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Worldwide demand for fully adjustable moulds to manufacture box-culverts, lift shafts and stair cores

A couple of years ago, Construx designed a new type of adjustable moulds to produce any type of shaft or core without ties through the concrete element. The system is suitable to make single and double lift shafts, stair cores and box culverts. Since the first moulds have been installed in Belgium, three years ago, the worldwide demand for this type of mould has grown fast. Similar moulds have been supplied to Canada, New-Zeeland, United Kingdom, Germany, Northern-Ireland and many other countries.

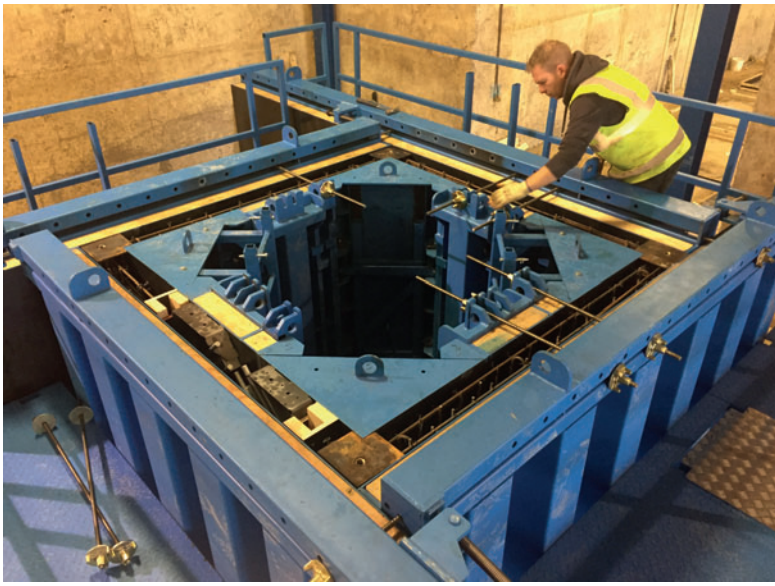
Fully adjustable and hydraulically retractable

The idea of the mould is to start with an adjustable base frame on which all components can be locked into position. The inside mould has 4 hydraulically retractable corners which, when connected without any infill panels, form the minimum shaft size. This size can be chosen at 1200mm x 1200mm, 1000mm x 1000mm or even at 900mm x 900mm. When adding infill panels in between the inside corners, any other internal size can be achieved, even up to 7500mm x 4000mm or more. Depending on the customers' requirements, increments can be 250mm, 200mm, 100mm, 50mm, 25mm, or even 20mm or 10mm. The retractable corners can feature a 90° angle (for lift shafts and stair cores) or can have a triangular chamfered corner of 150mm/150mm, 200mm/200mm or any other size (for box-culverts). In case the mould is going to be used for lift shafts and stair cores as well as for box-culverts, the chamfered corners can have detachable top-up parts to form a 90° angle.

The retractable corners can be operated by means of 4 individual hydraulic hand-pumps or with one single hydraulic group. After assembling the inside mould, steel bases are fit onto the base frame and against the inside mould. These bases sit on height adjusters and can have different widths, allowing various wall thicknesses for shafts and culverts. The continuous height adjustment systems allow to finish the concrete on top of the mould at all times. The bases can be flat (for lift shafts and stair cores) or have a rebate (for box-culverts). The outside panels connect to each other in a hit-and-miss configuration. By doing so, any outside size can be achieved, no matter the increments of the inside mould. Outside panels and inside panels are connected to each other with spindles at the base and by means of tie-rods over the top of the mould. So, there is no need for ties through the concrete element, which results in a fair-faced and watertight finish. When the length of the outside panels exceeds 5m, it is desirable to make those in 2 separate parts, otherwise the panels would stick out too far when making small size shafts and culverts. Dividing large size outside panels is also preferable for transport reasons. After demoulding, the outside panels can stand alone without securing. All outside panels are equipped with full steel working platforms and access ladders, to cope with worldwide health and safety standards. In order to make double lift shafts in one single cast, the customer can use 2 complete inside moulds, side-by-side, with one overall outside mould. All moulds are made to measure, according to the customers' requirements, as shown below.

Decast in Canada

Decast, a Canadian precast company, asked Construx to conceive a fully adjustable shaft mould suitable to produce lift shafts, stair cores and box culverts. One internal side needed to be adjustable from 1800mm to 4000mm and the other from 2400mm to 6000mm, all sides with 100mm increments.



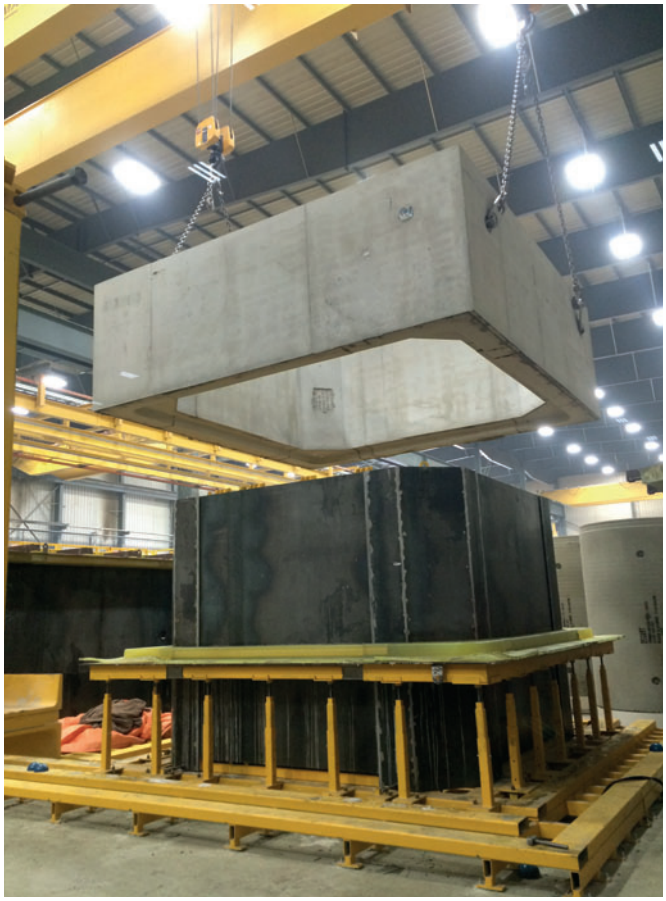
Fully adjustabe inside and outside mould

The wall thicknesses were adjustable per 50mm, from 200mm to 450mm. The casting height was adjustable from 1600mm to 2700mm.

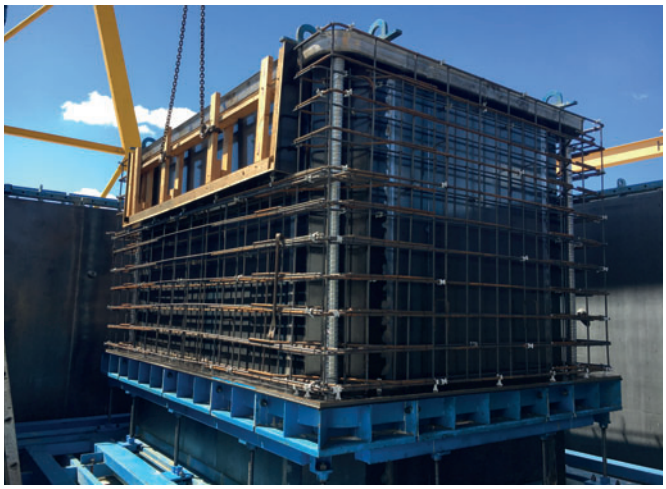
Hudson Civil Products in Tasmania

Hudson Civil Products, a Tasmanian precast company, required a 2600mm high mould to manufacture box-culverts of up to 4200mm in length and 3000mm in width, starting from a minimum inside size of 900mm x 900mm. Construx made

Box-culvert mould at Decast



Demoulding box-culvert at Decas



Inside mould with rebar at Hudson

Mould being prepared at Megaton

Demoulded culverts at Hudson

Mould ready to cast at Megaton

Demoulded lift shafts at Megaton

full steel bases and top-up inserts with half-wall rebate formers for different wall thicknesses. All these bases consisted of corner parts and straight parts, which were easy to assemble.

Combining different parts allowed to make culverts with 4 different roof and base / wall thicknesses: 150mm/150mm, 200mm/150mm, 200mm/200mm and 250mm/200mm.

Megaton in Belgium

Megaton, a Belgian precast company which is part of the Willy Naessens Group, was one of the first to purchase such an adjustable mould. Since then, they purchased another 3 complete moulds, all with panels of 3500mm high and suitable to make single and double lift shafts and stair cores of up to 7500mm in length and 4000mm in width, with 100mm increments. Each mould allows to manufacture one shaft per day, this sequence is achieved, even when all sizes need to be changed for the next pour.

Flexibility, versatility and speed

The high demand for this type of moulds is a direct result of its flexibility, versatility and speed with which they can be assembled, demoulded and adjusted. As proven above, the future is with the Construx fully adjustable lift shaft, stair core and box-culvert moulds. Construx is an engineering-driven manufacturing company relying on the commitment, creativity and experience of its employees. Their aim is to establish a partnership, rather than to be a supplier, in providing turnkey solutions for precast and on-site formwork issues. ■

FURTHER INFORMATION

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