VOLUME 6 — SITE ERECTION

(Expanded – BS EN 1090-2:2018 + Eurocode 3 + UKCA)

(All organization names replaced with XXXXXX)

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1. GENERAL REQUIREMENTS FOR SITE ERECTION

1.1 Compliance with Standards

All site erection activities shall comply with:

- **BS EN 1090-2:2018** – Execution of steel structures
- **BS EN 1991-1-6** – Actions during execution
- **BS EN 1993-1-1** – Steel structures
- **BS EN ISO 14731** – Welding coordination
- **BS EN ISO 17637 / 17640 / 23278** – NDT
- **UK Health and Safety at Work Act**
- **CDM Regulations**

1.2 Responsibilities

The Contractor shall:

- Provide all labour, equipment, and supervision
- Ensure safe erection procedures
- Maintain structural stability at all times
- Coordinate with other trades
- Protect installed steelwork
- Provide lifting plans and method statements
- Ensure compliance with tolerances

1.3 Site Conditions

Erection shall not proceed when:

- Wind speed exceeds safe limits
- Visibility is poor
- Surfaces are icy or slippery

- Lightning is present
- Unsafe ground conditions exist

The Contractor shall maintain:

- Safe access routes
- Adequate lighting
- Controlled storage areas
- Clean working platforms

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2. SITE ERECTION DOCUMENTATION

2.1 Required Submittals

Before erection begins, the Contractor shall submit:

- Erection Method Statement
- Lifting Plan
- Temporary Works Design
- Stability Analysis
- Crane Layout and Load Charts
- Risk Assessments
- Inspection and Test Plans (ITP)
- Survey Control Plan
- Bolt Tightening Plan
- Site Welding Plan

2.2 Erection Drawings

Erection drawings shall include:

- Member identification
- Bolt types and quantities
- Weld symbols
- Temporary bracing locations
- Lifting points
- Assembly sequence

- Survey control points
- Tolerances

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3. DELIVERY, STORAGE & HANDLING ON SITE

3.1 Delivery

Steel components shall be delivered:

- With identification marks visible
- With protective packing
- With lifting points clearly marked
- With delivery documentation

3.2 Site Storage

Steel components shall be stored:

- On timber bearers
- Off the ground
- In designated storage zones
- Protected from water pooling
- With adequate ventilation

Hollow sections shall be capped to prevent water ingress.

3.3 Handling

Handling shall be performed using:

- Certified lifting equipment
- Soft slings to avoid damage
- Spreader beams for long members
- Tag lines for control

Dragging steel on the ground is prohibited.

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4. ERECTION SEQUENCE & TEMPORARY STABILITY

4.1 General Requirements

The structure shall remain stable at all times during erection.

The Contractor shall:

- Provide temporary bracing
- Provide temporary supports
- Ensure stability under wind loads
- Prevent progressive collapse

4.2 Temporary Works

Temporary works may include:

- Temporary bracing
- Guy wires
- Shoring towers
- Temporary columns
- Temporary beams
- Lifting frames

Temporary works shall be:

- Designed by competent engineers
- Calculated for wind loads
- Inspected regularly
- Removed only when permanent stability is achieved

4.3 Erection Sequence

The erection sequence shall:

- Follow the approved method statement
- Avoid unbalanced loading
- Avoid overstressing members
- Maintain alignment
- Ensure safe access

Typical sequence:

1. Install base plates and anchor bolts

2. Erect primary columns
3. Install temporary bracing
4. Install primary beams
5. Install secondary beams
6. Install floor diaphragms
7. Remove temporary bracing when stable

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5. SURVEYING & ALIGNMENT

5.1 Survey Control

Surveying shall be performed by qualified personnel using calibrated equipment.

Survey control shall include:

- Benchmarks
- Gridlines
- Elevation references
- Plumbness checks
- Level checks

5.2 Tolerances

Tolerances shall comply with:

- **BS EN 1090-2 Annex D**
- Project-specific tolerances

Examples:

- Column plumbness: **H/1000**
- Beam level: **±5 mm**
- Base plate position: **±3 mm**

5.3 Alignment Checks

Alignment shall be checked:

- After positioning
- After bolting

- After welding
- Before grouting
- Before releasing temporary supports

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6. BASE PLATES, ANCHOR BOLTS & GROUTING

6.1 Base Plates

Base plates shall:

- Be positioned within tolerance
- Be supported on leveling nuts or shims
- Be fully grouted after alignment

6.2 Anchor Bolts

Anchor bolts shall:

- Be protected during construction
- Be checked for position and plumbness
- Not be bent without approval
- Be tightened per specification

6.3 Grouting

Grouting shall:

- Use non-shrink grout
- Be placed after alignment is confirmed
- Fill the entire base plate area
- Be cured per manufacturer instructions

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7. SITE BOLTING

7.1 General

Bolting shall comply with **Volume 5 – Mechanical Fasteners**.

7.2 Bolt Installation

Bolts shall be:

- Inserted from the least accessible side
- Installed with washers under both head and nut
- Tightened in a star pattern

7.3 Inspection

Inspection shall include:

- Bolt grade
- Bolt length
- Washer placement
- Tightening method
- Final tension

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8. SITE WELDING

8.1 General

Site welding shall comply with:

- **Volume 4 – Welding**
- **BS EN 1090-2 Clause 7.6**

8.2 Environmental Conditions

Welding shall not be performed:

- In rain
- In high humidity
- Below 0°C without protection
- In strong wind

8.3 Preheat

Preheat shall be applied per WPS.

8.4 NDT

All site welds shall be inspected per:

- **ISO 17637** (VT)

- **ISO 23278** (MT)
- **ISO 3452** (PT)
- **ISO 17640** (UT)

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9. PROTECTION OF INSTALLED STEELWORK

9.1 Protection from Damage

Installed steelwork shall be protected from:

- Impact
- Abrasion
- Welding spatter
- Chemical spills

9.2 Protection from Corrosion

Steelwork shall be:

- Painted
- Galvanized
- Protected from standing water

9.3 Protection from Fire

Fire protection shall comply with:

- Project fire strategy
- Approved fireproofing materials

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10. FINAL INSPECTION & HANDOVER

10.1 Final Inspection

Final inspection shall include:

- Alignment
- Plumbness
- Bolt tension
- Weld quality

- Coating condition
- Grouting
- Documentation completeness

10.2 As-Built Documentation

The Contractor shall submit:

- As-built drawings
- Survey reports
- Bolt tightening logs
- NDT reports
- Coating inspection reports
- NCRs and corrective actions

10.3 Handover

Steelwork is accepted when:

- All inspections are passed
- All documentation is submitted
- All NCRs are closed
- Structure is stable and complete