such as rubber, glass, and plastic, including fiberglass, resist electricity and are therefore the least efficient conductors.

Your body can become an electrical conductor, too, when you form the link between electricity and the ground. If you or something conductive you are touching (i.e. a conveyor or truck) get near an overhead power line, an electrical current can pass through you to the ground. However, you or the conveyor, don't need to actually touch an overhead power line to be shocked by an electrical current. Under certain conditions, electricity can jump from a line carrying high voltage to a nearby conductor such as a conveyor. How far the current can jump depends on the voltage (the force of the current) and atmospheric conditions. This is why federal regulations require all cranes (conveyors are classified as cranes) to stay at least 10' from all power lines. It is actually illegal for any part of a crane or conveyor to come within 10' of a power line; overhead power lines are not insulated. Birds get away with perching on these lines because they

do not link the line with the ground.

Fiberglass conveyors have the edge over its metal counterparts because of their natural non-conductive properties. In fact, they have been insulated and factory tested to 120 KV, but they too can fall prey to human error. To optimize the non-conductive properties unique to the fiberglass conveyor, a special non-conductive PVC belt is used in place of a traditional conveyor belt. This special belt is extremely important because it helps insulate the unit. However, it must not be depended on as a safeguard against electrical shock. Dirt, dust, debris or other contaminants including the presence of water or other fluids on the surface of the belt may alter or change its conductive characteristics and by chance, become a conductor of electricity. In the event the belt becomes worn and needs to be replaced, it must be replaced with the exact same special PVC belt and not with a substitute or a standard rubber belt (standard belts are highly conductive).

The hydraulic lines used to run the fiberglass conveyor are also manufactured from a special non-conductive, electrical material. Their basic properties do resist the flow of an electrical current thereby making them poor conductors. These lines should not be considered a safeguard against electrical shock. Just like the special PVC conveyor belt, contaminants can get into the hydraulic fluid and travel through the lines, creating a situation that will allow an electrical current to pass along the fluid corridors. All hydraulic lines on a fiberglass conveyor must also be replaced with an identical brand.

One easily followed precaution that will help reduce the chances of electrocution is to keep the conveyor clean at all times. By doing so, you help prevent the build up of contaminants that could possibly create a conductive situation. Also, if your conveyor is powered by an electric motor, never operate it in wet weather. Water on the truck bed, conveyor, or the ground increases the risk of electrocution.

Job Site Set-up

Before any roof loading can begin, a safety zone surrounding the conveyor must be marked off using safety cones, caution tape, or other type of warning line system to establish its presence. Think of the safety zone in terms of a gigantic cylinder. Its diameter must measure the length of the conveyor and surround the entire truck. For instance, a 30' conveyor requires a diameter measuring 30' all the way around the truck. The safety zone should also be twice as tall as the height of the conveyor. Using the same example, the safety zone height from the ground up should measure 60' total. The designated safety zone area must be void of debris, power lines, scaffolding, trees, unauthorized people, and anything else that may pose a hazard to the safe operation of the conveyor and the equipment operator(s).

The safety zone must also reside on firm, level ground. The truck is at risk of leaning or tipping if it is parked on uneven or unstable ground. Always block the wheels to prevent rolling, and don't rely on the transmission because it must be in "neutral" to power the conveyor's hydraulic system. Finally, lower the stabilizers firmly to the ground to better stabilize the truck. Stabilizers are recommended whenever using a truck-mounted conveyor and they are required on all conveyors 36' and longer.

The Basics

- All persons who will be using the conveyor must be trained in its safe operation and have read and understood all of the warning labels, videos, and operating instructions. They must not wear any loose clothing and have on approved safety gear including, but not limited to a hard hat, safety glasses, and suitable footwear (i.e. steel toed boots). Always remember to keep hands clear of any moving equipment parts.
- Know the weight limits of the conveyor before loading it with material. Each conveyor typically has a weight limit/load capacity of 90 lbs. per flight (cleat). That means when eight flights are showing on the top side of the conveyor at any one time, the load capacity is 720 lbs., to be distributed at no more than 90 lbs. in front of any given flight.
- It's important to work in pairs. With two trained equipment operators working together, while one is loading the conveyor, the other is watching for potential hazards.

- It is advised to evenly unload the materials from the truck. When too much weight is left to one side of the truck bed, it is at risk of tipping over especially when rotating the conveyor boom.
- The conveyor boom must be supported on the roof while unloading material. A support foot is attached to the nose of the conveyor to sustain the weight of load plus the conveyor fore section. Otherwise, the equipment may be damaged.
- Never operate the unit in windy conditions exceeding 20 mph. It is also recommended to avoid using the conveyor in wet conditions.
- Before moving the truck, make sure the conveyor is completely down and secured in the headrest.

Most of these safety precautions are basic, but often overlooked as was the case with the man who was hit in the head by the material cart that he had loaded on to the conveyor. The cart should never have been put on the conveyor. However, in an effort to transport materials, tools, and equipment to the roof the fastest way possible, one man took an unfortunate risk. Violating safety laws and regulations for the sake of saving time is only an illusion. In the end, we pay dearly for human negligence and time becomes but a small factor.