

# | Pallet Storage System



NILKAMAL STORAGE SYSTEMS

We Protect your product

**Increase your storage**

**Improve your Labor Productivity**

While enhancing Safety, Hygiene, & Ergonomics

[www.nilkamalmaterialhandling.com](http://www.nilkamalmaterialhandling.com)



## WHY USE NILKAMAL PALLET STORAGE SYSTEM

- All India Presence with more than 2000 Installations in single calendar year.
- Following the design standards that meets the International requirements.
- Solutions that can make big difference, Nilkamal being the only company with highest number of solutions in Warehousing products that includes Racking systems, Equipments, Pallets, Totes. We can suggest you the best solution that suits your requirements.
- R&D constant evolution process, Nilkamal having inhouse testing facilities, structural engineers, develops all products first time perfect over the years, be it ASRS with heights varying 30 mtr, Shuttle racks with 12+ mtr heights or cold stores special solutions.
- Installation that makes the solutions more reliable as products are installed professionally and as per standards which local markets barely knows. Our oldest installations are yet working well without much maintenance.
- Value of the finish of products and accuracy of the products that is manufactured make sure that designed products give 100% output.



RELIABILITY



INCREASE SPACE



DURABILITY



SAFETY

# DESIGN OF COMPONENTS

The racking components are designed as per Indian / European Standards as described below  
Indian Standard

IS 800 – General construction in steel

IS 801 – Code of practice for use of cold formed light gauge steel structure members in building construction

The above codes are used for general steel building design, thus the same does not cover the critical design parameters of rack designing. The limitations of the above IS code (for steel building design) essentially require rack to be designed as per European standard specific to Rack design. The details of the same are given below.

## European Standards for design

FEM: 10.2.01: Terminology and description of storage systems.

FEM: 10.2.02: EN 15512 Design code for Racking

EN 15635 : 2007- Steel static storage system; Adjustable pallet racking guidelines for safe use.

EN 15878 -Steel Static Storage System - Adjustable pallet racking - Terms and definition

# RAW MATERIAL

The components are manufactured from superior quality cold rolled/ hot rolled sheets of steel conforming to EN 10025/ EN 10327 with minimum yield stress of 250 N/mm<sup>2</sup> and or 420 ys. The corresponding IS code for steel used is IS 10748 , IS 513 etc. All fasteners like nuts, bolts are as per IS 1363.

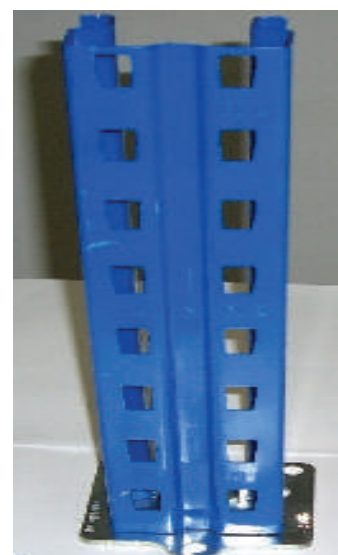
## System Description

The proposed pallet storage system as shown in attached drawing consists of Upright, horizontal & diagonal struts, beams and various components for imparting structural stability to the entire system. The uprights frames are fastened to floor using base plate and anchor fasteners. The unique features of each components is described below

### Upright

The upright is 10/12 bend roll formed section manufactured on precision roll forming line to ensure uniform profile without any twist. The uprights are powder coated on automated line.

The uprights have slots at 50mm pitch. Accurate Punching making sure of load transfer to land and increases the life span of the overall products.



# SYSTEM DESCRIPTION

## Base Plate

The base plate is powder coated with provision for fixing expansion bolts and dimples for locating shims. The lips are provided for locating the upright which also prevent rotation.

## Hook Connector

5 hooks for proper fitting Thickness 4 mm. High Quality powder coating with a medium coating thickness of 50µm.

## Beam with hook connector

The beams are Box type construction made with by roll forming. The beams are manufactured from single sheet having twin top profiles using latest technology. The twin top design offer maximum resistance to torsional failure. The twin top design also does not require continuous welding throughout the length of the beams and only the hook connectors have to be welded to the beams.

## Diagonal and Horizontal Struts

The struts are made of C-Section with four bends. The struts are galvanized type. These provide the stability to the uprights.

## Hardware

All fasteners supplied will be electro-galvanized conditions confirming to IS codes.



# STANDARD DESIGN & PROCEDURE

**All racking systems components are designed based on the load level requirements;**

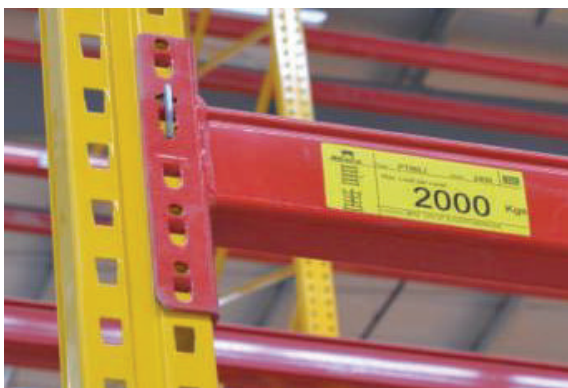
- Individual level load varied from 600Kg / level to 4500 Kg / Level can be designed;
- Total rack loads varied from 3000 Kg to up to 29000Kg loads;
- Height can go as long as 30 mtr as well for AS/RS.

All Racking layouts are made on Auto CAD with proper suggestion on equipment and load carrying capacities of Racks with actual size of Pallets with Storage achieved through racking system suggested.

Our offers includes detailed techno-commercial and are based on the drawings approved by our customer and follows the standards defined in the same. These can be explained in personal through personal meeting related to operational effectiveness, storage achievement and safety precautions taken care while designing the system.

## System or Solutions offer for Palletized materials:

- Selective Pallet Racking with Articulated Fork lifts, Very Narro Aisle (VNA), standard Reach Trucks, Stackers
- Double Deep Pallet Racking systems with Articulated Fork lifts or Double deep Reach Trucks
- Drive In / Drive Through Pallet Racking system.
- Drive In / Drive Through Pallet Racking with Shuttle Operations
- Mobile Pallet Racking Systems
- AS/RS Racking



Load Labels with all systems; 5 lip hook connectors for optimum load



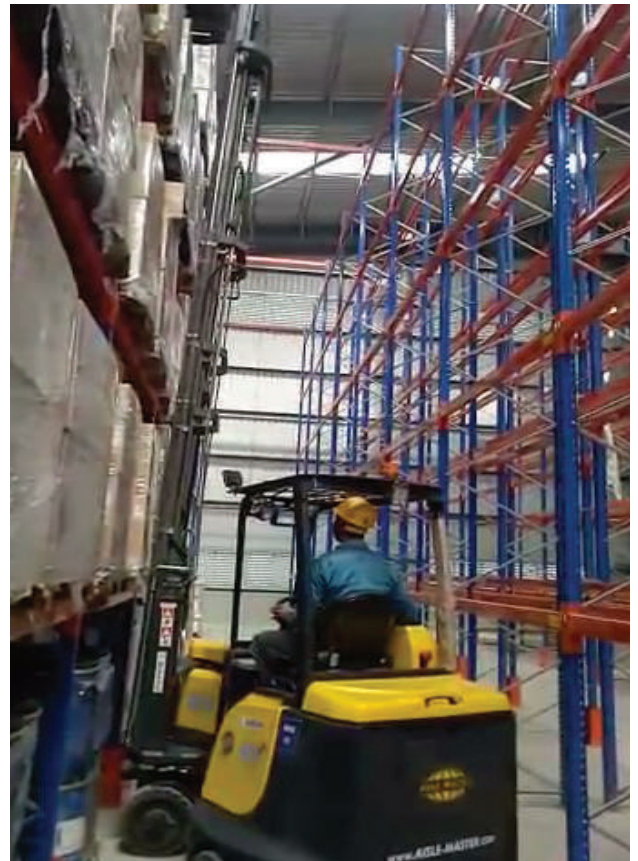
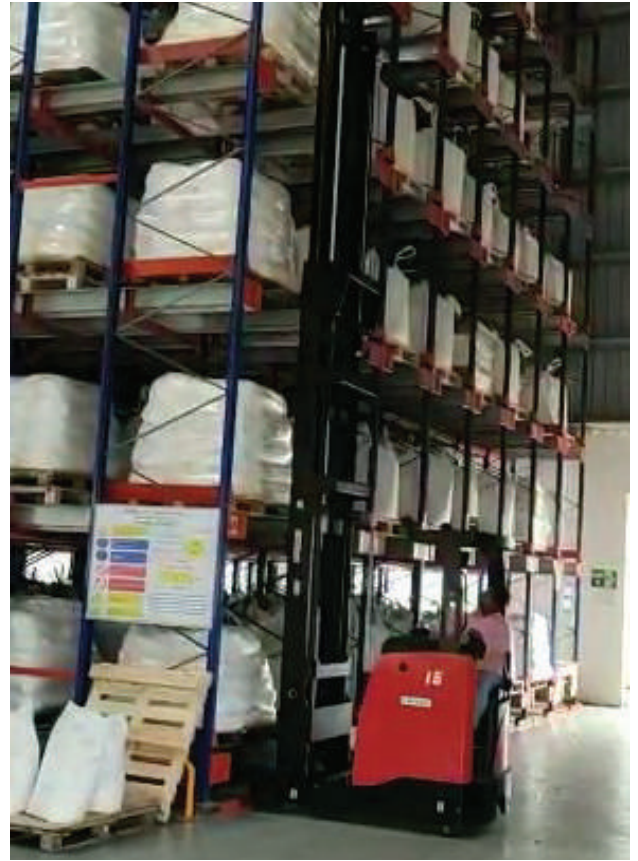
Optimum design 3 upright frames, engineered solution



Aisle Raw guards for Frame safety while equipment drive



Example of wide range for decking for different loads & applications



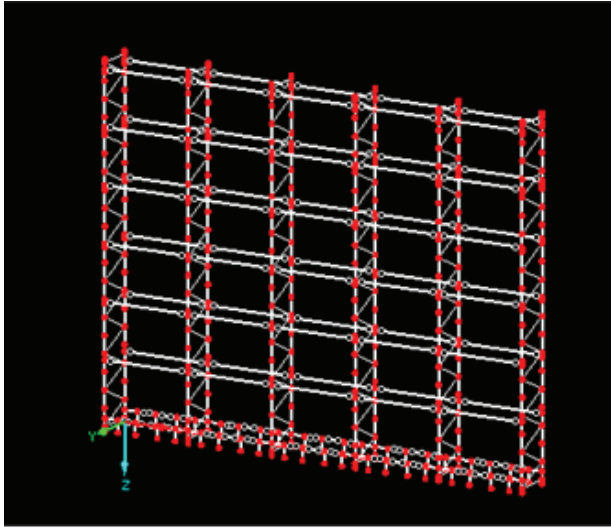
# STRUCTURAL ANALYSIS

## Structural Analysis On R-stab As Per FEM

- 3-d Modeling
- P-delta Analysis
- Stress Calculation
- Members Verification As Per Fem: 10.2.02: En 15512

## Reference Code of seismic design

- FEM 10.2.08 - Recommendations for the design of static steel pallet racks under seismic conditions
- IS 1893:2002 - Criteria for earthquake resistant design of structures



# STANDARD DESIGN & PROCEDURE

## Pre treatment

All components are to be subjected to anti corrosion treatment by following the process of Degreasing, Rinsing, Phosphating, Rinse & De- Mineralized water rinsing.

## Final Finish

The final finish of the components is achieved on fully automated conveyor-based powder coating line. The components are oven baked after powder coating at curing temperature. It is making sure of adhesion of powder to product and giving long life to the product, the minimum dry film thickness is 50 to 80 microns is assured on the automated line.



## Standard Color

Colors offered are

- ① Upright: Pepsi Blue;
- ② Beam: Orange,
- ③ Struts: Galvanized
- ④ Accessories as defined in offer

## Testing facilities at plant

### Stiffness Test

This is carried out the beam-upright connection stiffness



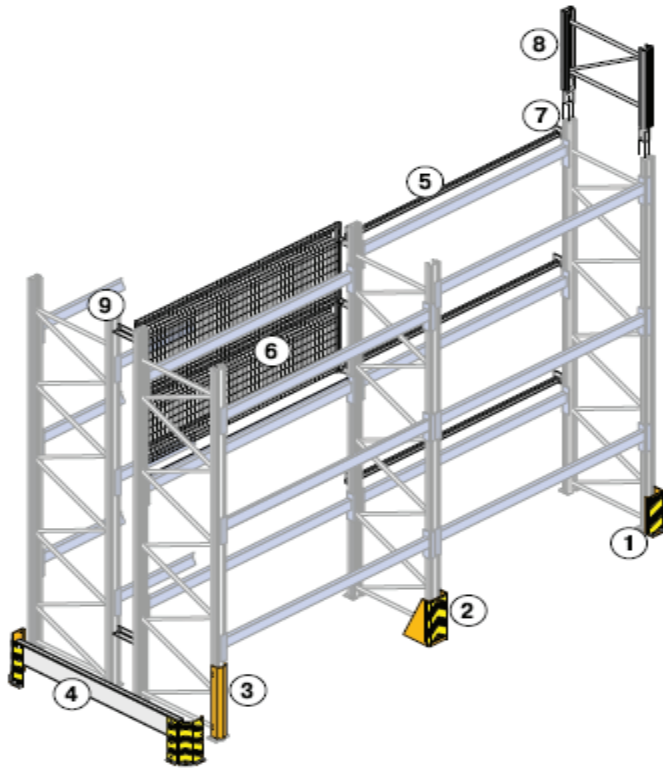
### Compression Test Buckling Test & Stub Column Test

This test is carried out to find out the effective area of the upright.



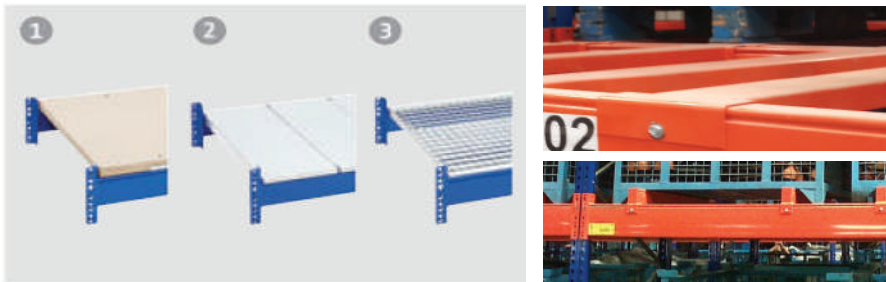


# BROAD RANGE OF ACCESSORIES & SAFETY EQUIPMENT FOR ANY STORAGE APPLICATION



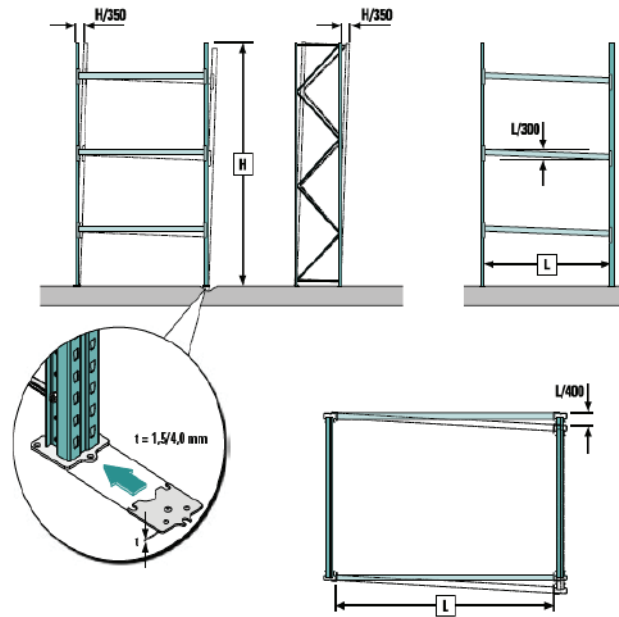
- 1 Column Guard L Shaped
- 2 Column Guard U Shaped
- 3 Upright Protector
- 4 Aisle Row Guards
- 5 Back stoppers
- 6 Back Cladding
- 7 Upright connector
- 8 Frame Extension
- 9 Spacer for back to back rows

# LEVEL ACCESSORIES FOR NON-STANDARD PALLETIZED OR HEAVY NON PALLETIZED MATERIALS



- MDF Boards
- Steel Drop over panels
- Wire Mesh decking
- Pallet Support Bars
- H frames
- Gratings
- Fork Entry bars for specialized load like Toos, 4 leg inverted Pallets etc

# INSTALLATION THAT MAKES THE DIFFERENCE TO THE DESIGN AND RELIABILITY OF THE SYSTEM



- Nilkamal Owns Total Strength of 50+ Skilled Supervisor / Technician 200+ workmen's .
- Also having Approved Contractors list having more then 15 to 20 years experience in storage system industries.
- Also scratches/ paint peel-off are given spray touch-up.
- Given Plant Training as well on site training to all Technician and Contractors
- Safety of worker is given highest priority..
- Offer post installation audit / regular check ups for any damages to racks / alignment / anchor issues / flooring ,etc.



# CLIENTELE



5 ASRS installation



And many more.....

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