

# **UNDERSTANDING**

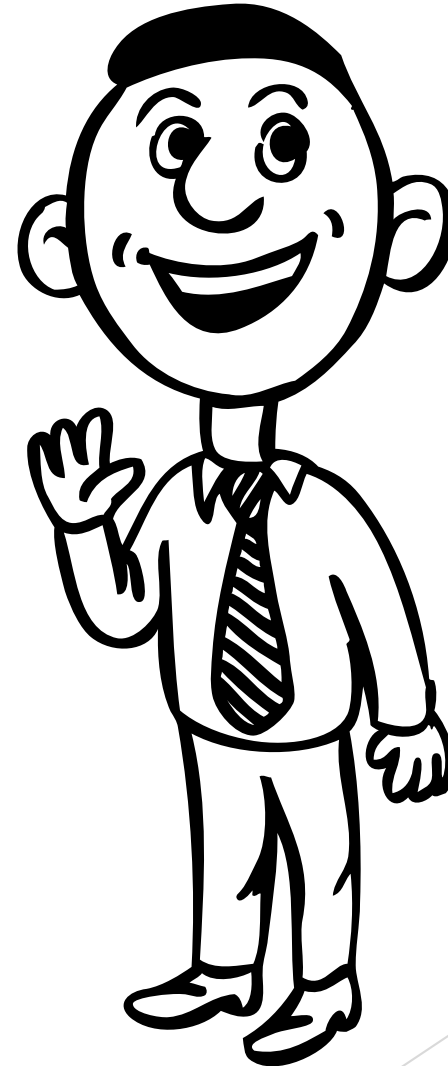
# **Rack Safety and Rack Repair**

**LIFE SAFETY**  
**&**  
**ASSET PROTECTION**

# Meet Chuck

This is Chuck. Chuck's warehouse suffers from damaged rack and he is unfamiliar with rack safety standards.

Chuck is ready to learn about what his options are in fixing the damaged rack.



**A safe warehouse is an efficient warehouse.  
An unsafe warehouse is a liability.**



# UNDERSTANDING Rack Safety Standards



**WOW!**  
Chuck is worried!

**ANSI/RMI (American National Standards Institute and Rack Manufacturer's Institute) sets forth Industry standards for identifying, repairing, or replacing damaged rack.**

# UNDERSTANDING Rack Safety Standards

**ANSI/RMI MH16.1 - OWNER MAINTENANCE:** The owner shall maintain the structural integrity of the installed rack system assuring proper operational and maintenance procedures. Regularly inspect for damage and immediately unload the affected area and replace or repair the damaged column(s), beam(s), and other structural components.

**Note: Only unload the damaged rack if it is safe to do so!**

**CAUTION**




# UNDERSTANDING Rack Safety Standards



**ANSI/RMI MH16.1 - REPAIR & REPLACEMENT OF DAMAGED COMPONENTS:** These shall be replaced by qualified persons following recommended and documented procedures. Repair components must be at least as strong as undamaged components.

# UNDERSTANDING Rack Safety Standards

ANSI/RMI MH16.1 -  
**ADDITIONS, ALTERATIONS &  
RECONFIGURATIONS:** All  
additions, alterations and  
reconfigurations should meet  
the same requirements as the  
original rack installation.

- 
- ✓ Columns
  - ✓ Struts
  - ✓ Footplates
  - ✓ Beams
  - ✓ Component
  - ✓ Frames

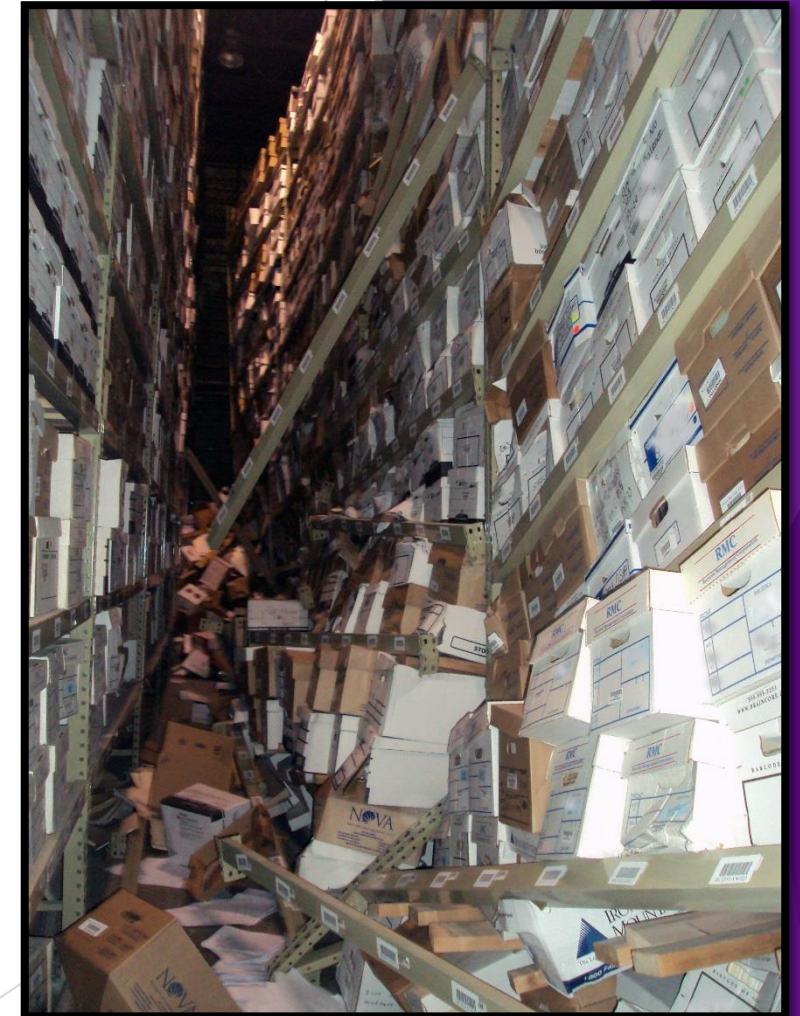
Check before moving beams  
from original position.

# WHY is compliance to these rack safety standards important?

This is what could happen!



Now Chuck is really nervous!





# WHAT can you do to prevent disasters such as these?



Periodically hire an Out Side rack safety specialist to conduct an on-site rack safety inspection of your system and take steps to remediate any safety concerns found.



In addition, conduct your own internal weekly or monthly safety audits.

Ok. Chuck is feeling better!

# WHY Rack Inspection & Repair Program?

- To implement an **ongoing program** that offers a continuous rack safety inspection of the companies core investment
- **Reduce risk to employees** of injury and potential legal action against the company
- To demonstrate to **company employees** that the company is investing in **life safety practices**
- **Reduce company insurance rates**
- To **protect employees** from improperly stored and potential falling items
- To **protect the company assets** from damage

# OVERVIEW: damage commonly found in rack systems



Leaning Frame

2

3

Deflected Beam

Missing Foot Plate Anchors

Damaged or missing Row Spacers

Damaged Strut

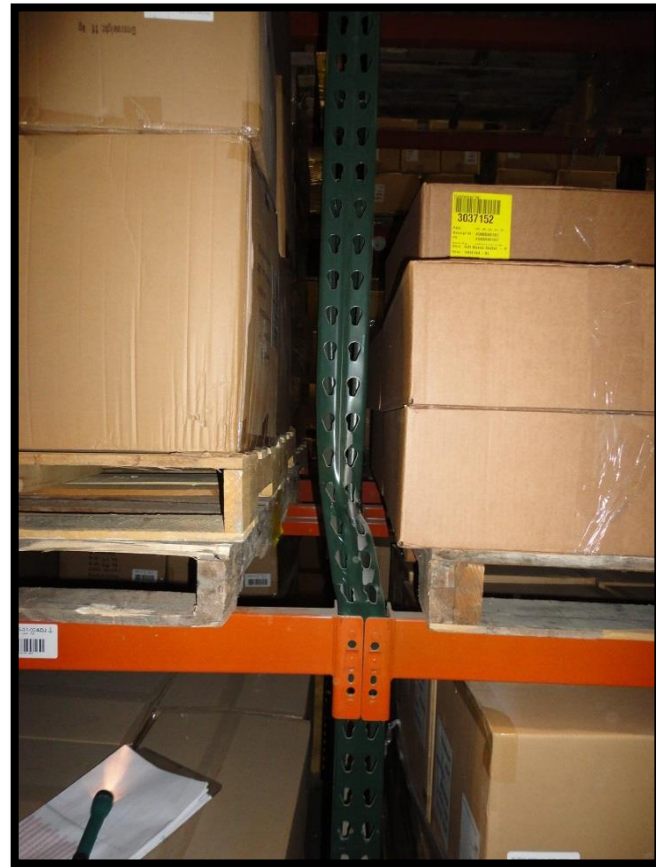
Damaged Upright

Damaged Footplate

**COLUMN DAMAGE** includes rips, tears, or deflection beyond acceptable limits. This deflection is greater than ½” or damage that no longer can carry the original rated load.



Damaged column



Collapse due to damaged column



Damaged column

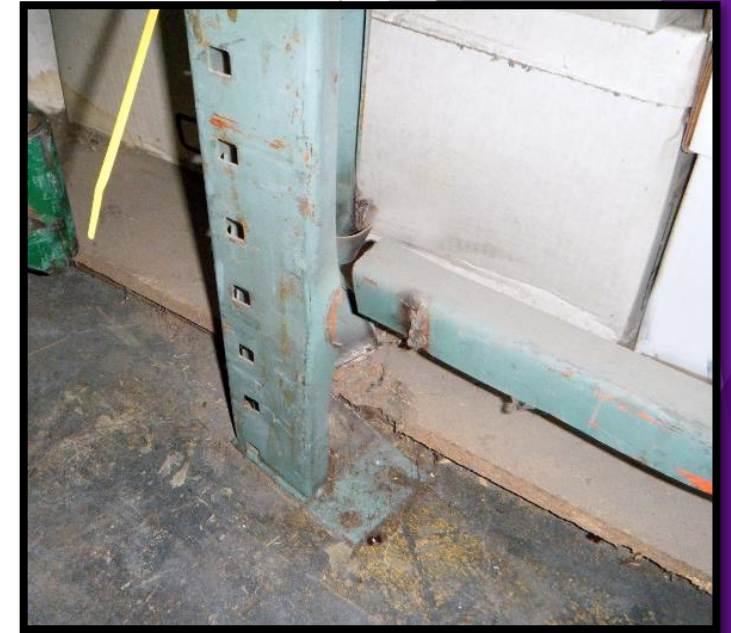
**STRUT DAMAGE** includes broken welds, missing braces, or braces with rips, tears, or deflection beyond the acceptable limits. Deflection greater than  $\frac{1}{2}$ " bent either horizontally or diagonally.



Horizontal strut deflection



Horizontal & diagonal strut deflection



Broken weld

**FOOTPLATE DAMAGE** Sheared or twisted past  $\frac{1}{2}$ ". Includes missing, broken, or loose anchors. Each upright footplate, both front and back, must be anchored to the floor.



Sheered footplate with missing anchors



Sheered/broken footplate

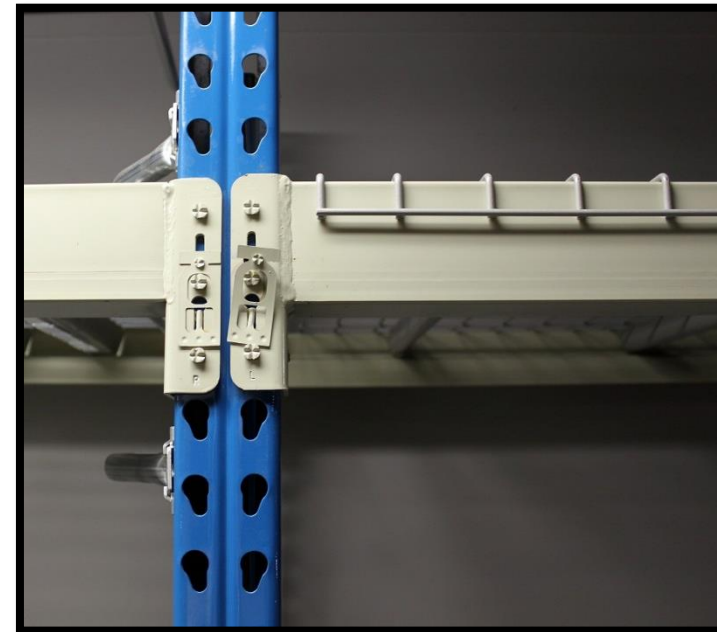


Sheered footplate

**BEAM DAMAGE AND IMPROPER CONNECTORS** includes missing or damaged beams and loose, damaged, or missing beam fasteners/safety clips. Insufficient safety clips will fail to hold beam end plates in place. Load beams secured to withstand 1,000 lbs. of uplift force.



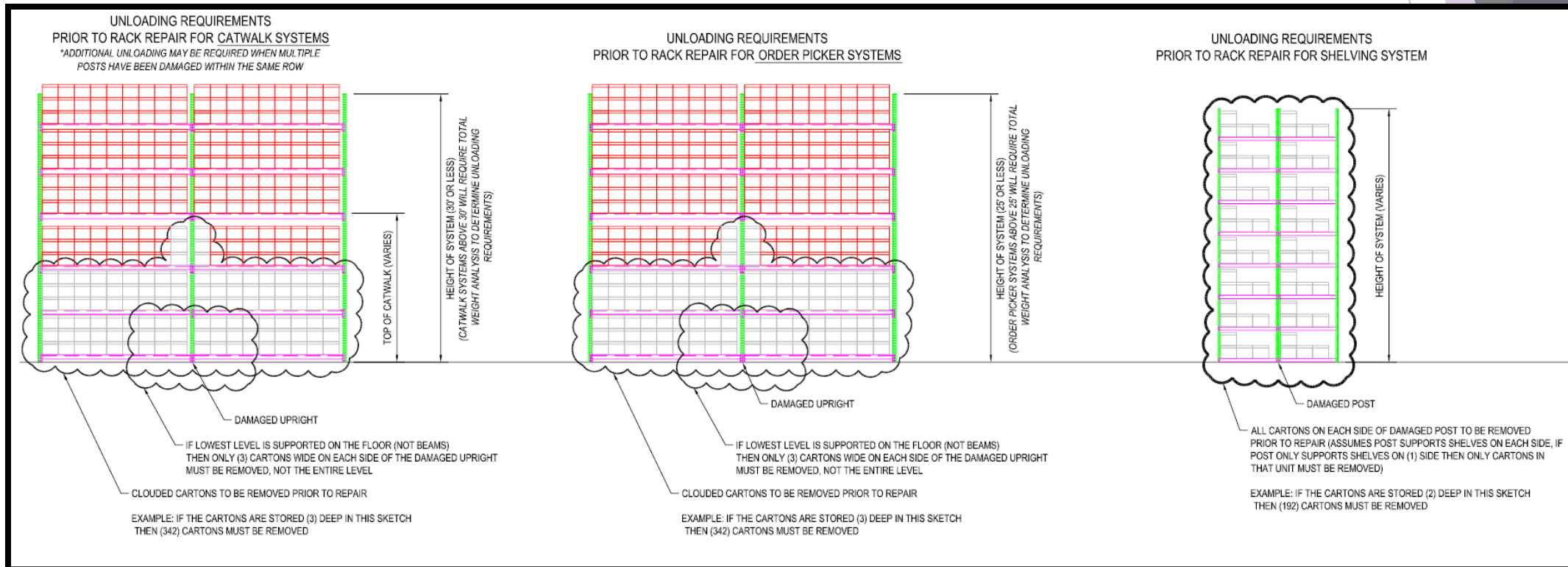
Beam damage with missing safety clips



Dislodge safety clip

# ASSET REMOVAL PRIOR TO REPAIRS

- Identify the asset removal required prior to beginning any rack repair.
- This will assist local operations to understand what is required before installers begin the repairs.
- **Be certain that it is safe to remove the material from the racking.**





**DEFLECTED BEAMS OR DECKING** past acceptable limits indicates overloading. Using the RMI description, review the manufacturer's frame capacity charts. It is helpful to post capacity information throughout the rack system.



Deflected beam



Deflected Beam



Deflected decking

# OVERVIEW: protection products commonly absent from rack systems



No Frame Extensions

No Column Protection

No Down Aisle Protection

No End-of-Aisle Protection

# RACK PROTECTION



## Column Protection:

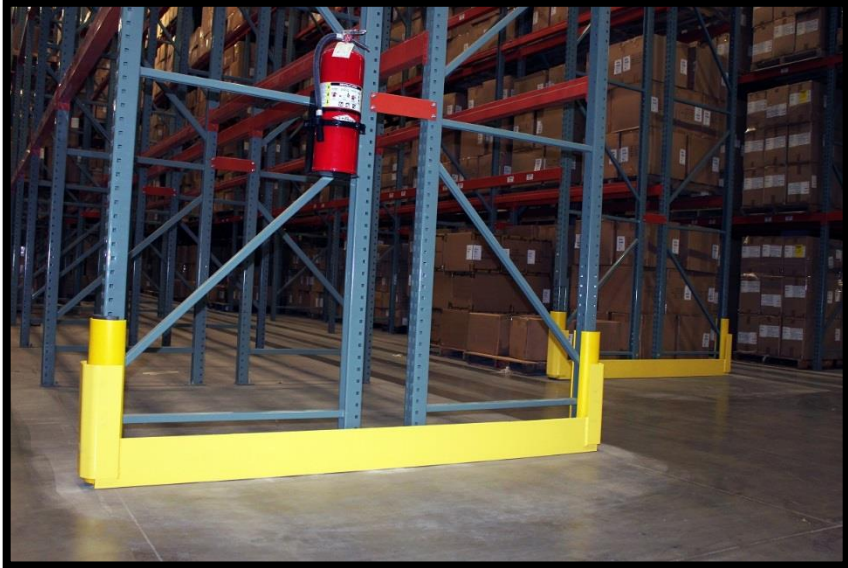
A preventive way to avoid damaged columns. Recommended for all columns adjacent to main pallet aisles and staging areas.



## Down-aisle protection:

Guides equipment through your system. Recommended for all aisles accessed by power vehicles.

# RACK PROTECTION



**End-of-row protection:** Keeps equipment from running directly into frames. Recommended at all row ends.



**Frame Extensions:** Keeps product from falling off the top of the rack. Recommended for all uprights.

# RACK LIFE SAFETY

**Highway Post and Guardrail:** Keeps power equipment from running directly into employee working areas, office walls, and water risers.



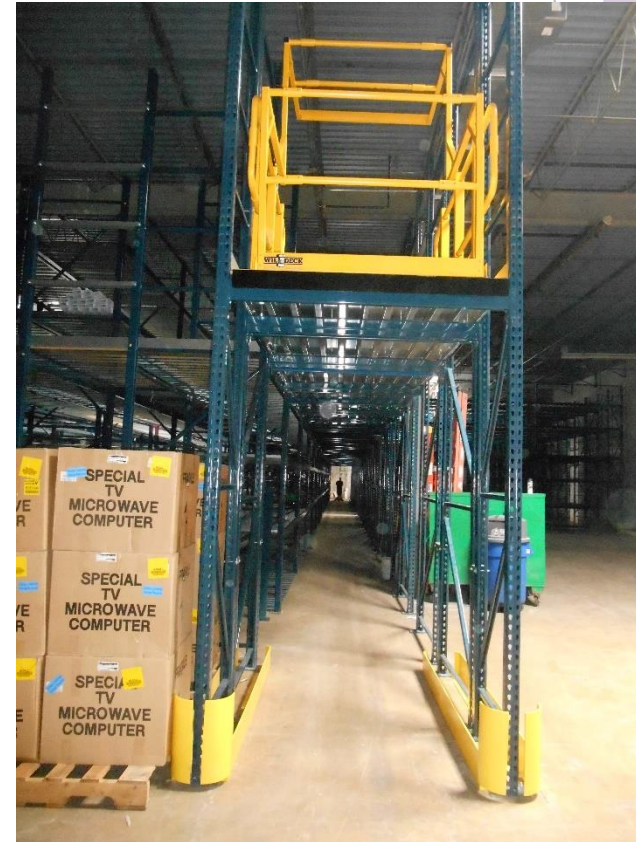
# LIFE SAFETY PROTECTION

Swing Gate Used at upper Catwalk levels



# FALL PROTECTION

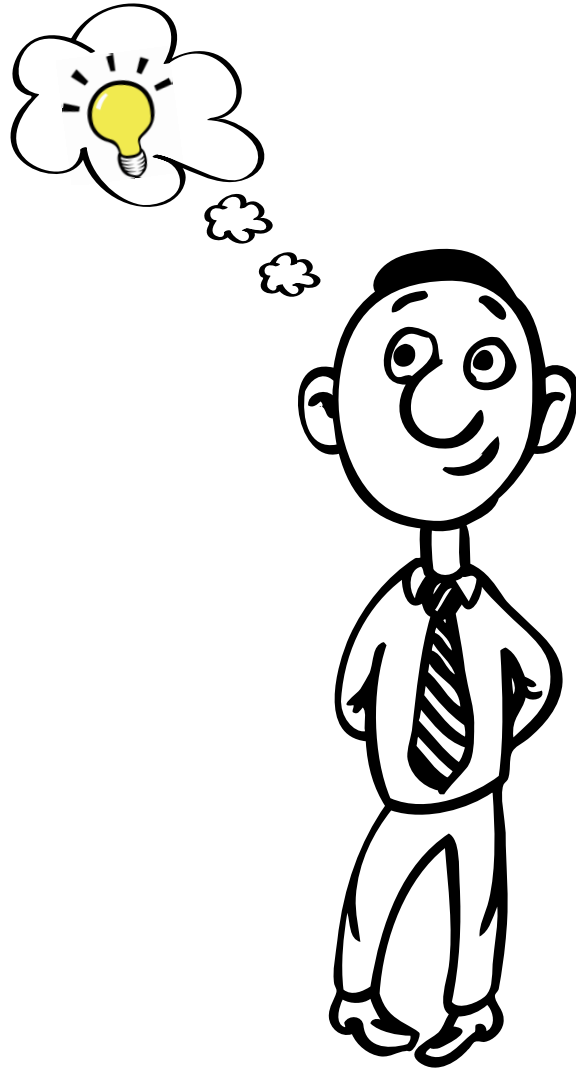
**Pivot Gates:** Keeps employees safe from falling from upper catwalk levels.



# RACK PROTECTION

Wow.

All that Rack  
Protection is a  
great idea!



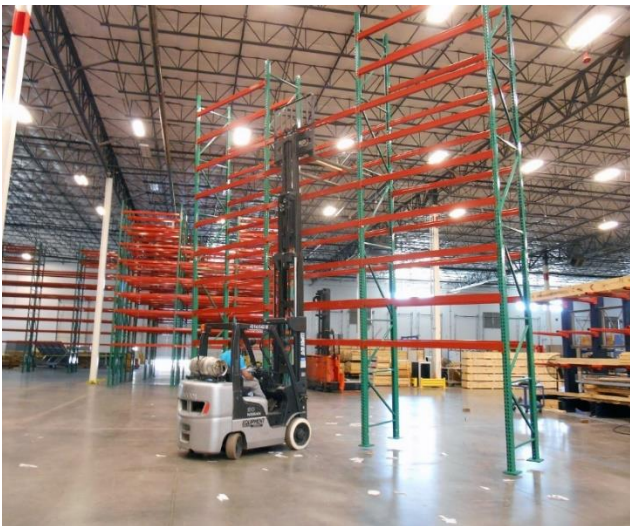


# Frame Replacement vs Frame Repair

Replacing a damaged frame tends to be a very labor-intensive project. All inventory has to be removed from the damaged rack, All the beams have to be dismantled before a new frame can be installed. This takes time and money.

Repairing damaged frame is a much less invasive process. Frames are repaired in place with manufacturer-engineered frame repair systems. A lifting jack stabilizes the rack while the damaged portion is removed and replaced with a heavier, abuse-resistant upright.

By using a frame rack repair kit, inventory unloading and business disruption are minimized, and the job-completion time is greatly reduced.



VS



# RACK REPAIR KIT

## How does the rack repair process work?

- Racks are repaired in place using a manufacturer-engineered rack lifting jack.
- The lower damaged portion of the rack is then removed and replaced with a heavier, abuse-resistant upright.



# Rack Repair Kit Features

## Frame Repair Kit Features Include:

- Should comply with the ANSI/RMI Standards.
- The repair kit can be configured to connect with most beam types
- Most are manufactured with a heavier gauge steel than the original manufactured frame
- Repair kits are manufactured for roll form or structural steel racking
- Repair kits can be bolted or welded
- Should be installed by experienced installers

Chuck is now happy in understanding how to keep his racking safe, employees safe, and assets protected!!

If you want to feel as worry-free as Chuck, contact Joe Malerba, Director of Remediation Services at REB by dialing 630-216-4742 or emailing him at [jmalerba@rebstorage.com](mailto:jmalerba@rebstorage.com)

