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Issued	15/08/2012	date	--
Valid until	Indefinite	Page	1 of 6

Wall structures built up with concrete building blocks

N.V. Betonagglomeraten Gubbels

DECLARATION BY KIWA

This attestation with product certificate was issued on the basis of BRL 2815 'Wandconstructies opgebouwd uit betonnen stapelblokken' [Wall structures built up with concrete building blocks] dated 22-06-2012, in conformity with the Kiwa-Reglement voor Productcertificatie [Kiwa Regulations for Product Certification].

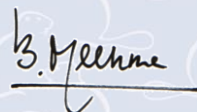
Kiwa declares that:

- confidence is justified that upon delivery the concrete building blocks supplied by the certificate holder meet the environmental-protection and technical specifications as laid down in this attestation with product certificate, on the condition that the building blocks have the KOMO[®] quality mark in the way indicated in this attestation with product certificate.
- the wall structures composed of these certified products will provide results like those described in this attestation with product certificate, on condition that:
 - the walls are constructed in accordance with the regulations and/or processing methods described in this attestation with product certificate;
 - the application conditions described in this attestation with product certificate are complied with.

Kiwa declares that, considering the above, concrete building blocks meet in their application the requirements of the Dutch Building Decree as specified on page 2 of this quality declaration and the Dutch Soil Quality Decree.

As part of this attestation with product certificate Kiwa declares that no inspection will take place with respect to the production of the other elements of the wall structure, nor to the use in structures and to the obligation of the user to report to and/or inform the competent authority.

This certificate is a recognised quality declaration of the Building Decree in accordance with the Tripartite Agreement (Dutch Government Gazette 132, 2006) and the Dutch Housing Act. As for the Soil Quality Decree, this is a certificate recognised by the Dutch Minister for Infrastructure and Environment if the certificate has been included in the 'Overzicht erkende kwaliteitsverklaringen in de bouw' [Overview recognised quality declarations for the construction industry] and in the websites of the Stichting Bouwkwaliiteit (SBK): www.bouwkwaliiteit.nl and in the website of Bodem+: www.bodemplus.nl.



Bouke Meekma
Kiwa

The certificate has been included in the overview on the website of Stichting KOMO: www.komo.nl.
Advice: refer to www.kiwa.nl to find out whether this certificate is valid.

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1. BUILDING DECREE CERTIFICATE

Building Decree department No. and title	Limit value / Determination method	Performance in accordance with quality declaration	Comments related to application
Chapter 2 – Safety regulations			
2.1 General strength of the structure	Not exceeding a maximum limit condition as determined by NEN-EN 1990.		For the design of the wall structure use is made of the attested characteristic values in accordance with 6.4 of BRL 2815.
2.2 Strength in case of fire	Time of fire resistance with respect to collapsing determined according to NEN-EN 1992-1-2.		To be determined per project
2.9 Limitation of the development of fire and smoke	(In)flammability determined according to NEN-EN 13501-1	Wall structures are inflammable or comply with fire class A1 according to NEN-EN 13501-1.	

2. TECHNICAL AND ENVIRONMENTAL-PROTECTION SPECIFICATIONS

2.1 SUBJECT









Wall structures composed of dry stacked concrete building blocks on a flat foundation and the environmental protection properties of the concrete building blocks delivered by the certificate holder and that may be used in wall structures that may come into contact with rain water, ground water and/or surface waters.

2.2 CONCRETE BUILDING BLOCKS (Masterbloc®)

The concrete building blocks are made from VBC concrete in conformity with NEN-EN 206-1 en NEN 8005 and NEN 6722. Strength class C30/37. At delivery the concrete pressure strength is at least 2/3 of the characteristic cube pressure strength.

The concrete building blocks consist of (non-)reinforced concrete.

The shape and dimensions of the blocks are given below.

BLOCK	Length	Width	Height
	150cm	75cm	40cm
	120cm	60cm	40cm
	75cm	75cm	40cm
	60cm	60cm	40cm
	112,5cm	75cm	40cm
	90cm	60cm	40cm
	37,5cm	75cm	40cm
	30cm	60cm	40cm

The maximum size tolerances for the building blocks and for the catch and counter-catch are shown in the IKB schedule in annex II of the BRL 2815.

Chapter 8 shows the drawings of the Masterbloc®.

2.3 WALL CONSTRUCTION

The foundation for the wall structure and any anchoring of this has not been included in this KOMO attestation with product certificate.

The wall structures covered by this KOMO attestation with product certificate are not parts of buildings, but they are parts of retaining walls, clamp silos and loading and unloading bays.

The wall structure is stacked in accordance with the stacking method in annex IV of BRL 2815.

2.4 ENVIRONMENTAL-PROTECTION SPECIFICATION

The average composition values determined in conformity with AP 04-SB and the average emission determined in conformity with AP04-U comply with annex A of the Soil Quality Regulations [Regeling Bodemkwaliteit] with respect to the intended application area.

Conditions for use

The concrete building elements shall be applied in accordance with articles 5, 6, 7 and 33 of the Soil Quality Decree (functionality, duty to maintain and recapturability).

2.5 MARKINGS AND INDICATIONS ON THE DELIVERY DOCUMENTS

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The products are marked with the KOMO[®] marking.
The design of the quality marking is as follows:



Mandatory indications on the marking:

- manufacturer and/or registered trademark;
- production date or code;
- KOMO[®] logo and certificate number.

The logo and the production date are printed on the product.
The logo is printed on the delivery documents.

3. PROCESSING

The manufacturer has agreed with Kiwa to take care of the quality assurance of the product after its final check in the factory until the time of delivery at the place of delivery.

The manufacturer will make available to the buyer all documentation relevant to the buyer, such as guidelines for handling and use, product certificates, warnings and the like at the moment of delivery.

The manufacturer is obliged towards Kiwa to ensure the correct contents of this documentation.

4. PERFORMANCE

4.1 STRENGTH OF THE WALL STRUCTURES (BUILDING DECREE 2.1)

The manufacturer or buyer will draw up calculations for each wall structure demonstrating compliance of the wall structure the section of the Building Decree referred to.

For determining the strength of the wall structure use is made of NEN-EN 1992, NEN-EN 1996 and/or NEN-EN 1990, annex D as referred to in article 2.1 of the Building Decree.

The foundation is designed in conformity with NEN-EN 1992-1-1 and the NEN-EN 1997-1, in which the maximum additional bending of the foundation is $0.002x l_{rep}$ or 15 mm, where l_{rep} is the length of the span and in case of projections two times the length of the projection.

When determining the maximum limit conditions use is made of the characteristic values for the mutual shearing strength between the blocks (f_{vk0}), the shearing strength between the block and the foundation ($f_{vk0,fund}$), the angle of internal friction (α_k) and the bending strength perpendicular to the edge joint (f_{xk2}) according to NEN-EN 1996-1-1, article 3.6.2 and 3.6.3 and as determined in accordance with section 6.4 of the BRL 2815 as shown below:

$$f_{vk0} = 0.11 \text{ N/mm}^2$$

$$\alpha_k = 0.042$$

$$f_{vk0,fund} = 0.0026 \text{ N/mm}^2$$

$$\alpha_{k,fund} = 0.0018$$

$$f_{xk2} = 0.36 \text{ N/mm}^2$$

In calculating the usability limit condition only the frictional resistance of the block is used, assuming that there is a play between the catches and counter-catches and that in this condition no shearing takes place.

The characteristic bending strength (bending with forming cracks in the edge joints or turning point (f_{xk1}) according to NEN-EN 1996-1-1, article 3.6.3) is '0'.

The turning point in the maximum limit condition is determined using the point of gravity in the concrete pressure diagram.

When designing the wall structure including the dilatations, the thermal effects according to NEN-EN 1992-1-1, article 2.3.1.2 are considered.

When designing the wall structure the fact that the blocks are stacked using the stacking method in annex IV of the BRL 2815 are considered. The wall structure is then with respect to the design considered to be a massive wall structure.

Explanation

The certifying authority does not check the calculations with respect to content, but it checks whether calculations have been made in which the aspects used in these section have been included.

4.2 STRENGTH IN CASE OF FIRE (BUILDING DECREE 2.2)

The duration of the fire resistance of the concrete construction elements with respect to collapse can be determined in accordance with NEN 6071 and shall be part of the calculations to be drawn up per project.

4.3 LIMITATION OF THE DEVELOPMENT OF FIRE AND SMOKE (BUILDING DECREE 2.9)

Wall structures are inflammable or comply with fire class A1 according to NEN-EN 13501-1.

5. SUGGESTIONS FOR THE BUYER

5.1 Inspect upon delivery the products listed in the 'Technical specification' for:

- delivery as agreed;
- correct marking and marking method;
- any visible defects of the product as a result of transport and the like.

5.2 At delivery of the products mentioned under 'processing', make sure that they meet the specifications described in this section.

5.3 In case of rejection of the products on the basis of the above, please contact:

- N.V. Betonagglomeraten Gubbels

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and, if necessary:

- Kiwa Nederland B.V.

- 5.4 Store, transport and process in accordance with the stipulations mentioned under 'processing'.
- 5.5 Observe the application conditions mentioned under 'Performance'.
- 5.6 Hand over the pieces of evidence (delivery receipts/soil proof and certificate) to the client. This does not apply in case of delivery to natural persons other than in pursuance of profession or company.

6. TIPS FOR THE CLIENT

Keep the pieces of evidence (delivery receipts/soil proof and, if applicable, the certificate) available for inspection by the competent authority for a minimum period of 5 years. This does not apply in case of delivery to natural persons other than in pursuance of profession or company.

7. LIST OF DOCUMENTS MENTIONED*

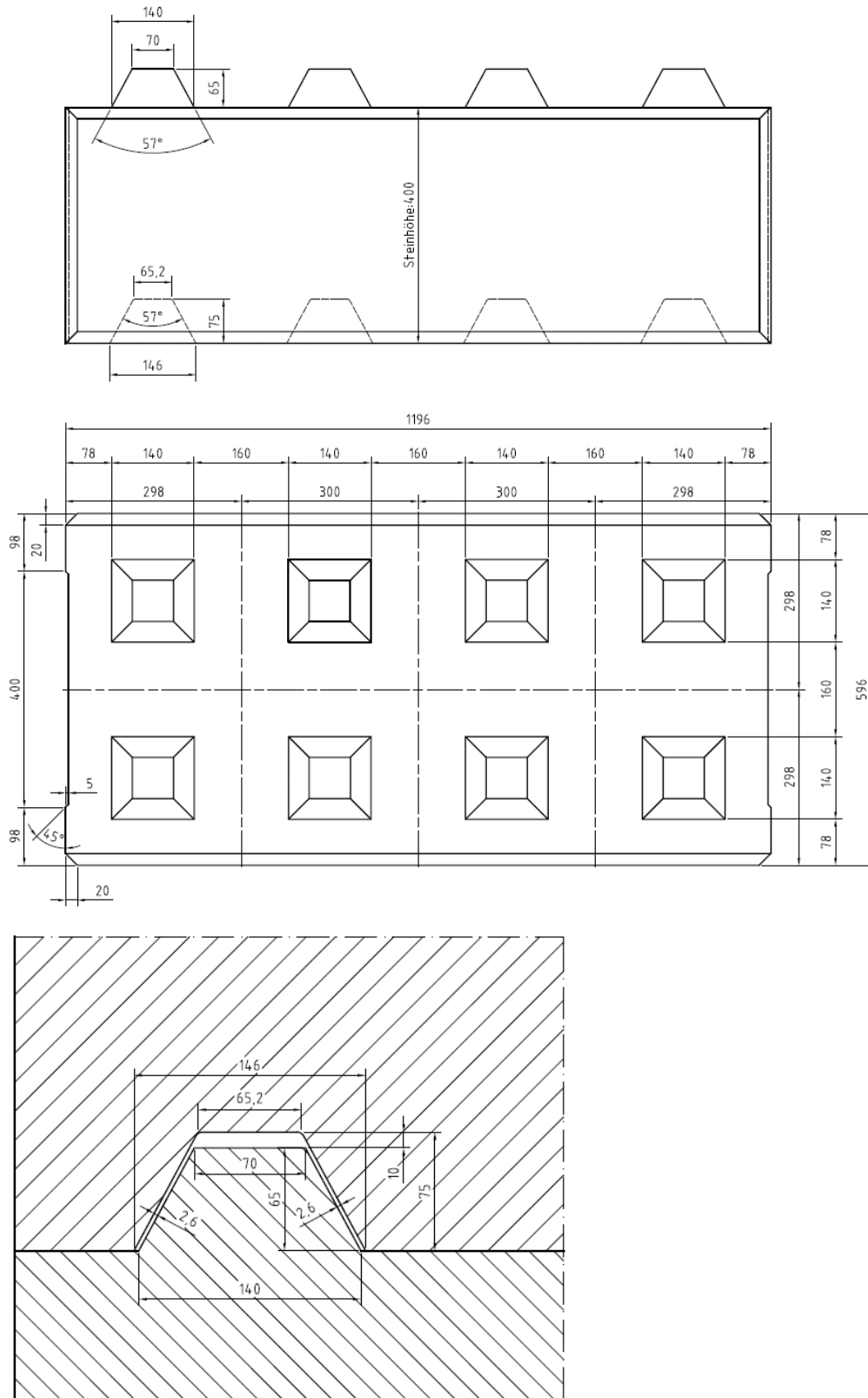
BRL 2815	Wall structures built with concrete building blocks.
NEN-EN 206-1	Concrete - Part 1: Specification, properties, manufacture and conformity.
NEN 6069	Experimental determination of the fire resistance of structures.
NEN 6071	Determination by calculation of the fire resistance of building elements. Concrete structures.
NEN 6720	Regulations for concrete: Structural requirements and calculation methods.
NEN 6722	Regulations for concrete: Execution.
NEN 7330	Leaching characteristics of solid earthy and stony building and waste materials. Determination of the content of organic components. General directions.
NEN 8005	Dutch version of NEN-EN 206-1: Concrete - Part 1: Specification, properties, manufacture and conformity.
Building Decree	The Building Decree.
AP04	Accreditatieprogramma Bouwstoffenbesluit AP04 [Accreditation Programme Building Materials Decree] AP 04, version 3, SIKB, Gouda.
Soil Quality Decree	Soil Quality Decree, Law Gazette of the Netherlands 2007, no. 469.
Soil Quality Regulations	Soil Quality Regulations, Law Gazette of the Netherlands 2007, no. 247.

* For the correct version of the above-mentioned documents, please refer to the last revision page of BRL 2815

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8. DRAWINGS

Masterbloc[®] 1200x600x400



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Masterbloc[®] 1500x750x400

