

Trenchguard



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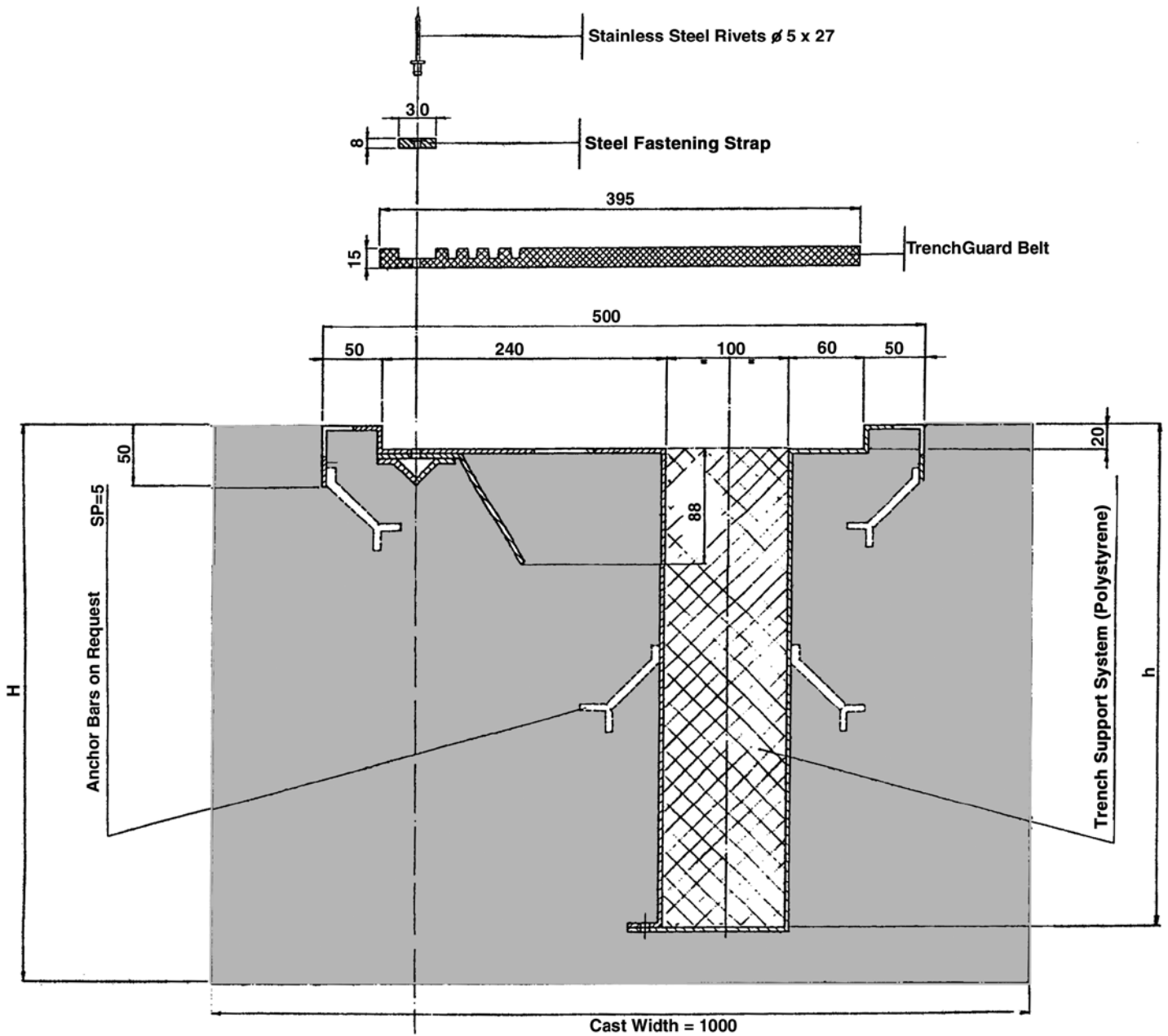
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1.0 Composition and Dimensional Information



Channel Type	Dimensions	
	h	H
XL 400-TrenchGuard / 220	220	260
XL 400-TrenchGuard / 320	320	360
XL 400-TrenchGuard / 420	420	460
XL 400-TrenchGuard / 520	520	560

2.0 Preparation of Channel System Components

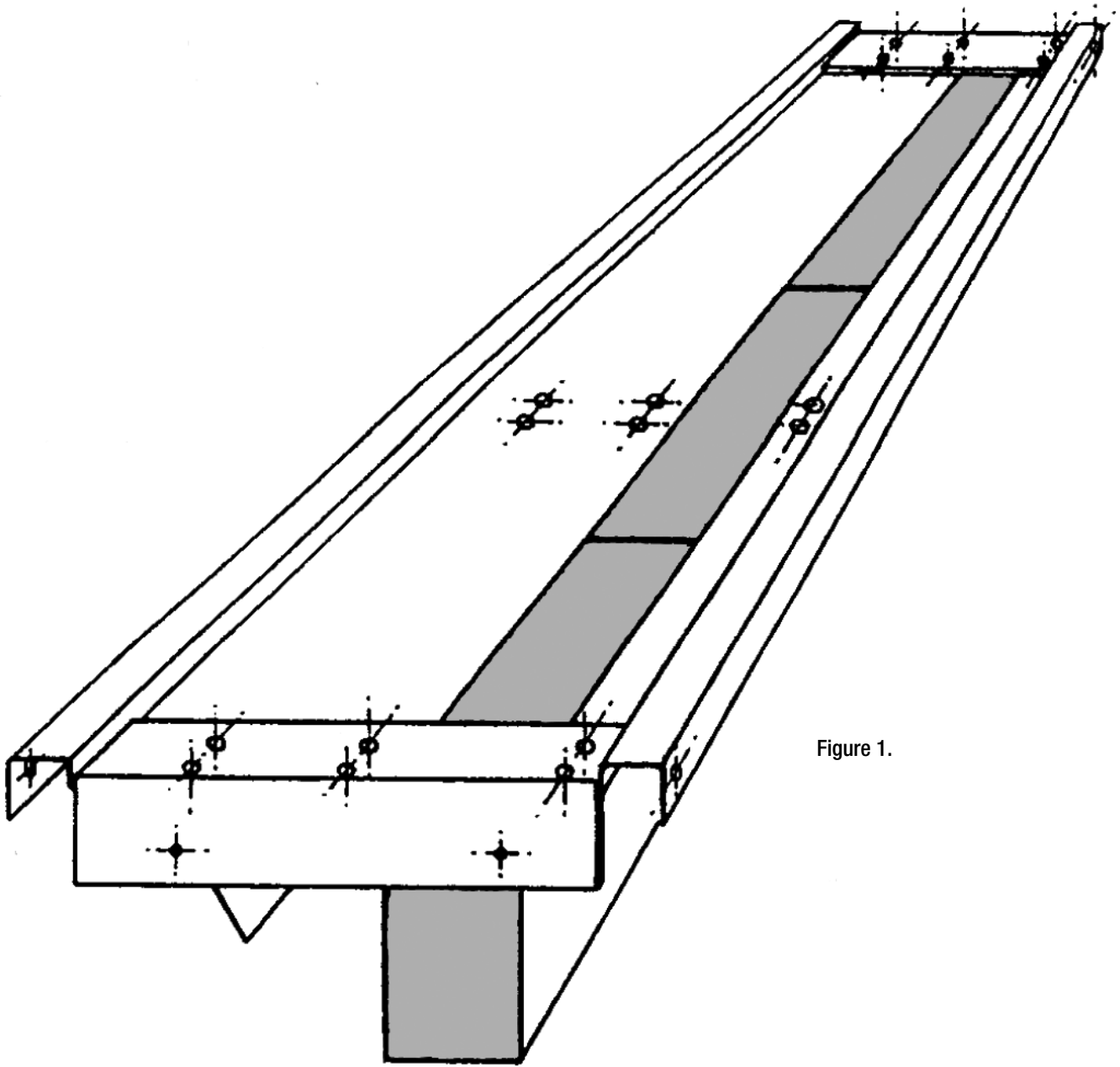
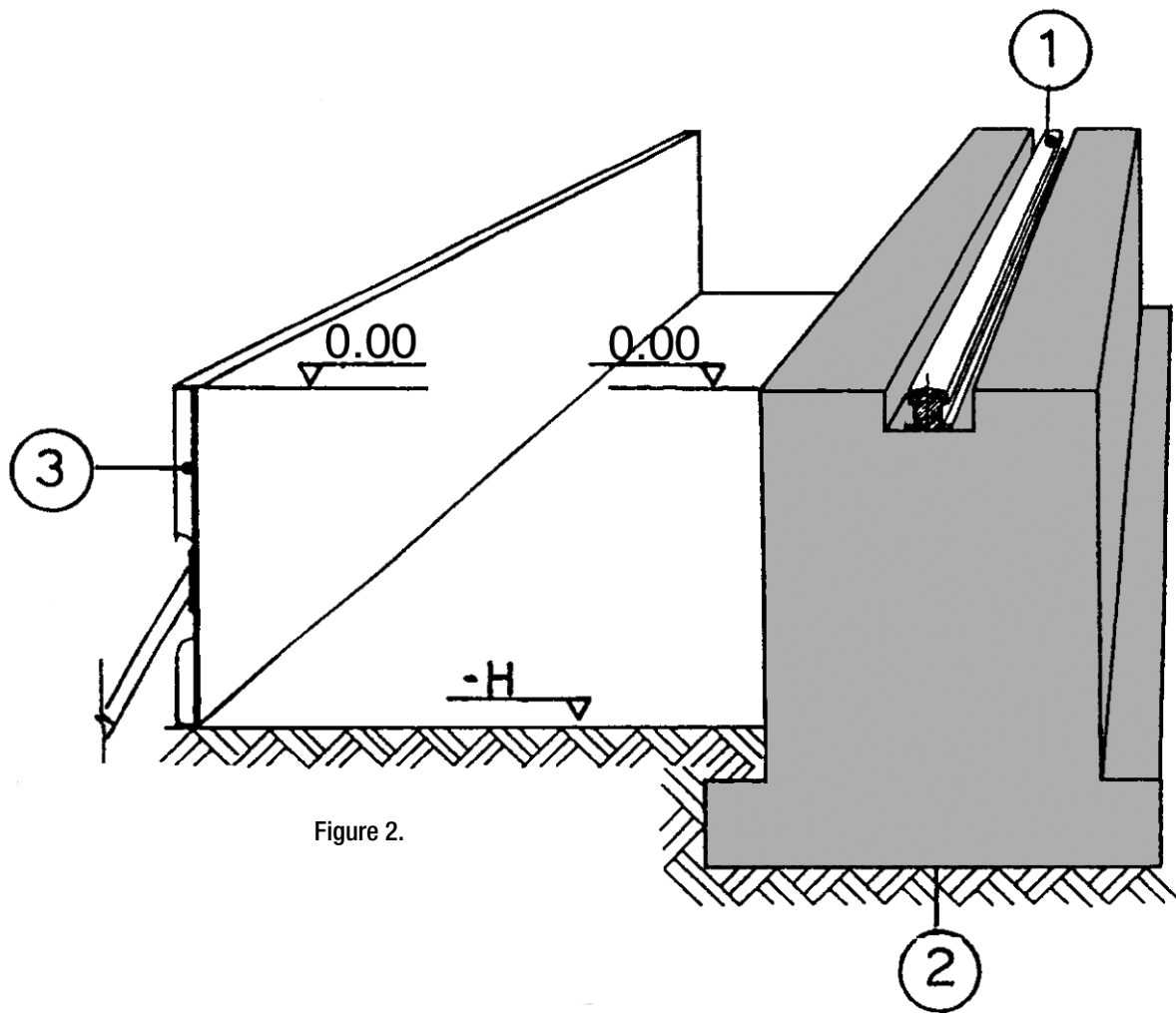


Figure 1.

2.1 The component parts of the channel system can be pre-assembled (left side, right side, polystyrene) with positioning brackets supporting the tube (see figure 1 above). Rivets, clamp plates and rolls of belt are supplied separately.

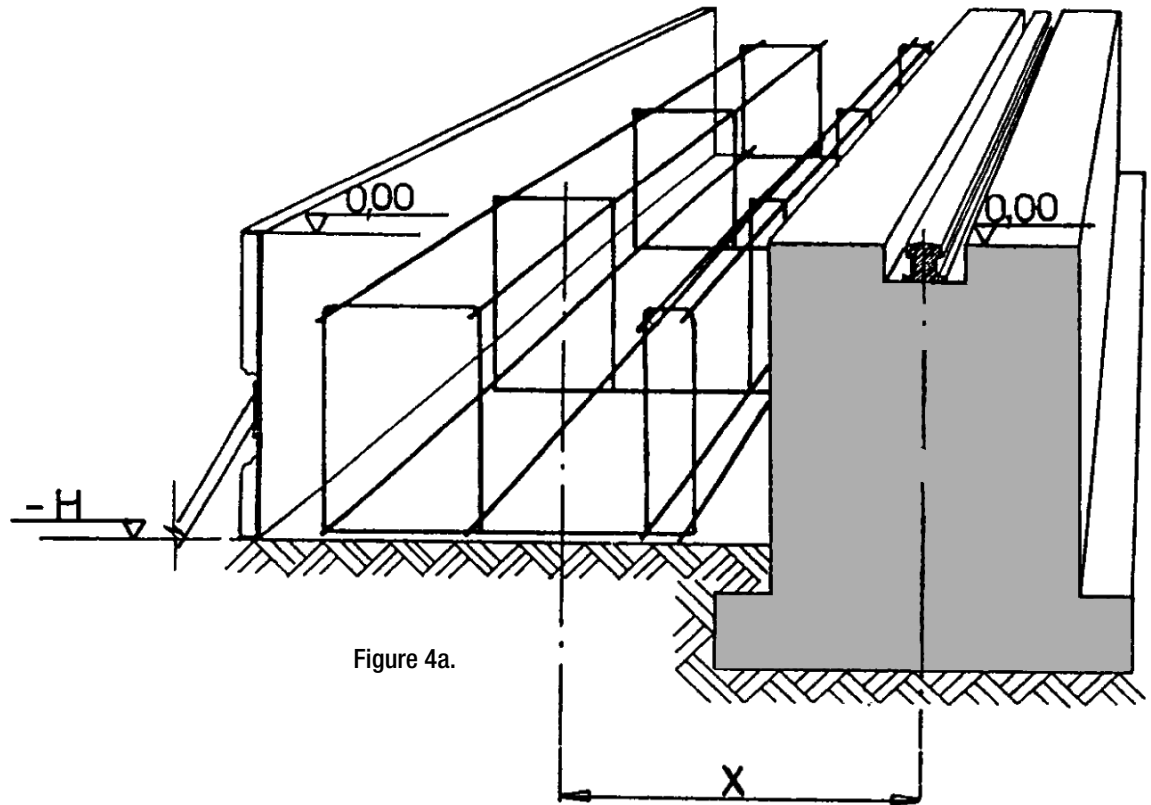
2.2 As an option the component parts of the channel can be supplied in kit form on separate pallets in order to reduce transportation costs.

3.0 Site Excavation and Preparation for the Civilian



3.1 Figure 2 (above) shows a typical section of a dock side with rail (1) placed on concrete support (2). The excavation of the surrounding area must be executed (if there are no other requirements of the civil engineer) to a depth $(-H)$ as indicated in the dimensional listing on page 1. Supports are to be formed (3) to contain the pour.

4.0 Reinforcement of Channel

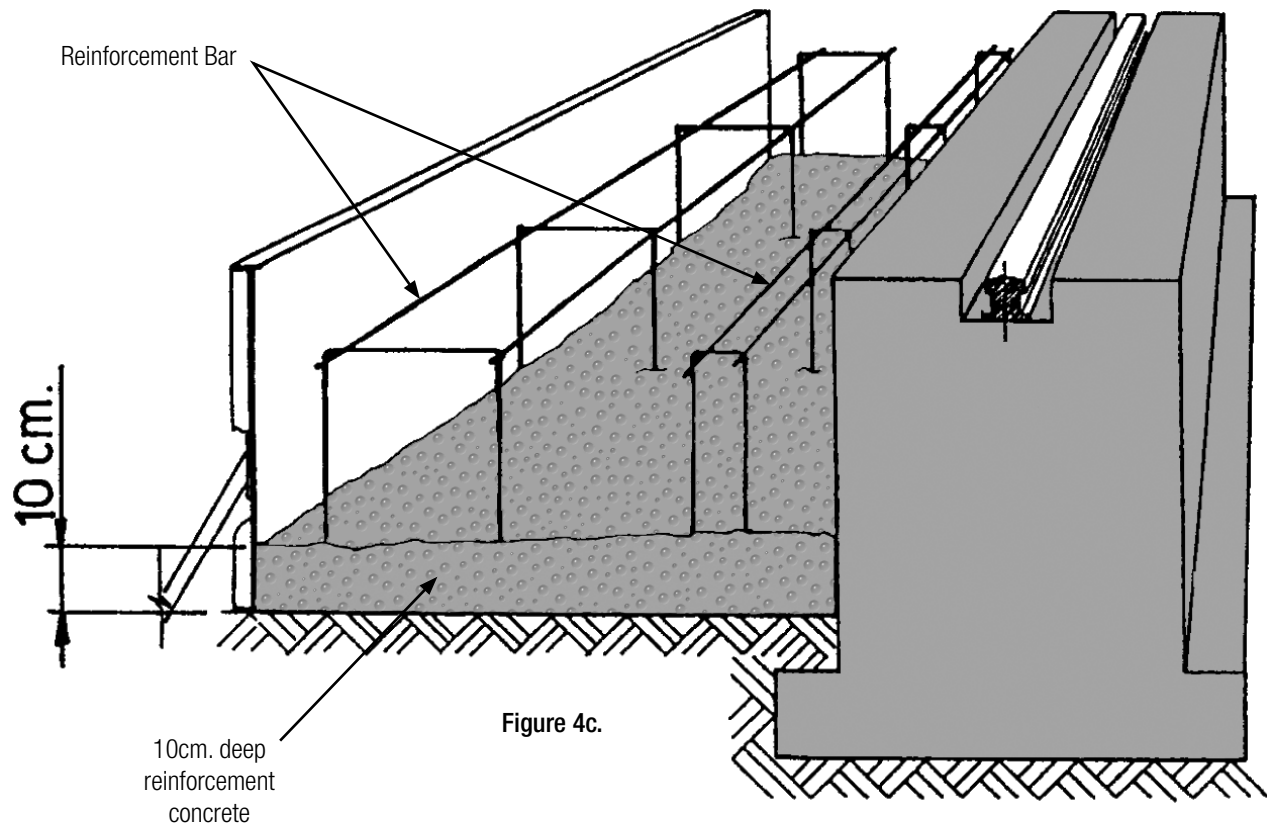


4.1 The reinforcements (calculated by engineer) are placed in the right position surrounding the area of the concrete pour. It is important to maintain the distance between centers (**X**) of the channel positioning, as in figures (4a & 4b).



Figure 4b.

4.0 Reinforcement of Channel



4.2 After placing the reinforcements in their right position pour the reinforcement concrete (which should be about 10cm. in depth), in order to create a solid foundation for the pour, and to ensure the reinforcements are stabilized (**figure 4c**).

5.0 Preparation of the Channel System

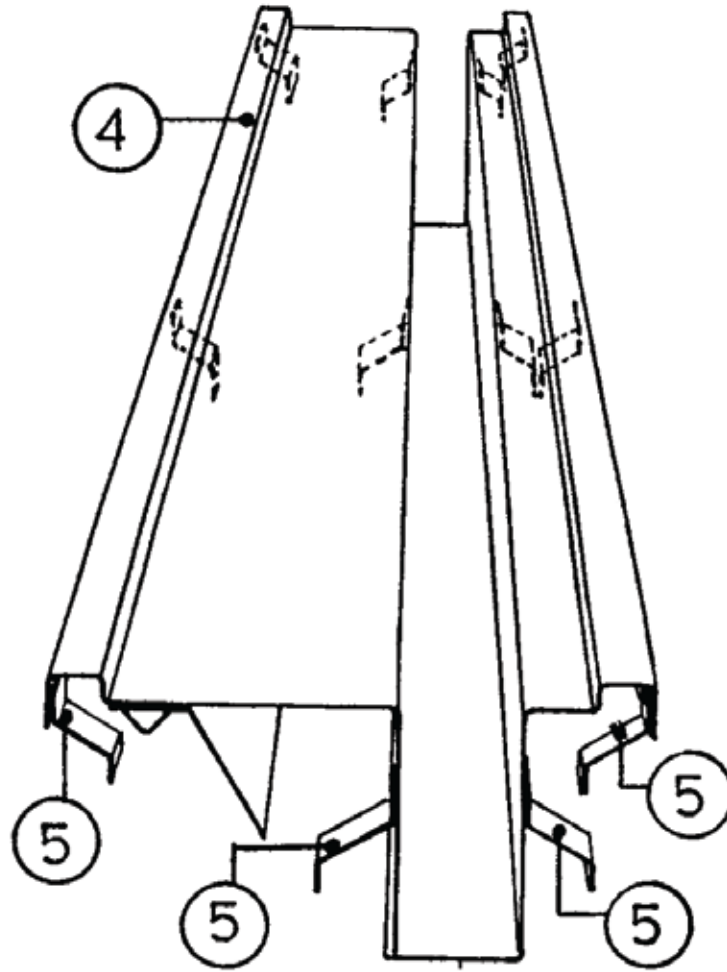


Figure 5a.

5.1 Any part of channel system that does not have anchor holes must have hooks tack welded in the position indicated in **(figure 5a)**. A total of 12 hooks per section are required. It is necessary to pay attention in placing the hooks so as not to interfere with the reinforcement.

5.0 Preparation of the Channel System

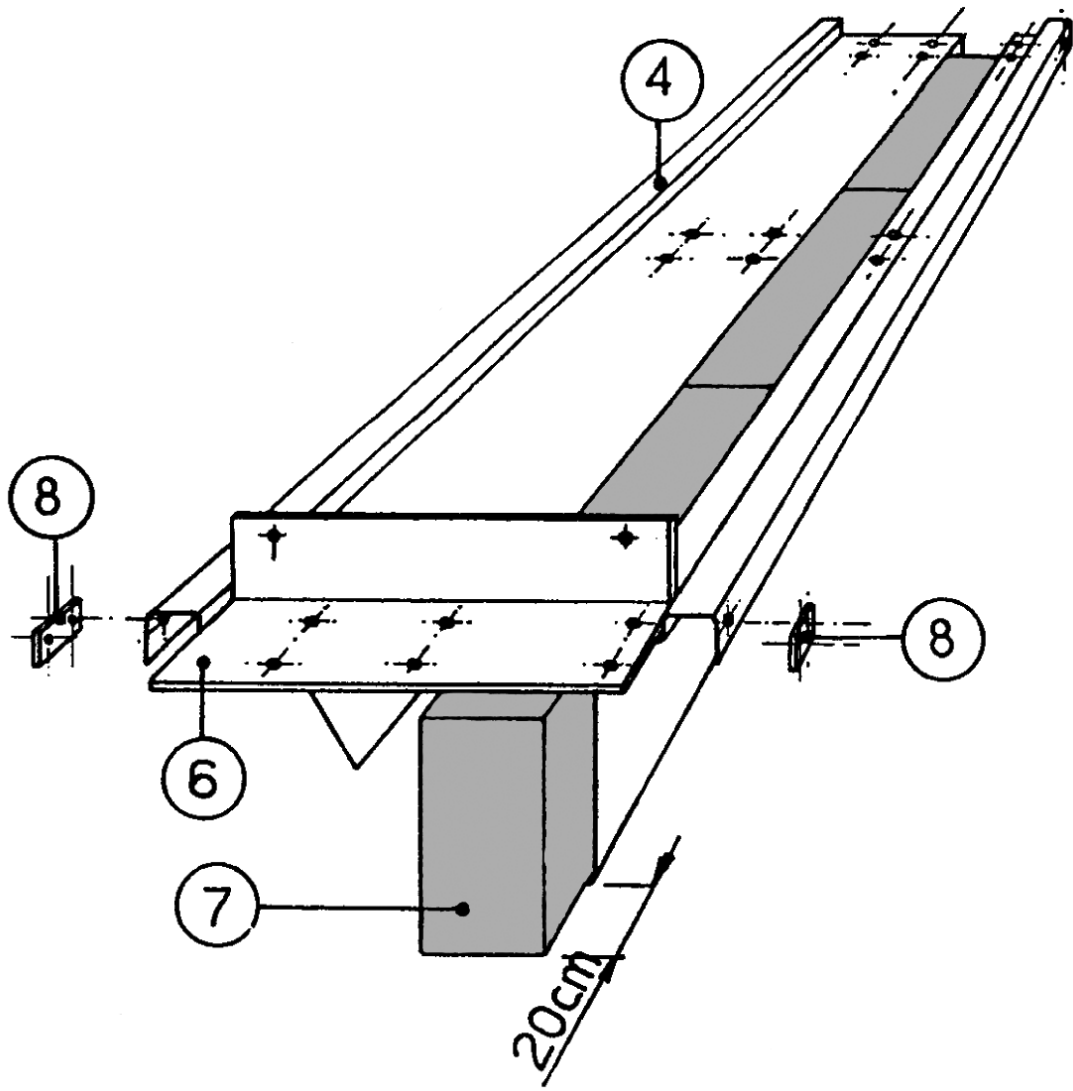


Figure 5b.

5.2 The positioning of each component part of the channel system (4) for the connection between them is indicated in (figure 5b). The junction angle plates (6) provided hold in position and join together the component parts.

- The continuity and the alignment between two component parts is obtained by making the polystyrene filler protrude by approx. 20cm. (7), and this one will fit into the next part of the channel.
- The copper fish plates (8) for the earthing of the channel will be bolted between the parts to bridge them.
- Tightening the bolts will help to align the different parts of the channel system.
- As an option the trench channel system may be supplied with an end-to-end interlock system to further align the sections.

5.0 Preparation of the Channel System

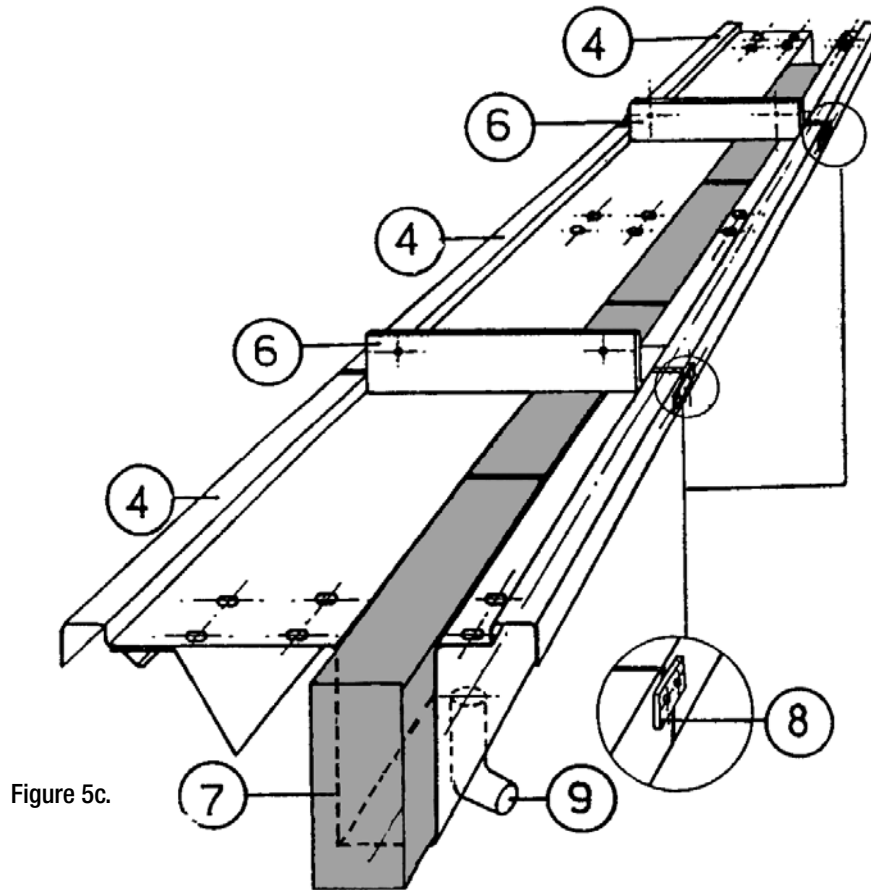


Figure 5c.



Figure 5d (above) shows site and channel system being prepared for installation.

5.3 The channel system parts are shown in their assembled form in (figure 5c) where it is possible to see the parts of the channel (4), the angles (6), the fish plates for electrical continuity (8), the polystyrene parts (7). In this picture it is also possible to see the scheme of the drainage system (9), which must be in place before the concrete is poured. The channel has holes in the base measuring 60-100mm. (to be executed during the installation) at pitches varying from 6 to 12 meters (the distance between the pitches depends on local rainfall). These holes will be joined to the drainage system by PVC pipes (9).

6.0 Installation of the Channel System

After the channel system has been prepared, and the various assembly phases have been completed by use of the angles, bolts and copper fish plates, it is now ready to be placed into the prepared, reinforced base.

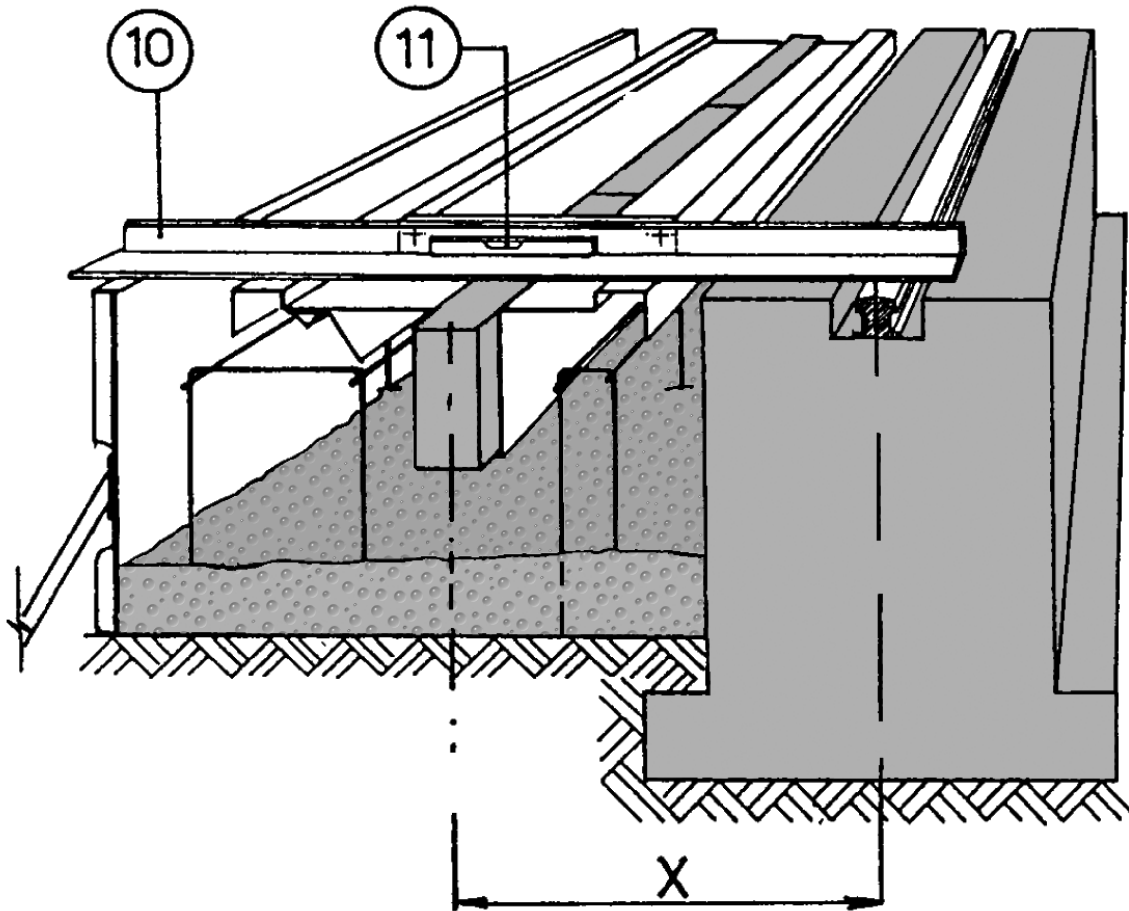


Figure 6a.

6.1 **Figure 6a** shows the positioning of the channel system with the rail (with a maximum tolerance of about 10mm.), using transoms (**10**). It is important to verify the critical dimension (**X**) of the project and the exact alignment and level between the channel and the crane rail.

The transoms (**10**) support the channel system during the concrete pouring phase, so they have to be fixed to the junction angles as described in **section 4.2**.

6.0 Installation of the Channel System

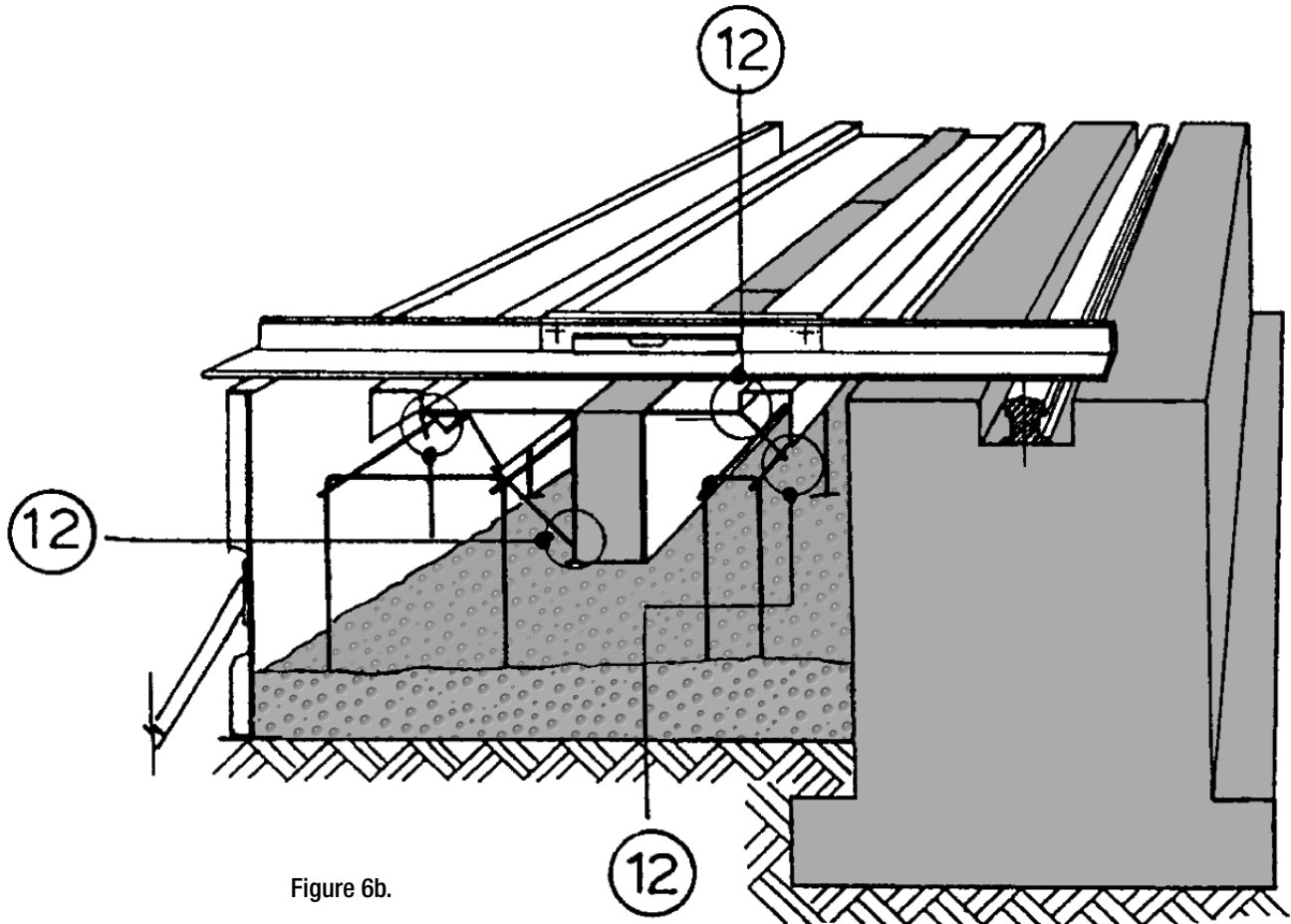


Figure 6b.

6.2 After aligning and leveling the channel with the crane rail, the channel must be fixed to the reinforcement to keep the channels from moving during the second pour phase. This is achieved by welding pieces of iron reinforcing rods to the channel system (12), as shown in (figure 6b).

6.0 Installation of the Channel System



Figure 6a.

6.3 **Figure 6c** is a photo of a channel already set in place and ready for the final pour. It is important to double-check these items:

1. The tolerance with continuous reference to the rail (10mm.) by the positioning of the transoms **(10)** related to the rail.
2. That dimension **(X)** is constantly maintained (10mm.) and channel is level with the crane rail.
3. Alignment between the parts of the channel (by use of polystyrene forms during installation; refer to **(7)** in section 5.2) must be precise.
4. Channel fixing must be executed before proceeding to the second pour. This is achieved by use of the iron rods **(12)** as described in **section 6.2**.

6.0 Installation of the Channel System

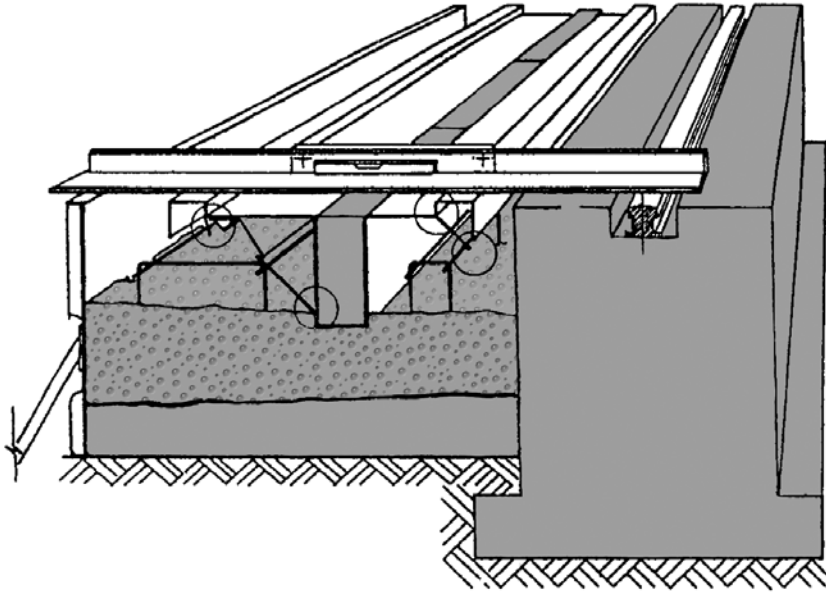


Figure 6d.

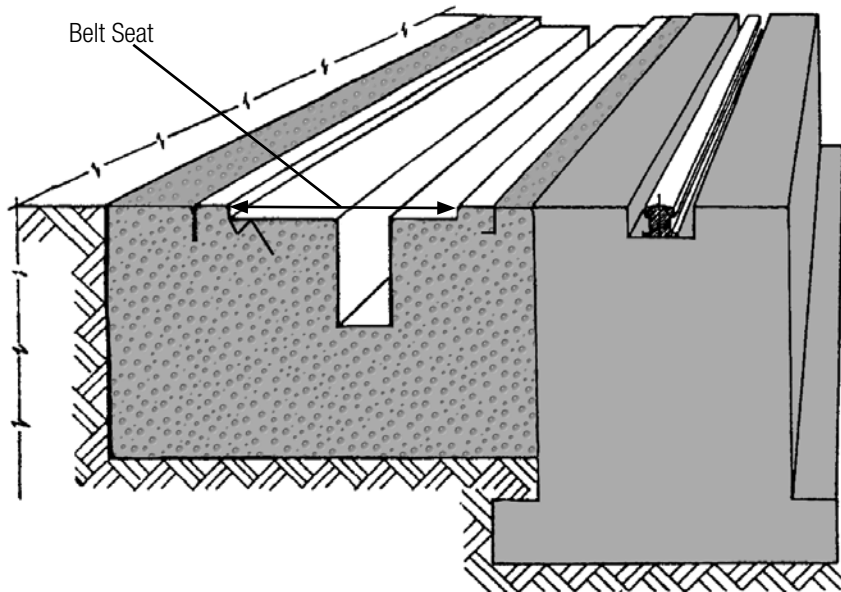


Figure 6e.

6.4 **Figure 6d**, shows the final pour of the concrete. This pour must be executed in two phases: the first one uses enough concrete to fill the area around the channel by approx. one third of the total depth to fix it better; the second one up to complete filling. This operation executed at a different time helps to prevent the possibility that the channel system might “float” out of position. This effect shall be prevented by the transoms properly secured to the ground. During the final phase of the pour it is important that concrete vibration equipment be employed, to ensure correct compaction, particularly on the external sides of the channel system. Therefore it is necessary to ensure that the upper level of the concrete before it sets up is the same as the upper level of the channel system. After setting the concrete it is necessary to remove the angles and polystyrene filler, and to clean the belt seat in **(figure 6e)**, and that the channel system is completely clear after the final cleaning operations.

7.0 Installation of Belting

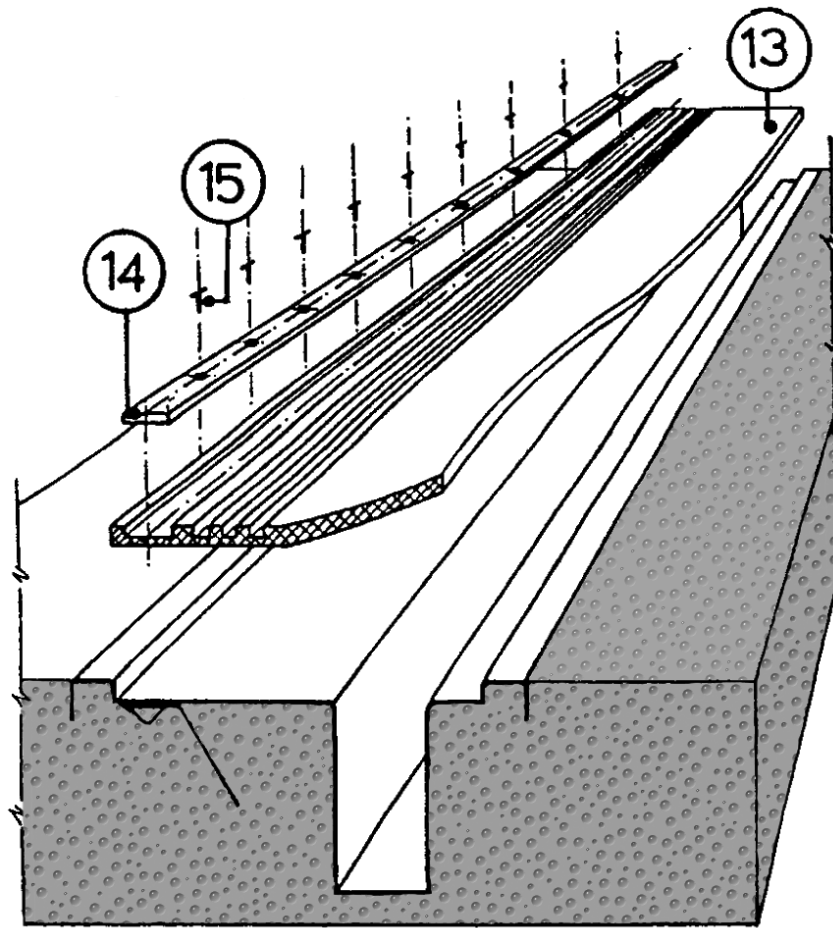
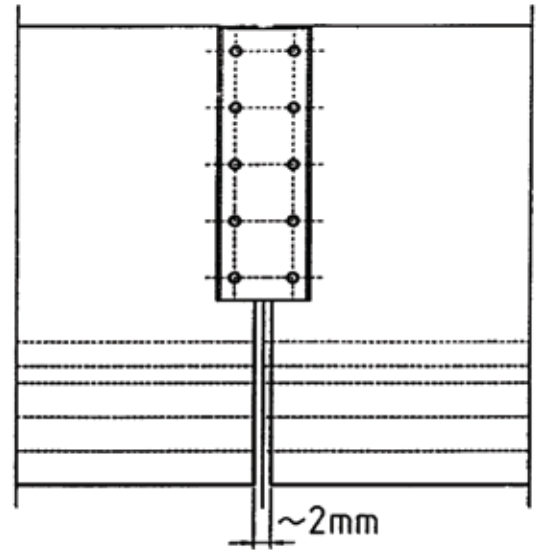
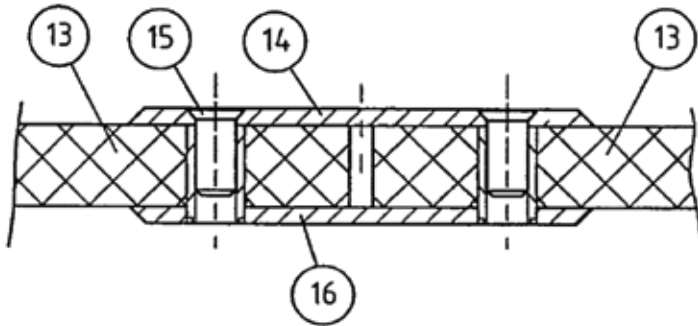


Figure 7a.

7.1 Before proceeding with this step of the installation, check the following details:

1. The Drainage of the water must be sure and without any obstacle.
2. The belt seat area & cable channel are perfectly clean. In **(Figure 7a)** the assembly of the belt **(13)** on the channel is shown and executed as follows:
 - 7.1.1 The belt roll must be fixed at one end and subjected to a stretch pull of 2500 N. (about 2% of it's length). Then reduce the pull to 500 N. and attach the other end.
 - 7.1.2 After this the stretched belt and the channel below are now ready for drilling by using the fixing plate **(14)** as a template. A gap of 3 to 5mm. is required between the end of each fixing plate.
 - 7.1.3 Attach the plate and belt to the channel with the rivets **(15)** supplied (5mm.), spaced at 80mm. intervals. For this operation it is necessary to use a pneumatic riveting machine.

7.0 Installation of Belting



7.2 When joining 2 lengths of belting together, do the following:

7.2.1 Bring the ends of belting **(13)** together.

7.2.2 Align the end of belting with the splice plate **(14)**.

7.2.3 Drill the belt with the splice plate **(14)** "used as a drilling template".

7.2.4 Widen the hole diameter to 10.5mm.

7.2.5 Position the end of the other length of belt between the two plates **(14 & 16)** and connect both with the flat head screws provided.



Figure 7a.

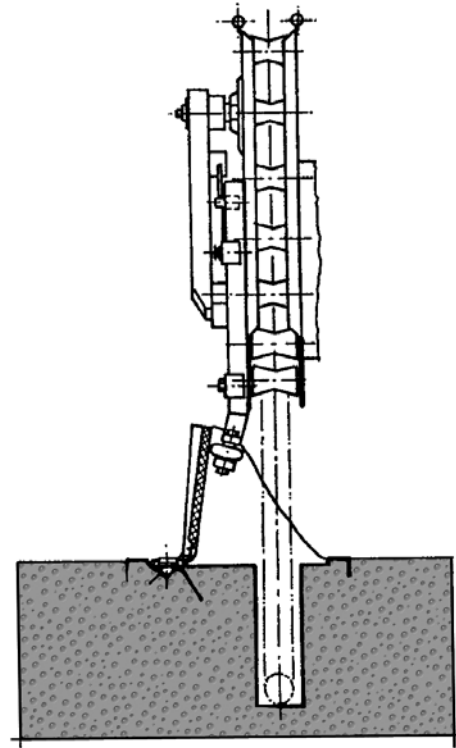


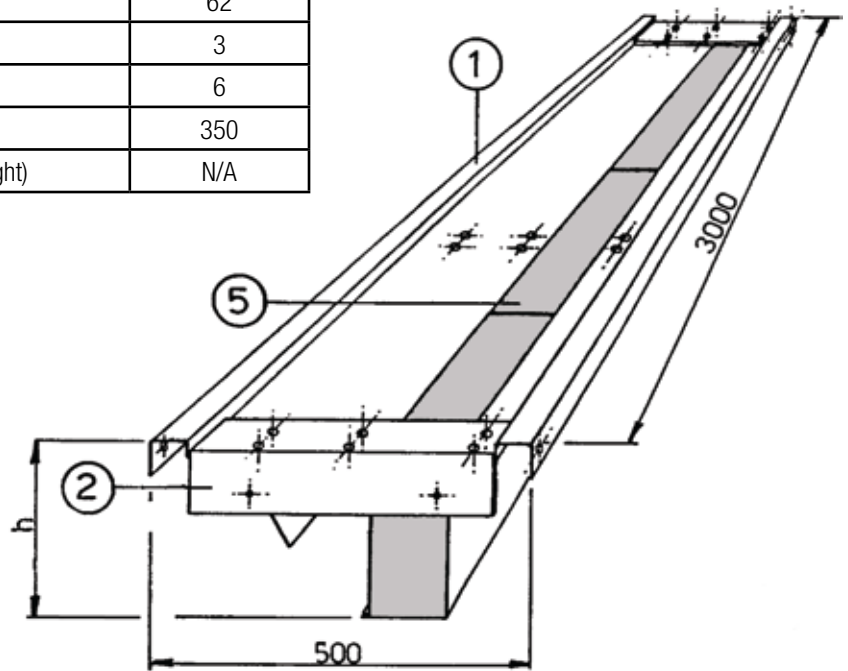
Figure 7b.

7.1 After the installation of the belt it is important to test the system with functional / traveling tests. To lift up the belt it is necessary to use the Condu-tix-Wampfler Lifting Device (shown in **Figure 7b**). The roller belt lifter is an integral part of the cable roller guide system fitted to the mobile machine and can be adjusted to suit the height required.

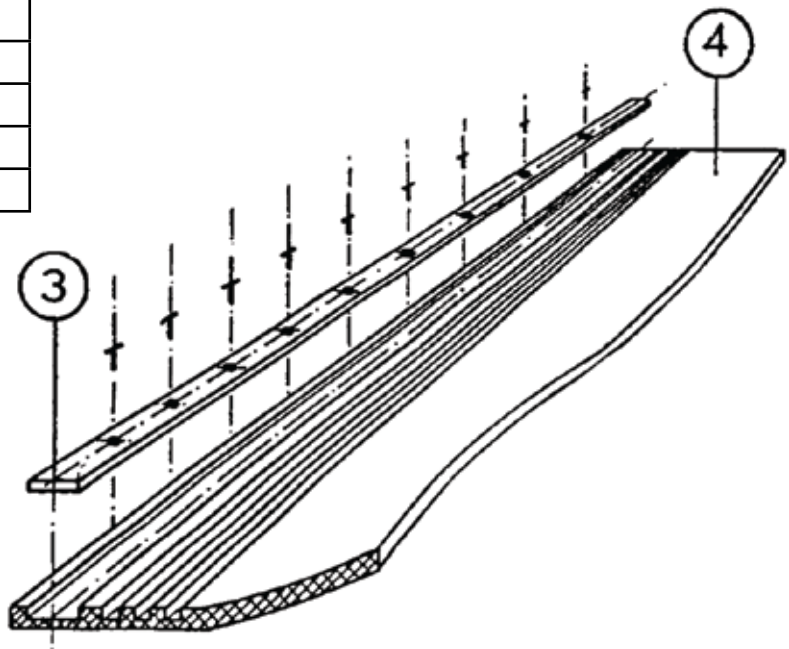
Photo **7a** shows a typical application of the channel system with belt lifter.

9.0 Dimensional Reference Information

Item No.	Quantity	Description	Weight in Kg.
1	1	Premounted Channel	62
2	2	Positioning Angle	3
3	6	Fixing Plate	6
4	*1	50 Meter Roll of Belt	350
5	3	Polystyrene (Insignificant Weight)	N/A



Item No.	Deminsions (in mm.)
1	See Page 3 (h=220, 320, 420, 520)
2	N/A
3	8 x 30 x 500
4	15 x 295, 395 or 595
5	100 x height



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