

Industrial Door Company



DOCK SOLUTIONS GUIDE

Guide to DOCK DOORS,
SEALS AND
SHELTERS, TRUCK
LOCKS, AND DOCK
LEVELERS

DOCK SOLUTIONS GUIDE



Industrial Door Company

Dock Door Types	4
Dock Levelers	9
Vehicle Restraints / Truck Locks	14
Dock Bumpers	18
Dock Shelters and Seals	21
Weather-Stripping and Insulation	24
Dock Add-ons and Accessory	30
Dock Planning	38

1



DOCK DOOR TYPES

Overhead Door Types

Most docks are set up with one of two types of overhead doors leading to the exterior: a **sectional** or **rolling door**. A **high speed door** may also be used between unloading / vestibule area and the rest of the facility. Steel **swing doors** are often in the dock area as well to accommodate people.

Common repair calls for the doors are from worker damage via forklift or truck backing into the panels, or the facility manager forgoing maintenance of the working components of the door.

In this section we seek to give you an overview of some of the common issues with the different types of doors and solutions to preventing them.

SECTIONAL



ROLLING



HIGH SPEED





SECTIONAL

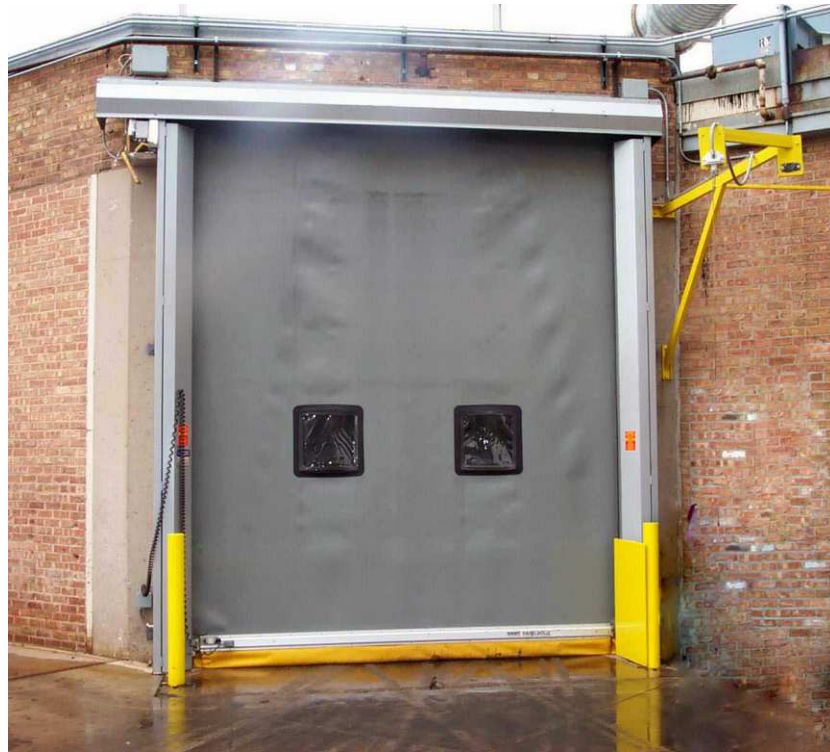
- Thicker panels held together by hinges. Door slides back or up the wall on overhead track. May be manual chain operated or automatic with a motorized opener
- The door is counterbalanced (the weight of the panels is offset by) the spring. The coils are designed in thickness and number of coils specific to the weight of the door. The spring is wound (CAUTION: Experienced Technician ONLY) to properly offset the weight of the door and balance it. Springs are the primary mechanism without which the door would be too heavy to lift by hand – having an extra set of replacement springs on site saves time and headaches of having a licensed technician measure the coils. They have to be the right kind for the specific door and are custom made to the door.
- Cables attach from the spring with a drum on the shaft to the door bottom panels and become worn. Cables can snap and cause the door to drop unexpectedly. If you believe your cables may be at the end of their life span, schedule a service or maintenance call with us to replace your cables before an incident occurs
- Track – the door rollers run along a track which has to be correctly installed and can be easily dented / bent by workers if not adequately protected. Additionally, corrosion and rust to the track can cause the door rollers to bind in place.
- Remotes, Operators, Sensors are found on automatic doors and make up the safety system – a door can operate oddly if there are alignment issues with photo eyes or if remotes and the operator are not working properly, with the sensors causing the door to open or close mysteriously.



ROLLING

- Rolling Doors function the same way essentially as sectional doors, with the primary difference being that the thinner door slats roll up into a barrel and save the space needed for a track on a sectional door.
- Rolling Doors come in insulated and fire rated options.
- A rolling door has fewer exposed components and finish options
- Rolling door springs are hidden inside a cylinder within the barrel and must be taken out, and taken apart (BY QUALIFIED PROFESSIONAL ONLY) at a shop to measure and provide a replacement

HIGH SPEED



- “High speed” doors can be steel, aluminum, rubber or fabric that roll into a barrel
- Fabric high speed doors have some of the quickest cycle times and can be easily reset on their track even if hit by a forklift!
- The thick fabric is secure enough for building exterior applications but the speeds are not necessary for a semi-truck dock. They are, however, more commonly found as a second door leading from the vestibule / unloading area and help immensely to save on heating and cooling costs because of their quick speed. They are a great solution to cold storage warehouses and controlled environments such as food processing and pharmaceuticals

2



DOCK LEVELERS

Dock levelers ensure a smooth transition of goods from dock to truck, and are a necessity in applications where a forklift or other heavy load is being driven or wheeled from the dock into a trailer, they provide a platform and have shock-absorbing components to stabilize the load transfer from the dock into the trailer or box truck

MECHANICAL



HYDRAULIC



AIR CUSHION



EDGE OF DOCK



VERTICAL STORING



MECHANICAL

- Mechanical Dock levelers operate with a basic spring mechanism and pull chain. Although bare-bones and no frills, they are suitable for many applications
- Mechanical Dock levelers are also good for remote facilities with dock areas where there is no power source or running electrical connections not present.



HYDRAULIC

- Automated levelers and controls facilitate workflow and remove the risk of workers setting the leveler platform. Hydraulic cylinders do the heavy lifting and the leveler connects to the truck with the push of a button
- Hydraulic levelers have double the capacity of manual



AIR CUSHION

- Automatic like the hydraulic leveler, the newer style air-cushion powered levelers lift the leveler plate with an inflatable air cushion. The system has less moving parts and saves money and time on maintenance costs
- Air cushion levelers have double the capacity of manual



EDGE OF DOCK

- Edge of dock levelers require less space and are simpler than the larger pit-style levelers.
- They are intended for lighter-use and load applications at docks that have an occasional shipment needing to be transferred from dock to trailer via forklift
- Edge of dock levelers must have the dock almost level with the truck accessing it and have a small “working range”– they can only safely accommodate a 3” – 5” height difference between truck bed and dock
- Hydraulic levelers have double the capacity of manual



VERTICAL STORING

- Vertical storing levelers allow the dock overhead door to close and seal tightly with the dock floor, and are used in controlled environments such as food processing and cold storage facilities.



DOCK LEVELER CONSIDERATIONS

When we specify a dock leveler for your company, many factors are taken into consideration. Some of these include the range for gross vehicle weight (or weight of the forklift and loads) and working range – or the acceptable height difference between the dock and trailer that the leveler can accommodate.

Common Dock Leveler Issues:

- Dock Shock and Trailer Drop - A correctly installed dock leveler and stabilizing truck lock is essential to safe load transfer and preventing “dock shock”, which is shock and jarring of the spine of a forklift operator and damage to sensitive goods when traveling between an uneven dock – trailer surface. “Trailer Drop” occurs when the trailer bed moves significantly producing a similar effect on the goods transferred and operator
- Checking for dock shock: Listening to worker complaints about a rough transition between dock and trailer, observing workers to see if they slow down significantly when they drive from trailer to dock
- Dock Leveler Lip Damage – often preventable but it is damage to the last part of the leveler, the lip which drops into the trailer
- Dock leveler used over capacity – dock levelers are designed to a certain weight capacity. If the dock leveler was designed to handle lighter loads, it will and crack under the weight, and the metal surface will warp creating a dangerous work environment
- Wear and Tear: Springs (mechanical) break, hydraulic cylinders can wear out on leveler

!! WARNING !!

DO NOT ATTEMPT TO SERVICE THE UNDERSIDE OF YOUR DOCK LEVELER OR ALLOW STAFF TO ADJUST WORKING PARTS. THE DOCK LEVELER IS EXTREMELY HEAVY AND SHOULD ONLY BE SERVICED BY SKILLED PROFESSIONALS. IMPROPER ADJUSTMENT OR MAINTENANCE OF DOCK LEVELER PARTS BY UNSKILLED TECHNICIANS CAN CAUSE SEVERE INJURY TO WORKERS AND LIABILITIES IF THE DOCK LEVELER COLLAPSES, AND CAN CAUSE DAMAGE TO DOORS, THE TRUCK BED AS WELL AS THE GOODS BEING MOVED

3



VEHICLE RESTRAINTS

Vehicle Restraints, or “truck locks” are the number one safety feature to have at a loading dock. They secure the trailer of the truck by locking on to the vehicle’s rear impact guard rail. Locking in the trailer stabilizes it to prevent the trailer from being unstable when transferring loads and to prevent truck drivers from accidentally pulling away before all loading work is complete. There are models that are cut into the driveway surface or the dock surface, and certain ones provide additional stability and balance.

- OSHA REQUIRES wheel chocks or dock locks

[https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_tab=STANDARDS&p_id=9828#1910.178\(k\)\(1\)](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_tab=STANDARDS&p_id=9828#1910.178(k)(1))

HIDDEN HOOK



VERTICAL BARRIER



WHEEL CHOCK



HIDDEN HOOK

- Entirely tucked away into loading dock face. Does not require cutting or mounting into the driveway.
- Good for applications with asphalt drive approach or if there is a dock drain present in the driveway because of sloped driveway– mounts only to dock wall
- Less accommodating of different truck bar styles and sizes than simple vertical barrier bar.
- Run the risk of damaging building wall if truck pulls away hard enough
- Certain models come with hydraulic stabilizers which prevent trailer movement when the forklift is moving from dock to trailer.



VERTICAL BARRIER

- more versatile than a rotating hook for compatibility with different rear impact guards
- certain manufacturer models provide trailer stabilization options
- avoid potential building damage with a restraint not attached to the dock wall
- Good for applications with concrete drive approach
- Can be installed in asphalt drive, but requires rebar reinforcement kit
- Lasts longer than the hidden hook – the hook makes contact with the truck each time it is secured, whereas the vertical barrier will never touch the truck unless it tries to depart early



WHEEL CHOCK

- Most versatile as they attach to the truck wheels and will fit many vehicles
- Certain models provide guide for driver to drive into making sure the trailer is perfectly oriented with the dock
- Con:





DOCK BUMPERS

Dock Bumpers prevent damage to structure and sensitive dock equipment, there are a few different designs suited for different applications.



EXTRUDED RUBBER TUBE

Intended for a lighter use application – work vans, tow trucks, and construction equipment. The expanded rubber tube absorbs minor impacts associated with backing these vehicles up to the dock. High quality material withstands abuse and the design makes it easy to install and replace



LAMINATED RUBBER PADS

Heavy use, thick rubber strips absorb shock and prevent unsightly damage and wearing of dock area and vehicles. This is the most popular design appropriate for a variety of applications



STEEL FACED DOCK BUMPER

High wear application, all steel bumpers withstand heavy truck traffic



5



DOCK SHELTERS & SEALS

Shelters and seals close off the gaps in between the dock opening and the trailer. There are seals for the dock opening and the leveler, among weather-stripping options. High-traffic loading areas greatly benefit from having a proper seal or shelter to both save on energy costs and climate control, as well as eliminate dangerous slippery conditions from inclement weather to prevent worker accidents and equipment damage.

SHELTERS



FOAM SEAL



INFLATABLE SEALS



FOAM SEAL

- Foam Seals provide the best insulation between truck trailer and the building, the foam perfectly grips the sides of the trailer and form a tight seal
- Tapered Seals: Seals can be tapered to match the dock driveway angle



SHELTERS

Shelters provide protection from the element and help mitigate loss of heating / cooling but are not as effective as seals

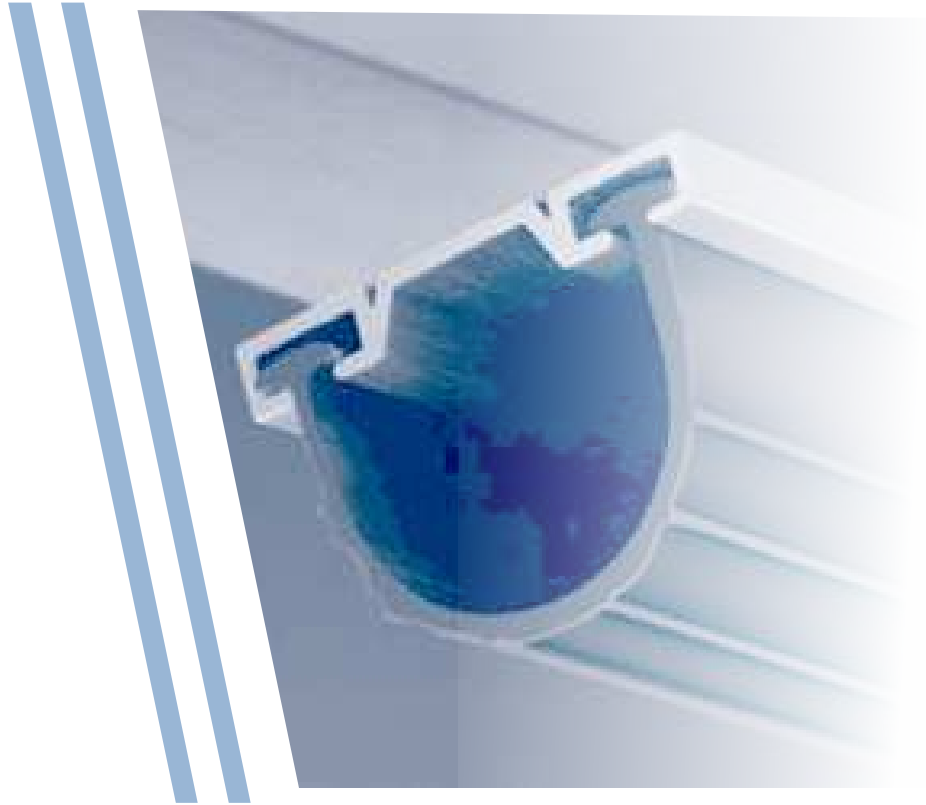


INFLATABLE SEALS

- Tight seal with trailer. Certain models have inflatable curtain to adapt to different trailer heights
- Wear panels on seals and shelters extend life by providing abrasion resistance



6



WEATHER-STRIPPING

Every door in a facility, whether an overhead or swing door should contain some form of weather-stripping or sealing components to keep outside weather conditions from coming in through the space in between the door and frame. These are essential components that take care of filling the gaps and sealing off the opening, and are common wear-and-tear items that need periodic replacement. Weather-stripping depends on the application area, and can be any of the following styles:

RUBBER STRIPS



FELT STRIPS



BRUSHES AND SWEEPS



THRESHOLDS



FELT STRIPS

Soft felt material that is backed with a solid material and slides into a channel on a swing door. Compresses against door frame when doors is closed, sealing off the gap in the door



RUBBER STRIPS



Extruded rubber tube

Rubber tubing in a channel shaped like a hollow cylinder compresses easily against the door frame or threshold, forming a seal

(V-Strip) rubber tension strip

A folded, v-shaped strip of flexible material such as plastic or rubber that tensions open when pressed in the frame, forming a seal

BRUSHES AND SWEEPS

A long strip resembling a brush, composed of plastic bristles. Often placed along the bottom of a door or around a dock leveler plate. Serves a dual purpose of providing weatherization as well as deterring pests and rodents



THRESHOLDS

Formed metal channel mounted on the floor to ensure a better seal. Also serves the dual purpose of bridging the gap between different floor types or heights

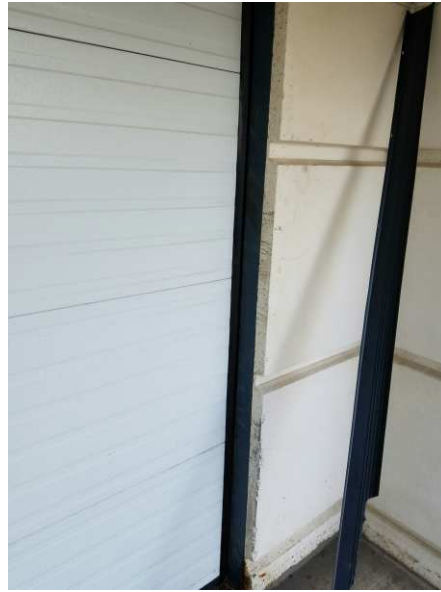


APPLICATIONS

DOCK DOOR WEATHER-STRIPPING

Dock Doors, and all overhead doors generally contain weather-stripping elements

- Weather stripping lines the sides (jamb) and top (lintel) of the door
- The bottom of the garage door seals with a bottom astragal and (optionally) brush which effectively seal off the opening from weather and pests out of the facility



PEDESTRIAN / SWING DOOR WEATHER-STRIPPING

- Personnel doors at the loading dock have weather-stripping on the sides (jamb) and top (lintel). Often times this is a strip of rubber material tubing integrated into the frame. Door thresholds on the floor may also incorporate weatherstrip in their design if it is not on the door itself.



DOCK LEVELER SEALS

- Often overlooked, the dock leveler may be contributing to your heating and cooling costs. Brushes, weather-stripping and sealing options for dock levelers provide solutions to stopping air leakage at the dock leveler pit.
- Additionally, “under dock leveler” seals seal the space underneath the leveler when it is engaged with the trailer

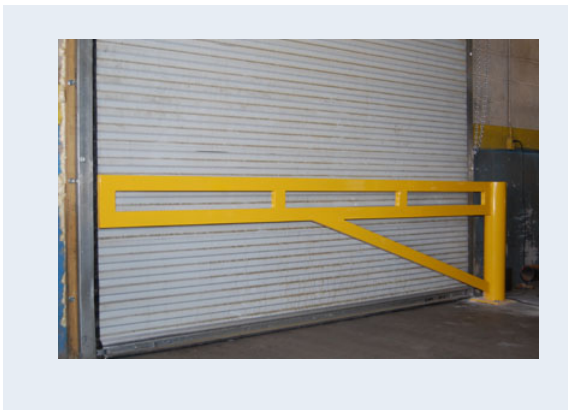




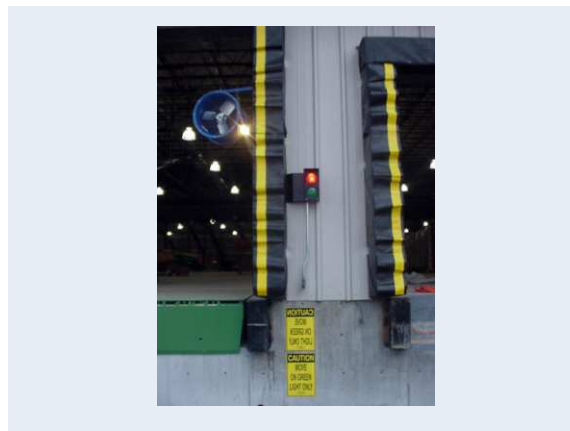
DOCK ACCESSORY & ADD-ONS

Loading docks, are both a high-traffic opening with inherent risk and accident potential, as well as a point of opening to the outside of the building that presents energy efficiency and pest infiltration concerns for building engineers. Manufacturers have devised a variety of solutions to common pain points: from preventing forklift damage and accidents, to keeping the outside weather, pests, and intruders out – be aware of popular options to eliminate these common problems.

SAFETY FEATURES



SIGNALING / CONTROLS



SECURITY OPTIONS



DOCK RUNOFF PROTECTION

Just as severe an incident as early truck departures, it is easy for a worker to accidentally back a forklift off of the edge of a loading dock unknowingly while working, causing a severe and potentially fatal accident scenario. The whole incident can be avoided and mitigated by installing basic safety precautions, these being:

Lip Barriers

Retractable lip on the edge of the dock prevents forklift from being drive over edge

Gate barriers

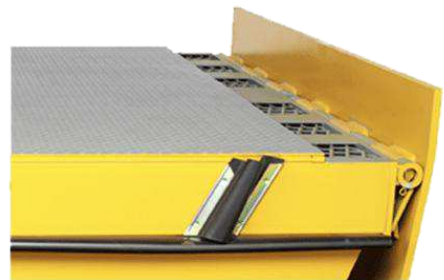
Gates obstruct objects from being pushed over the dock edge, and can stop a forklift to some degree or alert the operator that they have gone too close to the dock edge

Retractable gates

Retract to allow full opening clearance and are engineered to withstand multiple impacts, saving thousands in door repair costs

Open Docks:

- Bollards and safety chain
- Vertical Storing Levelers



SECURITY OPTIONS

Loading docks are an opening to your building just like any other door, window or other access point to your facility. This presents an opportunity for intruders, whether they be potential thieves or pests such as mice, birds and bugs. Fortunately a variety of simple, as well as advanced screening options exist to solve these problems.

Scissors gates

A simple solution to quickly fence off a dock opening when it is not in use but the facility needs ventilation or the door needs to be open. They withdraw from their stored position and fold out accordion-style to block off the area

Bug barrier doors

Bug barrier doors can range from simple pull down screens and fabric to heavy duty screen and fence panels. They keep bugs out of your facility and help eliminate potential contamination or health code violations. A bug barrier can be mounted behind an existing door and track to minimize modifications to the door

Vinyl strip doors

Vinyl strip doors are made of heavy duty transparent plastics and are a great solution to applications necessitating a controlled environment. Vinyl strip doors seal off the opening and dramatically improve heating and cooling costs, traffic simply moves through the door strips, and there are minimal mechanical components that would need servicing or replacement.



SAFETY FEATURES

Bollards, guide rails, wall protectors, door track protectors

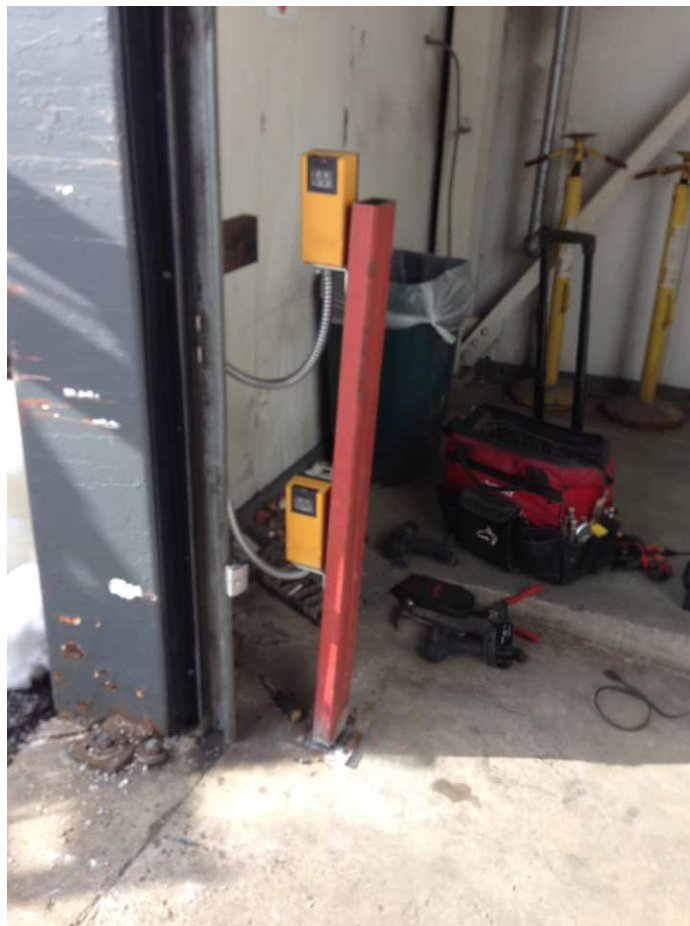
You research and invest in quality and reliable loading dock components to minimize accidents and down time, so why not protect these assets from wear and tear, abuse and accidents in the high-traffic environment of the loading dock? Commercial doors have some unavoidably exposed and critical parts that can't be damaged or the door won't function correctly. It is common practice to use bollards or door track protectors to prevent door track and jamb damage, as well as guide rails and wall protection for the work area.



SAFETY FEATURES

Sensing Edges and Photo eyes

The overhead door at the dock is a potential danger to itself as well as workers if not adequately protected with sensors. A door can accidentally be closed on a forklift, employee or an ill-placed object sitting in the way of the door's path. Although many will claim that a door reversing, sensing edge will suffice we have found that these alone are not an adequate safety measure to prevent damage and accidents. Once a door has hit an object at a high enough speed, even with a sensing edge it is difficult for the door to stop and reverse. It is better practice to install a photo eye, or laser sensor at the floor or a light curtain (a beam of laser sensors) to prevent the door from coming down on a vehicle, person, or object in the first place!



SIGNALING / CONTROLS

Signaling and communications devices

Integrated controls – Dock Interlock Features

Powered dock levelers can be interlocked with vehicle restraints so the leveler can only be operated if the vehicle is locked in

Loading Dock Lights

- Adjustable / position-able arm (fan optional) for additional illumination inside truck trailer. Fans to circulate air into trailer option
- Many trailers have no interior lighting and are 40' long creating a hazardous working environment without proper lighting. Specifying retractable dock lights for the area allows visibility inside the trailer and mitigates accidents





8



DOCK PLANNING

High-traffic loading docks can suffer from many bottlenecks. It is important for site managers to consider the flow of traffic, from truck access to the dock on the outside as well as site grading, to organizing the internal process in the building. Careful consideration, discussion with the work crew combined with a holistic thought process about the loading dock area will help you increase efficiency and prevent bottlenecks at your opening, as well as accidents and down time.

WAREHOUSE SPACE USE & OPERATION

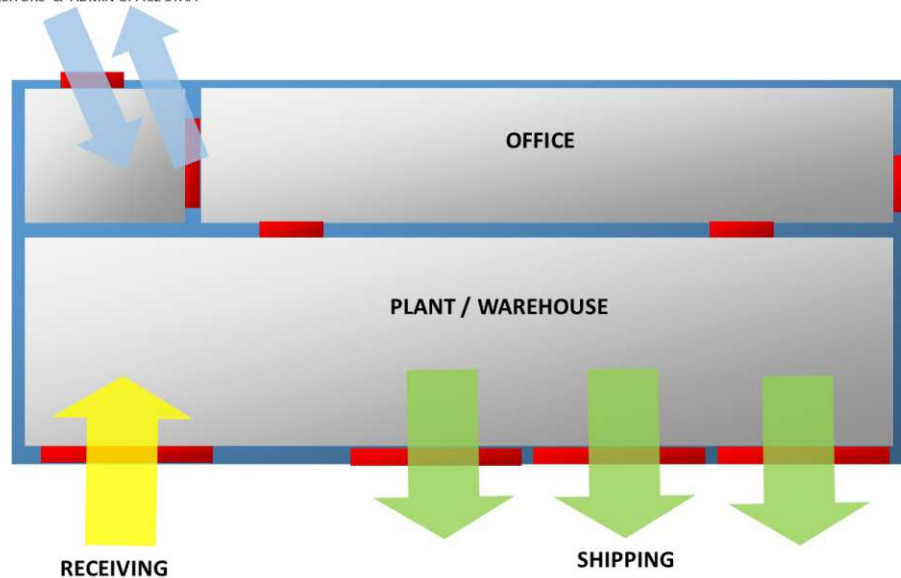
There are a few considerations to think about when optimizing your dock space: on the inside of the facility a manager must consider the flow of goods and the compatibility of the dock equipment with the process. More often than not, a facility will be an inherited space and suffer from a few pain points: Not enough loading docks, dock levelers ill equipped to handle the new load (i.e. a light textiles plant with levelers designed for lighter loads being used by a new tenant who manufacturers heavy machinery). Besides weight differences, the space has to be laid out to a new production process, and openings adapted to the new types of goods and materials being moved

MANUFACTURING COMMODITY FLOW

- *Place docks closer to finished product to shorten / eliminate fork lift trips.* Trucks can move to dock areas, moving items to docks is more wasteful effort
- *Loading docks away from pedestrian / main entrances* - It is ill-advised to have guests and front-office employees sharing the entrances with the loading dock as their presence may interfere with the work. Liability concerns are an issue as well if an unqualified person or visitor enters through one of the doors to the manufacturing plant and gets injured
- *Transporting of goods: conveyors vs forklift:* Heavy packages need to be brought to the truck on forklift and have appropriately rated dock levelers. Alternately, smaller packages can be moved around with conveyors or other light-duty such as pallet jacks, carts, conveyors, racks, and dollies.
- *Shipping and Receiving: Same opening, or separate?* Consider Placing Shipping and Receiving areas at same openings or separate – depending on the amount of goods needing to be moved around, it might benefit to have separate shipping and receiving areas on opposite sides of the building.

PEDESTRIAN TRAFFIC

VISITORS & ADMIN OFFICE STAFF



TRUCK TRAFFIC

PEDESTRIAN AND WORKER FLOW

Pedestrian and Worker Flow

Plan to have a separate door for personnel so they are not walking in and out of the overhead garage door. Pass-through and wicket doors can be installed but are labor intensive and limiting in their use. User error, such as not properly closing the pass door can cause damage when the entire overhead door is opened concurrently.

Light curtain sensors for safety

Light curtains, besides protecting vehicles and goods come to the rescue in the situation a worker is walking under a closing overhead door but is not detected by a photo eye beam. The light curtain detects presence of people and objects obstructing the door in a wider area.

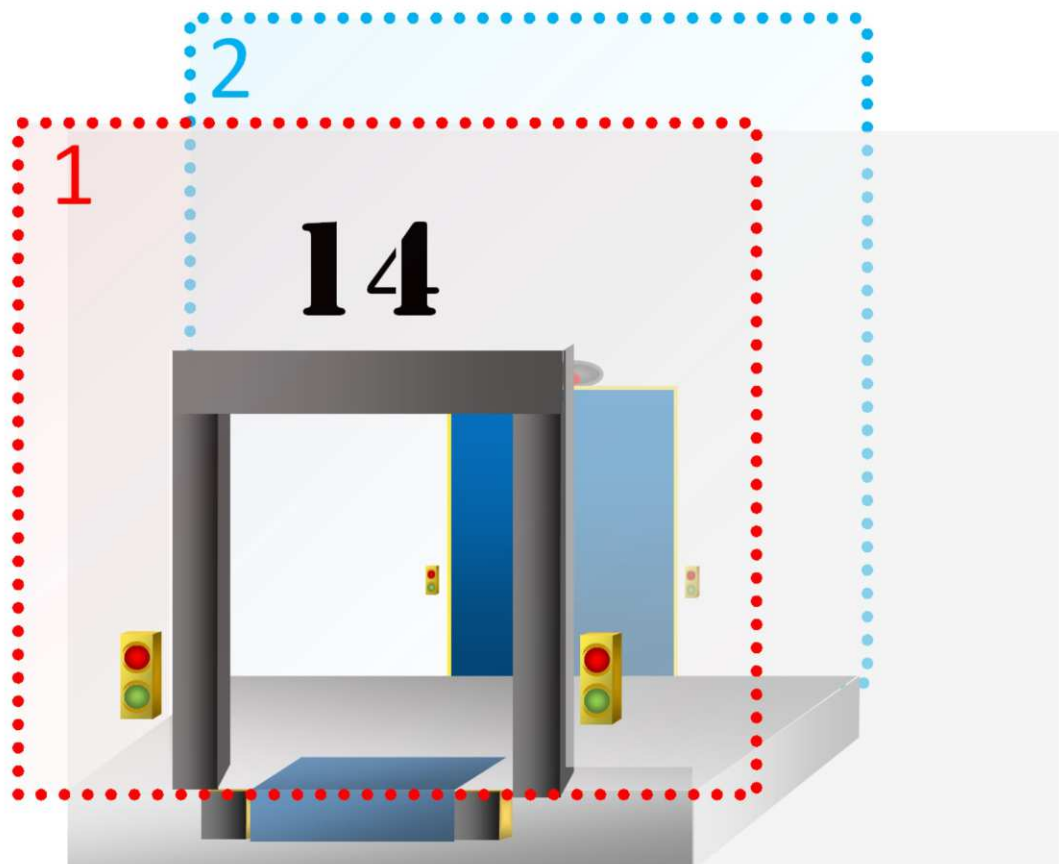


STAGING AREA / VESTIBULE

- All facilities with high traffic flow at the loading dock, such as warehouses and large manufacturers can benefit from planning a queue of goods, such as a designated staging area or temporary racking.
- “Vestibule” areas are a good solution for creating a barrier from the outside, they involve having two sets of doors, one loading dock and another into the main facility. They provide additional space to maneuver goods and pack them in and out of the trailer. Most importantly, they create a controlled environment that limits the loss of heating and cooling.

Vestibules are great for controlled environments:

- Facilities that require refrigeration, or cannot have extreme cold entering in the wintertime
- Facilities controlling release (i.e. transfer stations, grains milling, material sorting)



TRUCK TRAFFIC MANAGEMENT

Truck Access / On-site Traffic Management

Truck traffic and access:

There are a few things to consider when planning your loading dock area:

- Guide trucks around corners so that left side is on inside track, this provides higher visibility for truckers
- Allow enough “apron space” for truck to perform turning maneuver. This is the area that the truck needs to successfully back into the dock

Types of truck dock access

90-degree

Truck must make 90 degree turn and have enough room to move, or “anchor space”

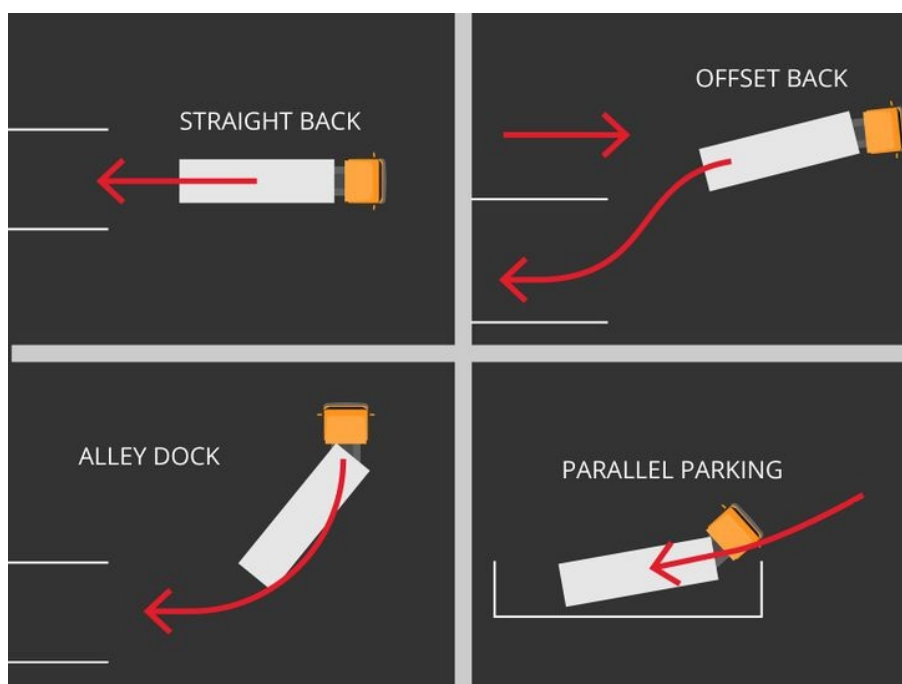
Straight backing

Truck backs straight into dock

- Diagonal and Stair-step dock designs
- Lowers angle of turning and anchor space

Offset Alley

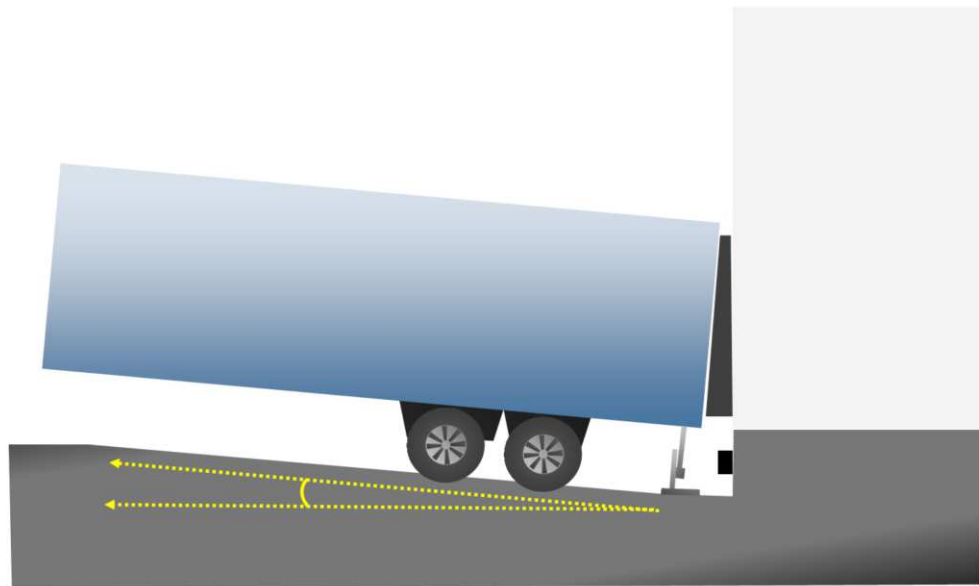
For tight spaces, truck is “parallel parked” into dock that runs parallel to the building wall



SITE GRADING

Driveway grading, or the slope and distance of the driveway from the road, is often overlooked in planning the dock space, or an afterthought that can lead to a host of problems. Many times there is not much of an option if the building was designed at a grade that requires a sloping driveway

- Short driveways can make deliveries by certain truck lengths impossible without blocking the road.
- A high slope or steep grade requires specialized angled dock seals, consideration of the truck trailer height and thicker dock bumpers as they will become more compressed by the trailer
- Sloped Driveways also require additional drainage and suffer snow accumulation and removal issues during the winter. A sloped driveway requires additional care and salt application to keep from creating dangerous icy conditions



ADDITIONAL CONSIDERATIONS

Controls and communication

Clear signals and signage for truckers, good communications method

Ventilation

If possible, have trucks turned off to prevent emissions entering building

Adequate ventilation of facility

Dock Alternate uses

Adapter panels for smaller vehicles

Sprinter vans

Access Ramps

