

# GENERAL INSTALLATION INSTRUCTIONS



## INSTALLATION INSTRUCTIONS FOR MEA DRAINAGE SYSTEMS

GENERAL INFORMATION FOR CORRECT INSTALLATION AND OPERATION OF MEA DRAINAGE CHANNELS

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# INTRO

The installation instructions given here are to be understood as general information for the proper installation and operation of MEA channel systems. It is recommended that professional advice is always sought concerning installation, as this will, for example, also be able to take particular account of special local conditions or requirements. MEA too will be able to assist you here.

Information is provided on our website, but you can also contact our sales support at tel +31 314 627762. This applies in particular for non-standard designs that will need to be specified by planners in consultation with our application engineering department. A warranty by the manufacturer is extended on the premise of professional installation, taking into account valid engineering rules and these installation instructions.

The specifications concerning the performance characteristics of channels presume, on the one hand, unimpeded, backpressure-free runout at the channel end (i.e. gullies), as well as a thoroughly maintained channel system, and a sufficiently dimensioned pipeline and sewer system.

The surface covering abutting channel elements and their haunch is to be installed in a way that precludes any horizontally-acting loads, (for example as the result of temperature-related expansion, and/or braking and acceleration forces).

The same applies for horizontal forces during concreting. Here, the channel elements will need to be sufficiently braced, or concreting will need to be carried out in stages, in order to prevent a deformation of the channel side walls.

The provision of a sufficient number of correctly positioned and designed expansion joints must be ensured. Expansion joints running at right angles to the channel run may only cross the channel run at the joint between two channel elements. In such cases the expansion joint width is to be reproduced by a suitable execution of the channel joint.

Drainage facilities comprising MEA channel systems are primarily intended for the collection and removal of rain water. Where channels are to be used in liquid-tight constructions such as storage, filling and transshipment facilities, we recommend our systems that have received "general building-inspectorate approval" from the Deutsche Institut für Bautechnik, DIBT (German Institute of Structural Engineering). Special installation instructions for systems with DIBT approval, information concerning sealing as well as the approval itself will be made available to you by our application engineering department on request.

The division of load classes as well as information concerning requirements of materials and the installation of channel elements are given in the respective valid version of EN 1433. An awareness and understanding of the applicable regulations by the professional company carrying out the installation is presumed.

Please also observe the following "General installation instructions".



# GENERAL INSTALLATION INSTRUCTIONS

Our installation instructions are generally applicable suggestions. Any special requirements for channel installation stemming from local conditions must be evaluated and defined by the planners.

1. Observe the correct class and installation position, as dictated by the respective local installation conditions.
2. Adjoining surfaces (pavements, slabs etc.) are to be installed 3-5mm higher than the channel upper surface.
3. Horizontal forces on the channel run – stemming from adjoining concrete areas or reinforced concrete structures - must be excluded by installing effective longitudinal and transverse expansion joints.
4. When applying the concrete haunch and laying lateral surface coverings, the gratings are to be inserted

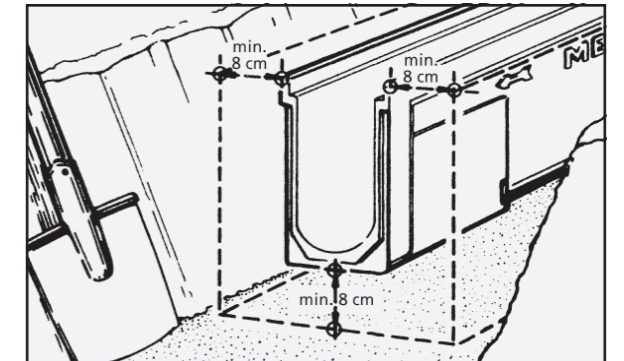
in the channel rebate, or the channels sufficiently braced to counteract compression.

5. Ensure that channels sustain no mechanical damage whatsoever during installation, e.g. during compaction/sealing of adjacent surfaces.
6. Install silt boxes and gullies similarly, in accordance with the installation examples for channels.
7. EN 1433 stipulates the mandatory, traffic-proof securement of cover gratings for class C250 and above.
8. The adjacent pavement must be installed in such a way that no horizontal forces act on channel elements.
9. Gratings must be secured into the channel body immediately after the final cleaning process has taken place. This action will prevent the installed system from being adversely affected by horizontal forces.

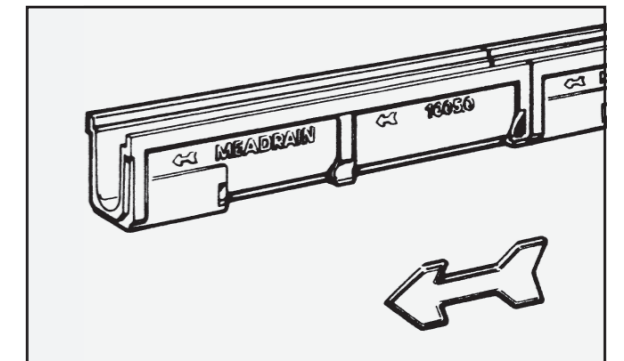


# INSTALLATION INSTRUCTIONS MEA DRAINAGE CHANNELS MADE FROM POLYMER BETON

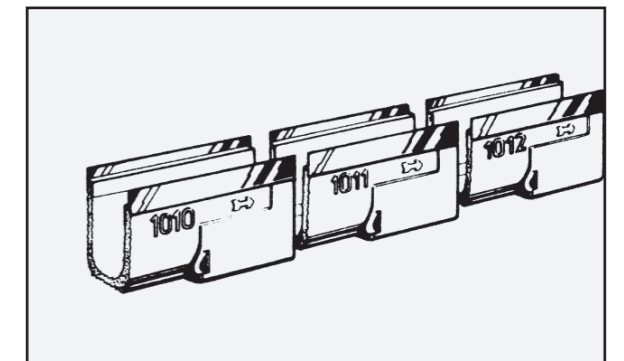
1. Excavate a trench of sufficient width; ensure that at least 8 cm (class A15) of bedding concrete can be placed under and alongside the channel.  
For higher loadings, please refer to the MEADRAIN installation examples. Similarly, the load-bearing capacity of the subsoil must be taken account, or a trench base with adequate load-bearing capacity must be installed.  
The minimum concrete quality, as specified in the installation instructions for the applicable loading class, must be used.



2. The flow direction is indicated by directional arrows on both sides of the channel body. The arrows point in the direction of the outlet.

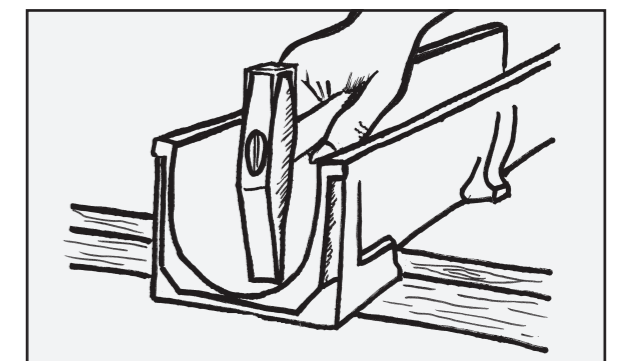


3. On channels with a fall, the numbers that are visible on the channel body indicate the position of the channel in the channel run. e.g. no. 1010 /1011 /1012.



4. Lay out the channel elements in the planned sequence alongside the excavated trench (following an installation plan, where available).

5. If necessary, the preformed outlet in the channel can be knocked out. To do this, support the channel on a batten and tap out the outlet carefully from the inside using a hammer.  
In GRP channels, use a jigsaw to remove the preformed outlet.

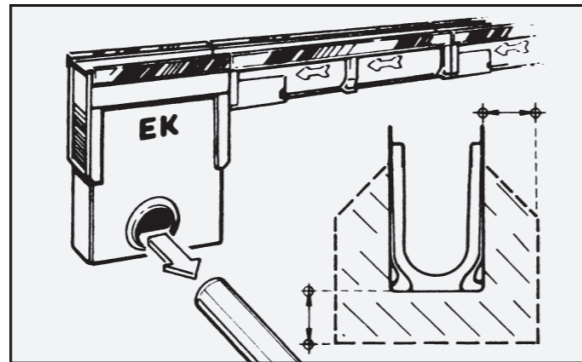




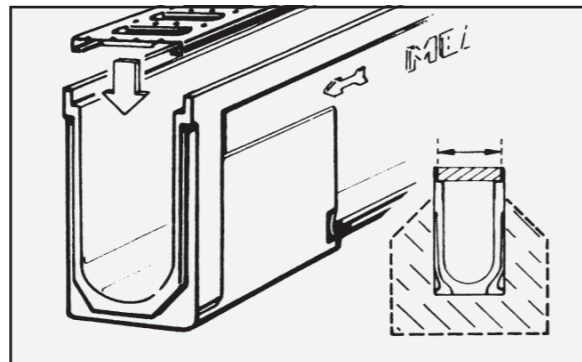


6. Stretch a string line, pour concrete into the trench and lay the channels in the trench starting from the outlet (e.g. silt box).

Embed silt boxes and gullies similarly in accordance with the installation examples for channels (thickness of concrete haunch). When inserting the channels, ensure that the arrows point toward the outlet. Fit the respective end caps at the start and end of the channel run. Connect the outlet point to the sewer.

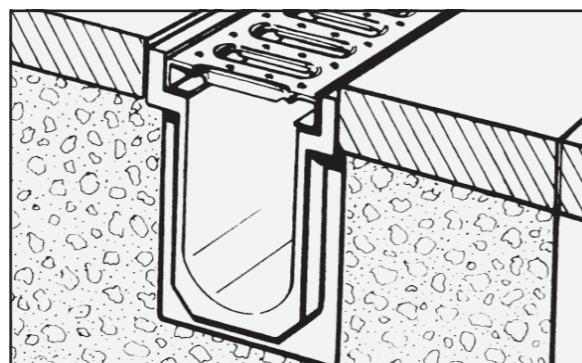


7. Brace the channel bodies against lateral compression; alternatively, place the gratings in the channel rebate. Protect gratings against soiling by concrete.

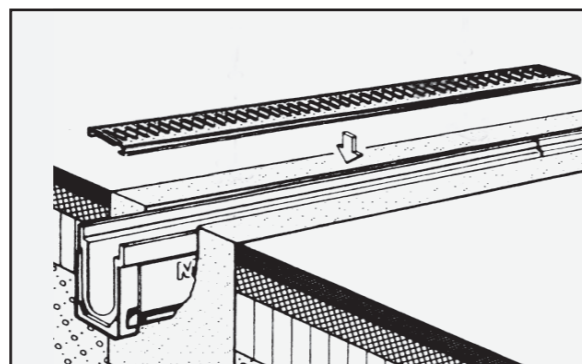


8. Apply an equal concrete surround on both sides of the channels. When installing channels in concreted surfaces, ensure expansion joints are also provided; alternatively do not allow existing expansion joints to be broken by the channel run.

Lay lateral pavements that directly abut the channel to be 3-5mm higher than the channel upper surface.



9. Clean gratings, channels and outlets of any soiling, insert and secure gratings to channel bodies using gating locking systems (EN 1433 specifies the mandatory installation of grating securing systems for class C250 and above).



## SEALING DRAINAGE CHANNELS

### Use in LAU systems (storage/filling/transhipment of water-endangering substances):

Only our EN gutter systems are approved for this purpose. Please refer to the installation information of our DIBt approval Z-74.4-28 and the relevant approvals of the sealants used regarding the sealing of EN drainage channel systems against water-hazardous substances in the area of LAU systems.

The sealing must be carried out by a sealing company certified by the sealant manufacturer.

### Use in non-approval-relevant areas:

For the sealing of MEA drainage channels in areas that are not relevant for approval, we recommend the use of the SABA MS Floor sealant.

We recommend the use of the sealants SABA MS Floor and SABA MS Floor SL especially for multi-storey building applications.

The primer SABA Primer 9102 and the SABA Solvent 48 cleaner for the adhesive flanks are adapted to these sealants.

### SABA MS Floor - Advantages:

- ✓ rugged
- ✓ resistant to salt, weak acids and chemicals
- ✓ resistant to short-term exposure to contaminated (oil) products in combination with appropriate control measures

### SABA MS Floor SL - Advantages:

- ✓ self-levelling, no need for subsequent smoothing
- ✓ resistant to salt, weak acids and chemicals
- ✓ resistant to short-term exposure to contaminated (oil) products in combination with appropriate control measures
- ✓ high abrasion resistance

### SABA MS Floor and SABA MS Floor SL - Processing:

The substrate must be clean, grease-free and suitable for the load bearing. Cleaning of the adhesive flanks with SABA Solvent 48. Primer coat with SABA Primer 9102.

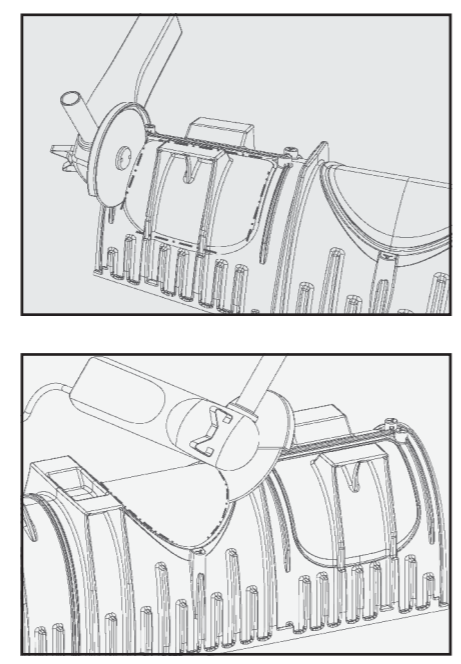
Observe the processing instructions of the sealant manufacturer!





# INSTALLATION INSTRUCTIONS DRAINAGE CHANNELS MADE OF GRP

- Step 1**  
Excavate a trench, prepare a mortar bed in accordance with MEA's specifications for the respective loading classes.
  - Step 2**  
Cut out the pre-formed outlet opening using a jigsaw; attach the discharge connector.
  - Step 3**  
Connect the channel section with inserted grating to the underground drainage pipe and place channel onto the mortar bed.
  - Step 4**  
Install the remaining channel sections and put the end caps into position.
  - Step 5**  
Fill in with concrete on both sides and compact.
  - Step 6**  
Lay the adjoining surfaces to be 2-3 mm higher than the grating upper surface.
- And the job's complete. MEARIN Plus/Expert is now ready to provide superlative drainage.

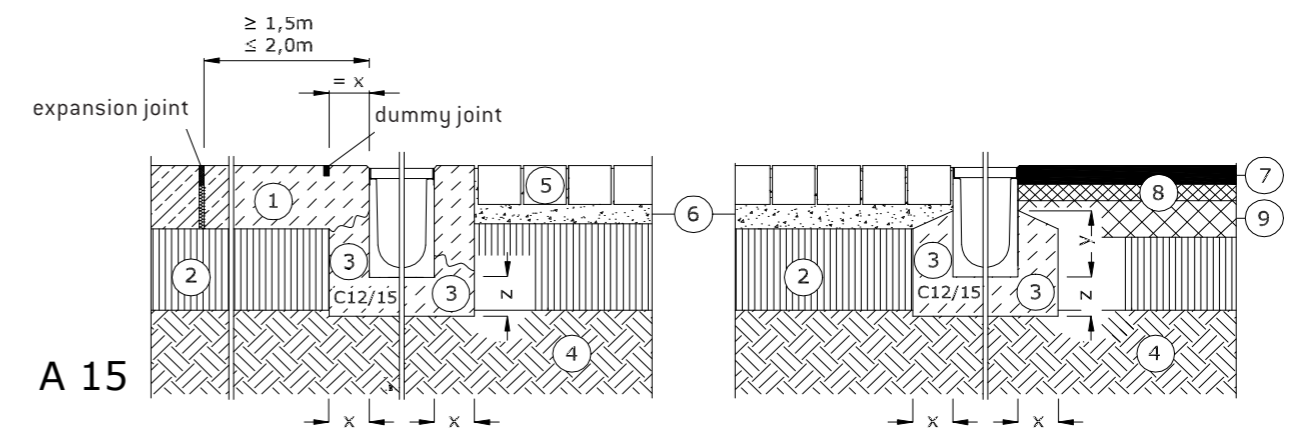


Form the lateral or lower opening by cutting along the cutting edges using an angle grinder, jigsaw or similar. If necessary, separate the rounded areas using well-aimed hammer blows. Smooth the edges using sandpaper.

## INSTALLATION A 15



Traffic areas that can only be used by pedestrians and pedal cyclists and comparable areas, i.e. lawned areas. (Test load 15 kN)

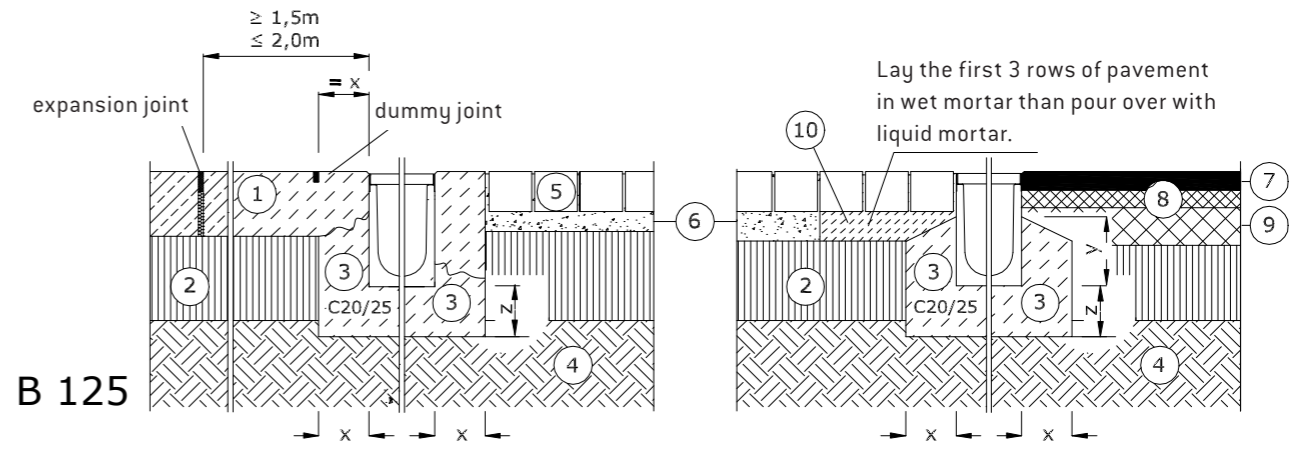


Free of settling and frost free-resisting base layers are to be accomplished in accordance with the German RStO road pavement design manual for different traffic loading classes.

## INSTALLATION B 125



Footways, pedestrian zones <sup>1)</sup> and comparable areas, car parking spaces and decks. (Test load 125 kN)



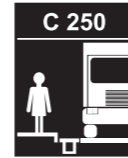
Free of settling and frost free-resisting base layers are to be accomplished in accordance with the German RStO road pavement design manual for different traffic loading classes.

- ① Concrete
- ③ Concrete haunch
- ⑤ Block paving
- ⑦ Asphalt
- ⑨ Bituminous base course
- ② Sub-base
- ④ Earth
- ⑥ Sand layer
- ⑧ Base course
- ⑩ Mortar

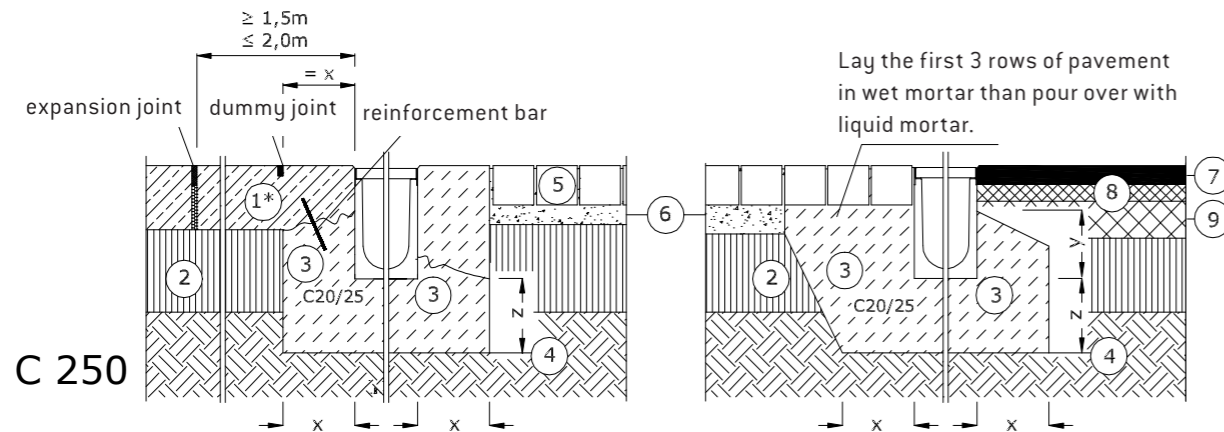
The adjacent pavement must be installed in such a way that no horizontal forces act on channel elements. Gratings must be secured into the channel body immediately after the final cleaning process has taken place. This action will prevent the installed system from being adversely affected by horizontal forces

1) Zone reserved for pedestrian traffic, with vehicles crossing only occasionally for supply or cleaning purposes

# INSTALLATION C 250



Kerbsides of roads and pedestrian roads<sup>2)</sup>, verges and marginal strips, parking areas.  
[Test load 250 kN]

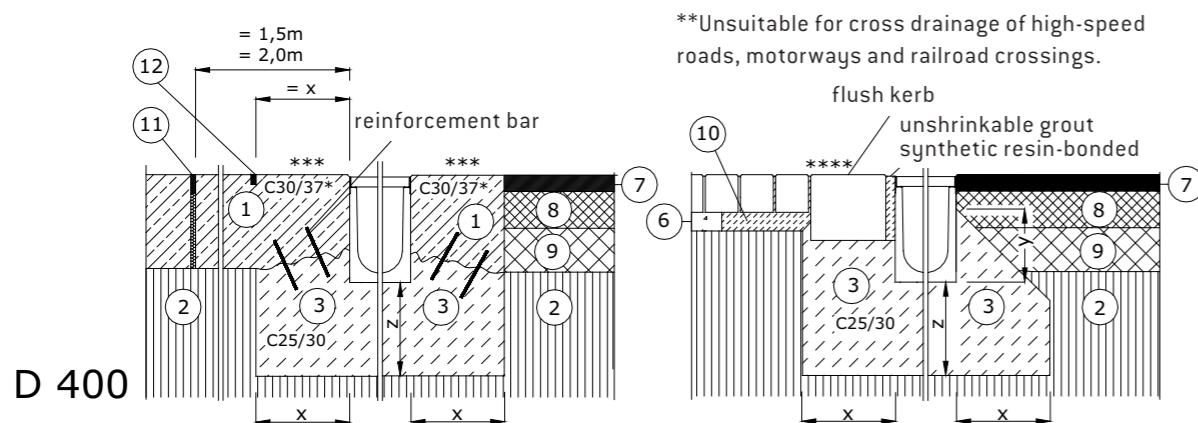


Free of settling and frost free-resisting base layers are to be accomplished according to the German RSt0 road pavement design manual for different traffic loading classes.  
Y min. = channel height - 50 mm  
\* Reinforcement and exposure classes under specification of the responsible designer.

# INSTALLATION D 400



Carriageways of roads, also pedestrian roads<sup>2)</sup>, parking areas and comparable paved surfaces. [Test load 400 kN]



\*\*Unsuitable for cross drainage of high-speed roads, motorways and railroad crossings.

Free of settling and frost free-resisting base layers are to be accomplished according to the German RSt0 road pavement design manual for different traffic loading classes. Y min. = channel height - 50 mm  
\* Reinforcement and exposure classes under specification of the responsible designer.  
\*\*\* Cross drainage of high-speed roads, motorways and railroad crossings, is only possible by installation of our D 1000, D 2000 and DM 2000 drainage systems and after advice of our technical engineers.  
\*\*\*\* Cross drainage of pedestrian walkways<sup>2)</sup>, entrances to parking lots and similar paved areas.

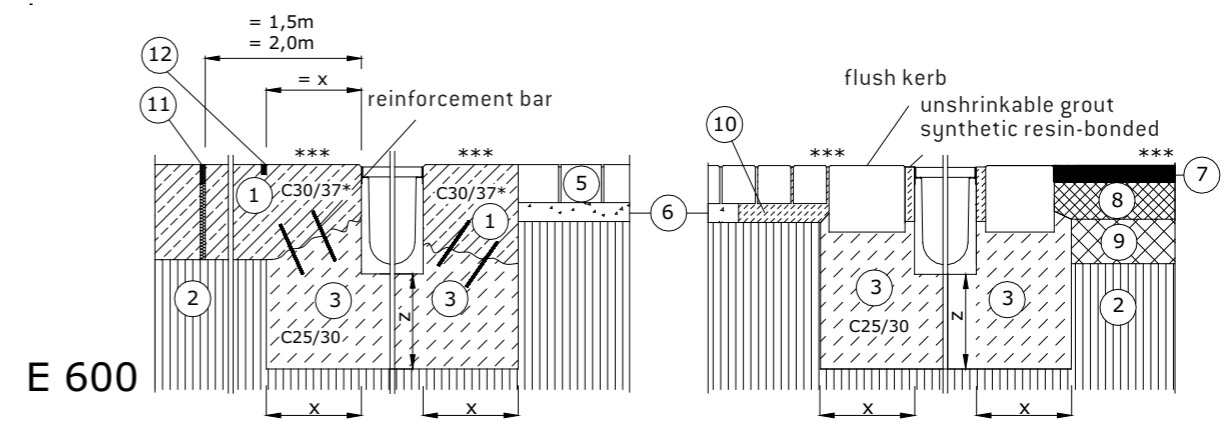
- ① Concrete    ③ Concrete haunch    ⑤ Block paving    ⑦ Asphalt    ⑨ Bituminous base course    ⑪ Expansion joint
- ② Sub-base    ④ Earth    ⑥ Sand layer    ⑧ Base course    ⑩ Mortar    ⑫ Dummy joint

The adjacent pavement must be installed in such a way that no horizontal forces act on channel elements.  
Gratings must be secured into the channel body immediately after the final cleaning process has taken place.  
This action will prevent the installed system from being adversely affected by horizontal force.  
2) Zone in which vehicular traffic is prohibited between certain times (i.e. a pedestrian zone during shop opening hours, [otherwise normal vehicular traffic]).

# INSTALLATION E 600



Non-public traffic areas that are subjected to particularly high wheel loads, e.g. traffic routes in industrial complexes. [Test load 600 kN]

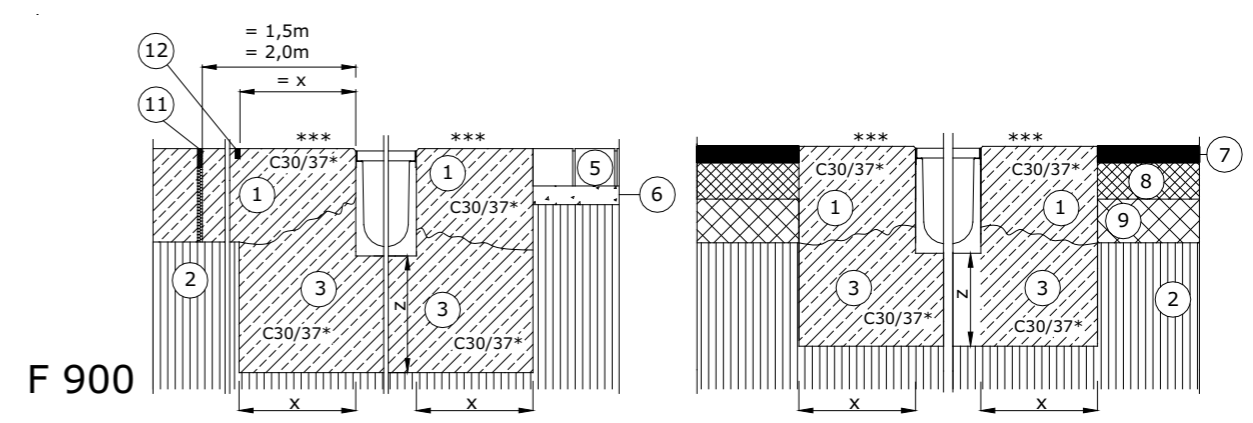


Free of settling and frost free-resisting base layers are to be accomplished according to the German RSt0 road pavement design manual for different traffic loading classes. Y min. = channel height  
\* Reinforcement and exposure classes under specification of the responsible designer.  
\*\*\* For cross drainage of areas with high traffic and dynamic loads, please contact our MEA engineering department. Cross drainage of dynamically loaded areas, cross over ridden, is only possible by installing our D 1000, D 2000, opA, DM 2000 and EN/ENS 1000-4000 channel systems and after consulting of MEA engineering department.

# INSTALLATION F 900



Special areas, such as certain aircraft operational surfaces of commercial airports. [Test load 900 kN]



Free of settling and frost free-resisting base layers are to be accomplished according to the German RSt0 road pavement design manual for different traffic loading classes. Y min. = channel height  
\* Reinforcement and exposure classes under specification of the responsible designer.  
\*\*\* Cross drainage of dynamically loaded areas, cross over ridden, is only possible by installing our D 1000, D 2000, opA, DM 2000 and EN/ENS 1000-4000 channel systems and after consulting of MEA engineering department.

- ① Concrete    ③ Concrete haunch    ⑤ Block paving    ⑦ Asphalt    ⑨ Bituminous base course    ⑪ Expansion joint
- ② Sub-base    ④ Earth    ⑥ Sand layer    ⑧ Base course    ⑩ Mortar    ⑫ Dummy joint

The adjacent pavement must be installed in such a way that no horizontal forces act on channel elements.  
Gratings must be secured into the channel body immediately after the final cleaning process has taken place. This action will prevent the installed system from being adversely affected by horizontal force.

# FOUNDATIONS

The requirements of the concrete regarding durability versus environmental influences, have to be provided by the designer at the definition of the accordant exposure class.

E.g.: Exposure class for road concrete at cross drainage of high speed roads and motorways – C30/37 (LP), XF4, XM2 (Source: Zement-Merkblatt Betontechnik B9 3.2006, www.beton.org)

## MEADRAIN POLYMER CONCRETE CHANNELS

The maximum loading class for the selected channel system is given in the product brochures, data sheets and prices lists and may not be exceeded.

| Loading class to EN 1433           | A 15 kNmm | B 125 kN | C 250 kN | D 400 kN | E 600 kN | F 900 kN |
|------------------------------------|-----------|----------|----------|----------|----------|----------|
| Concrete haunch measurement X (mm) | > 80      | > 100    | > 150    | > 200    | > 200    | > 250    |
| Concrete haunch measurement Z (mm) | > 80      | > 100    | > 150    | > 200    | > 200    | > 250    |
| Reinforcement bars                 | no        | no       | yes      | yes      | yes      | yes      |
| Min. concrete quality for haunch   | C 12/15   | C 20/25  | C 20/25  | C 25/30  | C 30/37* | C 30/37* |

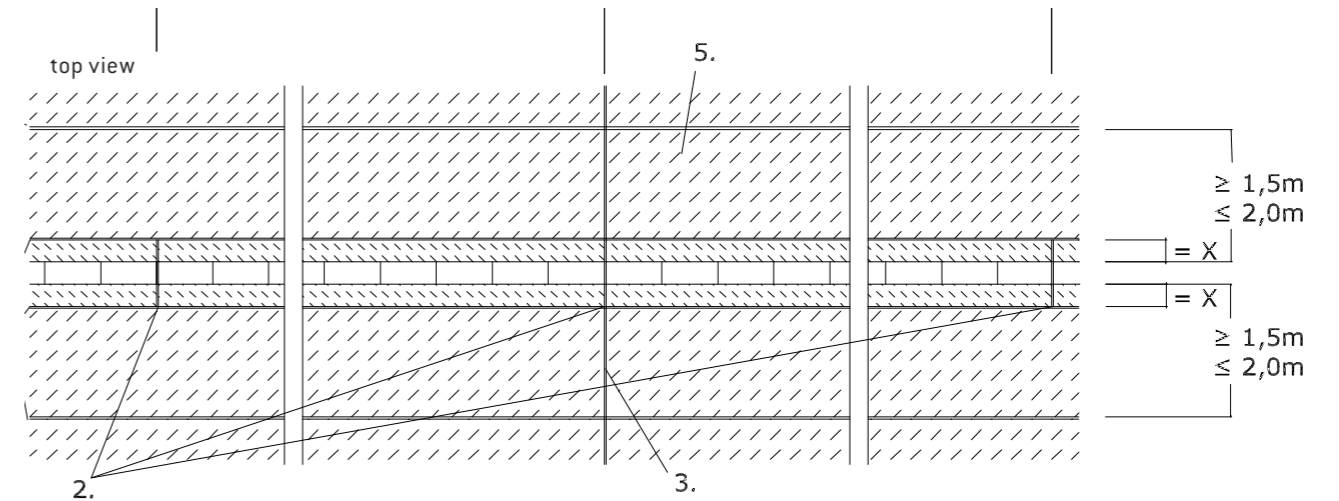
\* Reinforcement as specified by the engineer responsible.

## MEARIN CHANNELS MADE OF GLASSFIBRE REINFORCED POLYESTER

The maximum loading class for the selected channel system is given in the product brochures, data sheets and prices lists and may not be exceeded.

| Loading class to EN 1433           | A 15 kNmm | B 125 kN | C 250 kN | D 400 kN | E 600 kN |
|------------------------------------|-----------|----------|----------|----------|----------|
| Concrete haunch measurement X (mm) | > 80      | > 100    | > 150    | > 200    | > 200    |
| Concrete haunch measurement Z (mm) | > 80      | > 100    | > 150    | > 200    | > 200    |
| Reinforcement bars                 | no        | no       | yes      | yes      | yes      |
| Min. concrete quality for haunch   | C 12/15   | C 20/25  | C 20/25  | C 25/30  | C 25/30  |

# EXPANSION JOINTS



Wenn von planerischer Seite keine anderen Vorgaben vorliegen, empfehlen wir die Einhaltung von Dehnfugen wie oben dargestellt.

1. Dummy joint
2. Expansion joints cross to the channel run into the concrete haunch.  
MEA recommendation for Central-Europe: distance of expansion joints cross to the channelrun 25 to 30m.  
In countries with extreme climatical conditions are the local designing specifications ruling.
3. Expansion joints in concrete are according to designers plan or site management. These expansions joints may not interrupt the channel run, but have to be continued into the concrete haunch.
4. Expansion joint parallel to channel run.  
A direct expansion joint between line drainage channel and the adjacent concrete slab is not allowed.
5. Concrete surface



# MEA DRAINAGE SOLUTIONS AREAS OF APPLICATION



MULTI-STOREY CAR PARKS



STREETS AND ROADS



HOME AND GARDEN



PARKING SPACES



GARDENING AND LANDSCAPING



INNENSTÄDTE UND FUSSGÄNGERZONEN



INDUSTRY AND COMMERCE





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Geschäftseinheit der MEA Bautechnik GmbH