

Full range of state of the art moulds for precast retaining walls

Construx is one of Europe's leading mould manufacturers and has developed over time a vast portfolio of moulds that suit precast manufacturers' needs. In close collaboration with the customer Construx tries to find the most appropriate mould which is in accordance with all technical specifications, which fits the customers' budget and which copes with the dimensions and numbers of precast elements the customer wants to cast. For companies supplying precast elements for agricultural use, Construx conceived over the years a full range of state of the art retaining wall moulds. The precast retaining wall units are ideal for forming both retaining and containing structures, not only in agricultural, but also in commercial, residential, industrial and waste developments.

Retaining wall units are an ideal product where the speed of installation is important. They offer a fast and cost-effective solution for constructing retaining developments. Typical shapes are L, U, T and A. In this article we focus on the L-shaped retaining walls which is the most common type. These elements can have several features: straight or tapered walls, straight sides or sides with tongue and groove, chamfers where needed, etc. There are three ways of manufactur-

ing retaining walls: side-cast, cast 90° turned (bottom leg cast vertical) or cast upside-down.

Different retaining wall mould types: advantages and disadvantages

Side-cast

Typical one element, one mould combination. With these moulds it is difficult to combine multiple elements in one mould. It is also not easy to apply tongue and groove in these moulds. The mould itself is very straightforward and can be low-cost and easily equipped with chamfers all around. This mould is typically applied for short elements of 1 m or 1,5 m in length. Where multiple moulds are required, they can be quite space-consuming compared to the other mould types. The major advantage is that they can be transported as they are cast, so no turning is needed.

Cast 90° turned (bottom leg cast vertical)

A typical mould for this type of casting looks like a table with a fixed vertical side. A second vertical side is used as a counter form. There is always easy access to the mould and to the concrete. The biggest disadvantage of these moulds is that self-compacting concrete cannot be used and that casting with regular concrete must be carried out with great care. One inside face of the retaining wall has no fair-faced finish. If the edges of the retaining walls can be made tapered, an easy and quick demoulding of multiple elements is possible.

Cast upside-down

These are typical multiple-element moulds. All surfaces are fair-faced except from the base, which is never apparent. Chamfers can be applied in almost all edges and tongue and groove or other side features can easily be implemented. Between demoulding and putting the elements in the stockyard, a turning operation must be applied. There are several solutions possible to do so (mechanical or vacuum lifting combined with a turning device ...) or as a high-end solution the complete mould can be turned and demoulded in one single action. The length of the elements can easily be adapted, and simple solutions can be found to adjust the height.



Fig. 1: Precast retaining wall elements



Fig. 2: Series of different types of retaining wall moulds

Typical mould combinations

Depending on the different types of elements needed and the frequency they must be cast, or depending on the flexibility in production, Construx can make the moulds multi-purpose. Moulds which can make all types of elements do not exist, although, Construx is the ideal partner to come close to such a combined solution. Depending on the type of mould and the shape of the elements, following combinations are suitable:

- Variation in length of the elements
- Variation in height of the elements
- Variation in thickness of the walls



Fig. 3: Manually movable and adjustable retaining wall mould

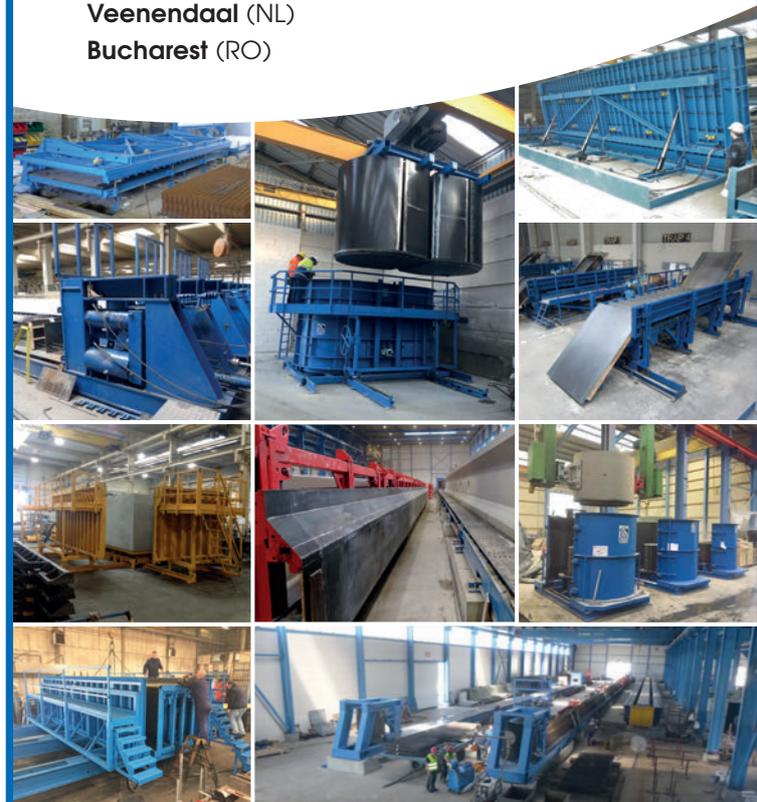


Precast Moulds & On-Site Formwork



Shaping the Future of Concrete

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To make the mould suitable for these variations, it may be necessary to have extra accessories such as stop-ends, height adjusters, different bases, etc., to complete the basic mould setup. Even in combination with a fully automated mould, this remains a suitable solution.

Possible mould automation

A basic mould setup consists of a fully mechanically closed and secured mould:

- All bolts are round threaded so they cannot be worn down by the concrete
- If the use of bolts is to be avoided, a fast-securing mechanical clamping system is appropriate
- To go all the way, Construx provides solutions where all closing and securing is fully hydraulic

Most customers want to have the crane-time brought back to a minimum for opening and closing the moulds:

- If the locking and securing is done hydraulically, opening and closing the mould is a fast and easy job
- Side-forms can be made hingeable or can be mounted on wheels
- If on wheels, the side-forms can be rolled backwards manually
- When required, the moving of the side-forms can be executed hydraulically
- An intermediate solution is the use of a chain-drive with gearbox
- Stop-ends can be moved by hand, by crane or by using a mechanical push-pull system
- In a fully automated setup, these stop-ends can be moved hydraulically or they can be made hydraulically shrinkable

Some customers may want extra automated processes in order to speed up the demoulding of the retaining wall elements. Construx can provide a multiple fully hydraulic mould, that can be turned by means of a turning device, so after turning and opening the mould all concrete parts will sit on a carrier or on a pallet. It only takes a minute to unlock and demould the complete setup and the mould will immediately be ready for the next pour.

The “mother of all retaining wall moulds”

Construx recently supplied a fully hydraulic quadruple mould for manufacturing 2 m long L- or inverted T-shaped retaining walls. The height can be set at 3,740 mm or 4,240 mm and the length of both foot and heel is steplessly adjustable. The mould is designed as a cross with four individual moulds (one in each quarter) and incorporated working platforms, with an access ladder, in the middle and on the entire perimeter of the mould. Each individual mould has a fixed part (panel and side-form connected), one articulating and movable panel and one articulating side-form. Each articulating and movable panel is connected to its twin mould articulating and movable panel, and each articulating side-form is connected to its twin mould articulating side-form.

All movements are fully hydraulic:

- Opening and closing the articulating outside panels
- Moving the articulating outside panels back and front
- Locking and securing the articulating and movable outside panels with wedges
- Opening and closing the articulating side-forms
- Locking and securing the articulating side-forms with wedges



Fig. 4: Fully hydraulic mould with stainless steel sheeting

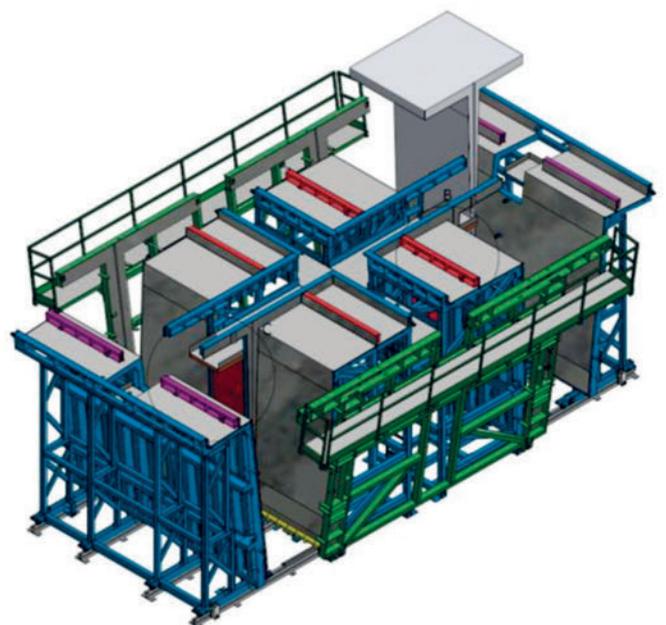


Fig. 5: Design of a fully hydraulic quadruple mould



Fig. 6: Fully hydraulic quadruple mould with stainless steel sheeting

The wall as well as the foot and the heel are tapered, the sides have a groove/groove finish, all corners have triangular chamfers, and the top of the element has a 20 mm rounding. The complete mould is sheathed with stainless steel providing a perfectly smooth and fair-faced finish of the precast elements and an easy cleaning of the mould. A perfectly fitting insert serves to reduce the height from 4,240 mm to 3,740 mm and the position of all stop-ends, for foot and heel, can be steplessly adjusted. Its robustness, versatility, adjustability and its top stainless steel finish, make this mould so to speak the “mother of all retaining wall moulds”.

Construx meets the requirements of every customer individually, in order to obtain a multifunctional and flexible solution to manufacture their retaining wall elements. The outcome of achieving such an objective is always a satisfied customer. ■

FURTHER INFORMATION



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