

Steel Mezzanine Racking System

1. What Is Mezzanine Racking?

Mezzanine racking (also called a steel mezzanine floor system or steel platform) is a raised steel structure built inside a warehouse to create an extra storage or working level above ground level. It combines steel columns, main and secondary beams, floor decking, staircases and safety guardrails into one engineered system — doubling or tripling the usable surface area of the building without the cost of a construction extension.

A mezzanine can be freestanding, or supported directly by pallet racking (rack-supported mezzanine), making it one of the most flexible and cost-effective ways to increase warehouse capacity. Systems are fully bolted, so they can be dismantled, relocated and reconfigured as operations change.

- **Vertical space utilisation:** turns unused headroom into productive storage or working area.
- **Two configurations:** freestanding steel platform or rack-supported mezzanine.
- **Relocatable:** fully bolted construction — dismantle, move and re-erect as needed.

August anniversary promotion activities

Advantage:

1. Multiple colors can be selected and mixed.
2. The storage rate can be up to 90%
3. Reduce the loss of goods.
4. Convenient warehouse management
5. Warehouse space can be fully utilized

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Fig. 1 — Complete mezzanine system: columns, beams, decking, staircase and guardrails

2. Key Features & Benefits

- **Double / Triple Usable Space:** Adds full storage or working levels inside the existing building envelope.
- **Customisable Layout & Load:** Column grids, floor height and live loads are engineered to your pallet, product and handling method.
- **Flexible Decking Options:** Bar grating, galvanized perforated steel plate, particle board, wood or concrete — selected per application.

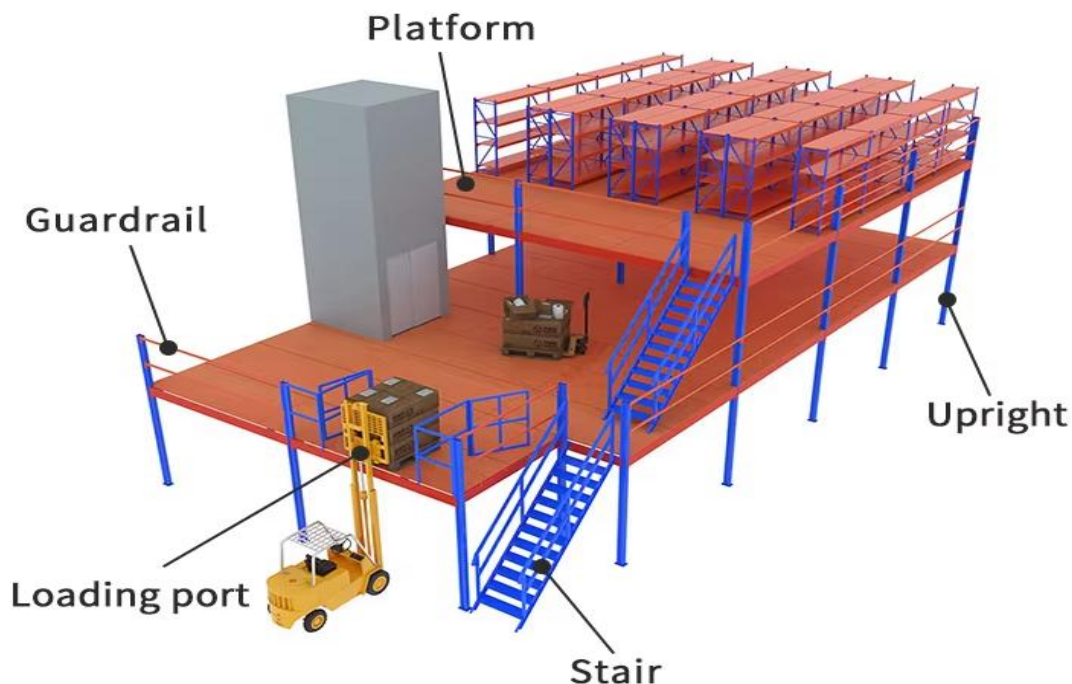
- **Rack-Supported or Freestanding:** Integrates with selective, drive-in, cantilever or shelving systems, or stands alone.
- **Quick, Clean Installation:** Bolted prefabricated components — fast erection with minimal disruption to operations.
- **Disassemblable & Reusable:** Systems can be relocated or reconfigured when your warehouse layout changes.
- **Integrated Safety:** Handrails, mid rails, toe boards, staircases and swing gates included as standard.

3. Components of a Mezzanine System

- **Columns & Base Plates:** Hot-rolled steel columns with base plates and levelling shims, anchored to the verified concrete floor.
- **Main Beams:** Primary load-bearing beams spanning the column grid and carrying the deck above.
- **Secondary Beams:** Closer-spaced beams distributing the floor load to the main beams.
- **Floor Decking:** Bar grating, galvanized perforated steel plate, particle board or wood — chosen by load and use.
- **Staircases:** Industrial staircases with handrails, from 60° access stairs to 45° comfort stairs with landings.
- **Handrails & Guardrails:** Perimeter protection with top rail, mid rail and 100–150 mm toe board at 1,100 mm height.
- **Safety Gates:** Swing gates and up-and-over gates control access at loading and stair openings.
- **Bracing System:** Cross bracing and tie beams give the structure stability against horizontal forces.

STRUCTURAL ANALYSIS

Safe and stable, saving factory rent, labor costs, and inventory losses



4. Technical Specifications & Configuration Options

The tables below list typical values for a standard mezzanine racking system. All dimensions and capacities are engineered to order — final values are confirmed after site survey and load calculation.

Platform Configuration (Typical)

Parameter	Typical Value / Range	Notes
Floor live load	200 – 500 kg/m ² (heavy-duty up to 1,000)	Calculated per project
Column grid	2.0 – 3.0 m typical (up to 6 m with larger sections)	Per layout & span
Floor-to-floor height	2.5 – 3.0 m per level	Per access & storage need
Number of levels	1 – 3 levels	Single mezzanine to multi-level
Staircase	60°–90° access stairs, width 600 – 1,000 mm, with handrails	Code-compliant
Handrail height	1,100 mm (top rail + mid rail + toe board)	Per local regulation
Rack integration	Selective / drive-in / cantilever / shelving below or above	Optional

Material & Finish (Typical)

Parameter	Standard
Steel grade	Q235B / Q355B structural steel (or equivalent)
Surface treatment	Shot blasting (Sa2.5) + electrostatic powder coating
Coating thickness	60 – 80 µm
Standard colours	Structure: RAL 5010 (blue) · Deck: RAL 7035 (light grey) — custom RAL available
Anchoring	Expansion anchors into verified concrete floor (typical 150 mm+, C25/C30 or better)

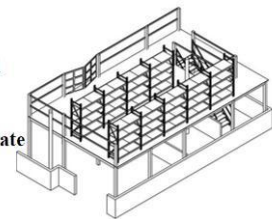


Mezzanine floor

Structure: mezzanine with stair only
Application:
The height of the warehouse is required to be greater than 4.3 meters

Mezzanine floor

Structure: mezzanine with stair and sliding door
The racks and mezzanine floor systems are two completely separate parts

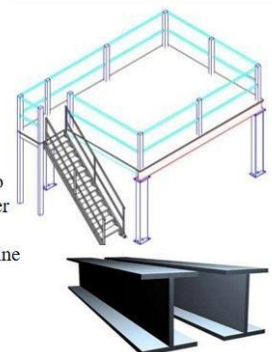


Multi tiers mezzanine floor

Structure: 3 levels mezzanine floor with stair.
The racks and mezzanine floor systems are two completely separate parts
Application:
The height of the warehouse is required to be greater than 6.5 meters

H steel structure mezzanine floor

Structure: Upright in H shape post.
Application:
1. The distance between the two columns is required to be bigger than 4.2 meters.
2. The load capacity of mezzanine floor is bigger than 1000kg



5. Types & Applications

Types

- **Freestanding Steel Platform:** Independent structure for storage, picking, packing or office areas.
- **Rack-Supported Mezzanine:** Deck supported by pallet racking below — combines dense storage and a working level.
- **Full-Area Mezzanine:** Covers the entire warehouse floor area, maximising usable surface.
- **Partial Mezzanine:** Targeted platforms above specific zones — picking, despatch or break rooms.

Applications

- **E-Commerce & Order Picking:** Upper deck for storage, lower deck for picking and packing stations.
- **Small Parts & Spare Parts Storage:** Multi-level platforms with shelving for high-SKU density.
- **Office / Work Platforms:** Raised offices, break rooms or quality-control areas above the warehouse floor.
- **Retail Backrooms:** Compact platforms that add storage capacity in limited back-of-store space.
- **Packaging & Assembly:** Extra working levels close to goods flow, reducing travel time.

6. Frequently Asked Questions

Q: What is the difference between mezzanine racking and a steel platform?

A: The terms are largely interchangeable. Mezzanine racking usually refers to a platform integrated with or supported by pallet racking, while a steel platform is a freestanding structure. Both use the same column-beam-deck construction.

Q: What floor load can a mezzanine support?

A: Typical live loads range from 300 to 800 kg/m², with heavy-duty H-beam platforms up to 1,000 kg/m². The exact capacity is calculated per project from your pallet weights, handling equipment and usage.

Q: Can mezzanine racking be relocated?

A: Yes. Systems are fully bolted (no welding on site), so they can be dismantled, moved and re-erected in a new location, and reconfigured as your operation changes.

Q: Which decking option should I choose?

A: Bar grating suits light loads with sprinkler penetration and ventilation; steel plate suits heavy loads and clean environments; particle board or wood suits offices and picking areas where flat, smooth surfaces are needed.

Q: Can pallet racking be placed under or on the mezzanine?

A: Yes. Rack-supported mezzanines place storage below and a working level above, and racking can also be added on the deck for additional vertical storage.

7. Plan Your Mezzanine System

A steel mezzanine is the most cost-effective way to multiply the usable space of an existing warehouse. Whether you need an e-commerce picking floor, a rack-supported platform or an office above the warehouse, the system is engineered to your building, load and workflow.

Send us your warehouse dimensions, clear height, required floor load and intended use — we will return a free layout drawing, load calculation and quotation.



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Mezzanine Platform Racking Installation Guide

The following is a complete installation guide for standard mezzanine platform racking, organized as an outline with detailed content in logical order.

1. Before Installation — Prerequisites

1.1 Site Survey and Assessment

A full on-site survey must be conducted before installation:

- **Floor flatness check:** Use a spirit level to check floor flatness; the deviation must be within the allowable range (typically $\leq 5\text{mm/m}$). If the floor is uneven, treat it by grinding, placing steel shim plates, or pouring a concrete leveling layer.
- **Floor load capacity assessment:** Confirm that the floor can support the total weight of the racking and stored goods. If the load capacity is insufficient, reinforce the floor or add load-bearing support plates.
- **Site dimension measurement:** Precisely measure the warehouse length, width, and height, and plan the racking layout based on the measured data.
- **Obstruction check:** Check the site for obstructions such as fire protection pipes, electrical wiring, and ventilation ducts, and ensure the installation area is kept away from fire sources and flammable materials.
- **Power and lighting check:** Confirm that the power supply and lighting facilities on site meet the construction power requirements.

1.2 Design Drawing Confirmation

- Confirm a reasonable racking layout drawing based on storage requirements. The drawing should include detailed information such as racking dimensions, number of levels, load capacity, and aisle width.
- Confirm the drawing with the designer before installation to ensure the design meets actual needs.
- Construction personnel should be familiar with the drawings and clearly understand the structural type, dimension parameters, and load requirements of the racking.

1.3 Personnel Organization and Qualifications

- **Personnel allocation:** Assign a construction supervisor, technical supervisor, quality inspector, and safety officer. The construction crew should include scaffolders, installers, electricians, and other specialized personnel.
- **Certified work:** All construction personnel must hold valid certifications and have relevant qualifications and experience.
- **Safety training:** Conduct safety education and a technical briefing for all personnel before construction, covering safety operating procedures, working-at-height precautions, emergency response measures, and more.

1.4 Safety Precautions

- Installers must wear personal protective equipment (PPE) such as hard hats, gloves, safety shoes with toe protection, and safety goggles.
- Safety warning signs should be set up on site to keep unauthorized personnel out of the construction area.
- When working at height, use scaffolding or a lifting platform and fasten the safety harness.
- Wire ropes must be secured with dedicated hooks/clamps, with no fewer than 3 wire rope clips.

2. Preparing Equipment and Tools

2.1 Measuring and Positioning Tools

Tool Name	Purpose
Tape measure (5m, 10m)	Measuring dimensions, positioning
Spirit level (accuracy 0.02mm/m)	Measuring levelness
Laser plumb / plumb line	Checking upright verticality
Chalk line / laser layout tool	Marking upright positions
Marking pen	Marking

2.2 Drilling and Fastening Tools

Tool Name	Purpose
Electric drill / hammer drill	Drilling holes (for expansion bolts)
Torque wrench	Tightening bolts to design requirements

Tool Name	Purpose
Open-end wrench / box-end wrench	Tightening bolts
Screwdrivers (Phillips and flat-head)	Tightening screws
Socket wrench / impact wrench	High-efficiency bolt tightening

2.3 Cutting and Welding Tools

Tool Name	Purpose
Angle grinder	Cutting, grinding
Welding machine	Welding connections
Circular saw	Cutting materials

2.4 Lifting and Transport Equipment

Equipment Name	Purpose
Forklift	Transporting large components
Lift / lifting platform	Working at height, installing upper-level components
Crane / manual chain hoist	Hoisting heavy materials
Frame scaffolding (mobile scaffold)	Working platform at height

2.5 Auxiliary Tools and Materials

Tool / Material	Purpose
Rubber mallet	Tapping beams into position
C-clamps	Temporarily securing components
Pry bar	Adjusting component positions
Vacuum cleaner	Site cleanup
Anti-rust paint / touch-up paint pen	Repainting damaged coating

3. Installation Procedure

3.1 Foundation Work and Floor Preparation

1. **Site cleanup:** Clear the construction area of obstructions and debris.
2. **Layout and marking:** Based on the design drawing, use a chalk line or laser layout tool to mark the upright positions; snap the upright base layout lines and beam installation control lines, ensuring spacing and diagonal deviations meet the requirements (typically $\leq 3\text{mm}$).
3. **Floor drilling:** Drill holes with a hammer drill according to the upright base layout lines; the hole diameter and depth are determined by the expansion bolt specifications.
4. **Floor leveling:** If the floor is uneven, perform leveling treatment.

3.2 Upright Installation

1. **Erecting uprights:** Place each upright vertically at the marked position. One person holds the upright while another assists with positioning.
2. **Verticality calibration:** Check verticality with a plumb line or laser plumb; the deviation must be $\leq H/1000$ (H = upright height). Adjust by adding shims at the base of the upright if necessary.
3. **Securing uprights:** Choose the fixing method according to the floor material — use chemical anchors for concrete floors; use expansion bolts for ordinary floors, with bolt length $\geq$ floor thickness + 100mm. Only proceed to the next step after the uprights are securely installed.
4. **Rust protection:** Apply anti-rust paint to the base of the uprights where they contact the floor, or install anti-rust sleeves.

3.3 Beam Installation

1. **Beam positioning:** Determine the height position of each level's beams according to the design drawing; you can first count the hole positions to locate them, ensuring the left/right sides and both ends are at the same height.
2. **Beam connection:** Align the hooks or connectors at both ends of the beam with the slots or connection holes of the uprights. Push the beam down firmly until it snaps fully into place.
3. **Bolt tightening:** If bolts are used for connection, tighten them with a torque wrench to the design requirement (typically 50–70 N·m), avoiding over- or under-tightening.
4. **Recommended sequence:** Install the beams starting from the lowest level and work upward level by level.

3.4 Decking Installation

1. **Placing decking:** Place the deck panels evenly on the installed beams.
2. **Securing decking:** Choose the fixing method based on the deck material — steel panels can be welded or bolted; wood panels can be secured with screws.
3. **Deck gaps:** Leave a 3–5mm gap between adjacent deck panels to prevent deformation or compression caused by thermal expansion and contraction.
4. **Load distribution:** Ensure the decking is in full contact with the beams to avoid local unsupported areas. Heavy-duty racking requires stiffeners or support beams beneath the decking.

3.5 Stair and Guardrail Installation

1. **Stair installation:** The stair slope must be $\leq 45^\circ$, and the tread width ≥ 250 mm. Movable stairs can be installed first to facilitate construction; welded fixed stairs should be installed after the main racking structure is complete.
2. **Guardrail installation:** Guardrail height is typically no less than 1050–1100mm, mid-rail height ≥ 500 mm, and post spacing ≤ 1000 mm. Toe boards should be no lower than 100mm.
3. **Opening protection:** Install movable guardrails or gates at racking openings, equipped with locks.

3.6 Connector Reinforcement and Overall Adjustment

1. **Connector inspection:** Check and tighten all bolts, nuts, and other connectors.
2. **Level adjustment:** Use a spirit level to adjust the overall levelness of the racking.
3. **Verticality recheck:** Re-check the overall verticality of the racking.

4. Post-Installation Acceptance

4.1 Appearance and Structural Inspection

- Check that all components are securely installed and that connection points are tight.
- Check that welds are sound and that bolts are tightened.
- Check the racking surface coating for damage.

4.2 Load-Bearing Test

- Evenly place goods of the specified weight on the racking to simulate storage conditions.
- Observe any deformation of the racking and check whether component connections have loosened.
- If problems are found, make timely adjustments and reinforcement.

4.3 Safety Signage Installation

- Install safety signs in prominent locations, such as “No Climbing” and “Load Capacity Limit.”
- Install protective corner guards at the base of the uprights to reduce damage from forklift impacts.

4.4 Cleaning and Documentation Archiving

- Clean up debris and waste generated during installation.
- Develop a daily maintenance plan for the racking and conduct regular inspections and maintenance.
- Organize and archive technical documents such as installation records and test reports.

Note: The above is a general installation guide. Actual installation should strictly follow the manufacturer's installation manual and design drawings. For large or complex racking systems, it is recommended that installation be carried out by a professional installation team.