

IMBF QA/QC CHECKLIST — STEEL BUILDING FABRICATION

Document Ref: IMBF-QAC-01 Revision: 01

Issuing Body: Indian Metal Building Forum Date: Oct 03, 2026

INDIAN METAL BUILDING FORUM (IMBF)

Promoting Excellence in Pre-Engineered & Structural Steel Buildings

Website: indianmetalbuildingforum.com

Phone: +91 87547 12376

Address: Plot No. 19, 20-Vijaya Nagar West Extn., Dheeran Nagar, Trichy - 620009, TN, India

IMBF QA/QC CHECKLIST — STEEL BUILDING FABRICATION

Document Ref: IMBF-QAC-01 Revision: 01

Issuing Body: Indian Metal Building Forum Date: Oct 03, 2026

JOB DETAILS

Project / Client : _____

Fabricator & Location : _____

Job / Building / Phase No. : _____

Approved QAP No. & Revision : _____

Welding Code & Edition : AWS D1.1:2006 / AISC / MBMA (Confirm contract edition)

Inspection Date(s) : _____

Inspector Name & Org : _____

1. PURPOSE AND USE

This checklist verifies shop fabrication quality of pre-engineered and structural steel buildings, stage by stage, from documents to dispatch. It follows the sequence of the attached fabrication plan and is written vendor-neutral, so any fabricator's own QAP, WPS and tolerance sheet can be checked against it.

Mark each item OK, NC (non-conformance, raise an NCR) or NA. A stage is released to the next operation only when every item is OK or NA. Reworked items are re-inspected and re-marked.

2. PRE-FABRICATION CHECKS

A. Documents, Qualifications and Calibration

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
A1	Approved Quality Assurance Plan (QAP) available at the shop	Client-approved QAP, current revision		
A2	Latest shop drawings, shop sketches and weld map issued; superseded copy withdrawn	Drawing register		
A3	Design and fabrication codes listed and available	Contract: IS 875 Part 3, IS 1893, AISC, AISI, AWS D1.1, MBMA		
A4	WPS approved, backed by PQR, displayed at welding stations	AWS D1.1		
A5	Welders, welding operators and tack welders qualified; list current	AWS D1.1 qualification records		
A6	NDT personnel certified; evaluation by Level II or III only	SNT-TC-1A		
A7	Measuring and test instruments calibrated; history cards current	Calibration register		
A8	Project requirements passed to shop (double-side welding, flatness limits)	Project particulars / order documents		
A9	Manufacturing & inspection flow charts with hold points agreed	QAP		

B. Incoming Material Inspection

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
B1	Plates, sections and coils carry size, spec and heat / coil / cast number	Tag or print on material		
B2	Mill test certificate reviewed against specified grade and filed	Material specification (e.g. ASTM A572 Gr 50, A36)		
B3	Plates traceable to mill certificate by heat or cast number	Traceability procedure		
B4	Thickness, width and length checked with micrometer, vernier and tape	Relevant material specification		
B5	Surface free of lamination/pitting; flatness & straightness checked	Relevant material specification		
B6	Coils: grade, thickness, width and coating verified	Coil test certificate		
B7	Welding consumables: classification, batch certificate and storage	WPS (e.g. ER70S-6, AWS A5.18)		
B8	Bought-out items (bolts, anchor bolts) match spec with certificates	Purchase specification		
B9	Paint: type, shade, batch number and shelf life	Job specification		
B10	Rejected material segregated, tagged and NCR raised	Incoming NCR		

Records: Incoming inspection report, heat / batch test certificates.

3. FABRICATION PROCESS CHECKS

C. Cutting, Drilling and Punching

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
C1	Part mark and job number written or stencilled on each piece	Shop sketch		
C2	Length, width and thickness of sheared / gas-cut parts	Shop sketch; fabrication tolerance sheet		
C3	Cut edges free of dross, notches and gouges	AWS D1.1		
C4	Hole diameter, pitch, gauge, edge distance and count; burrs removed	Shop sketch; fabrication tolerance sheet		
C5	Bevel and joint preparation	WPS		
C6	Measurements taken with calibrated instruments	Calibration register		

D. Cold-Formed Members, Sheeting and Sundries

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
D1	Purlins / girts: depth, flange, lip, thickness and length	Shop sketch; fabrication tolerance sheet		
D2	Punched hole positions, including special hanging holes	Shop sketch		
D3	Sheets, trims, gutters: profile, cover width, length, colour	Shop sketch; job specification		
D4	Anchor bolts: diameter, length, thread length, bend and grade	Anchor bolt drawing		
D5	Sundries and accessories: dimensions and quantity	Shop sketch; bill of materials		
D6	Bundles marked with part mark, job number and quantity	Identification procedure		

E. Fit-up of Built-up Members

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
E1	Correct parts assembled; part mark matches shop sketch	Shop sketch		
E2	Web depth, flange width, taper and overall length	Shop sketch; fabrication tolerance sheet		
E3	End plate and base plate position, squareness and hole pattern	Shop sketch		
E4	Root gap and alignment of joints	WPS		
E5	Stiffeners, clips and brackets: location and orientation	Shop sketch		
E6	Tack welds sound and made by a qualified tack welder	AWS D1.1; WPS		
E7	Dummy stiffeners fitted on unsupported lengths >300 mm	Weld repair / distortion control procedure		
E8	[HOLD POINT] Fit-up released for welding, or NCR raised	Fitment inspection report		

F. Welding

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
F1	Welding done by a qualified welder	Qualified welder list		
F2	Welding to approved WPS and qualified position	WPS		
F3	Weld area free of base metal imperfections, rust, oil, moisture	AWS D1.1		
F4	Filler metal correct and undamaged	WPS		
F5	Joint prep, fit-up and alignment confirmed before arc start	WPS		
F6	Preheat & interpass temp maintained (measured with crayons)	Thickest part: ≤38mm (10°C); >38-64mm (65°C); >64mm (110°C)		
F7	Current, voltage, travel speed and gas flow logged	Daily welding parameter check report		
F8	Weld sequence balanced to control distortion	Distortion control procedure		
F9	Visual: no cracks, lack of fusion/overlap; craters filled	AWS D1.1 Table 6.1		
F10	Undercut limits (<25mm thick: max 1mm; ≥25mm thick: max 2mm)	AWS D1.1 Table 6.1 (statically loaded)		
F11	Piping porosity limits (sum ≤10mm in 25mm, ≤20mm in 300mm)	AWS D1.1 Table 6.1 (statically loaded)		
F12	Fillet weld size and length	Weld map; shop sketch		
F13	Double-side welding done where required	Weld map; project requirement		
F14	Slag removed and weld cleaned	AWS D1.1 clause 5.30		
F15	Arc strikes ground smooth and checked for soundness	AWS D1.1		
F16	Distortion and dimensions after welding	Fabrication tolerance sheet		

Records: Dimensional reports, welding inspection report, parameter check report.

4. INSPECTION AND TESTING

G. Dimensional Inspection of Finished Members

No.	Check	Limit (Approved Tolerance Sheet)	Measured	OK / NC / NA
G1	Overall member length			
G2	Web depth at each end and at splices			
G3	Flange width and flange tilt			
G4	Web off-centre on flange			
G5	Camber and sweep			

No.	Check	Limit (Approved Tolerance Sheet)	Measured	OK / NC / NA
G6	Twist			
G7	End plate squareness to member axis			
G8	End plate flatness			
G9	Hole-to-hole and hole group location			
G10	Web flatness / buckling			

H. Non-Destructive Testing

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
H1	NDT method and extent applied to each joint type	Approved QAP		
H2	Operator certified; results evaluated by Level II or III	SNT-TC-1A		
H3	UT used on fusion welds 8 to 200 mm thick; valid calibration	UT procedure; AWS D1.1		
H4	UT horizontal linearity checked q40h; dB accuracy q2m	Calibration log		
H5	UT calibrated before testing & re-calibrated every 30 mins	UT procedure		
H6	UT scanning surface clean; base metal scanned for laminations	UT procedure		
H7	UT scan overlap $\geq 10\%$; scan speed ≤ 150 mm/s	UT procedure		
H8	UT indications rated/accepted by rating & length	AWS D1.1 Table 6.2 / 6.3		
H9	MPI wet continuous method; pole spacing 75-200mm; overlap ≥ 25 mm	MPI procedure		
H10	MPI field strength verified with pie gauge before inspection	MPI procedure		
H11	MPI / PT viewed under ≥ 1000 lux; MPI surface temp 10-57 °C	MPI and PT procedures		
H12	MPI yoke accuracy checked every 12m; demagnetised after test	MPI procedure		
H13	PT surface clean; no blasting before test; part temp 16-52 °C	PT procedure		
H14	PT dwell 20-30 mins; developing 7-20 mins	PT procedure		
H15	MPI/PT: cracks, lack of fusion/penetration rejected	AWS D1.1		
H16	Rejectable indications marked over full length	NDT procedure		

I. Weld Repair and Straightening

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
I1	Repair done to approved procedure/WPS by qualified welder	Weld repair procedure; AWS D1.1		
I2	Cracks: crack + 50 mm sound metal each end removed & re-welded	Weld repair procedure		
I3	Defects removed & re-welded; undercut built up; excess ground	Weld repair procedure		
I4	Mislocated holes restored by welding only where permitted	Weld repair procedure		
I5	Heat straightening temperature max 650 °C (checked with crayons)	Weld repair procedure		
I6	Repair re-inspected by same NDT method and accepted	Original NDT report		
I7	Straightened members back within tolerance	Fabrication tolerance sheet		
I8	Repaired joints not coated until accepted	Weld repair procedure		

5. SURFACE PREPARATION, PAINTING AND DISPATCH

J. Surface Preparation

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
J1	Surface prep grade confirmed (hand tool or blast)	Job specification		
J2	Visible oil, grease removed by solvent cleaning	Painting procedure		
J3	Hand / power tool cleaning: loose scale, rust, dirt removed	Painting procedure		
J4	Blast cleaning achieves Sa 2.5	Job specification		
J5	Anchor profile checked with surface comparator	Paint manufacturer data sheet		

K. Environmental Conditions

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
K1	Steel surface temperature	10 °C to 55 °C		
K2	Relative humidity	Not over 85 %		
K3	Steel temperature above dew point	At least 3 °C		
K4	Surface dry; no dust; no rain exposure before drying	Painting procedure		
K5	Environmental conditions logged	Daily weather report		

L. Painting

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
L1	Paint type, batch match job spec; mixed to manufacturer instructions	Job specification; product data sheet		
L2	Shade matches specification; batch difference not visible from 6m	Specified shade		
L3	DFT gauge calibrated, accuracy within 10%	SSPC-PA 2		
L4	DFT spot check: 3 readings within 40mm = 1 spot; 5 spots per member	SSPC-PA 2		

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
L5	Mean DFT >= specified; no spot reading < 80% specified	SSPC-PA 2; job specification		
L6	Adhesion after hard dry	Min 4A or 4B, ASTM D3359		
L7	No runs, sags, holidays or uncovered areas	Visual		
L8	Paint repair: cleaned, abraded to bare steel, edges feathered 50mm	Paint repair procedure		
L9	Repaired areas re-checked for DFT, appearance and adhesion	Paint repair procedure		

M. Marking, Final Inspection and Dispatch

No.	Check	Reference / Acceptance	OK / NC / NA	Remarks
M1	Primary members hard-stamped/stencilled with job, building & part mark	Identification procedure		
M2	Secondary bundles marked with part mark, job no., quantity	Identification procedure		
M3	Final dimensions checked with calibrated instruments	Shop sketch; tolerance sheet		
M4	All holes complete	Shop sketch		
M5	No visible weld or paint defects	Final inspection procedure		
M6	No handling/loading damage; members supported and separated	Final inspection procedure		
M7	Markings clear; quantities match packing list	Packing list		
M8	[HOLD POINT] All NCRs for lot closed before release	NCR register		

6. RECORDS, NON-CONFORMANCE AND RELEASE

N. Quality Records Checklist

No.	Record	Available (Yes / No / NA)	Report No. / Remarks
N1	Approved QAP		
N2	Mill test certificates and consumable batch certificates		
N3	Incoming inspection report		
N4	Dimensional reports (cutting, drilling, fitment, purlins, anchor bolts)		
N5	Welding inspection report & parameter check report		
N6	WPS, PQR and welder qualification records		
N7	UT, MPI and PT reports; NDT personnel certificates		
N8	Surface prep, DFT and paint adhesion reports		
N9	Daily weather condition report		
N10	Instrument calibration records		
N11	Non-conformity reports and closure evidence		
N12	Pre-shipment inspection report		

O. Non-Conformance Summary

NCR No.	Item Ref.	Part Mark	Description	Corrective Action	Re-inspection Result	Closed On
---------	-----------	-----------	-------------	-------------------	----------------------	-----------

P. Release Sign-Off

Role	Name	Signature	Date
Fabricator or QC Engineer / Inspector	_____	_____	_____
Fabricator or QA / QC Head	_____	_____	_____
Client / Third-Party Inspector	_____	_____	_____