

# **DOCK SAFETY IS EVERYONE'S RESPONSIBILITY\*\***

By Lloyd Mather\*

One of the highest sources of potential injury in any industrial plant or warehouse is the loading dock area. Every year serious injuries and deaths occur during accidents that are the result of inadequate design and/or unsafe operating practices. The accidents usually involve people falling off the dock either while walking or operating lift trucks at the edge of the dock. Sometimes injuries can result from attempting to operate dock levelers that are in a state of dis-repair.

All of these accidents are preventable. It is the responsibility of the employer to design and maintain a safe working environment and to train the employees in safe practices. It is also the responsibility of the employer to supervise the activities of the employees to ensure that unsafe practices are not tolerated in the workplace. It is the responsibility of each employee to follow the procedures and to conduct him/herself in a way that will not endanger him/herself or other people in the workplace. It is everyone's responsibility to report to management any unsafe condition or unsafe action by anyone in the workplace, as soon as it is noticed.

There are many equipment choices available to designers and users of loading docks and costs can escalate quickly when upgrading from the basic design. Therefore, prudence must be applied to ensure that the required features are not left out in the interest of initial cost. Conversely, it is not reasonable to expect an employer to create the ultimate loading dock if the activity is not sufficient to justify the expense.

When designing the building it is necessary to make a determination of the number and location of truck doors based upon the number of vehicle visits per day and the duration of the visits. In a typical new distribution centre building constructed by a developer for general tenancy, provision will be made for about one truck door per 10,000 square feet of building area. That can add up to quite a few docks in a large building. Faced with a competitive rental market, the developer will usually provide basic dock equipment. This means a 25,000 to 35,000 pound capacity, 6-foot wide, 6-foot long mechanical dock leveler, rubber bumpers and wheel chocks. Anything over and above this will be deemed to be "Tenant Improvements" to be paid for by the tenant.

The criteria for a safe design are not hard and fast but, generally speaking, the busier the dock will be, the more features that should be built in. One hates to be morbid but it is necessary to consider the cost of not doing it right and having someone seriously injured or killed as a consequence. The dangers around truck docks are: the dock collapsing under load; the slope of the trailer or dock plate is excessive for the type of material handling equipment being used; someone walks or drives a lift truck over the edge; the truck moves away from the dock while a lift truck is traveling across the dock, into or out of the trailer; someone's back is strained trying to raise or lower a mechanical leveler that is not functioning properly; someone's foot or hand getting caught under the descending dock leveler.

Dock collapse is a very rare occurrence and is usually the result of overloading a dock that is already in an obviously bad state of repair. Dock leveler capacities are generally stated in pounds and, to a lay person, they are mis-leadingly high. Usually, the rating indicates the “static” capacity of the structure. This capacity also indicates the weight that can be stopped by the locking device in the event that the lifting mechanism was to fail catastrophically. Dock leveler manufacturers can provide recommendations on the actual capacity rating that should be specified for a given application, based upon the actual loaded weight of the lift trucks that will be crossing the dock combined with the amount of traffic.

The size of the dock leveler becomes a safety issue if the angle of the dock plate becomes excessively steep for a loaded lift truck to safely negotiate or, even more so, if hand pallet trucks are being used to load and unload the trailers. Most highway trailers have an unloaded bed height between 48 inches and 52 inches. The closer the dock height matches the trailer height, the shorter the dock leveler that can be used. The other factor to consider is the change in bed height between a full and empty trailer. With air suspension it is common to have a 6-inch change from loaded to empty. This all happens at the rear of the trailer. The slope of the truck concourse can also be an issue and is more critical if hand jacks are used for loading or unloading. The best practice is to have the concourse slope slightly away from the building for drainage purposes. A build-up of ice on the concourse during the winter can raise truck beds significantly. If that is a possibility, then longer dock levelers are in order.

The danger of falling or driving off a dock to the truck concourse is a factor if doors are frequently left open when no truck is parked at the dock. This may occur during the summer when open doors can provide ventilation or in the case of indoor docks where there is no door at the dock face. In these situations a barrier gate should be provided at each dock so that whenever there is no truck at the dock, the barrier is closed. An additional feature that is available from some manufacturers is an extended lip-plate on the dock leveler that becomes a curb when the dock is in the “stored” position with the lip down. A specialized “vertical storing dock leveler is also available for indoor docks. It requires less pit-work than a conventional dock leveler and forms a very solid barrier in the stored position. Protective railings are required around truck “pits” that are used for side loading of flatbed trailers, if personnel or lift truck traffic is normally prevalent around the pit when there is no trailer present.

Unexpectedly departing and shifting trailers are probably the most dangerous loading dock hazards. This can happen several ways and equipment is available to deal with all of the causes. If a trailer is “dropped” at a dock by the carrier, i.e. – the trailer is disconnected from the tractor, the residual air pressure in the brake system cannot be relied upon to hold the trailer in position. Also, if the tractor is still connected but the engine is shut down, the same applies. The force of a loaded lift truck entering a trailer can still be enough to cause the vehicle to shift an inch or so. Repeated trips can cause the truck or trailer to move far enough away from the dock that the dock leveler can drop when the lift truck passes over it. The driver can then be trapped under 8,000 pounds of machine. The most rudimentary method to secure the vehicle is to place a wheel chock in front of one or two of the trailer wheels. Properly positioned wheel chocks are an effective, inexpensive way to keep a trailer from shifting away from the dock. The critical issue is that from the dock it is not possible to determine if the chock is in place. In bad weather, nobody wants to go outside and check. Many companies try to place the onus for chocking the

trailers onto the truck drivers. It is small comfort to the victim that it wasn't done. If chocks are used it must be the responsibility of the lift truck operator who will load or unload the trailer to confirm that the chocks are properly positioned, just as a sky-diver packs his/her own parachute.

The preferred method of securing trailers is a mechanical vehicle restraint. These are available in manual and fully automatic designs that incorporate signal devices to alert the lift truck operator inside the building if there is a problem with the engagement of the device. Two basic design concepts are available. The more common type captures the standardized rear "ICC" bumper bar, required on all large transport vans, using a moveable hook. If the hook cannot be engaged because the ICC bar is damaged or missing, an alarm light comes on and the lift truck operator knows that chocks must be used on the particular truck or trailer. The other type is an automatic wheel chocking system that swings chocking bars in front of the rear wheels of the transport vehicle and pulls the vehicle tight to the dock bumpers.

Most Automatic Vehicle Restraint (AVR) systems are equipped with control lights inside and outside the building so that the lift truck operator knows whether or not the lock is engaged and the transport driver knows whether the truck is locked in or free to be removed. It is common to integrate the controls for powered (hydraulic or electrical) dock levelers with the AVR controls so that the dock leveler cannot be put into position until the AVR is engaged and also so that the AVR cannot be released until the dock leveler has been returned to the stored position. If a barrier gate is employed it can also be integrated with the AVR controls.

The physical risks while operating dock levelers are mostly maintenance issues. Most dock levelers are equipped with toe-guards to prevent a dock leveler from lowering on top of someone's foot. If these have been damaged so that they cannot work properly, then the protection may be inoperable. A properly maintained and adjusted mechanical leveler is operated by pulling a release chain. This permits the spring mechanism to raise the leveler and extend the lip. The operator then uses his/her weight to over-balance the spring pressure and "walk down" the leveler until it rests on the truck bed. If the lip extension mechanism hangs up or the spring tension is out of adjustment the leveler may not function properly and the operator may attempt to assist it. This is when injuries can happen, either from over-stressing back muscles or getting body parts into places where they are subject to injury. Regular maintenance is required to ensure safe operating. Operators should be instructed not to attempt to assist the mechanisms. If they don't work properly, get them fixed.

It is possible to have a safe operation with a basic design coupled with rigorous procedures, but for higher reliability in a busy environment the extra cost is good insurance.

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