ASSEMBLY AND INSTALLATION INSTRUCTIONS

Twinstore Tank from
Helically corrugated steel pipes HelCor®

VIACON

Constructing connections.
Consciously.

Table of contents

1. Delivery, unloading and storage 3
   1.1. Packing for transport 3
   1.2. Weights 5
2. Assembly 6
3. Excavation & backfill requirements 7
   3.1. Backfilling Guidance 8
4. Typical access shaft finishing detail 9

1. Delivery, unloading and storage

Although corrugated steel pipes are known for their strength, they should be handled with reasonable care. Never dump pipes directly from a truck bed on unloading, lift in a way that protects the galvanised or coated surface. As for any manufacturer, pipes should not be dragged across the site. Helcor pipes are relatively light in weight, typically supplied in around 7m lengths, they can be handled with simple, light equipment. In assessing handling requirements, the contractor should ascertain the heaviest part of any delivery. This information may be on a drawing and/or available from Viacon UK Ltd.

Fig.1

Fig.2

Pipes should ideally be handled with a double sling (Fig.1), to prevent excessive localised stresses in the pipe that could cause damage. In the case of longer pipes it may be prudent to use a spreader beam for off-loading and placing. Pipes should be handled with nylon slings and not with pipe hooks or items that can cause damage to pipe ends.

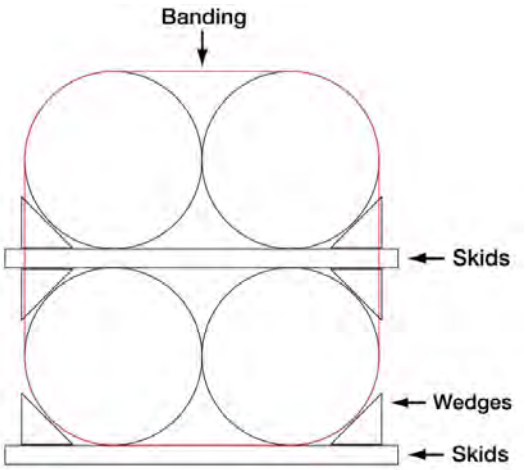
Do NOT lift with single strap or without bite. ALWAYS follow site safety procedures.

Off-Loading Guidance For safe transport and handling, Viacon fasten pipes together with steel banding. Packs of pipes sit on the vehicle on wooden skids to enable loading transport at the factory from a crane (Fig.3) or forklift truck (Fig.4). Skids are also used between rows of pipes (Fig.5). Wedges (chocks) are used to stop lateral movement of the pipes.

Fig.3

Fig.4

When off-loading a pack of pipes, nylon slings should be used if lifting by excavator or crane. Alternatively use a forklift truck or excavator with fork attachments. When the pack is placed at ground level, the banding can be removed as required and the pack split. Single pipes can then be handled with care, again using a crane with slings or forks.



Notes: The above is for guidance and should be followed in conjunction with current health & safety guidelines and site health & safety policy. Please note that the skids on the vehicle bed can be retained for use and disposal on site. Be aware of the possibility of nails and splintering.

Fig.5

1.1 Packing for transport

These diagrams (Fig.6) show how straight pipes are typically packed. Pipes that have additional factory fabrication work might not be packed as shown.

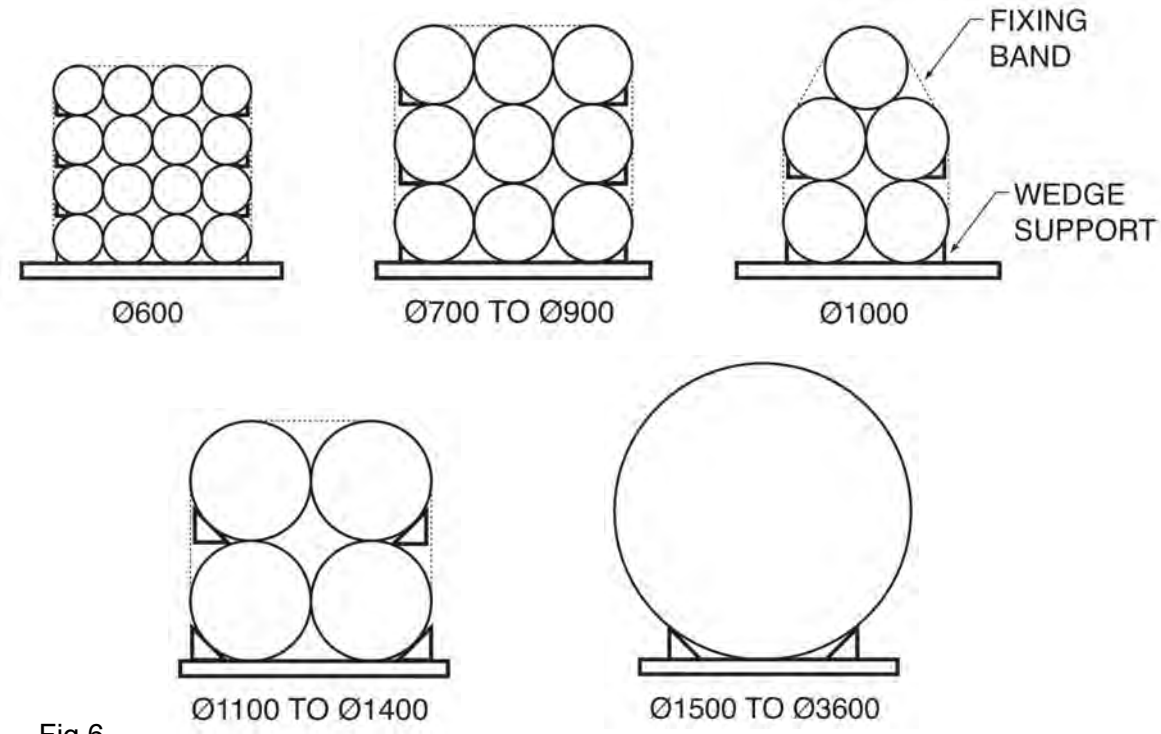


Fig.6

1.2 Weights

The tables can be used to calculate straight pipe weights. Please contact Viacon should you require weights confirming for off-loading and handling plant on site.

Helcor 68						
Clear Internal Diameter (m)	Weight per metre (kg)					Clear End Area (m2)
	Steel Thickness (mm)					
	1.5	2.0	2.5	3.0	3.5	
0.9	41	53	66	79	90	0.64
1.0	45	59	73	87	100	0.78
1.1	50	65	80	95	109	0.95
1.2	54	72	89	106	118	1.13

The weight charts represent the diameters within the scope of the BBA Certificate: 13/H209.

Please see the BBA Certificate for the full range of certified steel thicknesses.

Diameters below 0.9m are also available, these are outside the scope of the BBA Certificate. Please contact Viacon for further information if the pipe you need is not listed here.

Helcor 125						
Clear Internal Diameter (m)	Weight per metre (kg)					Clear End Area (m2)
	Steel Thickness (mm)					
	1.5	2.0	2.5	3.0	3.5	
1.2	55	73	90	108	124	1.13
1.4	65	85	105	125	145	1.54
1.5	69	91	113	134	156	1.77
1.6	74	97	120	143	166	2.01
1.8	83	109	135	161	187	2.55
2.0	92	121	150	178	207	3.14
2.2	102	133	165	196	227	3.80
2.4		145	179	214	248	4.52
2.6			194	231	268	5.31
2.8			209	249	289	6.16
3.0				267	309	7.07
3.2					329	8.04
3.4					350	9.08
3.6					371	10.18

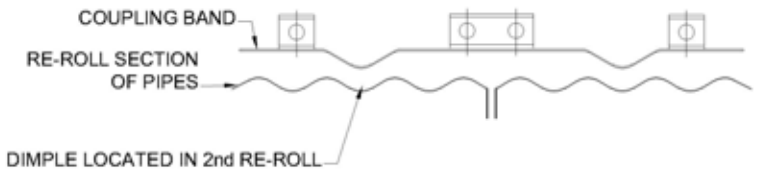
2. Assembly

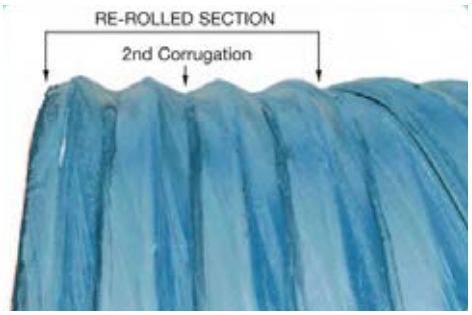
- Bed pipe on pre-shaped bed.

- Place the bottom segment of the band and chock in position with a timber wedge.

- Bed next pipe on band / bed.

- Place the second part of the band over the pipe ensuring a good and even seating of the band dimple into the second re-roll corrugation of each pipe.





- Locate the M12 studs provided through the lugs and place the saddle washers, loosely tighten the nuts ensuring that the curved face of the saddle washers sit into the radius of the lugs.

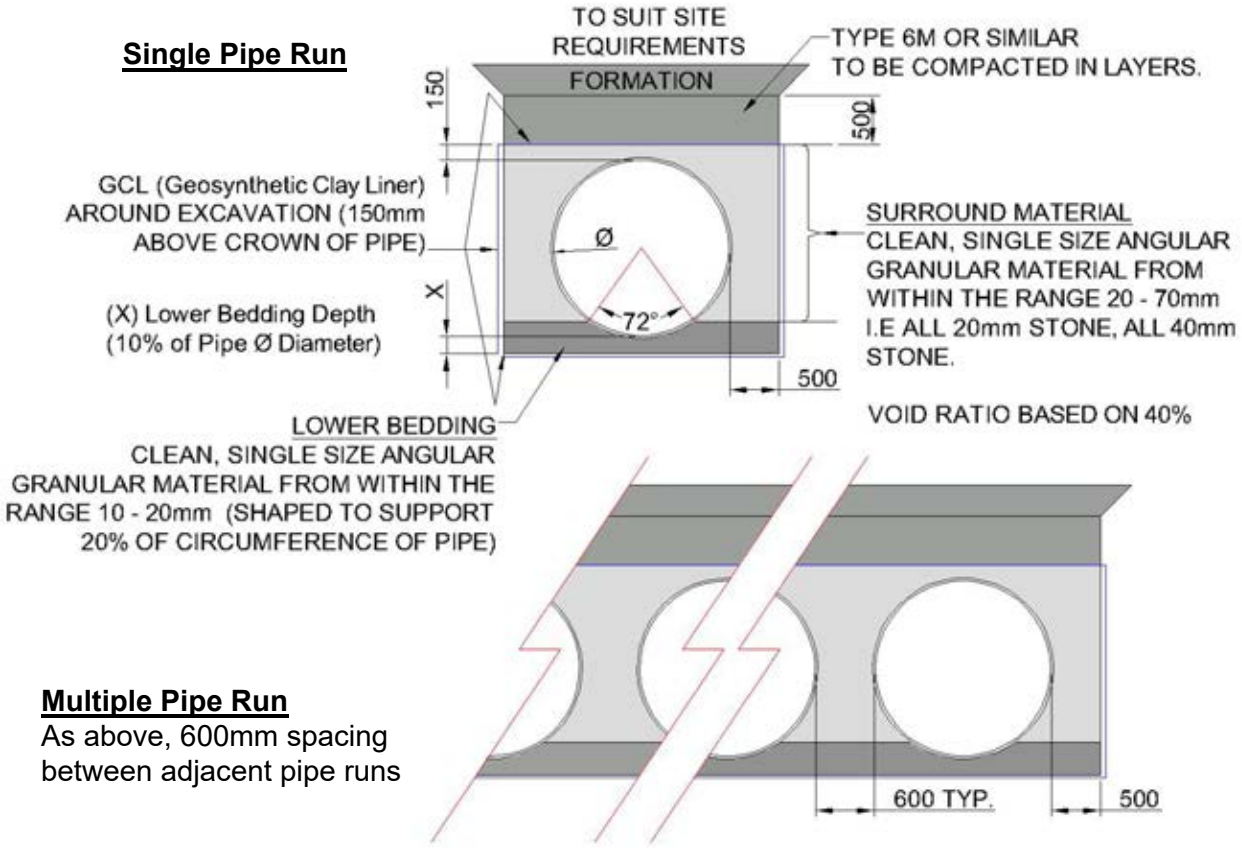
- Note that the nuts should only be hand tight, this is essential to allow the free flow of water from inside the tank into the voids within the backfill.

If there is a poor match in terms of shape then the pipe ends can be jacked into shape by the use of Acrow props or similar and held in a true circular profile whilst the coupling bands are placed and tightened and if needed be left in position until backfill is placed Generally, pipes over 1.4m diameter have match marked ends and each pipe is marked with a pipe sequence number. Pipes should be laid in this sequence to ensure good diameter match.

Please also watch: How To: Lay a Twinstore Pipe and Join Two Pipes on our website at : https://viacon.co.uk/guides/

3. Excavation and Backfill requirements

Single Pipe Run



Multiple Pipe Run
As above, 600mm spacing between adjacent pipe runs

Minimum depth (X) of Lower Bedding material to be equal to Diameter (D) divided by 10. Therefore, for an 1.8m pipe, X = 180mm. For a 2.4m pipe, X = 240mm etc.

*Dimension 500mm for pipes less than 3m diameter.

*Dimension 500mm to be 800mm for pipes 3m and above.

Fig.10

Backfilling Guidance

Correct placement of bedding materials, including the shaping of the bedding to support 20% of the circumference of the pipe is important. Getting this right not only gives the correct structural support to the pipes, it also ensures good line and level along the length of the tank or culvert.

The material under the haunches must be in firm contact with the entire bottom surface of the pipes, taking great care at this stage will ensure that the backfill is correctly placed and that the layer is thick enough to spread and accommodate the high pressures that are in this area. When well placed voids and soft spots should not occur.

As the first layer of granular fill is placed, the haunches are more accessible due to the bedding described above. Backfilling under the haunches is an important step in the backfill sequence. Hand equipment like a shovel should be used to fill the remaining haunches.

When placing backfill, layers are generally put down at thicknesses of 150mm to 300mm. A balanced sequence of backfilling is essential. The fill should be placed on both sides of the pipe at the same time, or alternating from one side to the other to keep it close to the same elevation on both sides of the pipes at all times.

When the fill on both sides of a pipe run approaches the top of the structure, the same techniques of spreading shallow layers thoroughly must be continued as the fill covers the pipe. For the initial layers over the pipe, light compaction equipment like a hand operated drum roller, working across the pipe is recommended.

Generally, on reaching 1 metre of cover above soffit level, in compacted layers, suitable larger plant may be used. Please contact Viacon to discuss construction loadings, especially under reduced cover.

4. Typical Access Shaft Finishing Detail

Notes:

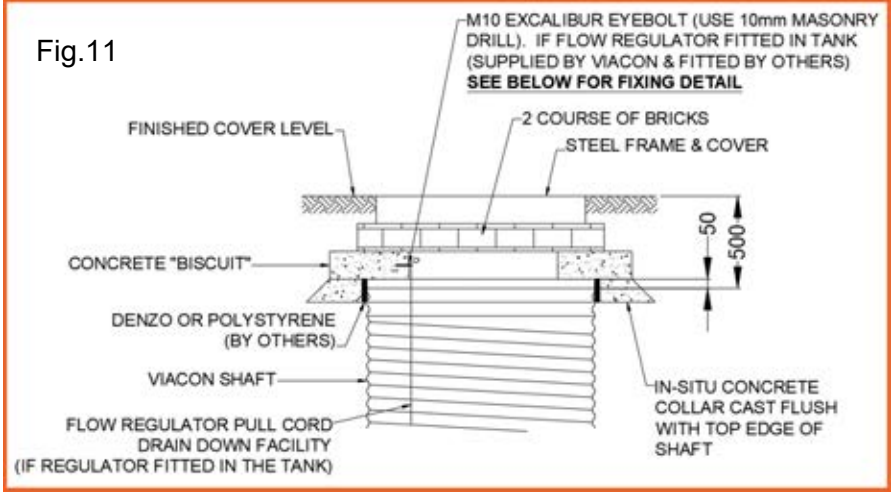
1. When calculating access shaft heights Viacon allows 500mm between finished cover level (FCL) and top of shaft.

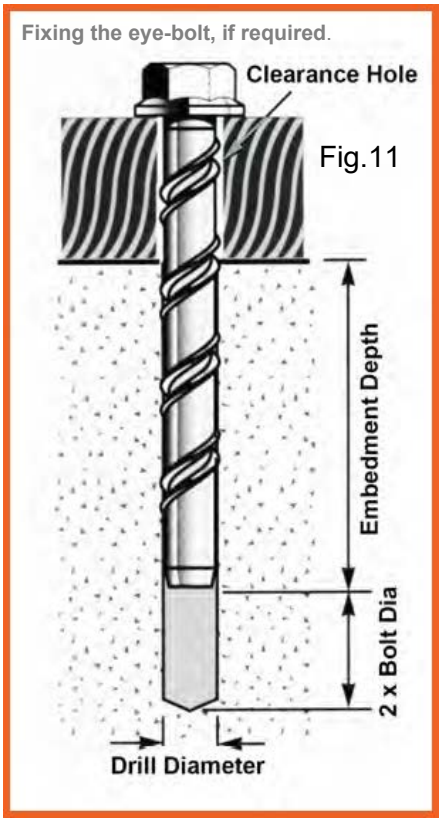
2. The 500mm is typically made up of a concrete “biscuit”, 2 courses of bricks and a steel manhole frame. Any discrepancy can be taken up within the brickwork.

3. Prior to placing the “biscuit” the top of the shaft should be wrapped with Denzo or polystyrene and the concrete ring should be cast with the top approx. 50mm above the top of the shaft. The “biscuit” should then be bedded onto the concrete ring with sand and cement mortar.

4. Concrete “biscuit”, bricks, cover and frame supplied by others.

Fig.11





© Excalibur Screwbolts_November 2009

Tools

Use hammer drill and sds drill bit. Drill bit diameter: Ensure correct diameter is selected for the fixing to be used and is not worn below minimum tolerance.

NB. When drilling into dense concrete observe the maximum efficient working life of the drill bit.

Preparation

Hole depth must be 2 times diameter plus the full working length of the bolt, to allow for the dust created when the bolt is installed into the pre-drilled hole. Remove surplus dust from the drilled hole by easing the drill bit up and down within the hole and blowing clear.

Installation

To install the screwbolt use a branded ratchet spanner with a full hexagon socket, or impact wrench. We recommend the use of the bosch gds or similar. To ensure that you do not ream out the drilled hole set the impact wrench to slow start. This will also avoid any excessive torque stress being applied to the bolt.

Apply pressure to head of bolt to ensure engagement
of first thread. If resistance is encountered when screwing down the bolt, simply unscrew one turn
to release trapped dust, and then continue to tighten down. The bolt is set when the built in washer, at the underside of the head of the bolt, meets the face of the object being fixed to the substrate.
No further tightening of the fixing is necessary.