

# SHELVING / RACKING / MEZZANINES



- Design - Supply - Installation -

Phone: (306) 716-3000 - [www.rbcengineering.ca](http://www.rbcengineering.ca)

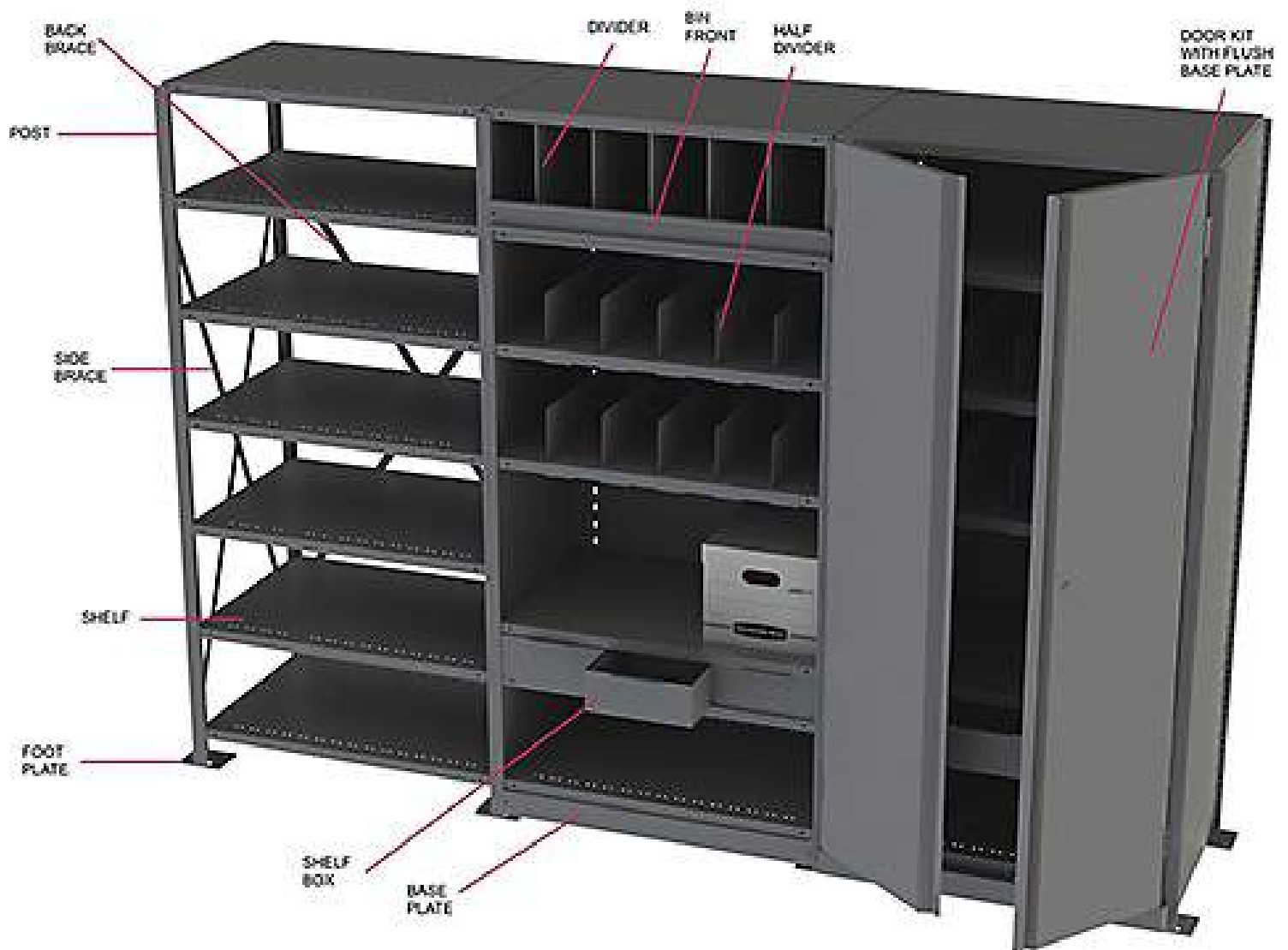


# WAREHOUSE PARTS & SERVICE SOLUTIONS





# BOLTLESS SHELVEING & MODULAR DRAWERS



# GALVANIZED OR RUST-FREE SHELVING OPTIONS





# CATWALK & DECK-OVER-SHELVING MEZZANINES



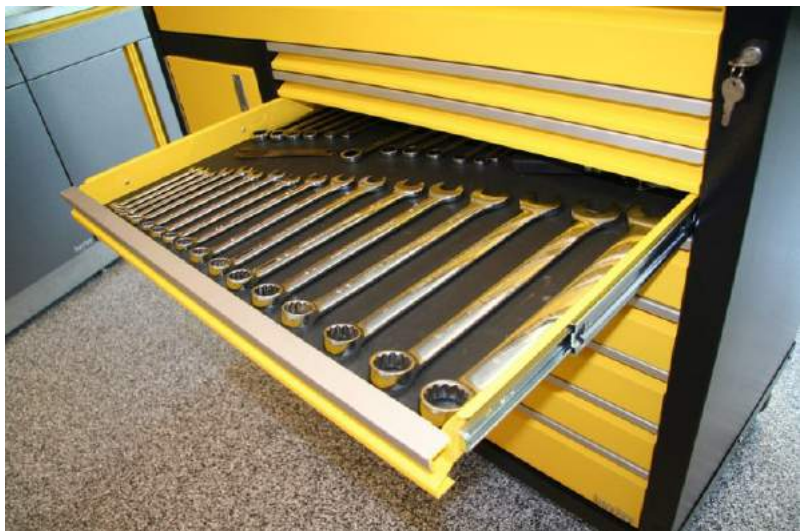
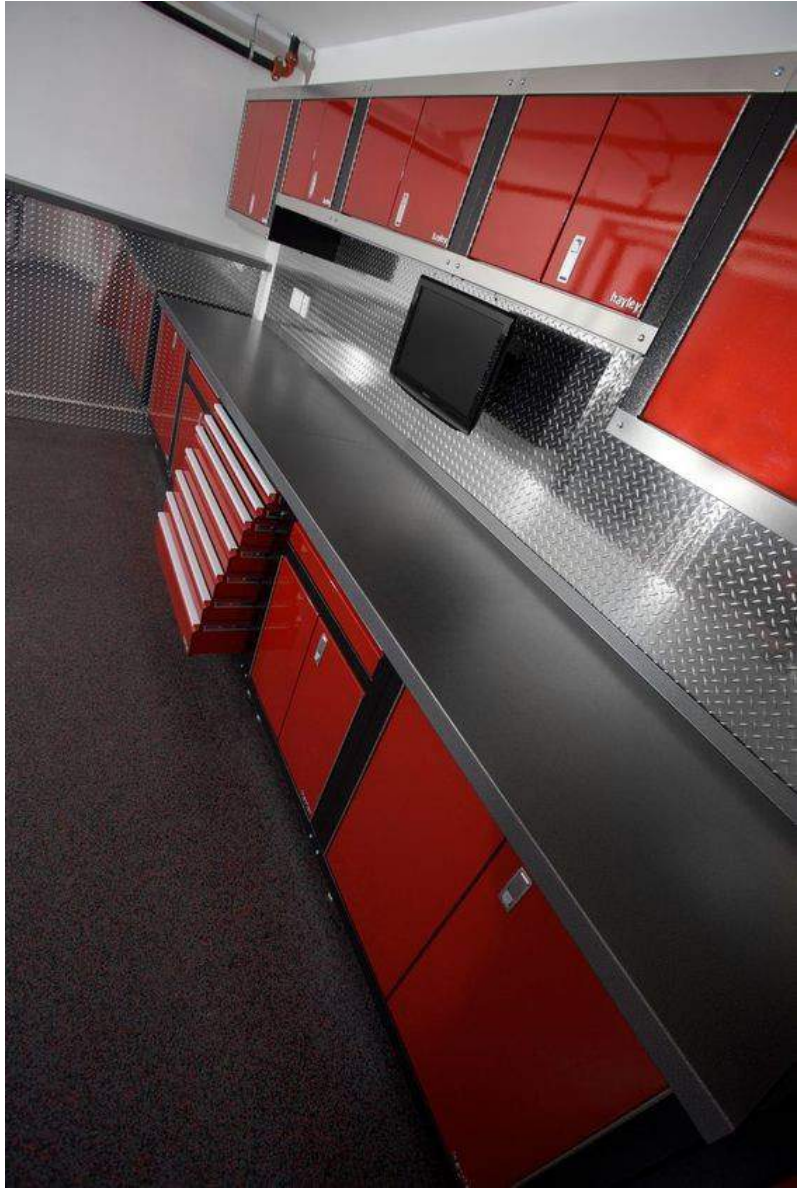


# PRE-ENGINEERED STRUCTURAL MEZZANINES





# SHOP CABINETS & WORKBENCHES





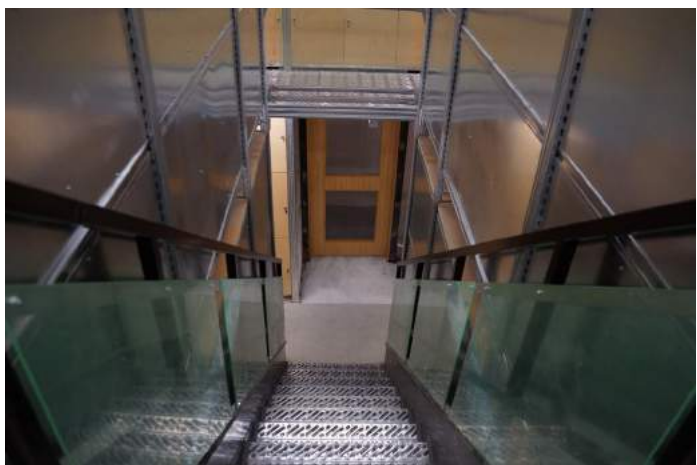
# CUSTOM RETAIL COUNTERS & DISPLAY SHELVING



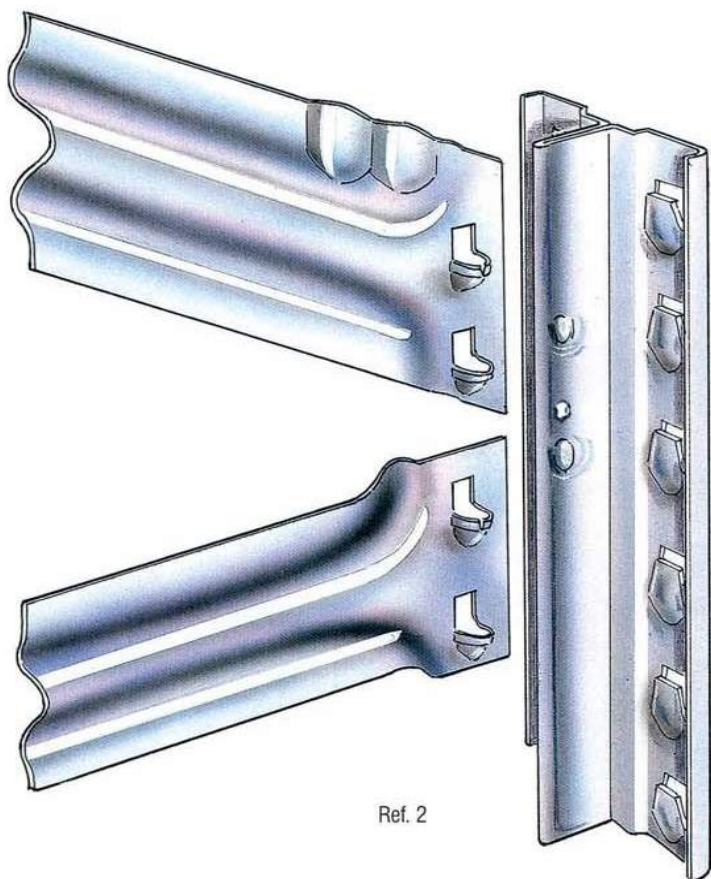


# **FILING / LOCKER / OFFICE / MOBILE / MEZZANINES**

- solid wood doors – glass railings – mobile secure filing systems - relocatable -







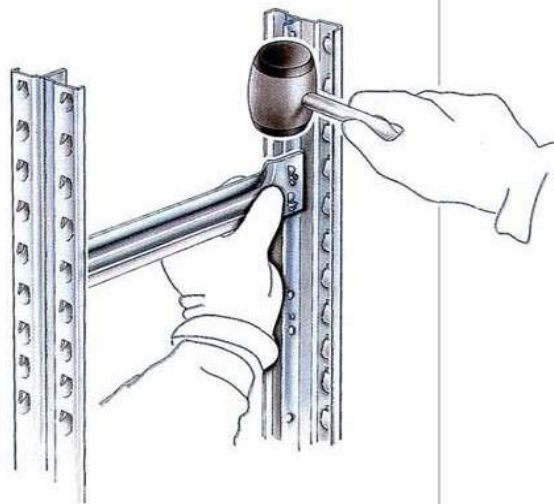
Ref. 2



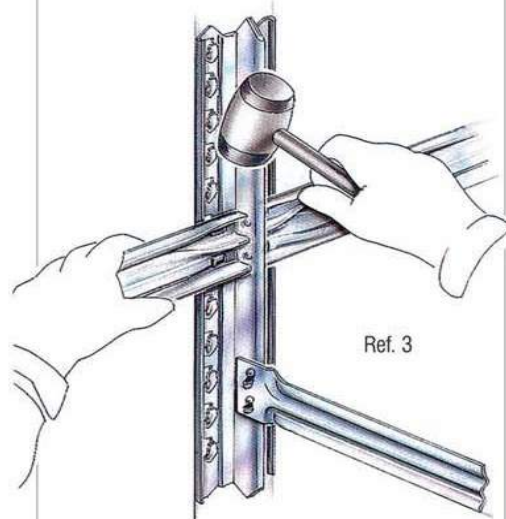
Ref. 3

## Beams

Take the frames, assembled with bracing and base plates: keep them as perpendicularly as possible and fit the beam by tapping it down onto the tongues, close to the upright, with a plastic-faced hammer to avoid damage to the beam.



The beams, once assembled, should be secured with the respective beam locking pins.



Ref. 3

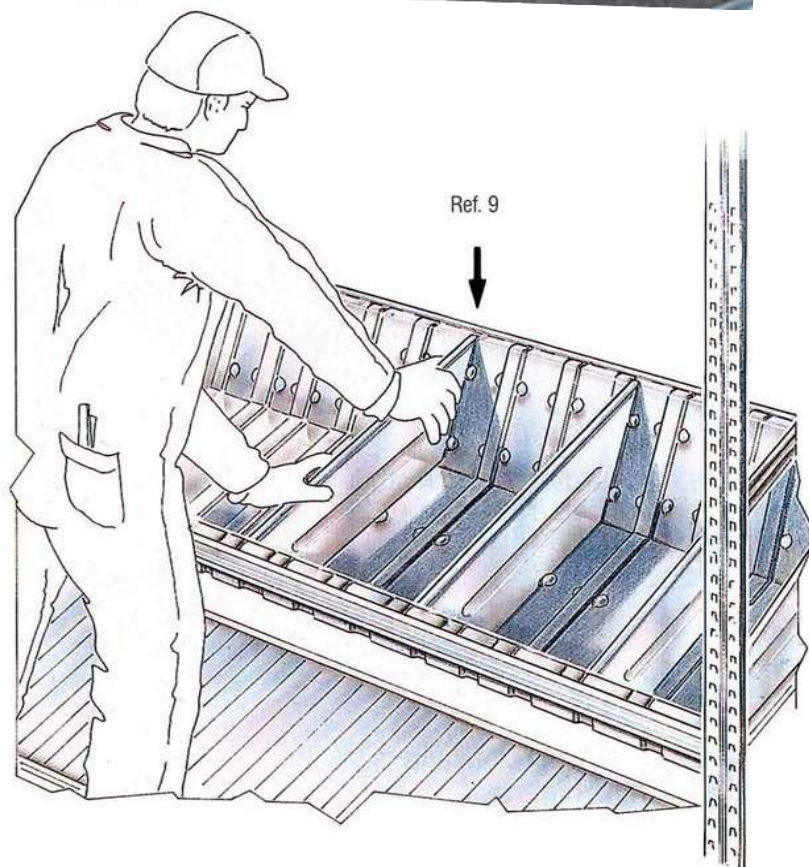
For the storage of tyres or round materials which are placed directly onto the beams, plastic strips are available to avoid damage to the products stored; these strips are fitted into the recess of the beams.



To assemble the containers correctly, the rear beam should be fitted two pitches higher than the front one (Ref. 10).  
Fit the dividers into the special slotted seats, pushing down to locate (Ref. 9).



The capacity of the containers can be increased by fitting bin front and rear panels 200 or 300 mm high.



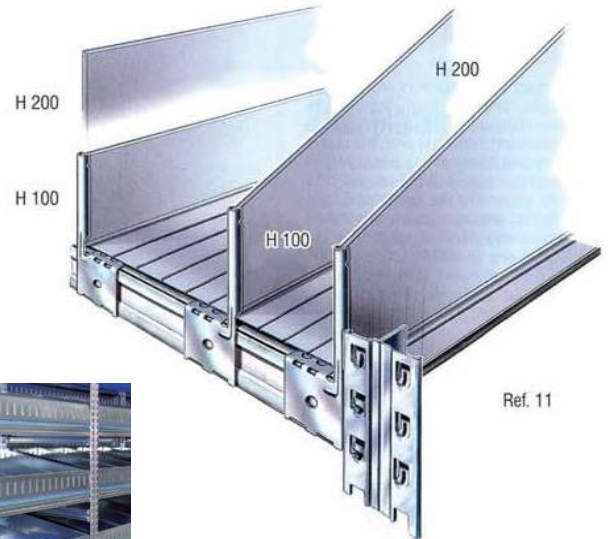


## DIVIDERS

A large range of dividers is available.

### Vertical Sliding Dividers

These have been designed to separate boxed items (Ref. 11). The concept of these dividers is based on the following components: a pair of clips, left and right, and vertical dividers, available for all frame depths and in two different heights (H100 mm / H200 mm), as well as in trapezoidal version (H200/100 mm).



### Shelf Trays

These comprise of a bin front and rear panel 100 mm high placed on a normal shelf with adjustable dividers from 320 to 800 mm in depth.

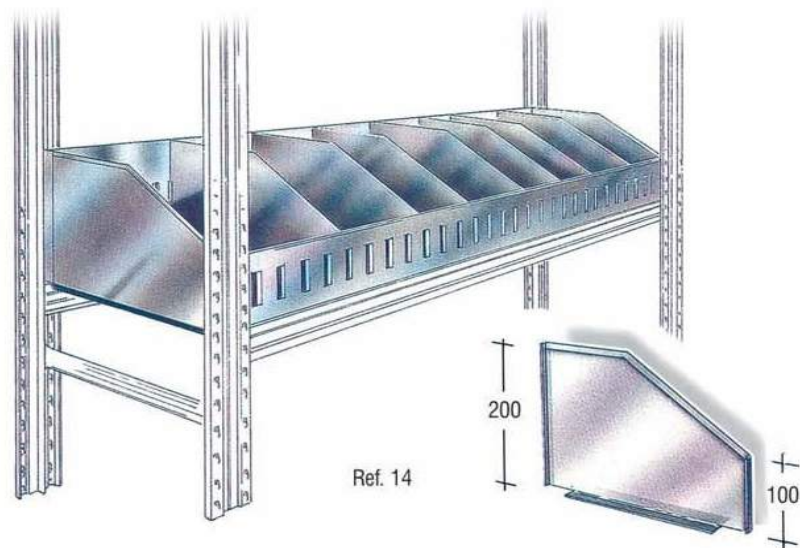
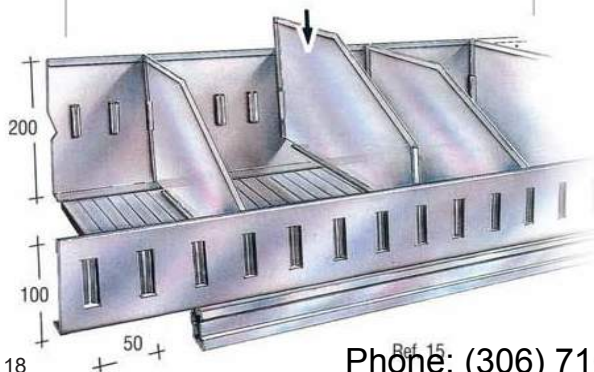
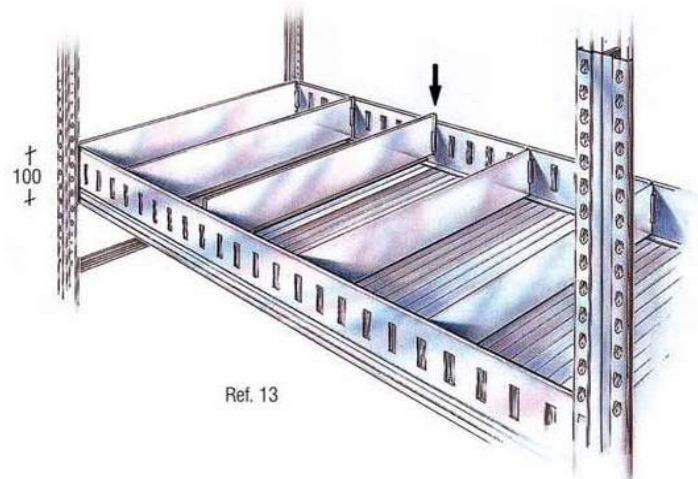
### Modular Drawers

The modular drawers are fully integrated with the Super 1-2-3 series and are located directly on the frames.

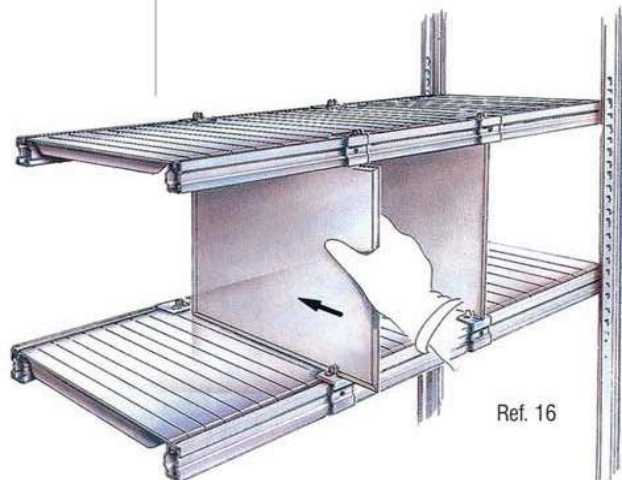


The drawers provide a cost effective solution for the storage of small items and may be fitted with a key lock.

Bin front panels 100 mm high and rear panels 200 mm high are fitted with trapezoidal dividers.







### Fixed Height Dividers

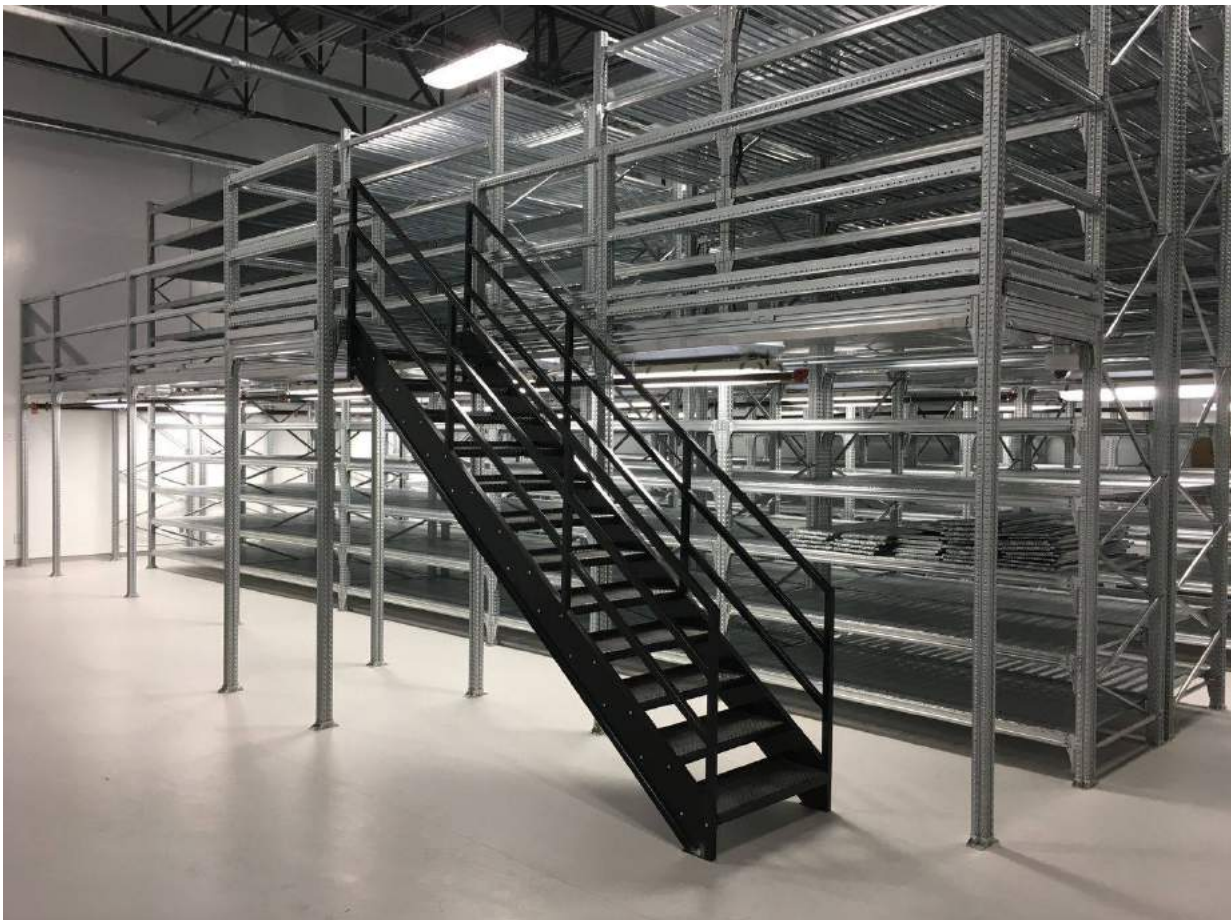
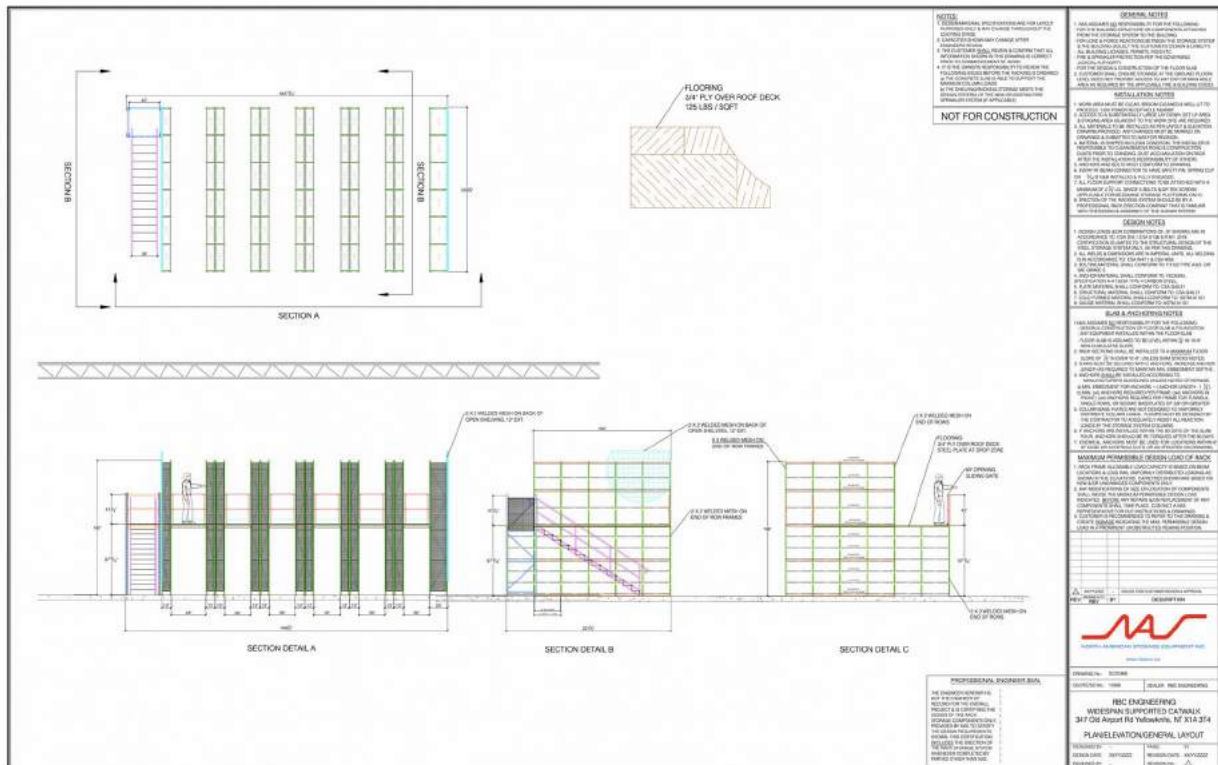
Available in three different heights: 244-344-444 mm.

They can be inserted in any position on the shelf by means of spring clips located on the beams H47 (Ref. 16).





# DESIGN / DRAFTING / ON-SITE CONSULTATIONS





# NORTH AMERICAN / STRUCTURAL & CANTILEVER RACKING

North American Rollformed Racking is compatible with Redirack and all major Canadian Rack Systems. NAS Rollformed Rack Installation capacities range from 25,000 lbs. to 100,000 lbs. per bay with a safety factor of 2.0.

At North American Steel we have the capability to produce 46' h endframes without splicing.

## Features & Benefits:

- › Our Endframe Capacity can be greatly enhanced by Double Posting. Life cycle is extended with Bullnose protection or Heavy Duty Braces to deflect accidental impact from lift trucks.
- › NAS manufactures a wide choice of step beams, box beams and structural beams which accommodate all our endframes to suit your company's specific applications.
- › Safety clips may be replaced with a choice of Spring clips, Tek Screws or Plunger Pins.
- › Paint Finish: All rack is powder coated over properly cleaned and phosphate etched surface and oven baked at proper temperature/time ratio to produce a durable scratch resistant coating. Food grade approved or acid resistant finishes are available.





# ENDFRAMES

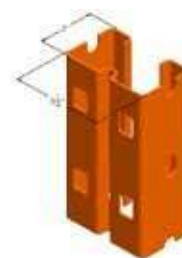


Rear return bends are a unique feature of North American Racking. The 10 vertical bends per column add strength, structural rigidity, and impact resistance.

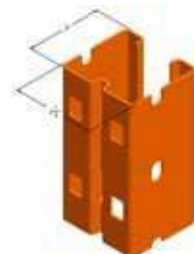
The tubular bracing used in our endframes makes them stronger than regular standard bracing channels. All horizontal bracing is welded at both ends against the front and rear endframe columns.

The 6-point wrap around beam connector supports each beam at 12 points, squaring the beam to the frame automatically.

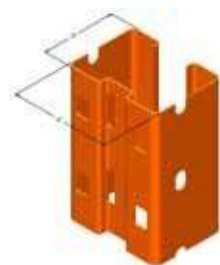
PART #	SIZE	GAUGE	CAP*
EF214	3 1/4"x 2"	14	22,570
EF213	3 1/4"x 2"	13	26,270
EF313	3 1/4"x 3"	13	33,230
EF413	4"x 3"	13	42,290
*Capacity in lbs at 48" Beam Centre and 42" in Between Bracing			



EF214



EF313



EF413

## Endframe Options

### Heavy Duty Lower Brace

Transfers frontal impact energy to the back post of the Endframe. Prevents column from rotating and acts as a Rub Rail for pallet entry.



### Double Post

Increase the capacity and transfers axial load to the second post if front post becomes damaged.



### Structural Column C-Channels

Inserted inside the column (usually to the first beam level) and welded in place, absorbing lift truck impact. This significant increase in column strength prevents column from denting or bending.



Cant-Leg

## Advanced Leg Options

### Cant-Leg Frame

Angles the front aisle post away from the load aisle to prevent accidental damage from pallet entry on the lower level. Severe Cant-Leg frames are often used in Double Deep Selective applications.

### Recessed Leg Frame

The front aisle post is recessed to allow greater aisle clearance for lift truck turning and pallet entry. Recessed Leg heights can be shorter than the Cant-Leg option, making this ideal for installing low beams for future Carton Flow or pick level locations.



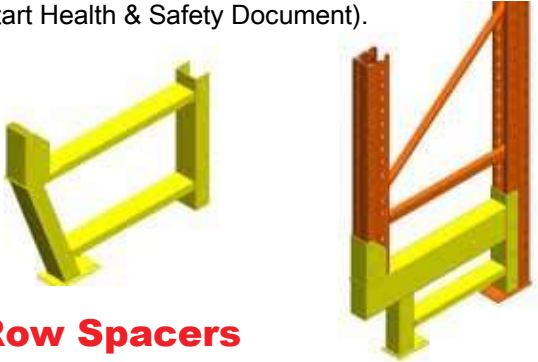
Recessed Leg



# ENDFRAME PROTECTION

## Removable Base

Removable Bases are bolted into frame legs. They are designed to be replaceable in the event of impact damage, saving time and cost of replacing the entire frame. Unlike the 3rd party repair kits, a frame supplied with a removable base can be replaced by North American Steel without requiring re-certification (Pre-Start Health & Safety Document).



## Row Spacers

Row Spacers are used for back-to-back rows to tie the endframes together for stability and consistent spacing. Row spacers can also support in-rack sprinkler systems

Recommended: 2 pair for frames up to 12 ft, 3 pair for frames up to 20 ft, 4 pair for frames up to 26 ft, 5 pair for frames up to 32 ft. Over 32 ft call the manufacturer.



## Cross Aisle Ties

Cross Aisle Ties are attached on top of two endframes that are adjacent to each other to stabilize single rows of racking. These are required if the height-to-depth ratio of a single row exceeds (6:1). They can also support electrical equipment if required (ie. extra aisle lighting).



## Post Protectors

Post Protectors provide added protection in high traffic areas. The angle helps to deflect rather than absorb direct frontal impact and reduces the possibility of rack frame damage .

**Welded-On** Factory welded to the front of the upright, it is the most economical option for protection. Available on new installations only.



Bull-Nose with Side Plate



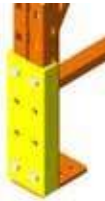
Bull-Nose with Cap



Structural Angle

## Clip-On

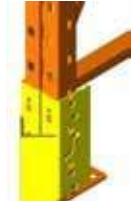
Clip-on to the front face of rack frame. The longer (15") style is designed for use with base plate beams.



C-Channel Bolted



Clip-on 15"



Clip-on 6"

## Floor Mounted

These are the most common type of stand-alone protectors. They are anchored separate from the column.



Structural Angle with Foot Plate



Rounded



Clip-on 15" with Foot Plate

## End of Aisle Guards

### Tapered Floor Mount

Provide protection for end of row frames against lift truck damage. Adds a neat finished appearance.



### Raised Aisle Guards

This raised aisle guard is preferred where cleaning under the guard is a sanitary necessity.



### Frame Mounted

Protect frames and braces from fork lift truck impact above floor level.



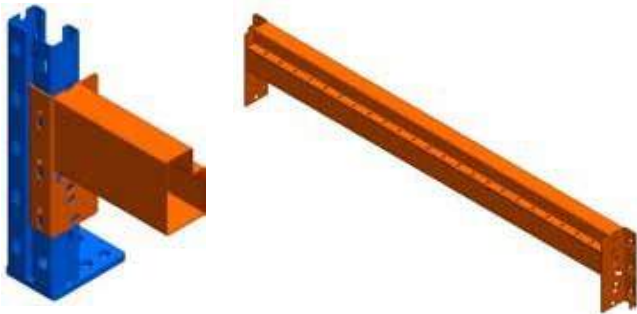


# BEAMS

## Step Beams 2 1/2" - 6 1/2"

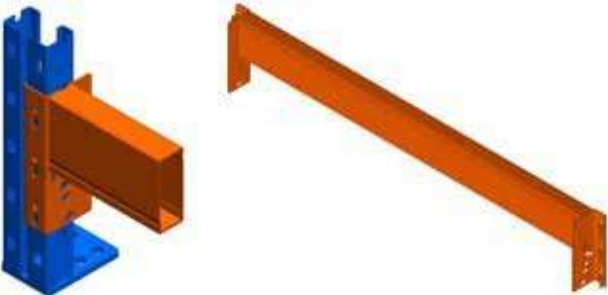
A one-piece multi-purpose beam with a rolled in-step, pierced to accommodate safety bars, shelf supports and other unique accessories. Full 1-3/4" top face for superior pallet support.

Our one-piece rollformed tube provides strength and safety. The seam of our beam is located at the rear under the step, preventing accidental fork lift or pallet "hooking". The 3" deep bracket allows welding of beams in front and rear.



## Box Beams 2 1/2" - 7"

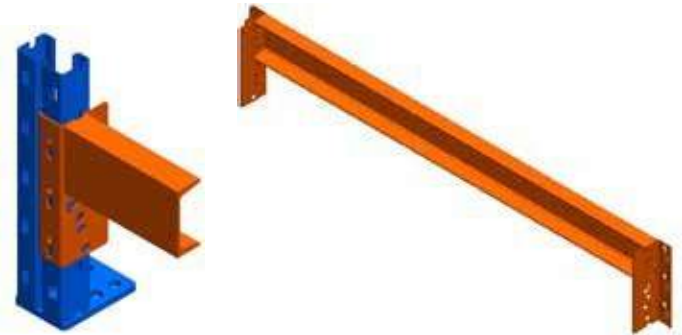
Ideal for heavy pallet loading; tunnel bays with 3 pallet loading. Box Beams offer the highest capacity/dollar of all beam types. The 2 piece interlock design is ideal for point loads and engages Tek Screw threads better than single layer beam designs. Our Box Beam seam is at the bottom and folds upwards so it cannot be hooked by lift truck or pallets.



## C-Channel Beams 3"- 8"

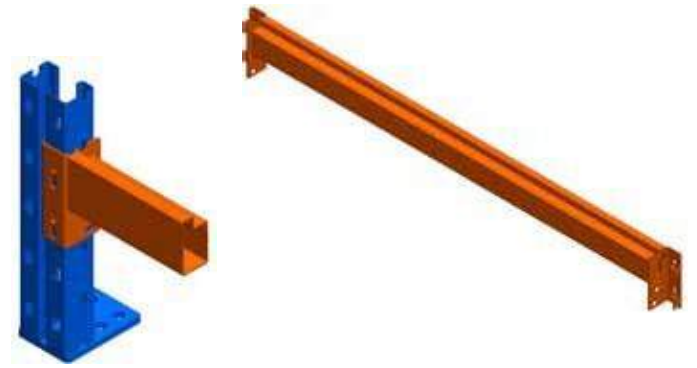
C-Channel beams are recommended for heavy traffic and high abuse areas (ie. front beams on Push Back and Pallet Flow Rack).

The structural shape places the most amount of steel on the face and face corners to prevent damage at impact. To obtain the full rated capacity, C-channels require tie bars to prevent rotation.



## Shelf Beams 2 1/4" - 3 1/4"

Light duty shelf beams are available for retail hand loaded applications. The one-piece rolled in-step beam has a 3/4" step. Ideal for particle board or wire mesh shelves.



## Safety Racking Clips & Tek Screws

Are a required safety element in the rack installation. They prevent accidental dislodging of beams on impact from lift trucks or pallets.

**Safety Pins** (included standard)  
Installed either in the front or side of the beam bracket (galvanized).



**Safety Tek Screws** (optional)

The Safety Tek Screw is a Grade 5.2 hex flange screw, case hardened and coated with a zinc chromate finish. When properly installed, this hardware provides significantly more resistance to accidental beam disengagement versus a standard safety pin.



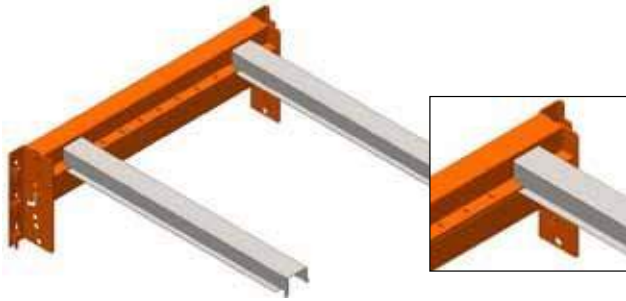
**Spring Clips** (optional)  
Installed in the front of the beam bracket (galvanized).

**Plunger Pins** (optional)

Our patented plunger pin snaps into position automatically and replaces standard safety clips. Recommended for retail applications.

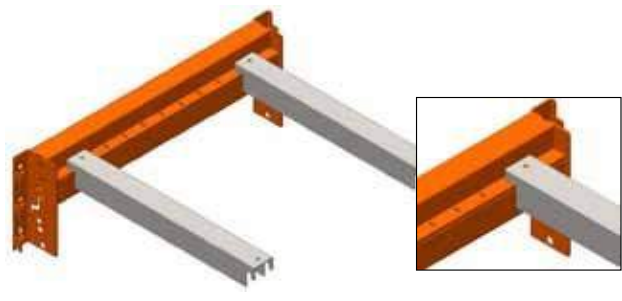


## BEAM ACCESSORIES



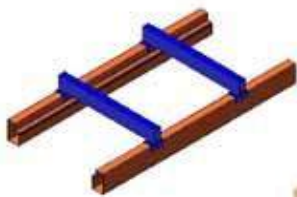
### Safety Bars Medium or Heavy Duty

Sit flush in pre-slotted step beams to stop improperly placed pallets from falling between beams. Safety Bars prevent spreading on extra wide racks under heavy loads. Two safety bars per pallet position are mandatory on installations over 16 ft. high.



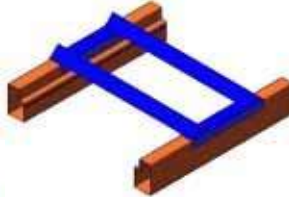
### Combination Shelf Supports Safety Bars For Step Beams

This shelf support has all the same features as the medium duty safety bars. It sits 7/8" below the top of the beam to provide a flush surface, when plywood or other shelving material is used. Minimum 4 per 96" shelf.



### Fork Entry Bars

Support non-palletized loads, such as wallboard, plywood and metal sheets.



### Drum Cradles

Designed to adapt racking to hold cylindrical objects. The unit is completely welded and fits securely on NAS Step Beams.

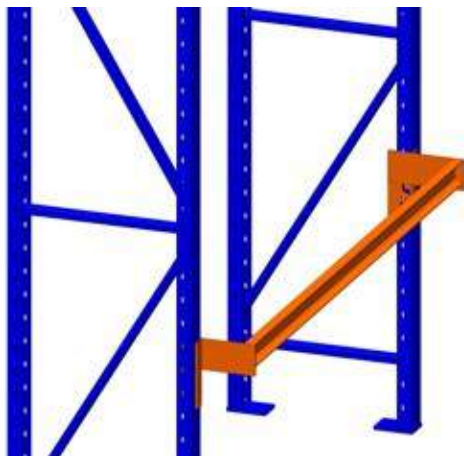


### Skid Channel

Adapt rack to the storage of semi-live and stationary skids.

### Back Stop Beam

Back Stop Beams are offset loadbeams which create a barrier at the rear of the pallet bay. Typically used to create flue space between back-to-back rows, prevent pallet contact with building walls, or to mount safety netting on to pallet rack adjacent to pedestrian walkways.



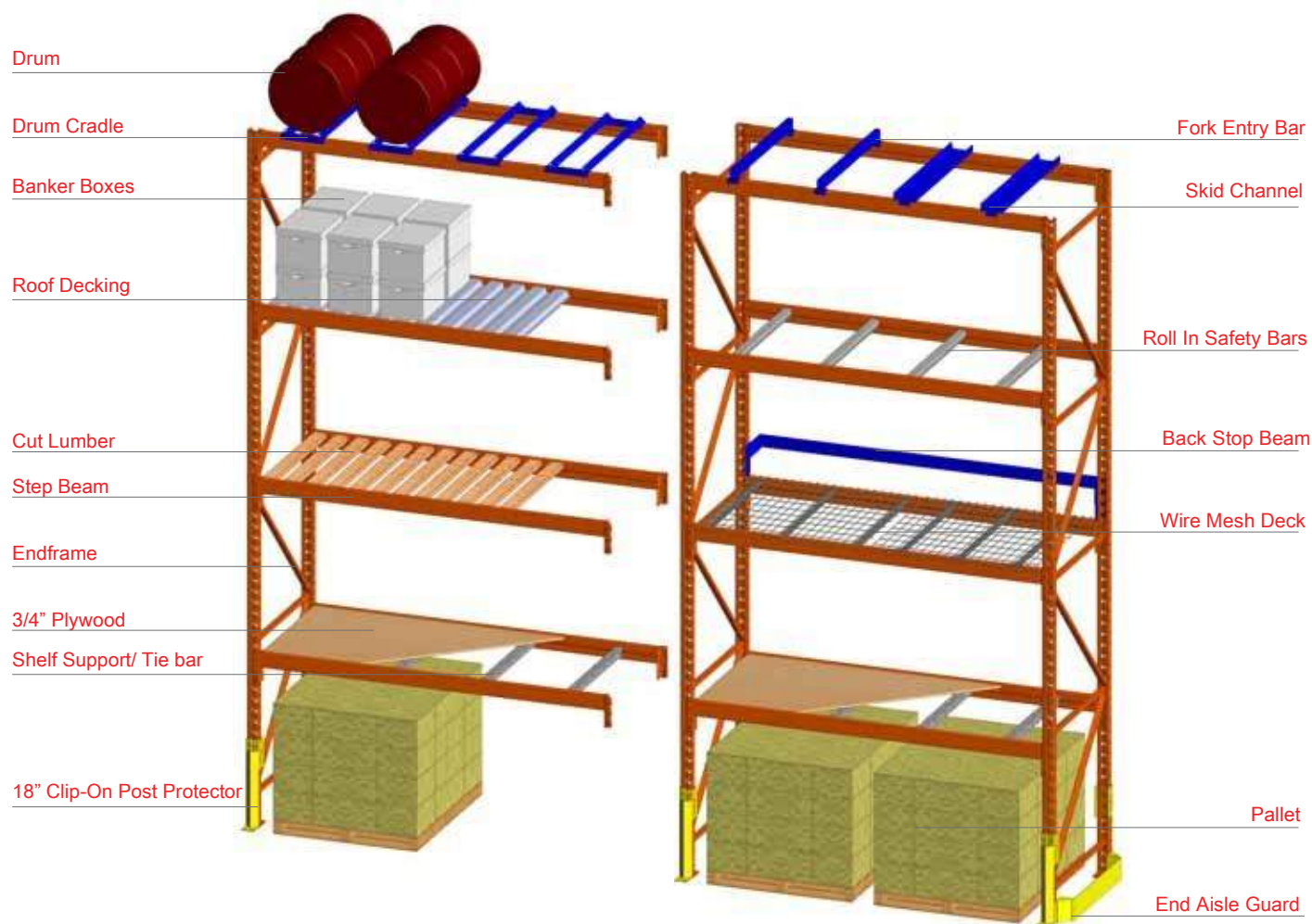
### Wire Mesh Decks

Universal Waterfall Wire Mesh Decks are designed to fit on all Step Beams, Box Beams and structural steel beams. The U-Channel support is welded to the wire mesh for added strength and sits on top of the beam. Channels are available in standard and sanitary configurations.





# RACK ASSEMBLY



## Rack Shelving Systems for Step Beams

### Shelf Support

Choose from steel shelf supports or 1"x 6" lumber to support wood shelves. A variety of materials, such as plywood, particle board or finished board can be used for shelving.



### Drop-In Panels

Galvanized steel panels provide a smooth surface. Available in 6" or 9" standard widths.



### Cut Lumber

Inexpensive shelving for NAS Step Beams. Standard 2"x 4", 2"x 6" and 2"x 8" lumber fits flush into step beam, providing an inexpensive shelving option.





# **“STRUCTURAL & HYBRID” RACKING**

North American Structural Racking, constructed of hot rolled channels, is capable of withstanding the wear and tear of the toughest environments, making Structural Racking popular for use in distribution facilities, coolers and freezers.

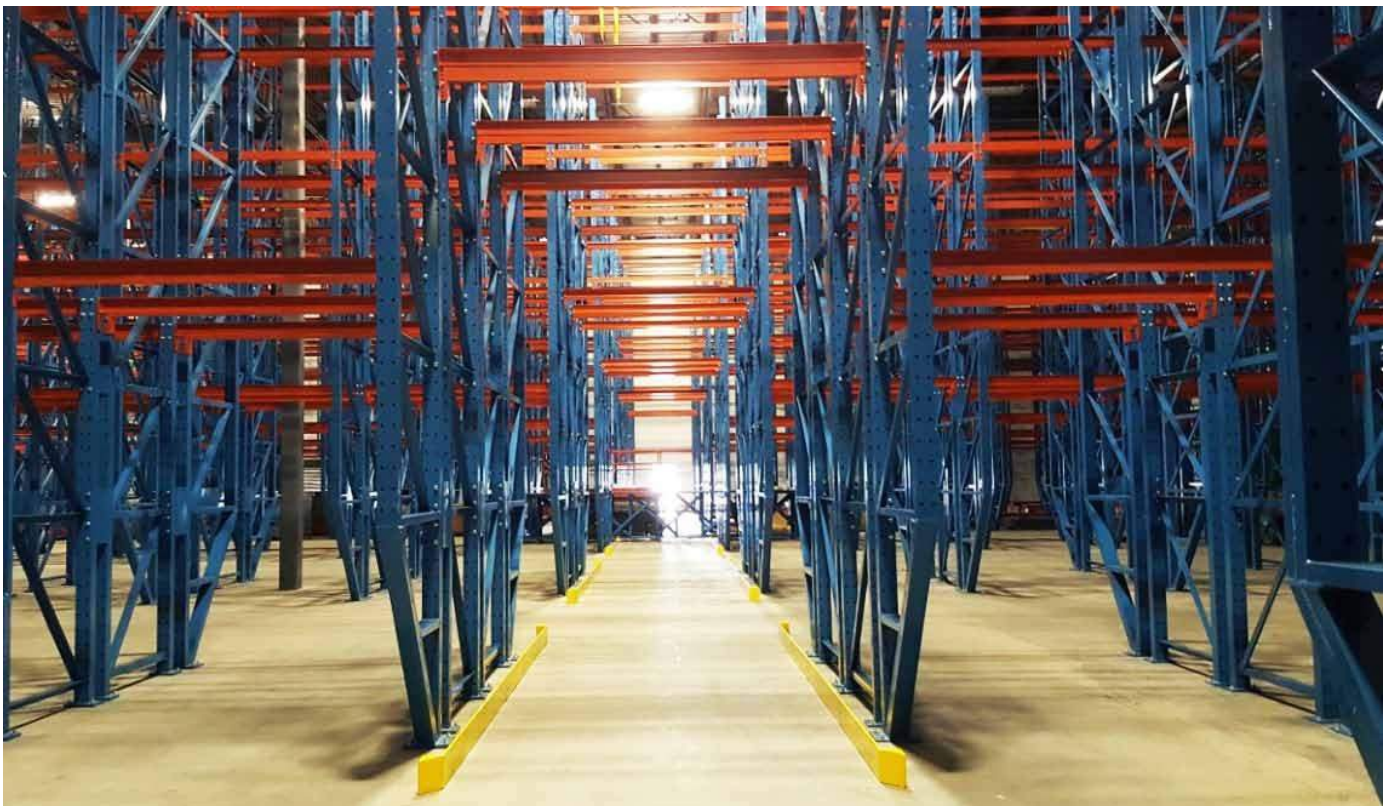
Structural Racking is ideal for high rise systems, heavy traffic and high abuse areas. It is available in a variety of column sizes and meets the required frame loads of today's higher ceilings and heavier pallets. It can also be integrated with Rollformed Rack components to provide a more economical 'Hybrid' alternative, using the best features of each style, and minimizing cost.

Lift truck damage is reduced due to both the structural shape of the column and by placing the greatest amount of steel at the front face corners.

Initial relatively small investment at the design stage, such as heavy duty lower braces, welded-on protectors, cant-leg or recessed leg or double posting to first beam level, will reduce long term maintenance on endframes or even replacement cost for high traffic areas.

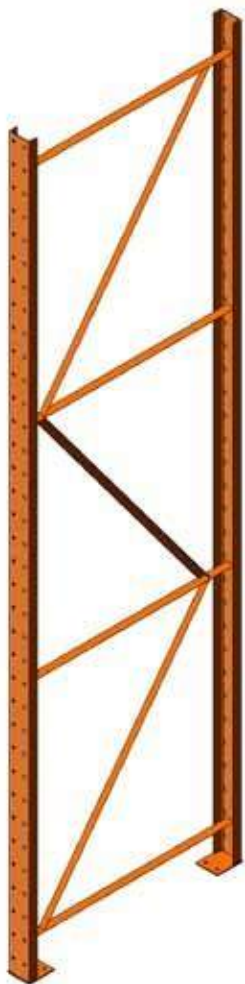
## **Features & Benefits**

- › Paint Finish: Our Structural Rack is finished with an environmentally friendly powder coat paint over a cleaned and phosphate etched surface, then oven baked at the correct temperature/time ratio to produce a durable scratch resistant finish. This high quality finish is unmatched in the industry. Choice of paint colours, food grade approved and acid resistant finishes are available
- › Meets standards established by RMI and CSA, and exceeds all government safety standards.
- › Capacities of up to 100,000 lbs per bay
- › Beam adjustability on 1" increments
- › Front Double Posting increases torsional bending resistance by 400% and increases impact resistance
- › Serrated flanged nuts offer larger clamping area and require less re-torquing or re-tightening
- › Structural Racking sections are thick enough to allow repairs to be made using ordinary cutting and welding Equipment. Note: Any re-work must be completed by fully qualified personnel





# "STRUCTURAL" ENDFRAMES



NAS Structural Endframes are manufactured mainly from C3, C4 and C5 channels. Other sizes are available on request.

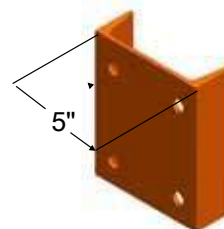
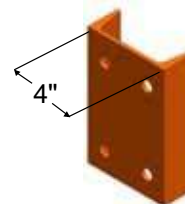
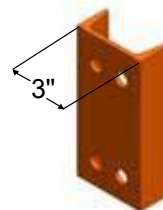
We follow either a 36" or a 44" brace pattern depending on the capacity required.

Frames are available with standard or seismic foot plates.

The chart below reflects capacity ratings for standard 44" brace centres.

FRAME POST CAP*	
C3 x 3.5	19,950
C4 x 4.5	30,730
C5 x 5.4	41,030
* Capacity per Bay in lbs at 48" Beam Centre in non-seismic conditons	

Please contact NAS if different capacities are required.



## Endframe Options

## Advanced Leg Options

### Heavy Duty Lower Br

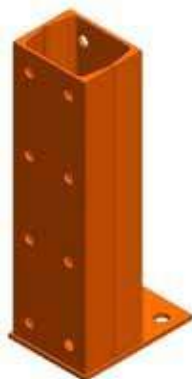
Transfer frontal impact energy to the back post of the Endframe. Prevents column from rotating and acts as a Rub Rail for pallet entry.



### Double Post

Increase the capacity and transfers axial load to the second post if front post becomes damaged.

Front double posting increases torsional bending resistance by 400% and provides increased impact resistance.



### Cant-Leg Frame

Angles the front aisle post away from the load aisle to prevent accidental damage from pallet entry on the lower level. Severe Cant-Leg frames are often used in Double Deep applications to allow clearance for Straddle Legs.



Cant-Leg

### Recessed Leg Frame

The front aisle post is recessed to allow greater aisle clearance for lift truck turning and pallet entry.

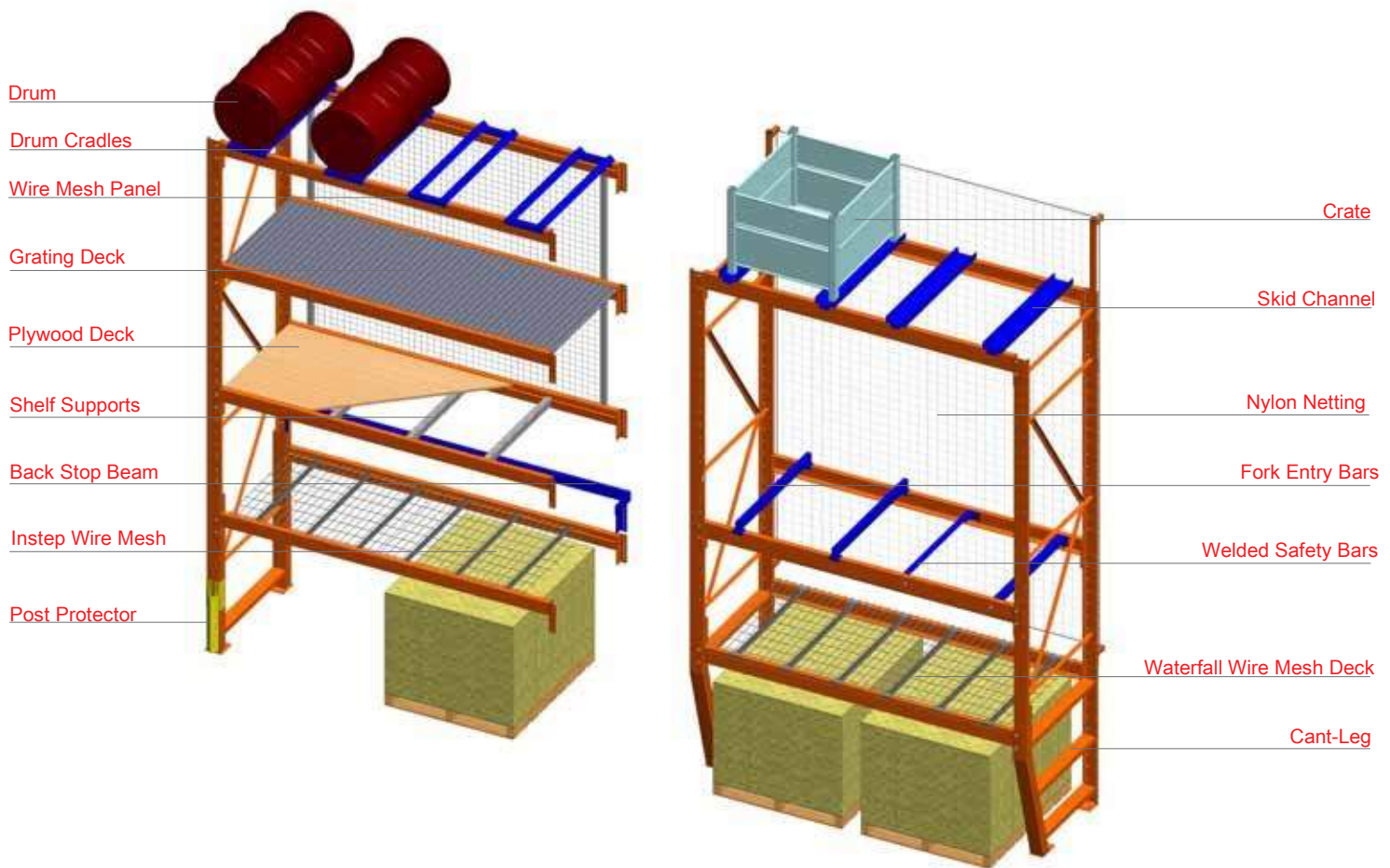
Recessed Leg heights can be shorter than Cant-Leg options making this ideal for installing beams on lower levels for carton flow or pick level locations.



Recessed Leg



# "STRUCTURAL & HYBRID" RACK ASSEMBLY & DIFFERENCES



CHARACTERISTIC	STRUCTURAL	HYBRID	ROLLFORMED
Abuse Resistance	High	High	Medium
Load Bearing Capacity	3000 lbs pallets and higher	3000+ lbs pallets and higher	Ideal for 2800 lbs pallets and less
Connection	Bolted	Bolted	Clip On
Repairs	Onsite repair may be possible with qualified welder	Onsite repair may be possible with qualified welder	Requires factory supplied bolt on kits, installed by factory personnel only
Type of Steel	Hot Rolled Channel	Utilizes both types	Cold Rolled Strip
Durability	High	High	Low without additional protection
Adjustability	Slower, on 1" Increments	1" Increments	Quick on 2-3" depending on design
Paint Coverage	Excellent adhesion, no hidden cavities	Best of both types	Smoother Finish
Cost	High	Medium	Low
Moment Resistance	High	High	Medium



# STRUCTURAL CANTILEVER

North American Steel/Storage manufactures Structural Cantilever systems to accommodate multi-level, high density loads of different types and sizes. This system is not recommended for standard pallet racking bays.

Cantilever systems are often utilized when storing lumber, siding, pipes, conduit, or rolled floor coverings. Storage of odd sized or bulky items such as furniture and household appliances which are not easily palletized are excellent applications of this system. Operators looking to maximize horizontal accessibility for products of variable lengths will benefit from Structural Cantilever's lack of vertical obstructions.

Structural Cantilever is ideally suited for outdoor applications and can be designed to provide side, rear, and overhead shelter. Our Structural Cantilever is finished in durable powder coated coverings available in standard colours and UV stable options.



## Outdoor

- › Structural Cantilever installed outside will not collect water and degrade over time
  - › Requires a concrete pad or other approved mounting system
  - › Suited for retailing of lumber products, landscaping, and pipe of all material types
  - › Roof and side cladding is available
  - › Standard designs available up to 24 ft. Taller designs upon request
  - › Can be designed to withstand outdoor weather conditions
- As an addition to existing storage buildings

## Indoor

- › Ideal for storage of long items that cannot be stored outdoors
- › Suited for retailing of appliances, rolled flooring, assembled and bulky furniture
- › Arms available from 18" to 72" in length to provide storage flexibility





## Cantilever Bolted Rack

- › Ideal for storage of lumber, steel channels, pipes, tubes, plywood, drywall, steel plates, and items of long length or irregular shape
- › Lift truck forks have easy entry for un-palletized loads
- › Base legs provide stability and keep the products off the floor
- › Variety of arm styles and capacities available
- › Arms and bases are designed to bolt on either or both sides of column for conversion from single to double-sided units
- › Can be galvanized for external use

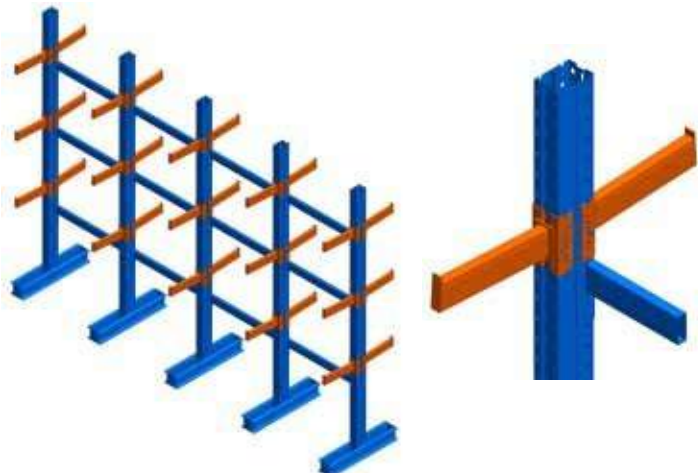


## Cantilever Deck Rack

- › Ideal for furniture, long boxes or long containers
- › Strong, durable, and fully adjustable system
- › Durable construction for low maintenance and longer service life
- › Minimizes storage space and construction costs
- › Utilizes higher lift height capacity for the latest handling equipment
- › Allows for vertical shelf height adjustment without interruption of the horizontal plane
- › Can incorporate optional guide rails for handling equipment

## Cantilever Bar Rack

- › Ideal for pipes, tubes or bars
- › Durable Powder Coated finish
- › Capacity up to 500 lbs per arm
- › Reel holding option up to 2,500 lbs per reel
- › Arm length up to 48"
- › Arms attached with a double bracket connection
- › Arms have welded end stop
- › Available in single and double sided configurations



## Double-sided Cantilever

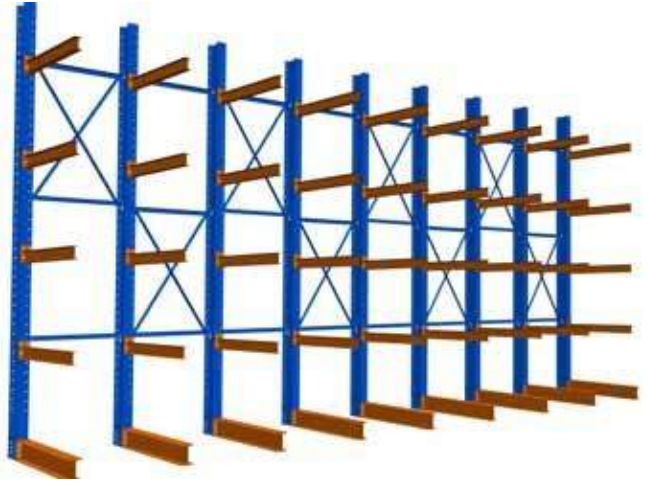
- › Allows loading on both sides of column
- › Back to back loads need not be identical weight or dimension

\*All columns are punched on 4" centers for both single and double sided applications



## Single-sided Cantilever

- › Arms installed on one side of the column only
- › Typically used along walls or adjacent to equipment/pallet racking system



## Wide Aisle

- › Wide Aisle / Conventional is typically 192" and above and uses conventional lift trucks



## Narrow Aisle

- › Narrow Aisle is typically 84" or less and requires specialized narrow aisle equipment



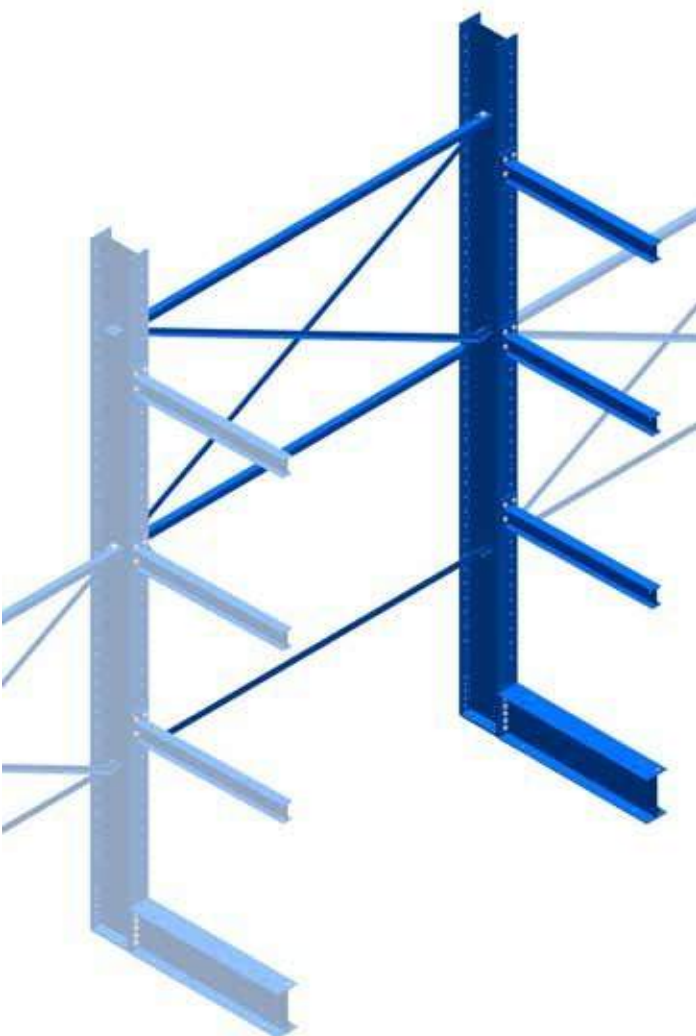


# COMPONENTS

## Column

NAS Structural Cantilever features columns manufactured using Wide Flange hot rolled sections punched on 4" centers starting at approximately 20" above the slab surface. All columns are punched for single sided or double sided applications and are available in the following standard sizes:

COLUMN	HEIGHT	CAP*	ANCHORING
8"	8'(96")- 18'(216")	10,600- 18,600	(x2) 7/8" Ø hole for 3/4" Ø anchors
10"	12'(144")- 20'(240")	16,100- 28,400	(x2) 7/8" Ø hole for 3/4" Ø anchors
12"	12'(144")- 24'(288")	22,000- 37,500	(x4) 7/8" Ø hole for 3/4" Ø anchors
*Capacity in lbs Per Side			



## Base

Bases and arms are typically specified with equal lengths, with the exception of special cases where a base may be longer in order to utilize a rod end stop.

Bases use the same Wide Flange hot rolled section as the column and are punched to accept 3/4" diameter wedge anchors.

NAS recommends the use of a suitable concrete foundation as a base for Cantilever Racking (typically 6" minimum). Concrete piers or footings may also be acceptable but may settle over time. Screw piles are also acceptable if specified for the application by the manufacturer.

BASE SIZE	AVAILABLE LENGTH	ATTACHMENT*	ANCHORING
8"	2'(24")- 5'(60")	(x6) 3/4" Ø Grade 5 Nut & Bolt	(x4) 7/8" Ø hole for 3/4" Ø anchors
10"	2'(24")- 5'(60")	(x8) 3/4" Ø Grade 5 Nut & Bolt	(x4) 7/8" Ø hole for 3/4" Ø anchors
12"	2'(24")- 5'(60")	(x10) 3/4" Ø Grade 5 Nut & Bolt	(x4) 7/8" Ø hole for 3/4" Ø anchors
*Attachment to Column (x2) for Double Sided Applications			

All Bases must be anchored to limit the lateral movement of the Cantilever rack.

## Bracing

All Structural Cantilever is supplied with bolted bracing panels which alternate horizontal and vertical X panel bracing to provide the required stability.

NAS only utilizes hot rolled structural angle for bracing and panel assemblies, offered in a variety of widths to accommodate the required spans between load supports.

Braces are bolted to tabs welded to the column, reducing potential for error during assembly. Vertical braces are required in each end bay of any row and in alternate interior bays. Bracing sizes shown are measured column centre to centre.

COMPONENT	LENGTHS	ATTACHMENT
Horizontal Brace	24"-96"	(x2) 3/4" Ø Grade 5 Nut & Bolt
Vertical Panel Brace	24"-96"	(x4) 3/4" Ø Grade 5 Nut & Bolt

## Arms

NAS Structural Cantilever Arms utilize hot rolled "S" sections in 3", 4", and 5" sizes over a range of lengths. Each system is designed based on the specific applications, product size, and required capacity.

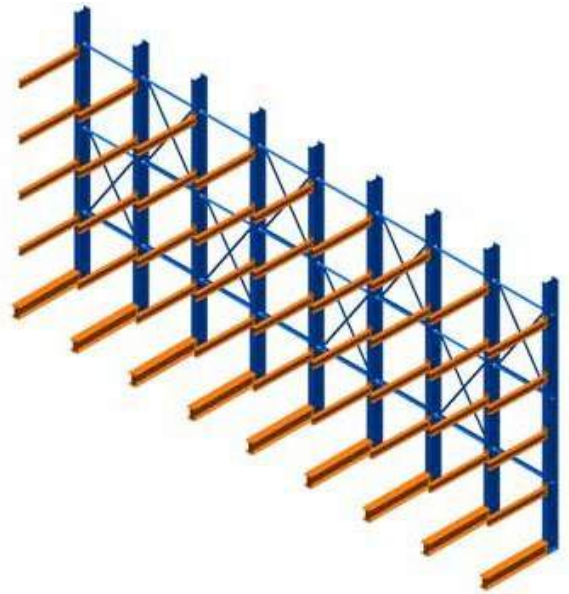
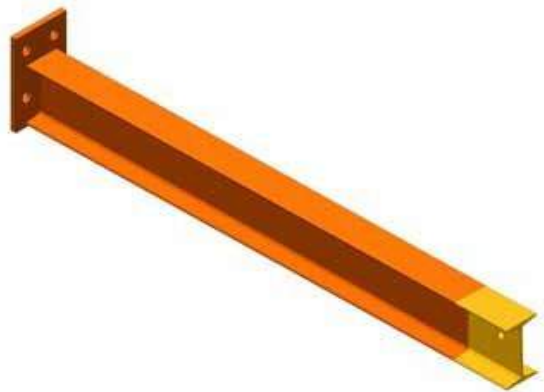
Arms are adjustable on 4" centers, are attached to the column with (x4) 3/4" Grade 5 hardware and are welded with an incline of 1/4" per foot of arm length. For example: 4' arm is 1" higher at the front tip than at column connection.

Arms are available with a variety of accessories and can be designed to accept solid and permeable decking based on the specific requirements of the application.

ARM	AVAILABLE LENGTH	AVAILABLE CAPACITY
3" Beam Arms	1 1/2' (18")- 4 1/2' (52")	4,000 - 1,200
4" Beam Arms	2'(24")- 5'(60")	5,500 - 2,100
5" Beam Arms	2'(24")- 5'(60")	8,900 - 3,500

## Arm Accessories

Arms are supplied with painted yellow tips. Load arms are available with a number of finishing options based on the specific application including 1"Ø rod and chain assemblies. Arm End stops and Base End Stops are available in a range of heights, custom arm angles, and decking attachment options.



## Bolted Rod and Socket

A Bolted Rod and Socket assembly creates a removable stop at the end of the arm or base. The rod is removed for loading bundled material into the system and then the rod is placed into a socket to create an end stop. A chain is welded between the rod and socket to secure the rod to the arm. Rods can be easily replaced if damaged.





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