



## INSTALLATION INSTRUCTIONS FOR CBS CONCRETE AGRI WALLS

*The site must be completely accessible to all freight and crane traffic when these arrive. Access must occur on a foundation with sufficient load-bearing capacity for heavy traffic. During installation, the site must be completely accessible and no other construction activities in the vicinity are allowed, enabling us to guarantee optimal safety conditions. Our retaining walls must be placed on a foundation with sufficient load-bearing capacity that meets the following requirements:*

*construction of the entirety on a raised foundation relative to the sub-foundation. This way, it will be possible to install in all weather conditions. The foundation will be less susceptible to possible flooding. In case of flooding, the customer shall ensure adequate water drainage so that the foundation will be dry during installation.*

### 1) HOW TO PREPARE THE FOUNDATION?

#### - 1.1 SUBSTRATE

The substrate shall be compacted and sufficiently load-bearing, with a compressibility modulus M1 of at least 40 MPa. Possibly improved by adding lime or cement or, if necessary, a build-up with replacement foundation material. This is entirely dependent on the existing situation.

#### - 1.2 FOUNDATION

The foundation should be constructed with compacted crusher run, possibly with the addition of lime, cement or a bitumen binder. This foundation layer should show a compressibility modulus M1 of at least 100 MPa. The layer thickness depends on the situation on site.

#### - 1.3 THE SOLID FILLING LAYER

If the foundation in sections 1.1 and 1.2 should not reach the prescribed compressive strength, an intermediate foundation of 10 cm of lean concrete with 150 kg of cement should be applied. This foundation should be mechanically compacted and levelled so that a levelling top layer can be applied.

#### - 1.4 THE BASE LAYER

The base layer, or foundation layer, should be composed of an unbound crushed stone or sand mixture with a crushed grain structure of no more than 10 mm. The layer thickness depends on aggregate and grain size.

A sand mixture of 0 - 5 mm determines a layer thickness of up to 3 cm.

A sand mixture of 0 - 8 mm determines a layer thickness of up to 5 cm.

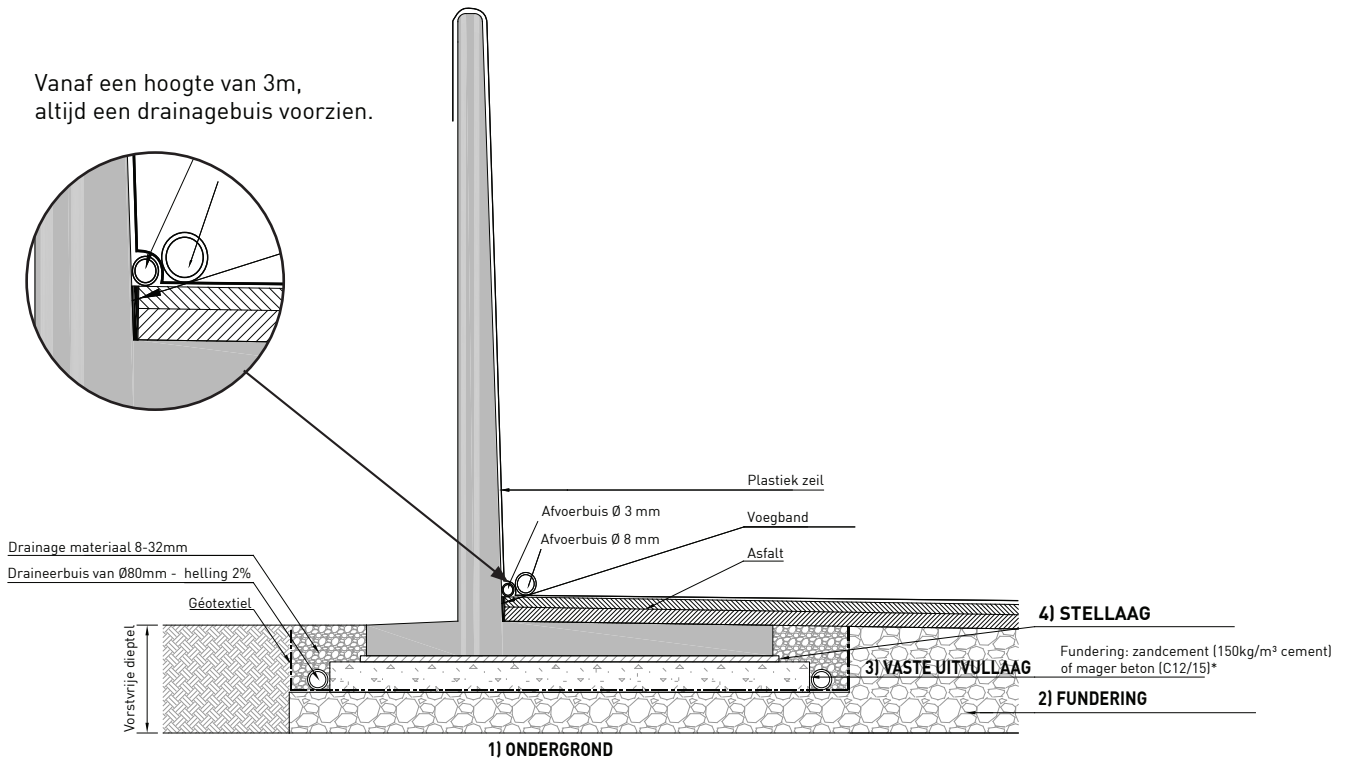
A sand mixture of 0 - 10 mm determines a layer thickness of up to 8 cm.

#### - 1.5 WIDTH OF FOUNDATION.

The total foundation's width should exceed the width of the panel by at least 20 cms on each side. This additional width is to be determined by the type of panel that is to be installed. After installation, backfill the sections on both sides to at least the top of the foot to prevent shifting/displacement. Our guarantee applies only if this foundation construction is adhered to. Ropes and attachment points ought to be provided and attached, so installation can start immediately. We are not responsible for dimensions, levels and bearing capacity of the foundation.

Prior to installation, the preparation shall be coordinated and discussed with our person in charge on site. The aim is to achieve a pleasant and effective collaboration.

If above provisions are not met, all resulting costs will have to be charged. Failure to comply with the above provisions will result in charges of all consequential costs.



Het ontwerp van de fundering gebeurt door de aannemer, op basis van:  
- het draagvermogen van de ondergrond  
- de funderingsdruk, zoals berekend in de rekennota van CBS Beton.

(\* ) Een funderingsplaat van gewapend beton kan geschikt zijn wanneer het draagvermogen gering is.



Preparation of the subsoil and construction of a foundation is the full responsibility of the client. We therefore recommend that this work be carried out by an approved earthmoving company.

## 2) 2) CALCULATION REPORT

There is a calculation report for every standard segment. It is available on request. In case of AGRI walls, the base should be filled with a material with a maximum specific gravity of 1000 kg/m<sup>3</sup>. The maximum silage angle is 30°. The maximum axial load above the bunker silo is between 7 and 20 tonnes (depending on the type of wall - see technical sheet for axial strength) for a vehicle with one-metre-wide wheels, taking into account our specifications. For corn storage, our walls can withstand a storage height of 6-8 m for crushed corn with a dry matter content of at least 33%.

## 3) 3) LIABILITY

The calculation reports are drawn up according to the Eurocode, including the national annexes. The buyer declares to be sufficiently informed about the properties and application possibilities of the sold goods. The buyer undertakes to use these goods solely for the purpose for which they are intended. He bears sole responsibility for exceeding the recommended stack height and recommended overload. The Agri U-walls should always be backfilled with soil before driving towards the next, adjacent silo.

Our concrete meets the strictest requirements of the European concrete standard NBN EN 206 as to resistance to aggressive chemical attack. However, in such specific environments, deterioration of concrete elements cannot be completely ruled out. To maximize durability of the concrete elements and reduce risk of deterioration to an absolute minimum, we recommend combining our concrete elements with silo varnishes, coatings, epoxy or silo foil. This preventive measure applies especially to biogas plants. CBS Beton can under no circumstance be held liable for damages resulting from non-compliance with the instructions for use. Furthermore, any warranty claims are excluded if these instructions are not followed.

## 4) LIFTING OPERATIONS

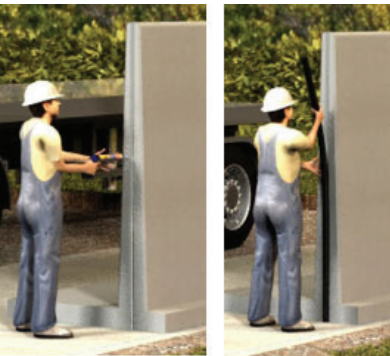


If CBS Beton lifts the wall sections to install them in their final position at your construction site, the foundation for the walls must be completed in its entirety. All loads are delivered on large trucks (44 T - 18.5 m long). The customer must ensure access for CBS Concrete's deliveries.

CBS Beton will provide you with a lifting plan/instructions and a risk assessment for the delivery and installation of your walls. Our experienced installation team can install up to 200 m of wall per day. Usually, we lift the sections using a hydraulic manipulator

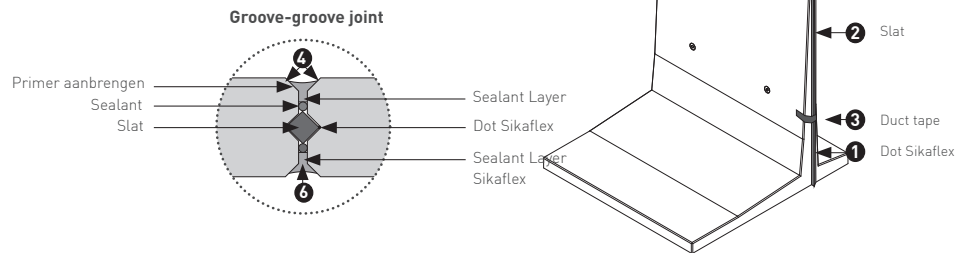
from the back of the truck itself. L and T walls are generally not equipped with lifting anchors. If lifting anchors are required, please state this clearly when ordering.

## 5) THE JOINTING SYSTEM



When installing the Agri walls, consider the following steps:

- 1) Above and below the groove, apply a dot of Sikaflex.
- 2) Place the slat in the groove.
- 3) Apply duct tape along 1 side to fix the slat in place.
- 4) Install the 2 concrete sections against each other.
- 5) Remove the excess duct tape.
- 6) Apply sealant to the joint.



## 6) PROTECTION OF YOUR NEW SILO



Even though CBS Concrete's concrete meets the highest requirements with regard to aggressive chemical environments, CBS Concrete cannot guarantee that the concrete sections can withstand all chemical attacks. Even exposure class XA3 has its limits.



In conditions where the concrete walls are exposed to chemical attack (anaerobic fermentation bunker, storage of corn, grass, sugar beet, etc.), additional protective measures should be taken. One of the most effective measures is protective plastic covering the entire vertical wall.



A minimum dry matter content of 33% is required for corn due to the aggressive behaviour of leachate. The minimum dimensions of your chopped silage should be between 6 and 8 mm. The permitted values of the angle of ensilage, density and angle of internal friction of the stored material as well as the permitted axle load can be found in the calculation reports prepared by our engineering service. Please contact our technical department for other applications. CBS Concrete provides a 10-year warranty if the above conditions are met.



## 7) THE SILO COVERAGE SYSTEM

**We offer 2 systems for covering your roughage in your trench silo.**

### 1) SILAGE SAFE

To optimally protect roughage, Silage Safe offers an innovative roughage cover system. It allows you to ensilage properly airtight in a fast and efficient way.

Covering roughage is often hard and labour-intensive work. Silage Safe coverage system relieves you of this strenuous activity. With Silage Safe coverage system you can cover your roughage hermetically after ensilage within half an hour. Thereby optimally preserving the quality of your roughage.



### 2) EASY SILAGE

With the Easy Silage Portal coverage system, dairy farmers keep their roughage in **optimal condition by means of a covering tarp and water system** for perfect storage of the roughage. Covering the roughage airtight, quickly and well, ensures perfect conversion into a high-quality product.

Our intelligent coverage system has a fully automatic, self-correcting control system with a remote control powered by a battery and solar panels.

The **Easy Silage Portal systems** are suitable for **stand-alone trench silos up to 100 metres long and 25 metres wide** and are easy to operate with a remote control. The portal system itself goes up to 26 m wide. Because every farm is unique, the coverage system is custom assembled.



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