

Concrete Specifications



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

2. Scope

These specifications apply on the manufacturing fresh concrete and of the concrete elements, mounting of these elements and providing all the necessary equipment to complete the project. All work should be performed according to work specifications and drawings.

The scope of the refurbishment of the Multi storey building on Moldevej 29-39 in Vejle is:

- to merge smaller apartments into bigger ones
- erect new floor with the penthouse,
- establish of the new facade with new balconies at the south,
- provide new access staircases

It is important to bring the building into the modern standard, complying with Building Regulations.

To establish this, following procedures in connection to concrete trade must be done:

- Cast new foundations for columns and entrance
- Place new hollow core slabs to create penthouse floor
- Stair elements and landings in the space created inside the building

2.1. General information

The work includes the building components and other services stated in point 2.2, which are described in more detail in the work specifications and 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:

1. cast-in situ foundations including reinforcement and installation accessories
2. Staircase elements and landings, including installation accessories
3. Hollow core slabs, including installation accessories

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

- reinforcement and installation accessories for concrete casts
- Formwork
- Temporary supports

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

- Concrete anchors for column installation
- Railings for concrete stairs
- Fixings of landings to bearing columns
-

2.3. Designing

No design should be done by the contractor, except where manufacturer's details apply. All required changes must be discussed with the client or clients consultant.

2.4. The building site

See case specification chapter 4 drawing no. **AN-X3(2ET) 001**

2.4.1 Access conditions:

The contractor must make sure that lorry can reach the site without unnecessary risks or delay. Unloading area must be suitable for the purpose with respect to surface properties, accessibility and load bearing capacity.

2.4.2 Mounting the elements:

Before the elements are mounted, there must be sufficient time to visually inspect for damages and faults. Elements with defects and such, which cannot be repaired or concealed, or which endanger the safety of structure, must be removed from the building site. If an element is damaged the building technician can decide if the element should be repaired on site or if it should be replaced. The building technician can scrap the element if the repairs did not live up to the demands.

2.4.3 Weather precautions:

From, when the elements are received and until the construction is permanently done, it is the contractor's responsibility that the elements are not damaged in any way by the weather. In case of rain and snow the workers should cover the elements and make sure that they are protected against moist and water.

2.5. Health and safety

See case specification chapter 4 and 5 and H&S plan

The contractor is responsible to make sure that the safety under all phases of the delivery and mounting are proper. The building technician can demand changes in the mounting process if necessary..

2.6. The surrounding environment

See case specifications chapter 5

The contractor is to make sure that the surroundings don't cause any risks to personnel working on site. This includes for example the noise pollution and other harmful components in the environment.

2.7. Quality assurance

Tender control plan, control plan and adjoining documentation must be followed.

2.7.1. General information

See case specification chapter 7

Elements must be delivered with a clear identification, which will be used both on drawings, calculations and on element plans. If the project material contains identification number, this must be used as well.

2.7.2. Quality control documentation

- See case specification chapter 7
- See tender control plan
- Control of the quality of materials including notes of visual inspection and photos if necessary
- Control of the quality of mounting materials and components
- Control of the quality of the execution of work with the above
- Final control of the work

2.7.3. O&M (operational and maintenance)-documentation

The contractor must provide documentation concerning operation and maintenance. These are to be used by the building technician and for the building owner in the future.

The following documentation for the work's quality must be delivered to TEAM Architectural office:

- Certificates of the concrete quality and standards
- Certificates of the element quality and standard
- Documentation for reinforcement grade and quality
- Documentation for raw material quality
- Documentation for each component produced measure, control and quantity of the components
- Maintainers plans for staircases

2.7.4 Project design documentation

The static calculations for the elements should contain at the minimum:

- Specification of safety
- Specification of materials
- Specification of loads and the load combinations used
- Documentation of strength according to DS 411 and DS 412 etc.
- Any other relevant information

If there are any deviations from the norms standards etc. This shall be stated in the documentation and the deviation has to be documented and approved.

If any calculations show higher demands for reinforcement, stronger connections etc. this has to be documented. Documentation and drawings of this must be sent to the building technician without delay.

2.8. Scheduling the work

2.8.1 General

Contractor must cooperate with other contractors, it is the duty of Main contractor to ensure this. Individual contractors may take part to the time planning as the Main contractor sees fit.

2.8.2 Documents

All work documents must be delivered for the client's or client's assistant'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 and client or client's consultant 7 days before mounting.

Guidelines pointed out in the preliminary time schedule should be followed.
The contractor must deliver detailed descriptions and drawings for the Employer to be inspected. Production must only begin when material is approved. Documents should describe the functions (for example rigidity, strength and stability) of the building components. The final construction must come up to strength and safety requirements.
It is the contractor's responsibility to design the elements with respect to strength, lift, transport, mounting and bracing.
Contractor must make sure that all the necessary fittings (electricity, plumbing) have space reserved.

2.8.3 Temporary support and bracing structures:

Temporary supports and bracing structure must be constructed so that they cause no harm to the element or the structure and are safe. They shall prevent the danger of element falling or tipping or such. Temporary supports and bracing must enable adjustments to the position of element. Adjustments must not cause any damage to elements.

2.9. Tests and samples

Test and sampling according to concrete control plan.

3. General specifications

3.1. Reference

3.1.1. Norms and standards

With the supplementary and tightened requirement that are given in the project materials, the following documents and attached standards, etc, are valid in their whole:

- BR 08
- DS 401, Dansk Ingeniørforenings norm for sand-, gravel- and stone aggregate, 1992
- DS 409, Norm for Health and Safety Provisions for Constructions, 1998
- DS 410, Norm for Loads on Constructions, 1998
- DS 411, Norm for Concrete Constructions, 1999
- DS 412, Norm for Steel Constructions, 1998
- DS 414, Norm for Masonry Constructions, 1998
- DS 415, Norm for Founding, 1998

- DS 423, Norm for Concrete Testing, 1984
- DS 427, Cement. Composition, Demands for Characteristics and Approval Criteria, Part 1: Standard Cements, May 1995
- DS 451, Norm for Composite Constructions. Concrete - Steel, 1984
- DS 481, Norm for Concrete Aggregate, 1999
- DS 482, Norm for the Execution of Concrete Constructions, 1999 (See Fronter)
- DS/INF 103, Technical Report re Constructions made of Lightweight Construction Concrete, 1995
- Norm Publication no. NP-188-R, Directions for the use of Fly Ash and Micro Silica in Concrete, 1987
- Dansk Standards Catalogue Update, current edition.
- Building Regulations, 1. April 1995 incl. current enclosures.

Publications

BPS-publikation 24, Typical Specification Sections, Concret Surfaces for betonoverflader til malebehandling og tapetopsætning, juni 1989

BPS-publikation 63, Typical Specification Sections, Concrete Constructions, In-situ Cast, Examples, March 1988

SBI-anvisning 64, Mortar, Brickwork and Plastering, 1981

SBI-anvisning 125, Casting Concrete in Winter, 1982

SBI, Beton 8, Choice of Environmental Classes for Concrete Constructions, 1994

Malerfagligt Behandlings- katalog (MBK), Dansk Teknologisk, Surface Techniques

Quality Assurance: By- og Boligministeriets Departmental Order no. 202 af 23. March 2000 with attached guidelines from May 2001.

Other norm standard papers, publications, etc, to which reference is made in the project materials are equally valid, except for points stipulated in the project materials where special, deviating demands are made. Norms, standard papers and publications are valid in their current editions.

Directions form Suppliers

Valid and current directions from suppliers regarding the transport, storing, protection, processing, mounting and use of a product, etc, must be observed unless otherwise stated in the project materials.

3.1.2. Direction

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.

Mounting of elements must be carried out by manufacturers guidelines and come up to Danish standards and code of practice as stated in these specifications.

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.

Materials and products of specific brands can be prescribed for the works. Other product brands can be used if they are on the same footing as the ones prescribed. Documentation for this must be presented to the project management.

Manufacture of the elements must be certificated by the institution of Danish standards (DS) for quality control system as well as all components used in the elements have to full fill DS/or ISO 9001 standards for manufacture quality in it's class.

These documentations have to be presented and approved before elements can be transported to the building site

All materials must meet standards for respective environmental demands.

3.3. Execution of works

Demands for executing the work must follow the given standards

see 3.1.1. Stipulations in the Health and Safety plan must also be followed.

Specific mounting and installation procedure must be followed for the stair elements due to specific nature of the project.

In the event of conflicting factors, the contractor shall provide alternative implementation method.

3.4. Control

See the attached control plan and tender control plan.

All documents concerning the control must be filled out and handed out signed to the building site manager and then be delivered to the client or client's consultant.

3.5. Relation to other works

Foundations must be complete before beginning of column erection. Entrance foundations must be finished before beginning of curtain wall installation and stair installation.

Staircases must not be installed before the demolition works are finished in the area where they are installed in.,

Hollow core slabs can be installed after steel work and masonry are on place. Consecutive work on penthouse floor can be carried after installation of hollow core slabs is fully complete.

Related services and finishes must be taken in to account.

3.6. Work environment

See case specifications chapter 4 and 5.

4. Building component specifications

See attached specifications.