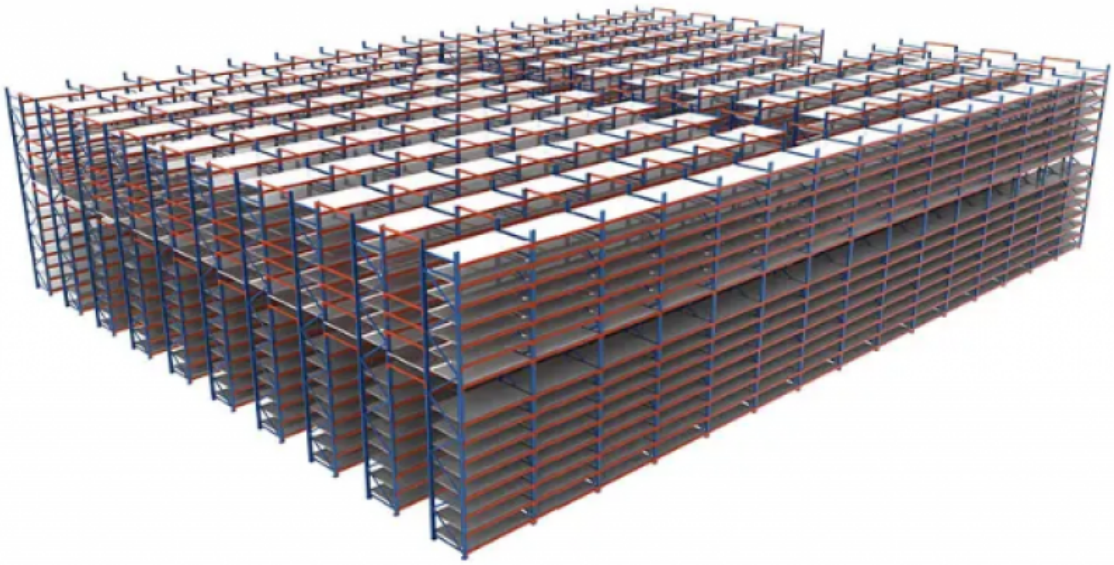
Warehouse Mezzanine Floor Solution: How HEDA Shelves Accelerates Multi-SKU E-Commerce Order Fulfillment



02 • 3D Rendering

3D Rendering

Once the project layout is finalized, we can provide complete 3D renderings for project implementation.

Guangzhou, Guangdong Nov 9, 2026 (Issuewire.com) - High-velocity e-commerce fulfillment centers and multi-channel retail distribution hubs compress horizontal walking routes across multi-SKU pick faces through an engineered warehouse mezzanine floor solution. This engineering design establishes high-density pick locations, rapid dispatch flow, and expanded storage volume within existing building parameters. Promotional order spikes and broad stock-keeping unit (SKU) profiles place severe operational demands on existing facility footprints, making vertical square footage creation a fundamental engineering priority. Founded in 2001, Guangzhou HEDA Shelves Co., Ltd. brings more than 20 years of warehouse storage manufacturing experience to multi-tier fulfillment platform engineering. Transforming open vertical headroom into modular multi-level picking decks, mezzanine floor systems physically separate high-volume pallet replenishment from labor-intensive carton picking, converting idle cubic volume into organized pick locations that accelerate order throughput across demanding retail dispatch schedules.

Vertical Routing Topology and Dense SKU Allocation Mechanics

Modern e-commerce fulfillment incorporates structural separation between bulk replenishment movements and fast-moving piece-picking operations. A multi-tier mezzanine creates a vertical routing topology. Ground levels retain wide-aisle pallet racking for full-pallet storage and forklift travel. Elevated decks independently support dense configurations of medium-duty and longspan shelving, maintaining steady order processing without cross-traffic interference. Upper picking levels organize thousands of accessible SKU faces along interconnected aisles, allowing pickers to retrieve discrete items into rolling order carts or totes with shortened step counts between bin locations. Floor surface continuity and non-slip surface profiles allow personnel to maneuver order carts and mobile ladder carts in bidirectional traffic lanes, supporting continuous material circulation during simultaneous batch-picking and inventory restocking windows.

Multi-Tier Structural Configurations and Ergonomic Aisle Engineering

Order fulfillment efficiency requires platform framing tailored to warehouse vertical clearances and ergonomic human movement. HEDA Shelves designs mezzanine systems supporting two to four functional operational levels, incorporating ground access plus one to three elevated deck tiers. Structural upright column heights are fabricated from 2,000 mm to 12,000 mm to fit varied facility clear heights. Warehouses with clear heights from 4,500 mm readily deploy two-tier platforms. Tall distribution centers with clearances exceeding 8,000 mm to 9,000 mm configure three-tier or four-tier installations. Aisle widths on elevated decks are dimensioned to human walking strides and equipment turning envelopes, standardizing walkway clearances between 1,000 mm and 1,500 mm for manual cart passage, alongside main arterial corridors engineered for bidirectional passing. Modular upright slot punching allows shelf support beams and deck elevations to adjust in standardized increments, accommodating fluctuating carton dimensions and seasonal inventory shifts preserving structural stability across the facility footprint.

Ergonomic Decking Selection for Acoustic Comfort and Fire Code Compliance

Floor decking selection directly determines acoustic performance, walking traction, point-load distribution, and regulatory fire suppression compliance within multi-level picking operations. Interlocking roll-formed steel decking provides a rigid, continuous walking surface with sound-dampening characteristics, reducing operational ambient noise generated by foot traffic and hard-wheeled picking carts. For order assembly areas requiring enhanced footwear traction, heavy-gauge checkered steel plate provides a slip-resistant wear surface that maintains structural grip across active order fulfillment zones. To accommodate varied live-load densities across multi-SKU layouts,

mezzanine floor systems are engineered with customizable load ratings from 300 kg/m² for lightweight piece-picking tiers up to 1,000 kg/m² for dense tote-staging corridors. Where high-velocity fulfillment facilities manage small cosmetic, apparel, or electronics inventory, perforated steel panels offer a balanced alternative to wide-aperture grating: the micro-perforated geometry permits overhead sprinkler water penetration and ambient ventilation while preventing loose hardware or diminutive items from dropping to lower operational aisles. In multi-tier facilities requiring maximum fire code compliance, open hot-dip galvanized steel grating ensures unobstructed sprinkler flow and natural downward illumination. Structural secondary joists positioned beneath floor panels distribute localized cart wheel loads directly into primary support girders, maintaining floor panel planar flatness under continuous rolling operations.

Vertical Pallet Transfer and Integrated Fall Protection Infrastructure

Replenishing thousands of elevated SKU pick faces requires coordinated vertical cargo staging coupled with continuous elevated edge containment. HEDA Shelves equips fulfillment mezzanines with integrated industrial steel staircases featuring uniform rise-and-run tread geometry, high-traction slip-resistant nosings, and continuous full-height handrails for ergonomic personnel transit between tiers. Deck perimeters incorporate continuous 1050 mm industrial steel safety guardrails combined with 100 mm continuous kickplates, maintaining physical tool and cargo retention along elevated walkways. To facilitate rapid vertical replenishment, intermediate decks incorporate balanced dual-swing pallet safety gates and dedicated lift platform landing bays. Ground-level forklifts elevate bulk pallet loads directly into upper staging openings, where pivoting safety gates maintain a continuous physical barrier between upper warehouse personnel and the exposed floor edge throughout loading and retrieval sequences.

Precision Fabrication Protocols, Authoritative Certifications, and Project Delivery

Fulfillment infrastructure reliability depends on certified structural materials and controlled industrial manufacturing. HEDA Shelves manufactures upright columns, support girders, and floor decking profiles from certified Q235B cold-rolled structural steel, evaluated for uniform yield strength and structural ductility. Fabrication follows a standardized ten-stage manufacturing protocol, utilizing automated multi-station CNC punching to achieve precision hole pitches, continuous multi-roll forming for reinforced profile geometry, and robotic gas-shielded welding for consistent joint penetration. Metal components undergo multi-stage chemical cleaning, acid washing, and phosphating pretreatment prior to automated electrostatic powder coating and high-temperature oven curing at 180°C to 200°C, producing a scratch-resistant finish in standard blue, orange, or custom RAL specifications. Structural fabrications hold European CE CPR certification (No. 2435-CPR-8605159) under EN 1090-1:2009+A1:2011, operating within an ISO 9001:2015 certified quality management system (Certificate No. 18624Q00169R0M, valid through June 2027) and satisfying RoHS environmental compliance. Operating a 30,000-square-meter manufacturing plant in Foshan staffed by more than 300 skilled workers and sustaining a monthly steel processing capacity of 30,000 tons, HEDA Shelves provides 24-hour project response, delivers detailed AutoCAD architectural layout drawings within 3 days, and supplies complimentary 3D rendering models upon contract confirmation, supporting reliable mezzanine deliveries within 25 to 50 working days across more than 10,000 completed global warehouse projects.

Commercial Sourcing Value and Direct Manufacturer Engagement

Procuring a warehouse mezzanine floor solution directly from a source manufacturing enterprise removes commercial intermediary markups, accelerates structural engineering coordination, and secures direct technical support tailored to dynamic e-commerce fulfillment metrics. Multi-tier vertical development allows fulfillment operations to expand active SKU storage capacity and order picking

throughput within existing warehouse walls, preserving capital investments and commercial resources. Configured as modular and demountable structural assets, engineered mezzanines can be expanded, reconfigured, or relocated as business product lines and order volumes evolve. To evaluate e-commerce facility parameters, receive customized AutoCAD layout proposals within 3 days, or secure direct factory pricing for an engineered HEDA Shelves platform installation, connect with the technical team through the official international portal at https://www.hedarackstorage.com/.



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