

VOLUME 10 — APPENDICES

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

(All organization names replaced with XXXXXX)

APPENDIX A — EXECUTION CLASS SELECTION GUIDE

A1. Overview

Execution Classes (EXC1–EXC4) define the level of quality control required for steel structures. Selection depends on:

- Consequence Class (CC)
- Service Category (SC)
- Production Category (PC)
- Structural complexity
- Public occupancy
- Environmental exposure

A2. Execution Class Matrix

Consequence Class Service Category Production Category Recommended EXC

CC1	SC1	PC1	EXC1
CC2	SC1	PC1	EXC2
CC2	SC2	PC2	EXC3
CC3	SC2	PC2	EXC4

A3. Typical Examples

EXC1

- Agricultural buildings
- Storage sheds
- Non-public structures

EXC2

- Residential buildings

- Commercial buildings
- Industrial buildings

EXC3

- Public buildings
- Schools
- Hospitals
- High-rise buildings

EXC4

- Stadium roofs
- Power plants
- Critical infrastructure

APPENDIX B — TOLERANCE TABLES (SUMMARY)

B1. Fabrication Tolerances

Item	Tolerance
Member length	± 3 mm
Straightness	L/1000
Squareness	≤ 2 mm per 100 mm
Hole diameter	+1.0 mm
Plate flatness	3–7 mm/m

B2. Erection Tolerances

Item	Tolerance
Column plumbness	H/1000
Beam level	± 5 mm
Base plate position	± 3 mm
Anchor bolt position	± 2 mm

APPENDIX C — WELD QUALITY LEVELS (ISO 5817)

C1. Quality Levels

Execution Class Quality Level

EXC1	Level D
EXC2	Level C
EXC3	Level B
EXC4	Level B+

C2. Typical Weld Defects and Limits

Defect	Level B	Level C	Level D
Undercut	≤ 0.5 mm	≤ 1.0 mm	≤ 1.5 mm
Porosity	Minimal	Limited	Moderate
Excess weld metal	Strict	Medium	High
Misalignment	≤ 10% t	≤ 15% t	≤ 20% t

APPENDIX D — BOLT TIGHTENING TABLES

D1. Preloaded Bolts (EN 14399)

Required Preload Forces

Bolt Size Grade 8.8 (kN) Grade 10.9 (kN)

M16	100	145
M20	155	225
M24	225	325
M27	310	450
M30	380	550

D2. Torque Values (Indicative)

(Exact values depend on lubrication and manufacturer)

Bolt Size Grade 8.8 (Nm) Grade 10.9 (Nm)

M16	210	310
M20	420	610
M24	720	1050
M27	1050	1500
M30	1450	2100

APPENDIX E — SURFACE PREPARATION GRADES (ISO 8501-1)

E1. Blast Cleaning Grades

Grade Description

- Sa 1 Light blast cleaning
 - Sa 2 Thorough cleaning
 - Sa 2½ Very thorough cleaning
 - Sa 3 White metal blast
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E2. Surface Profile Requirements

Coating System Profile (µm)

- Zinc-rich primer 40–60
 - Epoxy systems 50–75
 - Thermal spray 75–100
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APPENDIX F — INSPECTION FORMS

F1. Welding Inspection Form (Template)

- Project: XXXXXX
- Member ID: _____
- Weld ID: _____
- Welder ID: _____
- WPS No.: _____
- WPQR No.: _____

Item	Requirement	Result	Pass/Fail
Joint preparation	ISO 9692-1		
Preheat	WPS		
Weld size	Drawing		
Weld profile	ISO 5817		
VT	ISO 17637		
MT/PT	ISO 23278/3452		
UT	ISO 17640		
Remarks			

F2. Bolt Tightening Log (Template)

Project: XXXXXXX

Connection ID: _____

Bolt Type: EN 14399 / EN 15048

Tightening Method: Torque / DTI / HRC

Bolt No.	Size	Grade	Final Tension	Inspector	Pass/Fail
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F3. Coating Inspection Report (Template)

Project: XXXXXXX

Area: _____

Coating System: ISO 12944

Item	Requirement	Result	Pass/Fail
Surface cleanliness	Sa 2½		
Profile	50–75 µm		
DFT	240–400 µm		
Adhesion	ISO 4624		
Holiday test	N/A or Required		
Remarks			

APPENDIX G — MATERIAL TRACEABILITY FORM

Project: XXXXXX

Component ID: _____

Material Grade Thickness Heat No. Certificate Type Certificate No.

APPENDIX H — NON-CONFORMANCE REPORT (NCR) TEMPLATE

NCR No.: _____

Project: XXXXXX

Location: _____

Description of Non-Conformance:

Cause:

Corrective Action:

Re-Inspection Result:

Closed By: _____

Date: _____

APPENDIX I — METHOD STATEMENT TEMPLATE

11. Scope

Describe the scope of the activity.

12. Responsibilities

List responsible personnel.

13. Equipment

List tools and equipment.

14. Sequence of Work

Step-by-step procedure.

15. Safety Requirements

PPE, hazards, controls.

16. Inspection & Testing

Hold points, acceptance criteria.

APPENDIX J — WELDING PLAN TEMPLATE

Includes:

- Weld map
- WPS list
- WPQR list
- Welder assignments
- NDT plan
- Preheat requirements
- Consumable control plan