

INDIAN METAL BUILDING FORUM (IMBF)

METAL BUILDING A–Z RESOURCE INDEX

Structural members • systems • design • fabrication • erection • QA/QC • NDT • connections • Indian standards

Connecting India's Metal Building Ecosystem
Connect • Collaborate • Create • Construct • Certify+

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Purpose of the Index

This A–Z index is designed as the master map for the IMBF Resource Centre. Each term can become a dedicated study page containing: **definition** → **purpose** → **location** → **labelled diagram** → **load path** → **design considerations** → **fabrication** → **erection** → **QA/QC checkpoints** → **failure modes** → **applicable standards** → **Indian practice** → **optimization**.

Metal building systems are integrated assemblies of primary framing, secondary purlins/girts, bracing and roof/wall cladding.

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A

Term	Definition / Study Scope
Anchor Rods	Rods connecting a steel column base/base plate to the supporting foundation interface.
Apex	Highest point of a pitched roof where rafters meet.
As-Built Drawing	Record drawing showing the structure as actually fabricated and erected.
Axial Force	Force acting along a member axis; tension or compression.

B

Term	Definition / Study Scope
Base Plate	Plate at a column base transferring forces to the supporting foundation interface.
Bay	Longitudinal space between adjacent primary frames.
Beam	Member primarily resisting transverse load and bending.
Bolted Connection	Connection using bolts, nuts and washers to transfer structural forces.
Bracing	Members providing stability and transferring lateral/longitudinal forces.

C

Term	Definition / Study Scope
Camber	Intentional curvature introduced to control service deflection.
Canopy	Roof projection, often cantilevered, beyond a wall.
Column	Vertical structural member carrying axial force and often bending.
Connection	Engineered interface joining two or more structural members.
Corrosion	Degradation of steel due to interaction with its environment.
Cold-Formed Steel	Steel formed at or near room temperature, commonly used for purlins and girts.

D

Term	Definition / Study Scope
Dead Load	Permanent load from steel, cladding, fixed equipment and other permanent components.
Deflection	Displacement of a structural member under load.
Design Load	Load or load combination used for structural design.
Diaphragm Action	In-plane structural action of roof or wall sheeting.
Drainage	Arrangement removing rainwater and limiting roof ponding.

E

Term	Definition / Study Scope
Eave	Region where roof meets the sidewall.
Eave Strut	Secondary member at the eave supporting roof and wall systems.
Endwall	Building end elevation and its supporting framing.

Term	Definition / Study Scope
Erection	Assembly and installation of steel members at site.
Erection Bracing	Temporary or permanent bracing maintaining stability during erection.

F

Term	Definition / Study Scope
Fabrication	Shop cutting, drilling, forming, fitting, welding and preparation of steel.
Fatigue	Progressive damage caused by repeated stress cycles.
Flange	Part of an I/built-up section contributing strongly to bending resistance.
Frame	Primary structural assembly, commonly columns and rafters.
Framed Opening	Structural framing around a door, window or equipment opening.

G

Term	Definition / Study Scope
Gable	Triangular end portion below a sloping roof.
Girder	Major horizontal member supporting other beams or framing.
Girt	Secondary horizontal wall member supporting wall cladding.
Gusset Plate	Plate connecting bracing, truss members or other steel members.

H

Term	Definition / Study Scope
Haunch	Deepened rigid-frame region, commonly near the eave, for higher moment demand.
Heat Number	Material identification linking steel to its producing heat and mill certificate.
High-Strength Bolt	Structural bolt specified for high-strength structural connections.
Horizontal Bracing	Bracing acting in a horizontal plane for stability and load transfer.

I

Term	Definition / Study Scope
Inspection & Test Plan (ITP)	Plan defining inspection stages, acceptance criteria, hold/witness points and records.
Impact Load	Load associated with sudden application, moving equipment or impact effects where applicable.
Industrial Building	Building intended for manufacturing, process, warehouse or industrial use.
Inspection	Planned examination or verification of material, fabrication, erection or completed work.

J

Term	Definition / Study Scope
Jamb	Vertical structural member forming the side of a framed opening.
Job Safety Analysis (JSA)	Task-based hazard identification and control document for construction/erection work.

K

Term	Definition / Study Scope
Knee Brace	Brace near the column-rafter/eave region used for stability or force transfer.
Knee Joint	Column-rafter region often carrying high bending moment and shear.

L

Term	Definition / Study Scope
Lateral-Torsional Buckling	Instability involving lateral displacement and twisting of a member.
Load Combination	Specified combination of load effects used for strength/serviceability checks.
Longitudinal Bracing	Bracing stabilizing the building in its longitudinal direction.

M

Term	Definition / Study Scope
Metal Building System	Integrated system of primary frames, secondary framing, bracing and metal roof/wall cladding.
Moment Connection	Connection designed to transfer bending moment as well as other applicable forces.
Member	Structural component such as column, rafter, purlin, girt or brace.
Mill Certificate / MTC	Material certificate containing chemical, mechanical and traceability information.

N

Term	Definition / Study Scope
NDT / Non-Destructive Testing	Testing without destroying the component, e.g. VT, PT, MT, UT or RT as applicable.
Net Section	Effective cross-sectional area after deductions for holes/discontinuities.
Node	Connection point where structural members meet, especially in trusses/space frames.

O

Term	Definition / Study Scope
Overhead Crane	Crane system supported by runway beams or other structural framing.
Out-of-Plumb	Deviation of a column/frame from specified vertical alignment.
Opening	Intentional roof/wall void requiring suitable structural framing.

P

Term	Definition / Study Scope
Purlin	Secondary roof member supporting roof sheeting and transferring loads to primary frames.
Portal Frame	Frame system used to resist lateral loads and provide stability.
Primary Frame	Main frame, commonly columns and rafters, supporting secondary framing.
Panel	Metal roof or wall cladding component.
Ponding	Accumulation of roof water caused by drainage/deflection conditions; may increase load.

Q

Term	Definition / Study Scope
QA/QC	Quality assurance/control activities covering material, fabrication, welding, bolting, coating and erection.
Qualified Welder	Welder qualified for the applicable process, position, material and required range.
Quality Record	Documented evidence that an inspection or test was completed and accepted.

R

Term	Definition / Study Scope
Rafter	Primary sloping roof member supporting purlins and transferring roof loads.
Rake	Sloping roof/endwall edge or intersection.
Ridge	Highest longitudinal line/region of a pitched roof.
Rigid Frame	Moment-resisting primary frame of columns and rafters.
Roof Bracing	Bracing stabilizing roof framing and transferring applicable forces.

S

Term	Definition / Study Scope
Secondary Framing	Purlins, girts, eave struts and related members supporting cladding.
Shear	Internal force acting parallel to a section or connection plane.
Splice Connection	Connection joining two portions of a structural member.
Stability	Ability to maintain equilibrium without unacceptable buckling or movement.
Stiffener	Component added to strengthen a web, flange or connection region.
Structural Steel	Steel used for load-resisting members and connections.

T

Term	Definition / Study Scope
Tapered Member	Built-up member with variable depth to place steel efficiently.
Tie Rod / Sag Rod	Slender tension member used to restrain/support purlins or girts where designed.
Truss	Triangulated system whose members primarily carry axial forces.
Torsion	Twisting action about a member's longitudinal axis.
Traceability	Ability to trace material, fabrication, welding, inspection and erection records to a component.

U

Term	Definition / Study Scope
Ultimate Limit State	Strength or stability condition beyond which unacceptable structural failure may occur.
Uplift	Net upward force, commonly associated with wind acting on roofs/canopies.
UT / Ultrasonic Testing	NDT using ultrasonic waves to detect/evaluate discontinuities.

V

Term	Definition / Study Scope
Visual Testing (VT)	Visual examination of steel, welds, bolts, geometry, coating and workmanship.
Vendor Drawing	Supplier/manufacturer drawing submitted for coordination/review.
Vertical Bracing	Bracing in a vertical plane providing stability and force transfer.

W

Term	Definition / Study Scope
Web	Plate between flanges, contributing to shear resistance and section stability.
Welding	Fusion joining process used to fabricate steel members and connections.
Wind Load	Load effect generated by wind pressure, suction and related effects.
WPQR / PQR	Record demonstrating qualification of a welding procedure under specified conditions.
WPS	Welding Procedure Specification defining controlled production welding variables.

X

Term	Definition / Study Scope
X-Bracing	Diagonal bracing arranged in an X pattern.
X-Connection	Connection region where diagonal members meet a common joint/gusset.

Y

Term	Definition / Study Scope
Yield Strength	Stress level associated with onset of significant plastic deformation.
Yielding	Plastic deformation that can develop when a member or connection reaches yield resistance.

Z

Term	Definition / Study Scope
Z-Purlin	Cold-formed Z-shaped roof purlin commonly used as secondary framing.
Z-Section	Z-shaped cold-formed steel section; exact use is defined by the project.

Indian Codes & Reference Map

This is a reference map, not a substitute for checking the latest BIS edition, amendments, corrigenda and project specifications. IS 800 covers general steel construction; IS 875 covers design loads; IS 1893 addresses earthquake-resistant design; IS 2062 specifies structural steel. ■cite■turn0search28■turn0search27■

Reference	Scope
IS 800:2007	General construction in steel — code of practice.
IS 875	Design loads other than earthquake; applicable part depends on load type.
IS 1893	Earthquake-resistant design; applicable part depends on structure/system.
IS 2062	Hot-rolled structural steel specification.
IS 808	Dimensions for hot-rolled beam, column, channel and angle sections.
IS 801	Use of cold-formed light-gauge steel structural members in general building construction.
Project Specifications	Project requirements, manufacturer documents and approved drawings must be checked with the applicable codes.

Required diagram library

The next phase should create simple IMBF-labelled diagrams for: complete metal-building anatomy; primary rigid frame; column; rafter; haunch; apex/ridge; purlin; girt; eave strut; X-bracing; base plate and anchor rods; bolted end-plate; welded connection; splice; truss; space frame; framed opening; roof/wall cladding; crane runway interface; drainage; load path; and typical failure modes.

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Source note: terminology was cross-checked with MBMA educational resources and metal-building terminology references.

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