

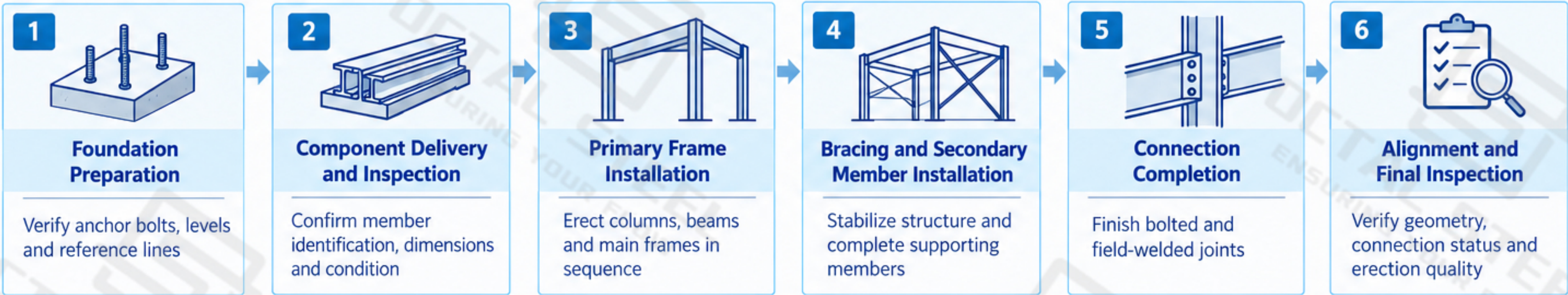
Steel Building Erection Sequence Overview

INSTALLATION / SEQUENCING / CONNECTIONS / INSPECTION

1. OVERVIEW AND PURPOSE

Steel building erection is a controlled assembly process in which fabricated structural members are installed in a planned sequence to form the final load-bearing system. Erection quality depends not only on member fabrication accuracy, but also on foundation readiness, installation sequence, connection completion and dimensional control during assembly.

2. ERECTION SEQUENCE



3. MAIN CONTROL FOCUS

Erection Stage	Primary Objective	Key Control Focus
Foundation Preparation	Prepare installation interface	Anchor bolt position, elevation, reference grid
Component Delivery and Inspection	Confirm erection readiness	Member marking, dimensions, damage check, documentation
Primary Frame Installation	Establish load-bearing framework	Lifting sequence, temporary stability, column alignment
Bracing and Secondary Member Installation	Improve structural stability	Bracing order, member fit-up, installation tolerance
Connection Completion	Achieve designed force transfer	Bolt tightening, field welding, joint completion
Alignment and Final Inspection	Verify final erection quality	Verticality, geometry, connection status, overall accuracy

4. KEY TAKEAWAY

A reliable steel building erection process is achieved by sequencing structural assembly correctly and controlling geometry, connection quality and temporary stability at each stage.

Pre-Erection Verification and Site Readiness

FOUNDATION / REFERENCE CONTROL / COMPONENT CHECK / SITE PREPARATION

1. OVERVIEW AND PURPOSE

Before steel erection starts, the installation interface must be verified to confirm that site conditions match structural drawings and fabrication documents. Anchor bolt location, foundation level, reference lines, access conditions and delivered member status must be checked before lifting operations begin.

2. PRE-ERECTION READINESS CHECKLIST

1

Foundation Interface



- Anchor bolt position
- Foundation level
- Base plate bearing surface
- Grout or setting condition



2

Reference Control



- Grid lines
- Elevation marks
- Installation benchmarks
- Survey reference points



3

Site Access



- Crane access
- Storage area
- Member handling route
- Assembly workspace



4

Delivered Components



- Member marking
- Quantity check
- Visible damage inspection
- Packing list confirmation

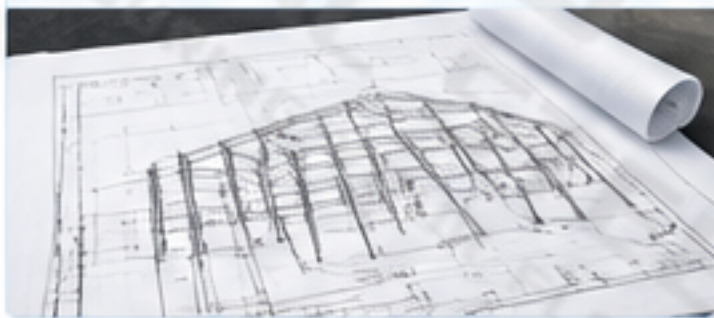


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Technical Documents



- Erection drawings
- Connection details
- Bolt list
- Inspection requirements



3. PRE-ERECTION VERIFICATION ITEMS

Verification Item	What to Check	Why It Matters
Anchor Bolt Position	Bolt spacing, projection and location	Prevents base plate mismatch and column installation errors
Foundation Elevation	Levelness and design elevation	Affects column base fit-up and frame alignment
Reference Grid and Benchmarks	Grid line accuracy and control points	Ensures correct member positioning
Member Identification	Match member marks with drawings	Avoids installation sequence errors
Delivery Condition	Surface damage, deformation, missing parts	Prevents installation delays and rework
Access and Lifting Conditions	Crane operation space and lifting path	Supports safe and efficient erection
Erection Documents	Drawings, connection details, bolt schedules	Ensures installation follows approved requirements

4. TYPICAL PRE-ERECTION RISKS



- Incorrect anchor bolt setting
- Missing or misidentified members
- Unverified elevation reference
- Limited crane access or poor staging layout



KEY TAKEAWAY

Pre-erection verification reduces avoidable ~~little~~ installation errors by ensuring that the foundation, member delivery and erection interface are ready before structural assembly begins.

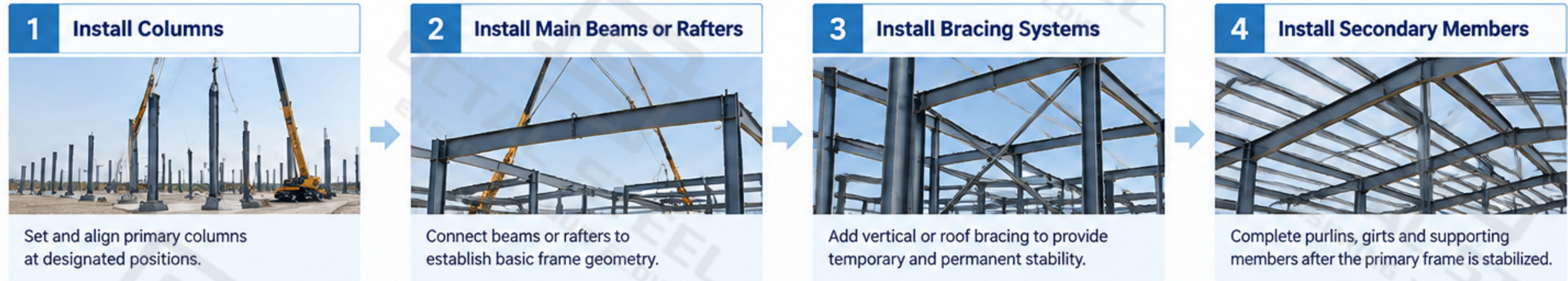
Primary Frame Installation and Structural Assembly Sequence

INSTALLATION SEQUENCE / FRAME ASSEMBLY / STABILITY CONTROL / QUALITY CHECK

1. ASSEMBLY SEQUENCE OVERVIEW

Primary frame installation establishes the main load-bearing system of the steel building. Columns, beams, rafters and main frames are erected in a planned sequence so that load paths can be formed progressively while temporary stability is maintained during assembly.

2. PRIMARY FRAME ASSEMBLY SEQUENCE



3. TYPICAL STRUCTURAL ASSEMBLY SEQUENCE

Installation Stage	Main Activities	Structural Purpose
Column Installation	Lift, position and temporarily secure columns	Establish vertical load-carrying members
Main Beam / Rafter Installation	Connect beams, rafters or main frame members	Form the primary structural framework
Bracing Installation	Install bracing members and stabilize frame bays	Control lateral movement and improve stability
Secondary Member Installation	Install purlins, girts and support members	Complete roof and wall support system
Frame Adjustment	Recheck plumbness, spacing and fit-up	Maintain erection tolerance before final connection completion

4. TEMPORARY STABILITY DURING ERECTION



- Partially erected frames do not yet behave as the final completed structure.
- Temporary supports, staged bracing and controlled erection sequence are often required before all permanent members are installed.
- Stability control is especially important for portal frames, multi-bay buildings and structures exposed to wind during erection.



KEY TAKEAWAY

The erection sequence should establish the primary load path first, introduce stability members at the correct stage and only then complete secondary structural installation.

Connection Completion and Alignment Control

CONNECTIONS / ALIGNMENT / INSPECTION / TOLERANCE

1. CONNECTION COMPLETION

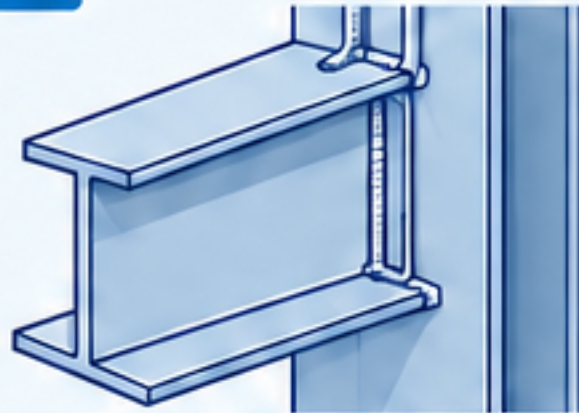
Connection completion converts positioned steel members into an integrated structural system capable of transferring design loads. At this stage, bolted joints, field welds and connection interfaces must be completed in accordance with approved details, while member position and overall geometry are rechecked to confirm that the erected structure remains within specified tolerances.

1 Bolted Connection Control



- Verify bolt grade and specification
- Confirm hole alignment and fit-up
- Apply required tightening procedure
- Recheck completed connections

2 Field Welding Control

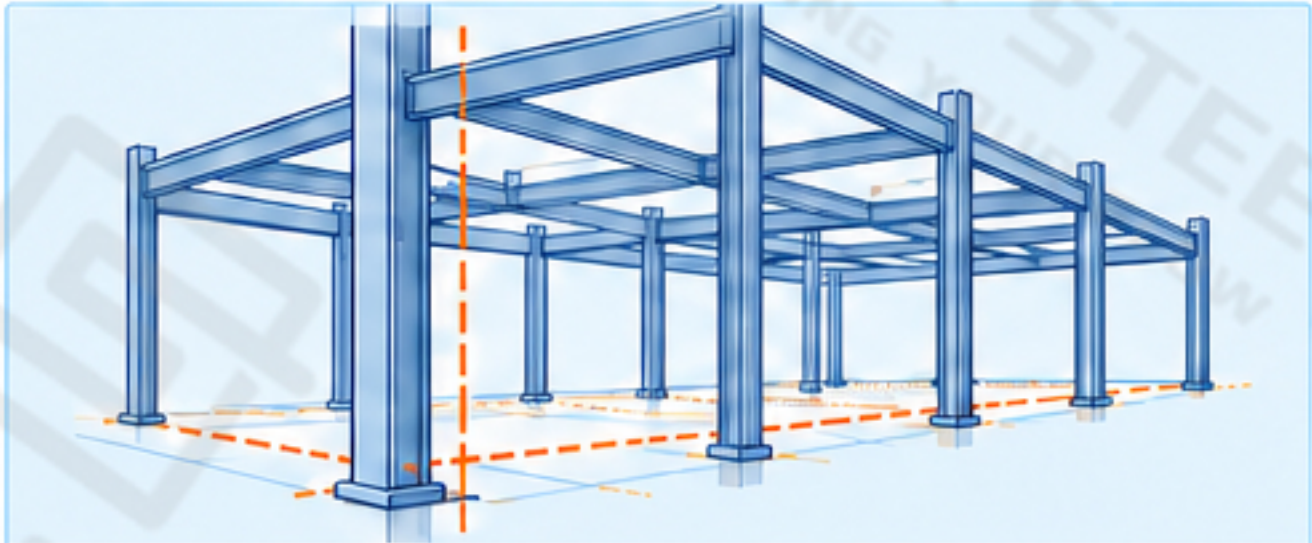


- Verify joint preparation
- Confirm welding procedure
- Control welding sequence where required
- Perform visual and specified inspection

2. CONNECTION AND ALIGNMENT CONTROL ITEMS

Control Item	What to Verify	Engineering Importance
Bolt Specification	Bolt grade, size and type	Ensures connection strength matches design
Bolt Tightening	Tightening method and completion status	Maintains required preload and connection performance
Weld Completion	Joint completion and weld continuity	Ensures design load transfer through welded joints
Member Position	Frame location and member spacing	Confirms erection geometry is correct
Column Verticality	Plumbness and alignment	Affects structural behavior and overall frame accuracy
Beam / Frame Alignment	Relative position and fit-up between members	Prevents accumulated erection deviation
Overall Dimensional Check	Bay spacing, elevation and structural geometry	Confirms completed assembly meets project requirements

3. WHY ALIGNMENT MATTERS



Dimensional control during erection affects more than appearance. Misalignment can influence connection fit-up, load transfer efficiency, cladding installation and the interface between structural steel and other building systems.



KEY TAKEAWAY

Connection completion and dimensional control must be treated together, because a connection can only perform as designed when installed on correctly aligned structural members.

Final Quality Control Checklist and Acceptance Documents

FINAL REVIEW / ACCEPTANCE / DOCUMENTATION / HANDOVER

1. FINAL QUALITY CONTROL CHECKLIST

Before a steel building is released for subsequent works or project acceptance, the completed structure should be reviewed as a whole system. Final quality control covers structural geometry, connection completion, inspection records and erection documentation to confirm that the installed steel frame is consistent with design and fabrication requirements.

1

Geometry Verification



- Column plumbness
- Frame spacing
- Elevation check
- Overall structural alignment

2

Connection Completion



- Bolted joints completed
- Tightening status confirmed
- Field weld completion verified
- Connection details match drawings

3

Member Condition



- No visible distortion
- No unapproved field modification
- Surface protection condition acceptable
- Member identification traceable

4

Stability and Support



- Permanent bracing installed
- Secondary members completed as required
- Temporary supports removed only after stability is confirmed

5

Surface and Protection



- Coating repair completed where needed
- Damaged protection areas corrected
- Final exposed steel condition acceptable

6

Documentation Review



- Inspection records complete
- Material traceability available
- Bolt and weld reports retained if required
- Final erection inspection documented

2. ACCEPTANCE DOCUMENTATION TABLE

Typical Acceptance Documents for Steel Building Erection

Document	Main Purpose
Erection Drawings	Confirm installation follows approved layout and connection details
Material Certificates	Verify structural steel materials used in the project
Bolt and Connection Records	Confirm connection materials and installation control
Welding Inspection Records	Provide evidence of weld quality and compliance
Dimensional Inspection Records	Verify structural geometry and erection tolerances
Site Inspection Reports	Record erection quality and completed checks
Final Acceptance Record	Confirm the steel building is ready for subsequent work or handover



KEY TAKEAWAY

Steel building erection quality is confirmed not by installation sequence alone, but by the combination of accurate assembly, completed connections, dimensional verification and traceable quality documentation.