

## TITLE 8. CONTROL

# CHAPTER 14

## GENERAL BASIS FOR CONTROL

### Article 78. General criteria for control

The Project Manager, representing the Owner, shall carry out sufficient control or inspections to allow it to assume compliance of the structure with the basic requirements for which it has been developed and designed.

When the Owner decides to carry out a control of the structural design, he may test its compliance in accordance with the provisions of Article 82.

The Project Manager shall carry out the following controls during the construction works:

- control of compliance with products supplied to the works, in accordance with Chapter 16
- control of structure construction, in accordance with Article 92, and
- control of the finalized structure, in accordance with Article 100.
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This Code includes a series of checks that allow the above control to be carried out. Despite this, the Project Manager may also opt for:

- other control alternatives provided that they demonstrate, under its supervision and responsibility that they are equivalent and they do not lead to a reduction in the guarantee to the user:
- an equivalent control system that improves the minimum guarantees for the user laid down by the Articles, for example through the use of materials, products and processes possessing officially recognisable quality marks in accordance with the contents of Annex 19, which may be subject to the special considerations laid down for these in this Code.

In any case, it should be understood that the decisions arising out of the control shall be conditional upon effective operation of the work during its useful lifetime specified in the design.

The cost of the reception control included in the design shall be considered independently in the work budget, provided the applicable legislation permits it.

### 78.1 Definitions

For the purposes of the control activities covered by this Code, the following definitions apply:

- **Batch:** quantity of product with the same designation and source contained in the same unit of transport (container, tank, truck, etc.) and that is received at the work or in the place designed for its reception. In the case of concrete, batches are usually identified by the product or mixture units.
- **Consignment:** set of products from the same source, contained in the same unit of transport (container, tank, truck, etc.) and that is received in the place where reception is carried out.

- Stockpile: quantity of material or product from one or several batches or consignments that is stored together after arrival at the work until its final use. Material or product batch: quantity of material or product subject to reception as a whole
- Construction batch (lot): part of a work, whose construction is subject to acceptance as a whole.
- Control unit: set of activities, corresponding to the same construction process, that is subject to control for reception of a construction batch.

## **78.2 Quality control agents**

### **78.2.1 Project Manager**

On the application of its duties and acting on behalf of the Owner, the Project Manager shall fulfil the following obligations with regard to control:

- a) approve a quality control plan for the construction work, which develops the control plan included in the design, and
- b) supervise the development and validate the control activities in the following cases:
  - control of the reception of products used in the work,
  - control of construction, and
  - reception control of other products that reach the work to be processed in the installation relation to the work.

The Project Manager may also require any additional evidence of compliance by products used in any industrial installations that supply products to the work. It may also decide to carry out checks, sampling, tests or controls on the said products before they are processed.

In the building sector, these are the obligations of the Construction Manager under the terms of Article 13 of Law 38/1999 of 5 November of the Building Regulation.

### **78.2.2 Quality control bodies and laboratories**

The Owner shall outsource the conduct of control tests to a laboratory that complies with the requirements set out in 78.2.2.1. It may also commission quality control organisations to carry out other technical service activities relating to the control of design, products or the construction processes used in the work in accordance with the provisions of 78.2.2.2. If appropriate, sampling may be outsourced to any of the agents to which this section refers provided they possess the corresponding certification, unless it is not required under the specific applicable regulations.

The quality control laboratories and organisations shall be able to demonstrate their independence from other agencies involved in the work. Beforehand, at the beginning of the work, they shall deliver a declaration to the Owner that is signed by a natural person possessing the required independence and that shall be included by the Project Manager in the final work documents.

#### **78.2.2.1 Testing laboratories for control**

Tests carried out to check the compliance of products on their reception at the work in accordance with this Code shall be outsourced to private or public laboratories with sufficient capacity and independent of other agents involved in the work. This independence shall not be a necessary condition in the case of laboratories belonging to the Owner.

Private laboratories shall support their capabilities by means of certification obtained in accordance with Royal Decree 2200/1995 of 28 December for corresponding tests or otherwise through certification issued by Autonomous Administration in the area of concrete and their inclusion in the general register is subject to Royal Decree 1230/1989 of 13 October.

Testing laboratories with sufficient capability and belonging to any Local Authority Directorate of Public Administrations with competencies in the field of building or public work may be used.

In the event that a laboratory is unable to carry out any of the tests required for the control using its own resources, it may subcontract it to a second laboratory following the approval of the Project Manager, provided the latter is able to demonstrate its independence and sufficient capacity in accordance with the provisions in this Article. In the case of laboratories situated in the work, these shall be linked to laboratories that are able to demonstrate their capability and independence, in accordance with the provisions of the previous paragraph in this section which shall be included in their corresponding quality system.

#### **78.2.2.2 Quality control bodies**

The product reception control, the construction control and, if applicable, the design control may be carried out with the technical assistance of quality control organisations with sufficient capability and independent from other agents involved in the work. This independence shall not be a necessary condition in the case of quality control organisations belonging to the Owner.

In the case of building works, the quality control organisation shall be those referred to in Article 14 of Building Law 38/1999. These organisations may justify their capability by means of certification issued by Autonomous Administrations for the control areas laid down in this Code.

A public quality control organisation with sufficient capability and belonging to any Local Authority Directorate with competencies in the field of building or public work may be also used.

### **Article 79. Conditions for the conformity of the structure**

The structure shall be constructed in accordance with the design and the amendments authorised and documented by the Project Manager. During construction of the structure, the documentation required by regulations shall be drawn up and this shall include the documentation referred to in Annex 21 of this Code without prejudice to the provisions of other Regulations.

A representative of the agent responsible for the inspected activity or products (design Author, concrete Supplier, Supplier of reinforcement constructed, precast elements Supplier, Builder, etc.) may be present during all activities connected with reception and control. In the case of sampling, each representative shall be given a copy of the corresponding report. When any incident arises during reception as a result of non-compliant test results, the Supplier or, if applicable, the Builder, may request a copy of the corresponding control laboratory report, which shall be supplied by the Owner.

#### **79.1 Control program and plan**

The construction design for any concrete structure shall include in its memory report an annex with a control plan that identifies any check that may arise out of the plan, such as an evaluation of the total control costs, which shall appear as an independent chapter in the design budget.

Before beginning the control activities in the work, the Project Manager shall approve a control programme, prepared in accordance with the control plan in the design and considering the Builder's work plan. The control programme shall include at least the following aspects:

- a) identifications of products and processes subject to control, defining the corresponding control batches and control units, describing in each case the checks to be carried out and the criteria to be followed in the case of non-compliance;
- b) a forecast of materials and human resources required for the control with

- identification of activities to be subcontracted, where appropriate,
- c) the control programming, dependent on the Builder's self-control procedure and the work plan specified for its construction;
- d) appointment of the person in charge of sampling, where appropriate; and
- e) the control documentation system to be used during the work.

## **79.2 Conformity of the design**

The aim of design control is to check compliance with this Code and with other applicable regulations, such as inspecting level of definition, design quality and all aspects that may affect the final quality of the design structure.

The Owner may decide on the implementation of the design control with the technical assistance of a quality control organisation as described in section 78.2.2.2.

## **79.3 Conformity of the products**

The aim of the product reception control is to ensure that their technical characteristics meet those laid down in the design project.

If products require EC marking in accordance with Directive 89/106/EEC, their compliance may be tested by checking that the values declared in documents accompanying said EC marking it possible to deduce compliance with specifications laid down in the design and, otherwise, in this Code.

In other cases, the product reception control shall include:

- a) control of documentation for supplies arriving at the work, carried out in accordance with 79.3.1,
- b) if appropriate, control by means of quality marks, in accordance with 79.3.2 and,
- c) if appropriate, control by means of tests in accordance with 79.3.3.

Chapter 16 of this Code includes some criteria for checking the compliance of products received at the work with this Code. Similarly, it also includes criteria for checking compliance of products that may be used for processing before their use where applicable.

In the exercise of its power, the Project Manager may order at any time additional checks or tests on product consignments or batches supplied to the work or on employees for the certification of compliance.

In the case of concretes with recycled aggregates, concretes with light aggregates and self-compacting concretes, compliance may be checked in accordance with complementary criteria set out in Annexes 15, 16 and 17, respectively.

### **79.3.1 Documentary control of supplies**

The Suppliers shall deliver to the Builder any product identification document demanded by the applicable regulation or, if appropriate, by the design or Project Manager, and supply them to the Project Manager. Without prejudice to the additional provisions laid down for each product or other Articles in this Code, at least the following documents shall be supplied:

- a) before supply:
  - compliance documents or administrative authorisations required by the regulation, including when documentation corresponding to EC marking is required for building products, in accordance with Royal Decree 1630/1992 of 29 December, which lays down provisions for the free circulation of building products in accordance with Directive 89/106/EEC,

- if applicable, a declaration by the Supplier signed by a natural person with sufficient power of representation that certifies that the product possesses an officially recognised quality mark at the same date,
- b) during supply:
- supply sheets for each batch or consignment, in accordance with the provisions in Annex 21,
- c) after the supply:
- a warranty certificate for the delivered product as referred to, in each, by the various sections of Chapter 16 of this Code, signed by the natural person with sufficient powers of representation in accordance with the provisions in Annex 21.

### **79.3.2 Acceptance control by means of quality marks**

The Suppliers shall deliver to the Builder, who shall supply to the Project Manager, a copy obtained by a natural person of the certificates that shows that the supplied products possess an officially recognised quality mark in accordance with the provisions of Article 81.

Before the beginning of the supply, the Project Manager shall evaluate whether the documentation supplied is sufficient for the reception of the supplied product depending on the mark guarantee level and in accordance with the provisions of the design and as laid down in this Code or otherwise establish the tests to be carried out.

### **79.3.3 Acceptance control by means of testing**

To check compliance with the basic requirements set out in this Control, it may be necessary, in certain cases to carry out tests in some products in accordance with the provisions in this Code or otherwise in accordance with specifications laid down in the design and ordered by the Project Manager.

If tests are carried out, the control laboratories shall provide their results together with measurement tolerances for a given level of confidence and also information on the dates on which the sample entered the laboratory and on which the tests were conducted.

The quality control organisations and laboratories shall deliver the results of their activities to the agent responsible for commissioning them and, in any case, to the Project Manager.

## **79.4 Conformity of the construction processes**

During construction of the structure, Project Manager will inspect the construction of each part of the structure, checking its sitting, the products used and the correct construction and layout of construction elements. It should carry out any additional tests considered necessary to check compliance with that indicated in the design, the applicable regulations and orders from the Project Manager. It shall check that the necessary measures have been adopted to ensure compatibility between the various construction products, elements and systems.

The construction control shall include:

- a) verification of the Constructor's production control, in accordance with 79.4.1, and
- b) implementation of process inspections during construction, in accordance with 79.4.2.

### **79.4.1 Control of the construction by means of checking the production control of the Constructor**

The Constructor is bound to define and develop a monitoring system that allows construction compliance to be checked. For this purpose, he should draw up a self-control plan that includes

all work activities and processes and incorporates, giving details, the envisaged performance programme that is to be approved by the Project Manager before beginning work.

The results of all checks carried out by means of self-control shall be recorded on physical or electronic media that shall be made available to the Project Manager. Each recording shall be signed by a natural person who has been appointed by the Constructor for the self-control of each activity.

During work, the Constructor shall maintain available to the Project Manager a permanently updated register showing the names of people responsible for carrying out self-control of each performance process at all times. Once the work has been completed, this register shall be incorporated in the final documentation on the work.

Depending on the construction control level, the Constructor shall define a stock management system sufficient to achieve the required traceability of products and elements positioned in the work.

#### **79.4.2 Control of the construction by means of control of processes**

The Project Manager, with the technical assistance of a control body, if appropriate, shall check compliance with the basic requirements laid down in this Code, carrying out spot controls of the construction processes where necessary, as laid down in the design, to ensure compliance with the requirements laid down in this Code or ordered by the Project Manager.

#### **79.5 Checking of the conformity of the finished structure**

Once the structure is completed, altogether or any of its stages, the Project Manager shall take steps to ensure that the load checks and tests required by any applicable regulations are carried out in addition to those established on a voluntary basis in the design or decided by the Project Manager, determining the validity of the results obtained where appropriate.

### **Article 80. Documentation and traceability**

All activities relating to the control laid down in this Code shall be documented in the corresponding physical or electronic logs, which make available documentary evidence of all checks, test certificates and control procedures carried out, which shall be included in the final control documentation once the work is completed.

The registers shall be signed by the natural person responsible for carrying out control activities and, if present, by a person representing the product supplier or the supplier of the inspected activity.

The supplier sheets will be signed by a natural person with sufficient capability as the Supplier's representative.

In the case of electronic procedures, the signature shall be as laid down in Law 59/2003 of 19 December.

Structural compliance with this Code requires the carrying out of appropriate traceability among products permanently used in the work (concrete, reinforcements or precast parts) and any other product that has been used in its production.

When the design lays down a control whose construction is demanded for the structure, compliance with this Code also requires the carrying out of traceability for suppliers and product batches or consignments with each structural element carried out in the work. In this case, with the aim of achieving this traceability, the Constructor shall introduce a stock management system that is part of its activities, preferably by means of electronic procedures.

### **Article 81. Warranty levels and quality marks**

Product and construction process compliance with the basic requirement laid down in this Code requires a set of specifications to be satisfied with a sufficient level of guarantee.

Products and processes may meet a warranty level higher than the minimum requirement on a voluntary basis by including systems (quality marks, for example) that certify that the quality systems and production control used comply with the requirements laid down for the granting of these said marks by means of the corresponding audit.

For the purposes of this Code, any warranty levels over and above the minimum laid down in the regulations may be demonstrated by any of the following procedures:

- a) through possession of an officially recognized quality mark as laid down in Annex 19 of this Code,
- b) in the case of products manufactured on site or processes constructed on the same site, by means of an equivalent system validated and supervised under the responsibility of the Project Manager, which guarantees similar warranties are complied with guarantees equivalent to those laid down in Annex 19 in the case of officially recognized quality marks.

This Code considers the application of certain special considerations during reception for products and processes with a higher level of warranty by means of any of the two procedures mentioned in the above paragraph.

Reception control shall take into account the warranties associated with possession of a mark, provided that this complies with certain conditions. In the case of construction processes and also of products that do not require EC marking under the terms of Directive 89/106/EEC, this Code also allows the application of certain special considerations on reception, when they bear a voluntary quality mark that is officially recognised by a Directorate with competencies in the area of buildings or public works or belonging to the local government of any European Union member State or any of the signatories of the agreement on the European Economic Space.

For the purposes of compliance with the basic requirements laid down in this Code, quality marks shall comply with the conditions laid down in Annex 19 to ensure official recognition.

Quality marks that have been subject to recognition or, as applicable, renewal or cancellation, may be entered in a specific register set up in the General Technical Secretariat of the Ministry of Development (Subdirectorato General on Standards, Technical Studies and Economic Analysis) that shall decide on its inclusion, if applicable, on the Permanent Concrete Council website ([www.fomento.es/cph](http://www.fomento.es/cph)) for circulation and General.