

# INDIAN METAL BUILDING FORUM

## IMBF

Connecting India's Metal Building Ecosystem

5C FRAMEWORK: CONNECT • COLLABORATE • CREATE • CONSTRUCT • CERTIFY+

### RESOURCE CENTRE

Technical Knowledge Series

## TECHNICAL GUIDE

### Model Specification Outline for the Structure of a Pre-Engineered Building

What a buyer's specification should state, clause by clause

Say What You Need

State the Standard

Close the Gaps

|              |                                                 |
|--------------|-------------------------------------------------|
| DOCUMENT NO: | IMBF-DO-004                                     |
| SERIES:      | Series E: Design Optimization (IMBF-DO)         |
| COVERS:      | Structural framing scope of a PEB specification |
| FOR:         | Owners, consultants and procurement teams       |

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Vendor-neutral guide. Values are typical industry practice; the project design and the governing codes decide.

**About this guide.** An outline of the clauses a buyer's specification for the structure of a pre-engineered building should contain. It is a prompt list, not a ready-made specification. Status: draft for IMBF technical review.

## 1 HOW TO USE THIS OUTLINE

Each row below is a clause heading for a buyer's specification, with what to state and a typical industry default. Replace the defaults with project values. Leave nothing as "supplier's standard" unless you know what that standard is.

## 2 SCOPE AND DOCUMENTS

| Clause               | State in the specification                                                                                        | Typical default                                            |
|----------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Scope of supply      | Structural framing, bracing, anchor bolts, cladding, accessories; what is excluded (foundations, floors, masonry) | Anchor bolts are sometimes excluded: say who supplies them |
| Building description | Frame type, width, length, eave or clear height, bay spacing, roof slope, measuring convention                    | Roof slope 1 in 10                                         |
| Drawings             | Anchor bolt plan, reactions, erection drawings, shop details if required; number of sets and approval steps       | Anchor bolt plan and erection drawings                     |
| Calculations         | Design calculations signed by a qualified engineer; software models if required                                   | On request                                                 |
| Order of precedence  | Which document governs when they differ                                                                           | Contract, then specification, then drawings                |

## 3 DESIGN

| Clause            | State in the specification                                                                                 | Typical default                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Codes             | Design codes for hot-rolled and built-up steel, cold-formed steel, loads and seismic design, with editions | AISC, AISI, MBMA and a building code; or IS 800, IS 801, IS 875, IS 1893 |
| Loads             | Dead, roof live, wind (basic speed, terrain), seismic zone, collateral, crane, mezzanine, snow             | Site-specific                                                            |
| Load combinations | Per the governing code; any client additions                                                               | Per code                                                                 |
| Deflection limits | Frame sway, rafter, purlin, girt, crane beam and mezzanine limits                                          | Often left open: state them                                              |
| Future provisions | Extension, added cranes, solar panels, mezzanine                                                           | None unless stated                                                       |

## 4 MATERIALS

| Clause              | State in the specification                           | Typical default                        |
|---------------------|------------------------------------------------------|----------------------------------------|
| Built-up members    | Plate grade and minimum yield                        | 345 MPa                                |
| Hot-rolled sections | Grade and minimum yield                              | 250 MPa                                |
| Hollow sections     | Grade and minimum yield                              | 345 MPa                                |
| Cold-formed members | Coil grade, yield, coating mass, section depth       | Galvanized, 345 MPa or higher          |
| Bracing             | Rod, cable or angle; grade or breaking load          | Rod or cable in tension                |
| Primary bolts       | Grade, coating, tightening method                    | High-strength bolts, grade 8.8 or A325 |
| Secondary bolts     | Grade and coating                                    | Ordinary machine bolts, zinc plated    |
| Anchor bolts        | Grade, diameter, embedment, projection, template     | Mild steel, as designed                |
| Certificates        | Mill test certificates with heat-number traceability | Required                               |

## 5 FABRICATION, PROTECTION AND ERECTION

| Clause                     | State in the specification                                                         | Typical default                        |
|----------------------------|------------------------------------------------------------------------------------|----------------------------------------|
| <b>Welding</b>             | Code, WPS and welder qualification, single-side or double-side web-to-flange welds | AWS D1.1; single-side automatic welds  |
| <b>Inspection and NDT</b>  | Visual, and extent of UT, MT or PT by joint type                                   | Visual only unless stated              |
| <b>Tolerances</b>          | Fabrication and erection tolerance standard                                        | MBMA or contract standard              |
| <b>Surface preparation</b> | Cleaning method or blast grade                                                     | Wire-brush cleaning                    |
| <b>Paint system</b>        | Primer type, coats, dry film thickness; finish coats if any                        | One shop primer coat, about 35 microns |
| <b>Marking and packing</b> | Part marks, bundling, protection in transit                                        | Supplier standard                      |
| <b>Erection</b>            | Who erects; method statement; temporary bracing; bolt tightening; touch-up         | By separate agreement                  |
| <b>Handover</b>            | As-built drawings, certificates, maintenance guidance                              | Often omitted: ask for it              |

*A single coat of shop primer is temporary protection. For corrosive, coastal or long-life applications, specify a full paint system.*

## 6 COMMON GAPS TO CLOSE

- Deflection limits not stated, leading to cracked masonry, jammed doors or crane problems.
- Collateral loads and future solar panels not declared.
- Extent of NDT left to the supplier.
- Base condition (pinned or fixed) and reactions not agreed with the foundation designer.
- Paint system chosen by price, not by environment.
- Erection stability and temporary bracing not assigned to anyone.

**Basis and disclaimer.** Written by IMBF in its own words as a vendor-neutral guide. A metal building manufacturer's published technical handbook was consulted for typical industry practice; its product names, drawings and tables are not reproduced. Indian references and commentary are added by IMBF from general knowledge and must be verified. This is an educational summary, not a design guide; it is not a substitute for project-specific engineering design, governing codes, manufacturer data or professional advice.