

Heavy Steel Work Specification



CA54E Group nr.4/ Agnieszka Krasuska/Tuuli Tuominen /
/Mick Wolstenholme/ Eglé Bartulytè

Project specific specifications

1. Table of contents
2. Scope
 - 2.1.General information
 - 2.2.Building components
 - 2.3.Designing
 - 2.4.The building site
 - 2.5.Health and safety
 - 2.6.The surrounding environment
 - 2.7.Quality assurance
 - 2.7.1. General information
 - 2.7.2. Quality control documentation
 - 2.7.3. O&M (operational and maintenance)-documentation
 - 2.8.Planning and scheduling of work
 - 2.9.Tests and samples.
3. General specifications
 - 3.1.Reference
 - 3.1.1. Norms and standards
 - 3.1.2. Directions
 - 3.2. Materials and products
 - 3.3. Execution of works
 - 3.4. Control

3.5. Relation to other works

3.6. Work environment

4. Building component specifications

The building component-ID, title for the building component specifications

Each building component comprises the following points:

4.1. Material lists

4.2. Building component ID

4.3. Quantities

4.4. Reference to drawings

4.5. Adjoining building components

4.6. Design

4.7. Materials and products

4.8. Execution

4.9. Surfaces

4.10. Tests and samples

4.11. Quality control

4.12. Work environment

2. Scope

All work conducted by the steel erector is relevant in this specification.

The project is at Moldevej 29-39, Vejle

The work includes the renovation of a multi-storey house and the building of three new penthouse apartments.

The steel erectors work is to erect and deliver materials that are to be used in the steel framework.

2.1. General information

The work comprises the building components and other services stated in point 2.2, which are described in more detail in the work specifications or in the drawings.

In addition, the work comprises the stipulations in the Case Specifications and any services required in tender forms, for example extra work or omissions that can be connected to the current works.

2.2. Building components

The work comprises all works and deliveries that are necessary for the full completion of building components.

The work encompasses the following building components:

- HBE220 Steel beams
- HBE220 Steel columns
- Foundation/column connections
- Column/beams connections
- Column foot plate connections

The following components, delivered by the employer/other contractor, is mounted as part of the current works:

- Anchor bolts for basement/foundation columns Mason
- Bearing plates for beams Mason

The following components, delivered by the employer/ other contractor, are mounted as part of the current works:

2.3. Design and detail design

- The contractor is not required to do any design work for this trade.

2.4. The building site

- See case specification chapter 4 and drawing

2.5. Health and Safety

- See case specification chapters 4 and 5
- In addition
 - Hot works to be controlled
 - Harness implementation to be planned by contractor

2.6 The surrounding environment

- See case specification chapter 5
- In addition
 - The contractor must be aware of the surrounding areas because the site is placed in a residential area.
 - Noise is to be kept lower than 80 dB.
 - No work will be done from 17 – 6:30 due to noise demand.

- Dust level must be kept at a bare minimum at all times.

2.7. Quality Assurance

- See case specification chapter 7
- See tender control plan

2.7.1. General information

- See case specification chapter 7

2.7.2. Documentation of quality

- See case specification 7
- See tender control plan

2.7.3. O&M (Operation and Maintenance)-documentation

The following documentation for the work's quality must be delivered:

- Certificates of the metal work standards and quality.
- Documentation for welding quality.
- Documentation for material quality.
- Documentation for each component produced, measure control and quantity of components.
- Documentation for paint quality.
- Documentation for galvanizing quality
- Maintenance plan for balconies

2.8. Planning and scheduling of work

- LPS Last planner system
- Contractor must be in cooperation with other contractors Work documents.
- All work documents must be delivered for the project management's scrutiny on request.
The work documents, which the contractor must prepare in accordance with his services, will be commented upon within 1 workdays for it reception.
- Mounting plan must be delivered to the project manager at least 7 days before mounting

2.9. Tests and Samples

- To be carried out by manufacturer prior to works and documented.

3. General Specifications

3.1. Reference

- Eurocodes 3, Steel construction
- Stålkonstruktioner Kapitel 6: p. 217, 221
- Teknisk Ståbi 18th edition
- European pre-standard ENV 1090-1:1996
- Håndbog om varmforzinking

3.1.1. Norms and standards

The norms and standards mentioned below, in their latest editions and with any enclosures are valid for the works - - with any amendments, additions and omissions that are stated in these work specifications and on the drawings.

The notes and directions, etc. stated in the references are to be construed as requirements that only can be deviated from if they are stated in these work specifications and/or on the drawings, or agreed with the project management.

- Building Regulation 2008, 12 of December 2007
- Eurocode 3: Stålkonstruktioner EN-1-1 1993
- DS-EN 1090
- DS-EN-1-4 1993 Supplementary rules for stainless steels
- European pre-standard ENV 1090-1:1996

3.1.2. Directions/instructions

Where the directions, reports and other documents in their latest edition, with any enclosures and together with the project documents, are made valid for the works, the stated recommendations, directions, procedures, advice, etc, must be construed as demands.

- European pre-standard ENV 1090-1:1996

3.2 Materials and products

The required documentation for the materials and products used, for example in the form of product certificates, receipts, etc., must be presented for the project management for their approval.

The following materials and products must not be delivered onto the building site before the project management's documentation for them are available:

- Bolts and Nuts, 20mm.M20 quality 8.8
- HEB220 beams with welded plates corrosion class C2, steel quality S355
- HEB220 columns corrosion class C2, steel quality S355
- Carbon steel bearing plates
- Washers, 0 22mm x 2mm
- Black steel bolts and nuts and washers
- IPE Corrosion protected with paint
- Handrail corrosion protected

Materials and products of specific brands can be prescribed for the works. Other product brands can be used if they offer the same characteristic values. Documentation for this must be presented to the project management.

3.3 Execution of works

Demands for the execution of steel work have to follow the European standard (See point 3.1.1)

Tolerance for steel anchors and columns ($\pm 5\text{mm}$).

Tolerance for erection: European pre-standard ENV 1090-1:1996

3.4.Control

Tender Control Plan must be worked into the contractor's Control Plan.

See Tender control plan.

If faults or mistakes are found in the inspections that have been executed within a control section the contractor must rectify that in time limit given by project manager.

And inspection brought up to 100%

3.4.1. Method:

- Visual control- by worker, foreman or engineer
- Measuring- by worker, foreman or engineer
- Testing- by manufacturer or other
- Control of documentation- on site

3.4.2. Extend and time

- See tender control plan
 - Material
 - Production
 - Instalment

3.4.3. Documentation:

All documents concerning the control must be filled out and handed out signed to the building site manager.

3.5 Relation to other works

- Height on walls and fix point must be checked see Tender control plan
- If something is like it shouldn't be, the building site manager must be notified e.g. Wrong height on walls and the fix point.

3.6. Work environment

- See case specification chapters 4 and 5

4. Building Component Specifications

4.1. Material list

- Columns, HBE220 , 355Mpa 28-HBE-220-C-B-01A Through to 28-HBE-C-4-4-C
- Beams type HBE220, 355Mpa 28-HBE-B-B-01A Through to 28-HBE-B-4-18-C
- Column bearing plates, s355 350x350mm 28-BP-C-01A Through to 28-BP-C-24-C
- Beam bearing plates, s355 230x350mm 28-BP-B-01A Through to 28-BP-B-108C

4.2. Building Component ID

Element	Type	dimension	column	floor	number	phase
28(Primary elements)	HBE	220	C	B	01	A

4.3. Quantities

4.3.1. Production of columns for longitudinal beam support, 72 pieces

4.3.2. Production of beams for slab support, 324 pieces

4.3.3. Column plates, 72 pieces

4.3.4. Beam plates 324 pieces

4.3.5. Fixings as required

4.4. References to drawings

4.5. Adjoining building components

4.5.1. Dissimilar metals to be isolated according to manufacturer's recommendations.

4.6. Design

4.6.1. Design has been approved by engineers. No further work to be done by main contractor unless deviating from the specified design.

4.7. Materials and products

4.7.1. Steel to be of 355 Mpa strength

4.7.2. 100% Covering with approved paint.

4.8. Execution

4.8.1. Steelwork control plan

Steelwork Control plan



Supervision plan



Tender control plan



Control plan

Case: Moldevej 29-39	No. of case:	Date:	Rev:	Page of
Location: Heavy steel work	Contract/building component:			

Pos. No.:	Subject	Method/How	Frequency:	Time:	Demands:	Demands to documentation:	Who/Responsible:	Carried out / Reference:
	Steel strength	Stamp check	All	Upon delivery	355 Mpa	QC document No	Site Manager	
	Fixing strength & Type	Packaging check	All	Upon Use	As per Engineers	QC document No	Steel Foreman	
	Shoring							
	Placement	Engineer's marking	All	Before fitting	Tolerance +/- 50mm	QC document No	Site Engineer	
	Capacity (will it work)	Foreman's inspection	All	Before demolition of wall	100%	QC document No	Steel Foreman	
	Notching							
	Placement	Engineer's marking	All	Before steel fitting	+/- 10mm	QC document No	Site engineer	
	Bearing plate	Measure	All	Before steel fitting	+/- 1mm	QC document No	Masonry foreman	
	Column erection							
	Part type	Drawing check	All	Before fitting	As per drawing	QC document No	Steel foreman	
	Placement	Engineers marking	All	Before fitting	+/- 10mm	QC document No	Site engineer	
	Alignment	Measure	All	Before fixing	+/- 10mm	QC document No	Fitter	
	Fixing	Torque	All	Before wall demolition	+/- 1Nm	QC document No	Steel foreman	
	Beam erection							
	Part type	Drawing check	All	Before fitting	As per drawing	QC document No	Steel foreman	
	Placement	Drawing check	All	Before fitting	+/- 10mm	QC document No	Site engineer	
	Alignment	Measure/diagonal	All	Before fixing	+/- 10mm	QC document No	Fitter	
	Fixing	Torque	All	Before wall demolition	+/- 1Nm	QC document No	Steel foreman	

4.9. Surfaces

4.9.1. All bear surfaces and welds to be treated with anti-oxidant paint

4.10. Tests and samples

4.10.1. Manufacturer to comply with National and Eurocode 3 codes of practice.

4.11. Quality Control

Steelwork Tender Control plan



Supervision plan



Tender control plan



Control plan

Case: Moldevej 29-39	No. of case:	Date:	Rev:	Page of
Location: Heavy steel work	Contract/building component:			

Pos. No.:	Subject:	Method/How	Frequency:	Time:	Demands:	Demands to documentation:	Who/ Responsible:	Carried out / Reference:
	Materials							
1	Beams, columns, bolts welds	Quality of steel to Engineers spec. Welds/bolts as per EC3			Eurocode 3		Main contractor	
	Fabrication							
1	Dimensions	Measure	All	Before welding	DS/ENV 1090-1 +/- 1mm		Main contractor	
2	Welding	x-ray	5%	Before delivery	85%		Main contractor	
3	Holes	Measurement	All	Before delivery	+/- 1mm		Main contractor	
	Execution							
1	Placement	Drawing check/ measurement	All	Before fitting	+/-10mm	Supervision plan	Main contractor	
2	Alignment	Measurement	All	After fixing	+/- 10mm	Supervision plan	Main contractor	
3	Connection	Torque test	All	Before demolition		Supervision plan	Main contractor	

- Work Environment