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### **Subject:**

### **NMC Precast Concrete Channels**

### **Certificate holder:**

### **Contru Solutions (Pty) Ltd**

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The master copy of this document will appear on the website:

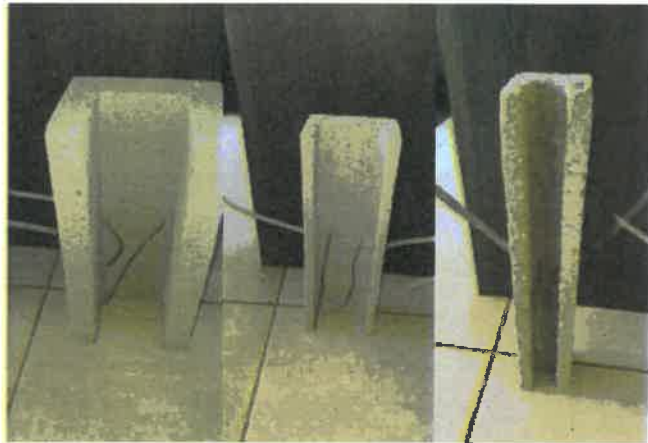
<http://www.agrement.co.za>

### **Validity**

Users of any Agrément certificate should check its status: all currently valid certificates are listed on the website. In addition, check whether the certificate is [Active or Inactive](#).

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### **General description**

The NMC Precast Concrete Channels are 25 MPa precast fibre reinforced concrete C-sections or Channels, precast in 500 mm modules. They are used in conventional (masonry) construction with brick and block configurations. They come with 2 x 20 mm x 250 mm corrugated hoop irons cast-in on both sides to be built into brickwork in order to achieve extra continuity. They are also fitted internally with cast-in binding wires for fixing piping or services. These channels are cast with a rough finish to achieve good bonding with existing brickwork and mortar.

### **Uses**

The NMC Precast Concrete Channels product range covers all needs for installing services in walls with brickwork and blocks, eliminating the chasing of walls. The NMC Precast Concrete Channels are used on walls for:

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- electrical conduits, light switches, plug boxes and DB Boards, horizontally and vertically
- plumbing services, all water supply and waste pipes (40 mm and 50 mm) as well as 110 mm sewer pipes
- accommodating shower and bath mixers that need to be installed in walls, and
- services that can be combined in one channel, such as wastewater and water supply.

This certificate and Agrément South Africa's evaluation apply only to NMC Precast Concrete Channels that are designed and erected as described and illustrated in this certificate, and where the terms and conditions of certification are complied with.

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## PREAMBLE

This certificate is issued by Agrément South Africa in terms of Agrément South Africa Act no. 11 of 2015. This certificate:

- has been granted after a technical appraisal of the performance of NMC Precast Concrete Channels for the uses covered by the certificate
- is independent of any patent rights that may or may not subsist in the subject of the certificate and
- does not relieve the certificate holder from the obligation to obtain the prior approval of the building authority concerned for the use of the subject.

Agrément South Africa's opinion is that the quality and performance of NMC Precast Concrete Channels will be satisfactory, provided that the requirements stipulated in this certificate are adhered to. However, Agrément South Africa does not on behalf of itself, or the state, or any of its employees or agents guarantee such quality or performance.

Responsibility for compliance with the requirements of this certificate and the quality of the finished buildings reside with the certificate holder.

No action for damages, or any other claim whatsoever, lies against Agrément South Africa, its members, the State or any of its employees should the said components and materials fail to comply with the standard set out in this certificate.

Building authorities or users who are in any doubt about any detail or variation, should contact [Agrément South Africa](#).

The validity of this certificate is reviewed every three (3) years. The certificate shall remain valid as long as Agrément South Africa is satisfied that:

- the certificate holder complies with the general and specific conditions of certification and the technical requirements stipulated in the certificate
- the performance-in-use of the subject is acceptable and
- any changes in building legislation, regulations, relevant standards or Agrément performance criteria have not invalidated the technical assessment which formed the basis of certification.

Agrément South Africa reserves the right to withdraw the certificate at any time, should reasonable cause exist.

Notices affecting the validity of this certificate will be published in the *Government Gazette*.

## PART 1: CONDITIONS OF CERTIFICATION

Licensee - any person or company appointed by the certificate holder and registered with Agrément South Africa to construct with NMC Precast Concrete Channels in accordance with this certificate and authorised to claim compliance with the certificate. It is the certificate holder's responsibility to ensure that the licensee carries out the work in compliance with this certificate and in accordance with the approved quality system.

NMC Precast Concrete Channels described in this certificate must:

- be designed, manufactured and erected by the certificate holder or a licensee
- be constructed in accordance with the technical description (see [Part 3](#)) and the certificate holder's detailed specifications and quality management documentation and
- comply with the Conditions of Certification.

Any person required to check on details of construction must refer to the documentation listed above, which is available from the certificate holder.

NMC Precast Concrete Channels is a combination of innovative and conventional construction. A change to any one aspect could result in one or more of the other aspects no longer complying with Agrément South Africa's performance criteria. For these reasons, no change may be made to NMC Precast Concrete Channels as described and illustrated in this certificate unless such change is approved in writing by Agrément South Africa before it is implemented.

**SANS 17050-1, Conformity Assessment-Supplier's declaration of conformity Part 1: General requirements**

**SANS 17050-2, Conformity Assessment-Supplier's declaration of conformity Part 2: Supporting documentation**

Contru Solutions (Pty) Ltd shall be responsible for the accuracy of the information contained within the Material Data Sheets, Technical Data Sheets and Material Performance Specifications, and all other information pertaining to the conformity of the blocks used. Contru Solutions (Pty) Ltd shall submit a COA (Certificate of Analysis) and COC (Certificate of Compliance) in terms of the requirements stipulated in **SANS 17050-1** and **2**. Should Contru Solutions (Pty) Ltd change or substitute any ingredient in the formulation of the product in question, then a notification shall be addressed to Agrément South Africa immediately.

### General conditions

#### Marking

A plaque at least 100 mm x 75 mm, with Agrément South Africa's identification logo together with the number of this certificate, as depicted, must be fixed at an appropriate position to an external wall of all NMC Precast Concrete Channels.

#### Validity

The continued validity of this certificate is subject to a satisfactory review by Agrément South Africa every three years.

**NMC Precast Concrete Channels**  
Tested and approved fit-for-purpose when constructed as specified in

**CERTIFICATE 2020/616**



### Quality monitoring

The certificate holder is required to participate in Agrément South Africa's post-certification quality management system, which requires:

- that the certificate holder shall maintain and continuously implement the quality system approved by Agrément South Africa in the assessment of NMC Precast Concrete Channels
- the certificate holder to notify Agrément South Africa within 30 days of any change of address of a factory and any new factories brought into operation by the certificate holder, for the purpose of manufacturing the subject of the certificate
- the certificate holder at any time of commencement of each contract, to provide Agrément South Africa with construction sites or structures on which the subject is to be used and
- the cooperation of the certificate holder in facilitating post-certification quality monitoring by Agrément South Africa or its authorised agents.

### Reappraisal

- must be requested by the certificate holder prior to making changes to the building product
- will be required by Agrément South Africa if there are changes to the National Building Regulations or Agrément South Africa's assessment criteria.

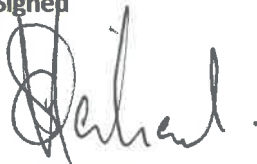
This certificate may be withdrawn if the certificate holder or a registered licensee fails to comply with these requirements.

### Requirements of *Supplement to certificates that must be met*

The [\*Supplement to certificates: good building practice\*](#) (revised 2001) applies to those conventional aspects of NMC Precast Concrete Channels that have not been specifically assessed (see Part 2: *Scope of assessment*). Cognisance should be taken of the recommendations contained in the *Supplement to certificates* to ensure that an acceptable standard of construction is maintained consistently.

On behalf of the Board of Agrément South Africa

Signed



Chairperson  
December 2020

## **PART 2: ASSESSMENT**

### **Scope of assessment**

This assessment applies to those innovative aspects of NMC Precast Concrete Channels described in Part 3 of the certificate. It also applies to those conventional aspects of the building product which, in the opinion of Agrément South Africa, are influenced by the innovative aspects.

The assessment was based on:

- documentation provided by the applicant
- inspections of the applicant's completed project
- known behaviour of the materials used in the building product and
- the applicant's quality management system.

### **Assessment**

In the opinion of Agrément South Africa, NMC Precast Concrete Channels as described in the certificate is fit-for-purpose.

The performance-in-use of building structures making use of NMC Precast Concrete Channels for chasing purposes will satisfy:

- the relevant requirements for safety and health prescribed by Agrément South Africa
- where stated in Table 1, the requirements of the National Building Regulations and
- Agrément South Africa's performance criteria and requirements for durability and habitability.

Agrément South Africa's detailed comments on the assessment are set out in Tables 1, 2 and 3. Each aspect of performance was assessed by experts in that field.

### **Compliance with the National Building Regulations**

The innovative aspects of NMC Precast Concrete Channels relates to the National Building Regulations as set out in Table 1. Any regulation not specifically referred to is considered to be outside the scope of this certificate and must be applied for by the local authority in the normal manner.

Government Notice R. 711 **National Building Regulations and Standards Act, 1977** (Government Gazette No 34586, Pretoria, South Africa, 09 September 2011).

**Table 1: Performance**

Aspects of performance	Opinion of Agrément South Africa	National Building Regulations satisfied
<b>Structural strength and stability</b>	<p>Satisfactory, provided all the requirements of this certificate are adhered to.</p> <p>The channel sections can safely be used for horizontal as well as vertical replacements for the normal practice of chasing channels in brickwork.</p>	<p>Regulation B1 (1) and (2) are deemed to be satisfied when NMC Precast Concrete Channels are built in accordance with the technical specification and description set out in Part 3.</p> <p>When these conditions are not complied with, the structural design and erection of each building is the responsibility of a professional competent engineer (deemed-to-satisfy rule BB4 of <b>SANS 10400</b> is applicable).</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>SANS 10400: BB4</b> <i>Responsibility for design and construction.</i></p> </div>

**Table 2: Habitability**

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
<b>Durability</b>	<p>The NMC Precast Concrete Channels should perform well if the manufacturing processes and materials are well controlled.</p> <p>The product will be used by customers in the general building industry.</p>	<p>Agrément South Africa’s opinion is based on knowledge of the construction materials used.</p> <p>It is also recommended that materials with Agrément certificates should be utilised by preference.</p>

**Table 3: Quality management system**

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
<b>Quality management system</b>	<p>The certificate holder’s quality management system complies with Agrément South Africa’s quality management system’s requirements.</p> <p>If properly applied, it will ensure that quality in manufacture of NMC Precast Concrete Channels will be consistently maintained.</p>	<p>Agrément South Africa’s requirements are based on <b>SANS/ISO 9001</b></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>SANS/ISO 9001</b> <i>Quality management systems – Requirements.</i></p> </div>



## **PART 3: TECHNICAL DESCRIPTION**

### **General description**

NMC Precast Concrete Channels are products/components that are designed to eliminate chasing on conventional walls to accommodate building services like electrical conduit, water supply and waste pipes. They are manufactured in different sizes to enable them to be used with different brick and block sizes.

Different channels will be used for different service applications. Small channels will be for single pipes and bigger channels for multiple services.

The cavity of the channel will be filled with a river sand and cement mix prior to plastering.

### **Manufacturing Process**

- the steel moulds are cleaned and assembled
- the release oil is applied on the steel mould
- fibre reinforced concrete is mixed in an electric pan mixer
- the reinforced concrete must obtain a strength of 25 MPa
- galvanized binding wires, 2 x 2 mm, are inserted at the bottom of the mould
- the moulds are filled with concrete and then placed on the vibrating table
- from the vibrating table, the moulds are placed on a level surface to insert the 2 x 20 mm serrated hoop irons into the wet concrete on both sides
- after 24 hours it is expected that the concrete will be settled and hardened, that is when the precast concrete channels will be removed from moulds
- the curing process commences by spraying water and covering the precast concrete channels with plastic for 7 days, and
- then periodical concrete strength tests are performed.

### **Erection Process**

- the NMC Precast Concrete Channels will be delivered to the site where they will be stored in a designated area

- from the designated area they will be distributed to where the brickwork will commence
- the bricklayer must have a detailed drawing to where the services are required
- all the NMC precast concrete channels are fitted with galvanized hoop iron ties
- where the services are required vertically, the bricklayer must use the hoop iron ties to build into the courses
- the bricklayer must ensure that there is a proper mortar joint between edges touching brickwork, this is due to the NMC channels having a rough edge to enhance a bond between mortar and the channel
- the bricklayer must also ensure there is proper mortar joint between NMC channels that are backside joined horizontally and vertically
- in cases where NMC channels are installed horizontally, the bricklayer must ensure that there is a continuous mortar joint between brickwork and the channels and
- where the services need to cross over or join up at different levels, a portion on the side of the NMC channels can be chopped out to change the direction of the services from vertical to horizontal.

### **Handling, transportation and storage**

- after the curing process the product is neatly arranged on a pallet to support all edges and strapped down
- utilising a forklift, a complete pallet of precast concrete channels is loaded on a suitable vehicle and transported to site or intended destination and
- at the intended destination, the pallets are off-loaded by means of forklift and stored in a designated area.

# Drawings

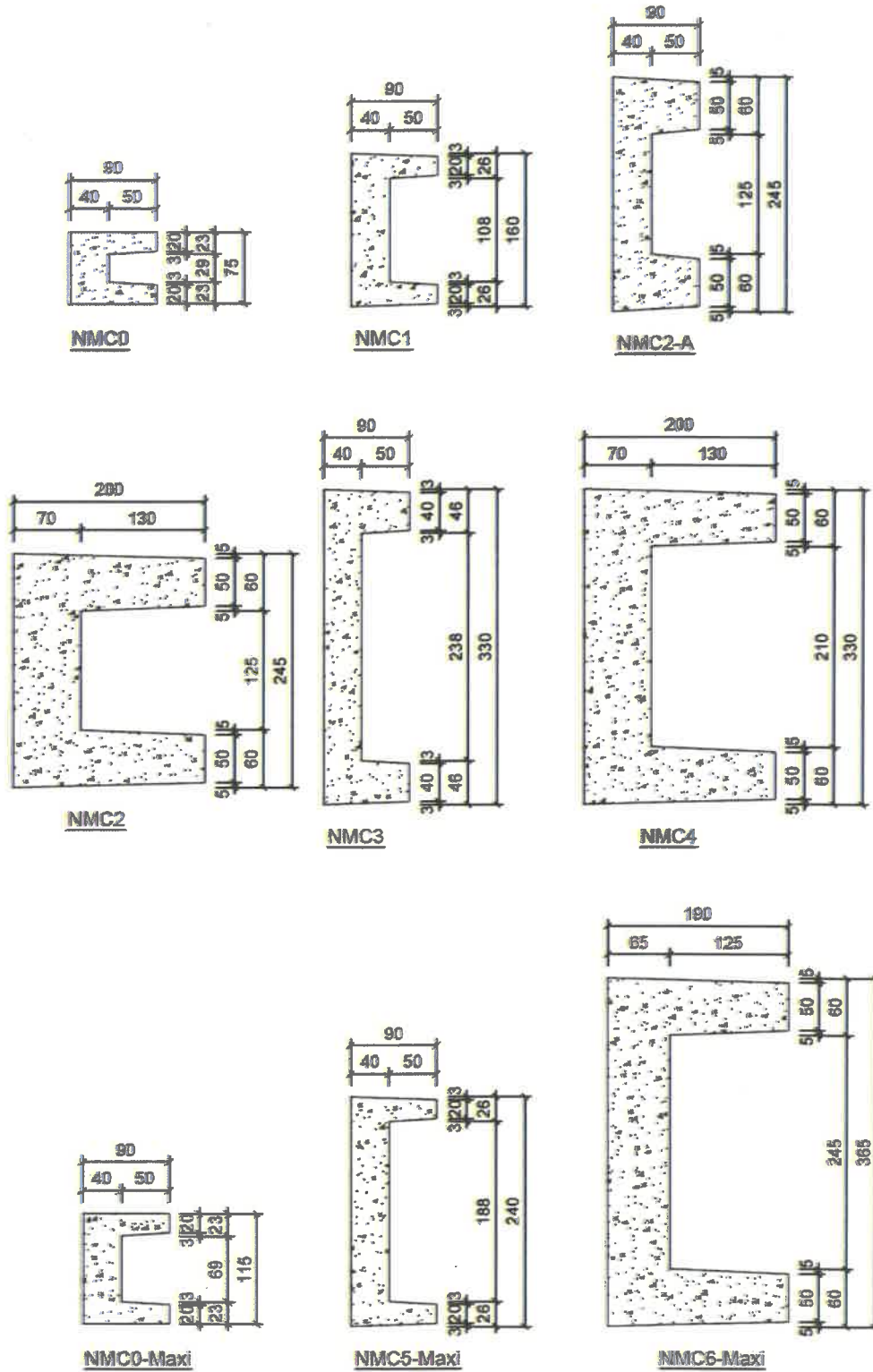


Figure 1: Precast Concrete Channels

