



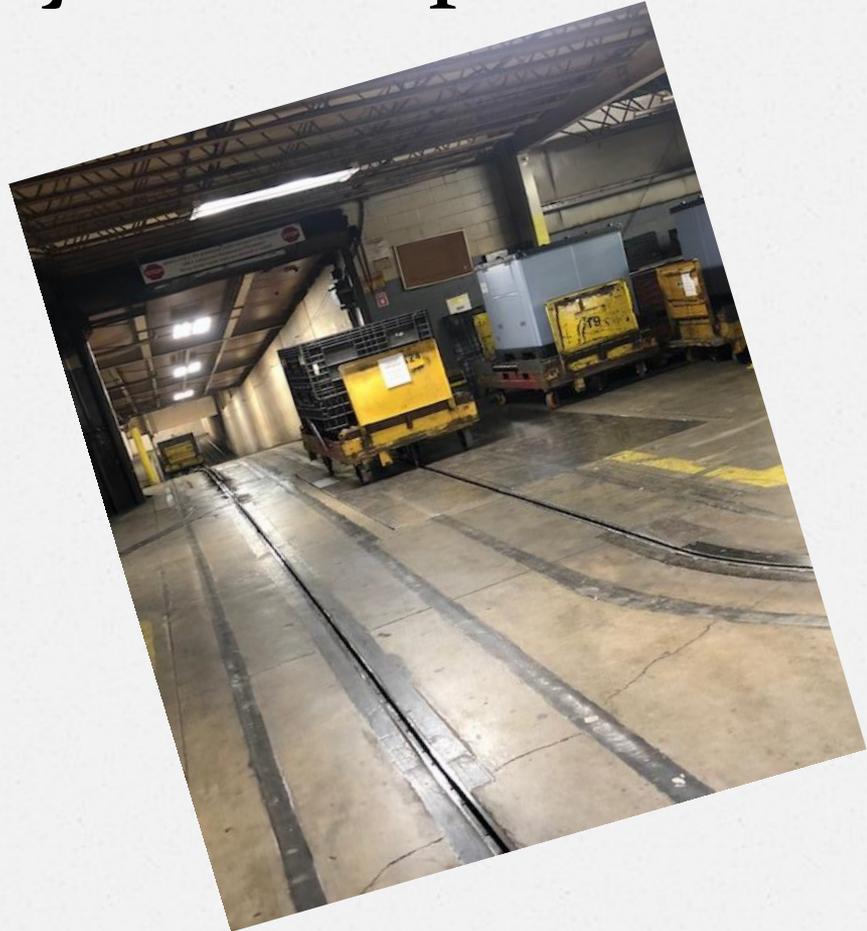
Jay Industries, Inc.

Lo-Tow Conveyor System Operations

February 2019

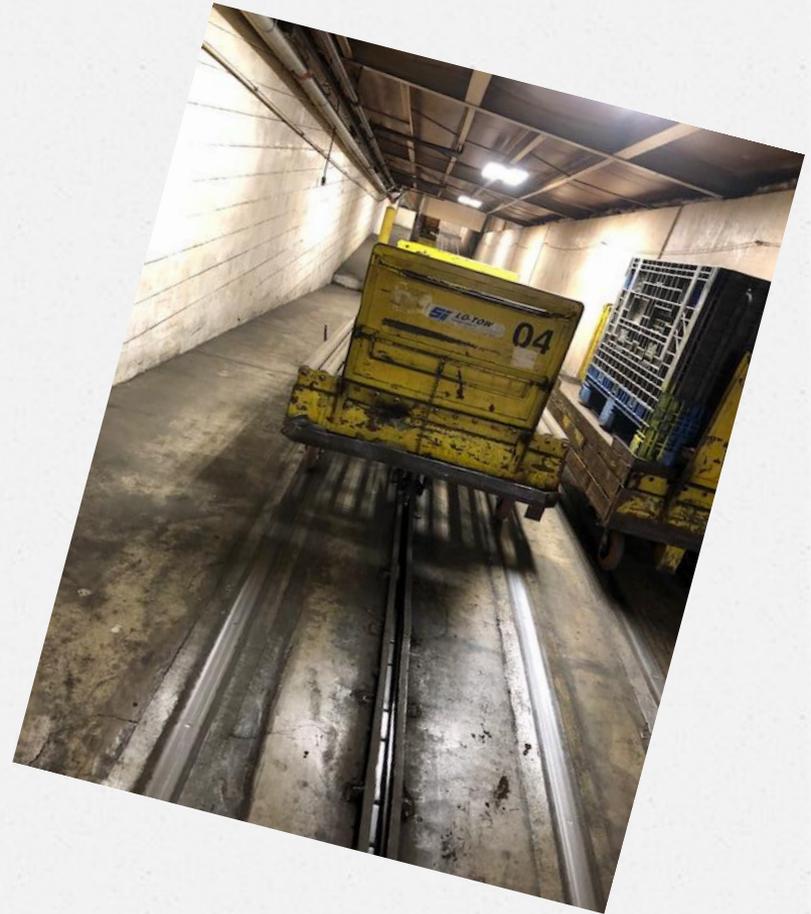
Lo-Tow Conveyor Components

- o Endless loop, in-floor track
- o Automatic operation
- o Non-powered spurs
- o Transfer conveyors
- o Four wheeled carts



How it Works

- Carts travel on a floor track with an endless chain loop inside
- Carts proceed automatically down the track, held in place by front and back pins.



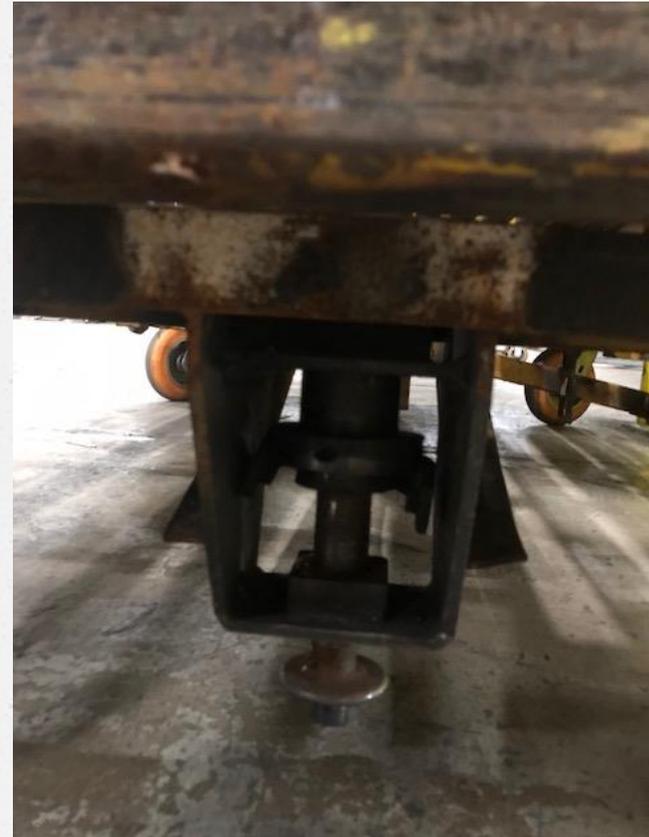
Cart Track and Pins

- About every 20 feet, there is a deep hole called a chuck or dog
- The front pin drops into the chuck
- The back pin follows by seating in the track



Cart Pins & Donut Sensor

- o The cart pins keep the front and back of the cart in the track
- o They have a donut ring, which can be picked up by sensors at the top and bottom of the hills
- o The sensors stop the line if two carts are hooked together



Magnetic Pins

- o Magnetic Pins direct the cart to its final location
- o Don't hit them against a hard surface
- o Wipe them off with a cloth if they get dirty



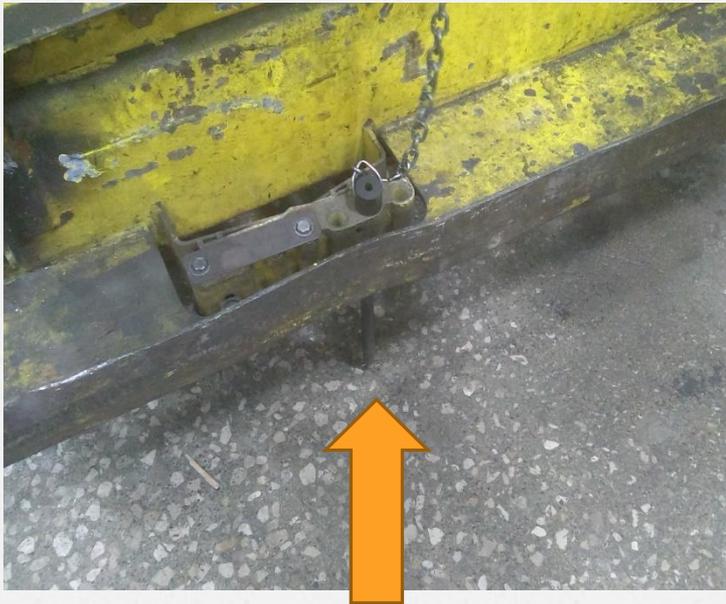
How does cart know where to go?

- o Carts are directed via magnetic pin placement
- o The cart will travel to the location where it is sent
- o The pin in the picture sends the cart to Broshco, Location #1

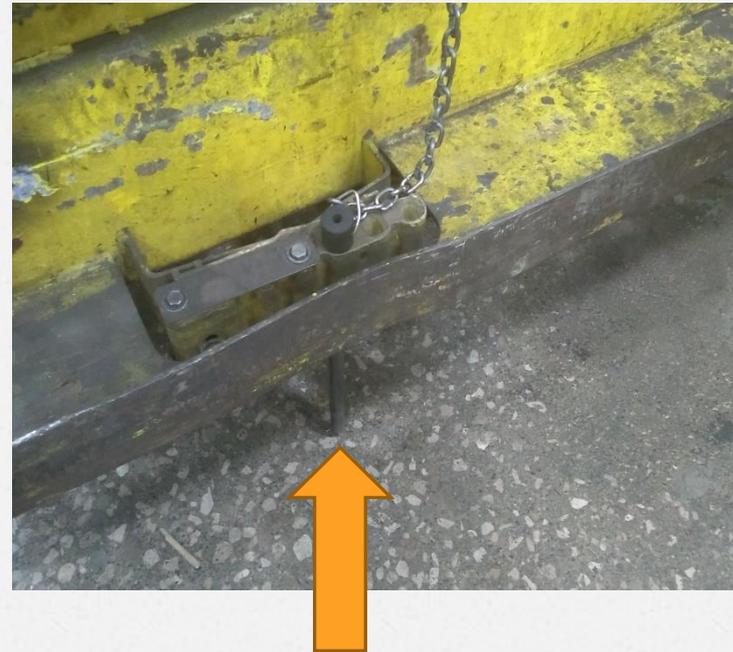


Magnetic Pin Location Key

Kronis Location #2



Rohr Location #3



Flat Carts or Non-Rolling Carts

Used for:

- o baskets
- o wooden pallets
- o small plastic containers
- o whirlpool containers
- o VN boxes



Flat Car Loads



Roller Carts

- o Roller Carts
- o ONLY used for xytecs at least sized 45" x 48"
- o Rollers are being phased out



Roller Cart Loads



Modified roller carts

- Some roller carts have a metal strap platform welded over top of the rollers.
- These are modified and can be used like flat carts



Lo-tow Control Boxes

- o Broshco Control located at Spur #1
- o Kronis Control located at Spur #2
- o Rohr Control is located at Spur #3
- o Main Control located on opposite side of Lo-tow in Rohr



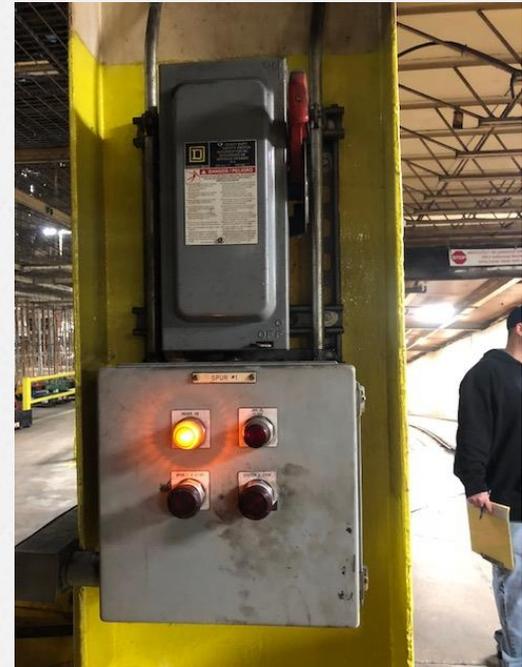
Control Box Lights & Buttons

- o Your supervisor will train you on the lights and buttons in your work area



Power Light

- Shows the system has power and is running
- Your supervisor will show you how to operate it in your work area



Spur Emergency Stop Light

- o Will stop the system if needed
- o Your supervisor will show you how to operate it in your work area



Jam Flash Zone Light

- o Will flash if the spur jams for any reason
- o Your supervisor will show you how to operate in your work area



Jam Reset Button

If the system jams for any reason...

- o Clear the jam
- o Push the Jam Reset Button and the Fault Reset Button The system will restart



Fault Reset Button



- Resets faults for missing/misloaded carts
- Carts that are too tall (Broshco)
- Chain Breaks (Kronis)
- Spur being full (Rohr & Kronis)

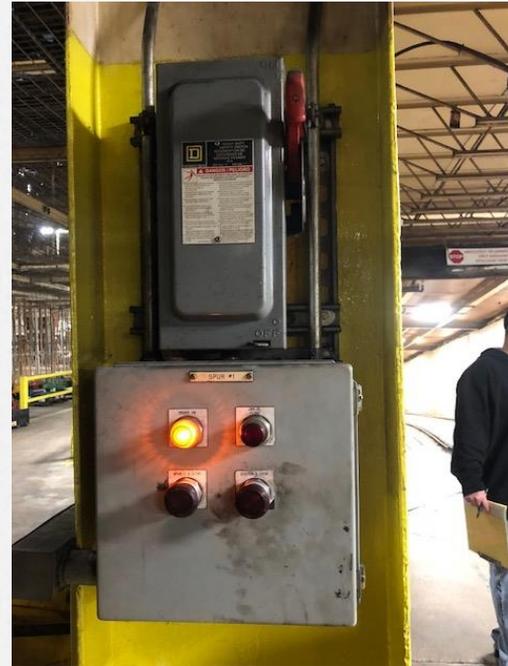
Emergency Stop Button

- Can be pulled back out to restart the system after the emergency is corrected



Work Area

- o Learn the buttons and set-up for the Lo-Tow in your work area
- o Your supervisor will train you on the control box



Buzzer

- o The system has a repeating buzzer to notify users that the Lo-Tow is about to start.



Stopping/Emergency

- o There is no automatic sensor on the Lo-Tow cart
- o It will not stop for a person or tow motor in its path
- o The line will only stop if the Emergency Stop is used.



Kronis

Tow Motor Emergency Stop

- o Because tow motors and people must travel and between lo-tow carts and stack/unstack containers close to low tow.
- o In case they run out of propane while crossing a track.
- o In case of an emergency such as a run away cart or broken cart



Cart Safety

- Carts weigh 500 pounds each
- There is NO emergency sensor on the cart
- It will not stop if it hits something in its path



Track Safety

- o Always stay alert and be careful around the Lo-Tow
- o Check before crossing any Lo-Tow track
- o Keep loose shoe laces from getting caught in the moving track



Tunnel Safety

- o NEVER cut through the tunnel, when the Lo-Tow is operating



Pull Cord E Stop

- o There is a pull cord safety rope that stops the line
- o It is in the tunnel between Broshco and Kronis



Runaway Carts

- o The pin releases the cart from the track
- o Cart is free riding, being pushed by another cart, or rolling down hill
- o Very Dangerous!
- o Warn others!
- o Use the Lo-tow E stop IMMEDIATELY
- o Call a supervisor
- o Call maintenance



Double Carts

- o Sometimes one cart will get stuck on another
- o If the donut sensor does not stop the line, manually stop the line
- o Pop the front car off the line
- o Put it behind the car that pushed it
- o Reset the fault from the donut sensor



Carts Stuck on the Hill

- o Push the e-stop
- o Call Maintenance to remove the jam
- o Tag the carts
- o Tell the shift supervisor



What makes a cart unsafe?

- o Broken welds on front or back walls
- o Bottom wheels or rollers missing, bent or crooked
- o Foot Pedal not locking or releasing pin fully
- o Pins bent, missing, damaged, not engaging or coming loose from track after engaged



Operator Safety Inspection

- o Verify no damage to track or concrete around it (visual walk around)
- o Verify carts working properly and safe (when pulling them off or putting on)
- o If they fail for pinning, have damage to welds on front and back walls, or other safety issues, pull cart where it is and tag with description of what is wrong and direct to Broshco fab area (Ed's area by receiving)



Removing a cart

- When a cart causes the system to shut down, check the cart for damage
- If damaged, it must be removed and tagged for repair



How to tag out a damaged cart

- Put a tag on the cart, filled out completely
- Check or describe the defect on the back of the tag
- Tell the shift supervisor



Cart Repair

- o Cart may be taken to Broshco for repair via a box truck in Kronis or Rohr.
- o Sometimes they can be repaired on the spot
- o Tell the shift supervisor



Loading the System

- o Place the load squarely on the cart
- o Do not allow the load to hang over the sides
- o Ensure the guides on roller carts are up to keep load from shifting and falling off



Load Limits

- o Do not overload carts!
- o Load limit is 2,500 pounds per cart
- o Load height limit is 50 inches from cart platform



Unloading the System

- o If the area has a spur, use it to pull carts of the main track.
- o Forklift should be used to lift the containers off cart and take to correct location.
- o Be sure to lift the containers high enough so they don't catch on the guides when backing up.



Pulling Cart off Spur

- o Make sure you have enough time to get into cart and pull container off before another cart enters spur.
- o Press firmly down on foot pedal and slide to the left. This will lock the pins up and allow you to move cart.



Putting Carts back on Track

- o Pull carts to main track, with the handle in the front of the direction the track is traveling. Once over track, push the foot pedal to the right, releasing the pin.
- o Check that both front and back pins locate in track.
- o Watch to make sure the pins are caught in track and continue to travel with the track.



Routing the Carts

- o The magnetic pin must be placed in the proper hole
- o The cart handle must be lowered



Foot Pedal Operation

- o The foot pedal lifts the front and rear pin to allow the cart to move from the track
- o Gently press on the pedal – don't stomp it
- o As the cart continues forward 2-3 inches, the pedal will lock into place with the pins locked into position



Foot Pedal Do's and Don'ts

- o **DO NOT** stomp on the pedal to disengage carts
- o This will damage the cart and make it unusable



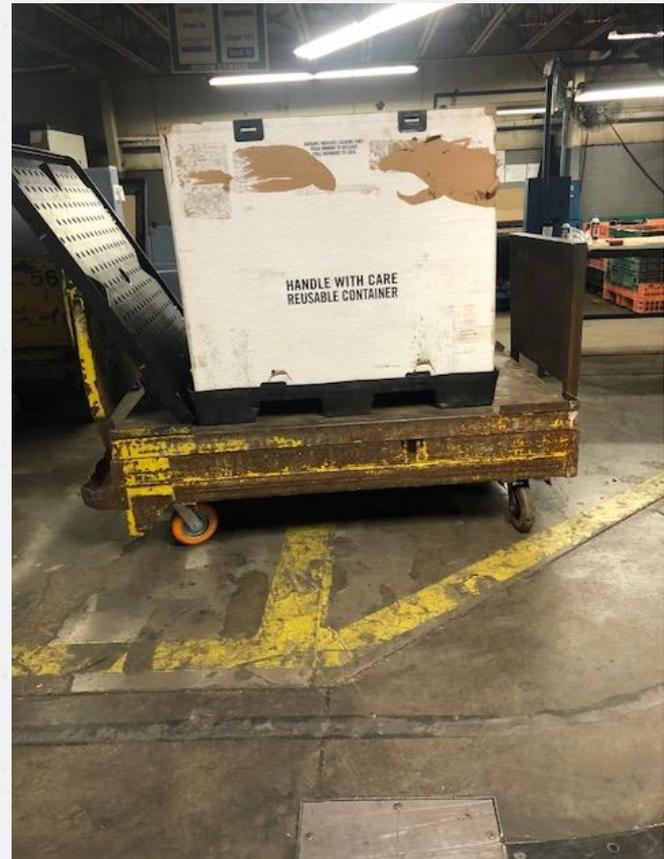
When a cart will not locate or release from track using the foot pedal.

- o Stop the low tow using the e stop
- o Lift the cart with the tow motor using only the designated holes



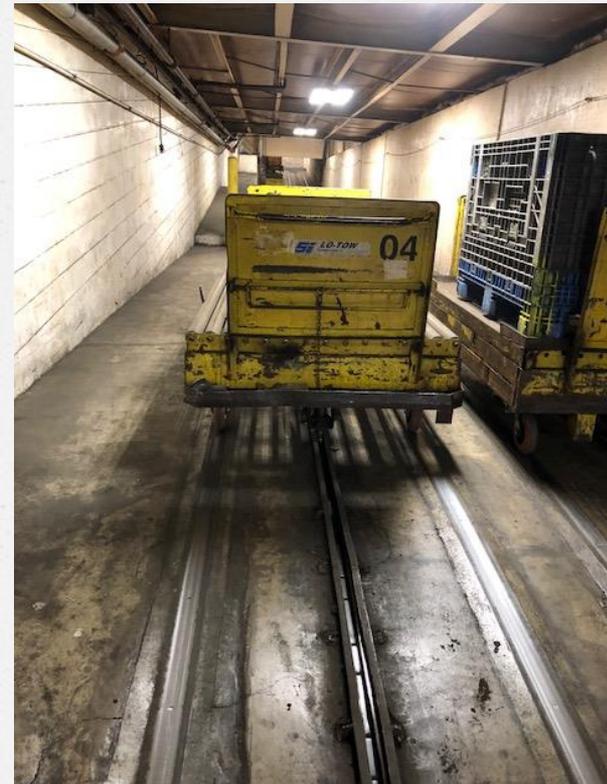
When a spur is NOT available

- o Use the same method of removing the cart
- o Be sure to pull carts far enough away from the main track to prevent them from being hit by other carts



Putting a cart back on line

- o Use the same method as loading a cart
- o make sure the front pin goes in the track dog/hole
- o Make sure the back pin goes into the track
- o Watch the cart moving to be sure it is on the track correctly



Cleaning the Magnetic Pins

- o **DO NOT** hit the magnetic pins hard against something
- o This will damage or break them
- o Do clean them with a clean rag
- o Cleaning the pins is not needed very often



Lo-Tow Emergency Stopping

- o Only stop the system for an emergency
- o Notify a supervisor if the system is stopped
- o Excessive stopping is hard on the system and will cause premature breakdown or failure



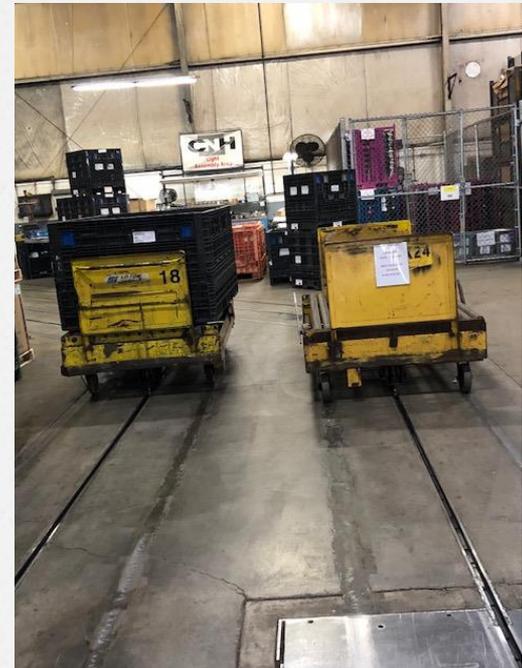
Tow Motor use on Carts



- Carts sometimes need to be pulled off by a tow motor because pins don't release.
- Carts have designated lift holes cut into them to use when removing from track.
- If these are not used, more damage can be caused to foot petals and pin operations

Tow Motor/Lo-Tow areas

- o In crowded places the tow motors travel in and out of lo-tow tracks
- o Learn to be extra careful of crossing the track, timing, buzzers, and foot traffic



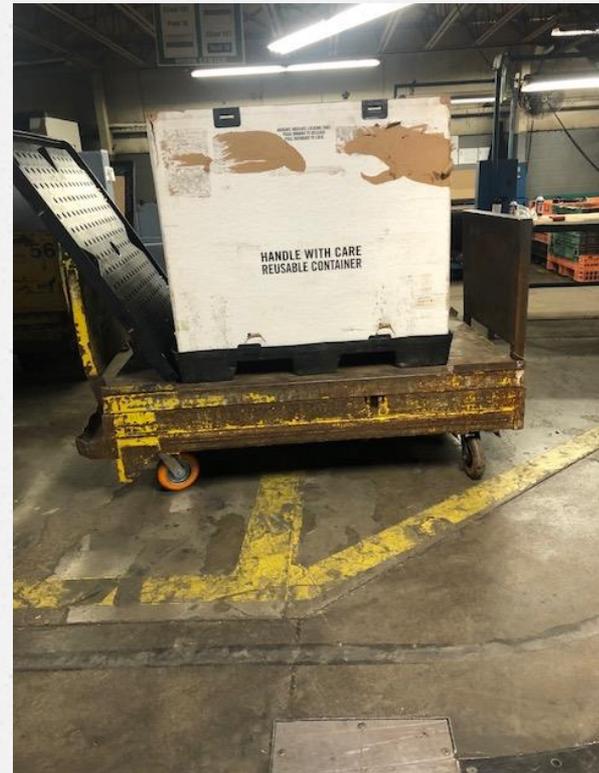
Tow Motor Reminders

- o **DO NOT** move carts with the forks underneath the carriage
- o Running forks underneath the cart will bend or break the running gears, and make it unusable
- o **DO** use the holes to move a cart with a tow motor, when necessary



Tow Motor Reminders

- o **DO NOT** load or unload a cart using a tow motor while the system is moving
- o Dangerous to people
- o Damages the carts



Tow Motor Reminders

- o **DO NOT** load or unload a cart while it is over or near track, even if it is shut off.
- o Someone else may start the track at any time and you may not be able to clear it before track begins to move.



Lo-Tow Do's and Don'ts

- o DO NOT attempt to stand or ride on carts at any time
- o This can cause severe bodily injury
- o You will be terminated immediately if you do this



Lo-Tow Do's and Don'ts

- o **DO NOT** enter the tunnels at any time when the Lo-Tow is moving
- o This could result in severe bodily injury
- o You risk disciplinary action if you enter the tunnels when the Lo-Tow is moving



Supervisor Reminders

- o **Supervisors** – report any damage or tagged carts to Maintenance before the end of your shift
- o **Supervisors** must train and certify employees on SAFE lo-tow operations

Lo-Tow Conveyor System Practical Test

Employee must successfully demonstrate all in an acceptable manner.

- ___ Demonstrate how to remove a cart from the track.
- ___ Demonstrate how to place a cart back on the track.
- ___ Explain what type of load on a flat cart and what type of load on a miller cart.
- ___ Explain what the buzzer sounding means.
- ___ Show the e-stop button and explain how to use it.
- ___ Shows the buttons on the control panel in their work area and explains how each is used.
 - ___ Power Light ___ Spur Emergency Stop Light ___ Jam Flash Zone Light
 - ___ Fault reset button ___ Jam Reset Button
- ___ Explain procedure for removing a damaged cart from operations.
- ___ Tell a supervisor ___ Tag the cart.
- ___ Explain procedure to follow in case of a runaway cart.

Lo-Tow Conveyor System Certification

Employee

I, _____, certify that I have been trained in Lo-Tow Operations and I fully understand the operation of the Lo-Tow. If I have questions or problems, I will ask my supervisor. I will follow the guidelines I have learned for the safe use and operation of the Lo-Tow.

Signature: _____ Date: _____

Supervisor

I, _____, certify that the employee has completed the training materials and demonstrated the safe and correct use of the Lo-Tow Conveyor system.

Signature: _____ Date: _____

02/13/19

Lo-Tow Summary

- Operates automatically and does not stop
- Follow directions to protect **YOU** and the system from damage.
- **STAY ALERT AND SAFE EVERY DAY AROUND THE LO-TOW!**

