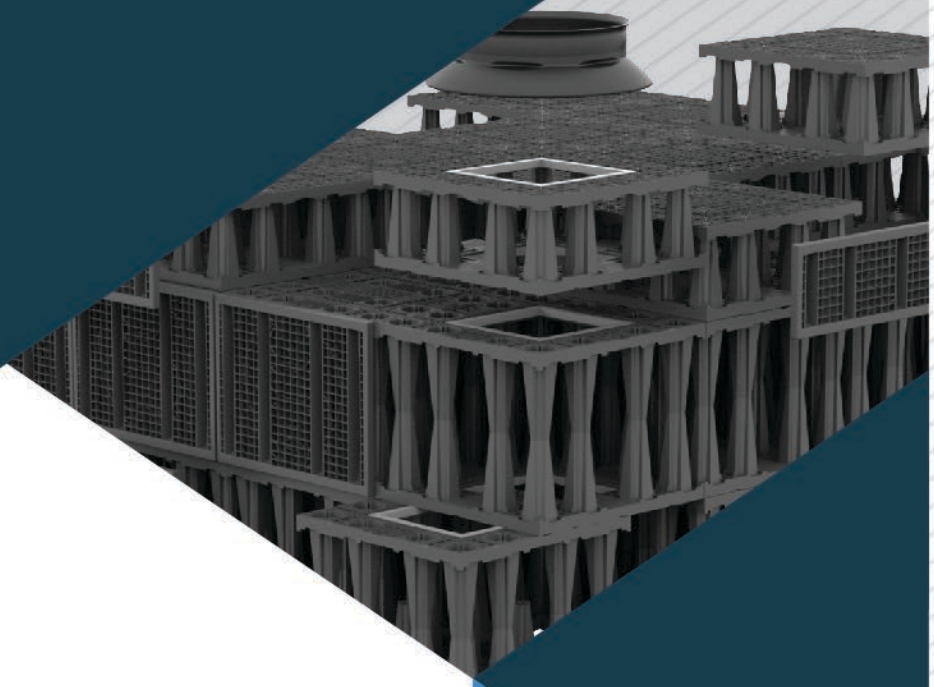
EZStorm

Installation guide



STEPS

1. Before starting work
2. Handling and storage
3. Trench preparation
4. Subgrade preparation
5. Installation of wrapping geotextile
6. Geomembrane installation (if required)
7. Blocks installation
8. Side panels installation
9. Pipe connections and manholes
10. Backfilling and finishing

Note: warranty applies only if all components specified for the EZStorm system are installed. No replacement parts will be accepted.

STEP 1

BEFORE STARTING WORK

Should the information in this guide differs from that in the drawings and specifications, please contact your NextStorm representative.

Contact your NextStorm representative at least 48 hours before work begins. A pre-construction meeting is recommended, and a visit from an authorized NextStorm representative is strongly advised, following receipt of products on site or before work begins.

On receipt of goods, ensure that all items listed on the shop drawing have been delivered. Contact your NextStorm representative in case of breakage.

BLOCK

HALF-BLOCK

SIDE PANELS

COVER PLATE FOR HALF-BLOCK

STEP 2

HANDLING AND STORAGE

Unloading

Blocks must be unloaded using equipment fitted with forks at least 1.8 m (6 ft) long and with a minimum lifting capacity of 2,000 kg (4,500 lb). A pallet of blocks contains 204 half-blocks (102 blocks), divided into 6 stacks of 34 each. It is recommended to keep the blocks, side panels and cover plates on their respective pallets until they are needed. Pallets and components should be placed on a horizontal, solid, flat surface to prevent them from tipping over.

Block handling

To remove the half-blocks from the pallet, carefully cut the straps holding them together. Each piece (half-block) weighs approximately 9.5 kg. Two people are required to remove the half-blocks. Parts damaged during handling must not be used.

STEP 3

TRENCH PREPARATION

Lay out and excavate the trench according to shop drawings and approved plans. To prevent soil migration, install a separation geotextile (non-woven) between the soil and the stone backfill, around the perimeter of the system. The minimum overlap between each row of geotextile is 300 mm. A level, dry excavation bed is required before proceeding with subsequent steps. Provide a surface large enough to allow workers to pass between the system and the trench walls.

STEP 4

SUBGRADE PREPARATION

If specified on the plans, install a drain to de-water the subgrade, then level it (0-20 mm granular A material or class A sand) and compact to at least 95% Standard Proctor (S.P.). 19 mm clear stone is also acceptable. It is essential to lay the system on a flat, solid, horizontal and stable surface, especially for multi-stage systems or systems supporting traffic loads. A minimum bed thickness of 150 mm is required.

Note: refer to workshop drawing and plans for seat thickness.

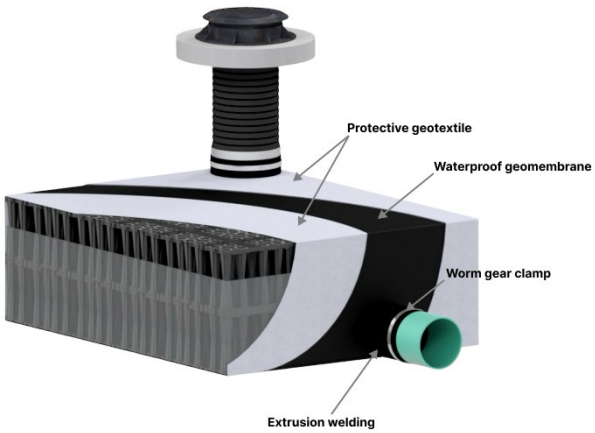
STEP 5

INSTALLATION OF WRAPPING GEOTEXTILE

Unroll the structure wrapping geotextile (non-woven) on the bedding, ensuring a minimum overlap of 300 mm between rows, and roll it up the side walls of the excavation.

STEP 6

GEOMEMBRANE INSTALLATION (IF REQUIRED)



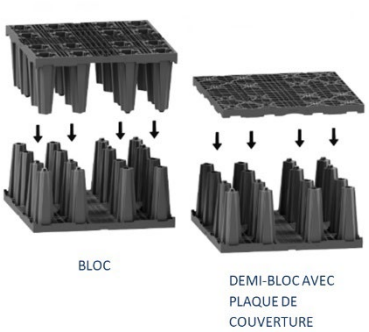
In some situations, the system needs to be waterproof. In this case, a geomembrane must be added between two layers of non-woven geotextile, encapsulating the EZStorm structure. The geomembrane must be welded in place by a competent team approved by NextStorm.

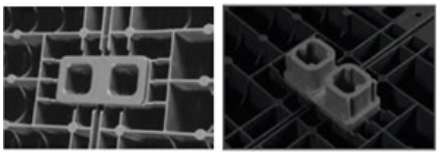
STEP 7

BLOCKS INSTALLATION

Blocks installation is simple. Each block consists of two half-blocks. First, one half-block is placed on the geotextile (columns up), then a second half-block is clipped on (columns down) by placing over the one on the ground and applying slight pressure. This first block is then positioned in one of the corners, as shown in the drawings.

If a half-block floor is required, the upper half-block is replaced by a cover plate.





For adjacent blocks, continue by laying the blocks side by side, according to the layout shown on the shop drawings. Between each block, lay a single-layer or multi-layer connector (when floors are laid above).
If a pre-treatment row is required, place the weir wall at the location specified on the drawings during installation of the lower floor, with the T-shaped section at the bottom. Clip the wall sections together.

If access chimneys are required, special half-blocks must be used from the top of the second floor upwards. A receptacle for the chimney is placed on the top block.

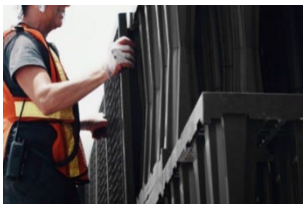
Install all blocks according to approved shop drawings. During installation, it is possible to walk on the blocks. However, no machinery (of any size) is allowed above the structure until the minimum backfill has been completed.

STEP 8

SIDE PANELS INSTALLATION

Once all the blocks are in place, the side panels are clipped onto the entire vertical perimeter of the system, except where connecting pipes are located. Apply slight pressure to the panel (towards the block) to engage the clips.

If the upper storey ends in half-blocks, clip the cover plates over the half-blocks.

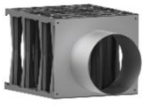


Note: depending on site accessibility, the side panels can also be attached to the blocks prior to installation within the structure.

STEP 9

PIPE CONNECTIONS AND MANHOLES

For side connection of pipes, a special part (factory-fitted connection face on a side panel) is supplied. Simply clip the assembly onto the block and connect the pipe to it, in the positions shown on the approved drawings.



To connect a pipe with a diameter greater than 600 mm, the connection is made from the concrete manhole provided for this purpose. The prefabricated manhole is delivered with an opening ready to receive the pipe and replace the equivalent of "2 boxes by 2 boxes".

Then install the access risers (on top of the system), according to the locations shown on the shop drawings and approved plans, by first placing on the receptacle (attached to the top of a block or to a half-block cover plate). Then place the riser on the receptacle. Installation of the concrete support ring as well as cast-iron frame and cover will take place once backfilling is complete (step 10).

Then continue installing the geotextile wrapping around and over the structure, taking particular care around pipe connections and access risers. Carry out a visual inspection to ensure minimum joint overlaps (300 mm) and no tears or openings that could allow backfill material to pass through.

STEP 10

BACKFILLING AND FINISHING

During this stage, every precaution must be taken to avoid damaging the structure. Any damaged blocks must be replaced before backfilling continues. Particular care must be taken not to damage or displace the wrapping geotextile.

Using the same material as for the bedding (0-20 mm granular A material or class A sand), proceed with lateral backfilling, depositing the fill uniformly in successive layers no thicker than 300 mm*. Each layer should cover the entire perimeter of the structure and be compacted to 95% of the S.P. (using a vibrating plate or compactor rammer) before moving on to the next. Lateral backfill may also consist of 19 mm clear stone. The space between the structure and the edge of the excavation must be completely filled.

* A geotextile may be required between the side fill and the natural ground, to prevent soil transfer.

Backfilling the top of the structure can only begin once the side backfill has been completed. First place a 450 mm layer of the same material as the base and side fill (0-20 mm granular A material or class A sand), on top of the structure, **without driving over it**. Then compact to a minimum of 95% of S.P., using light equipment weighing no more than 5,000 kg (5 metric tons). The upper backfill can also be made of 19 mm clean stone.

Then add layers up to 300 mm thick, compacting each layer to a minimum of 95% of S.P., using light equipment weighing no more than 5,000 kg (5 metric tons), until the final backfill height is reached. Then cover the backfill with the geotextile separator. If the system is to be installed under a roadway, it must be adjusted according to the subgrade requirements of that roadway.

Complete the installation by adjusting the height of the access risers and then superimposing the support rings and cast-iron frames and covers. **The concrete support and cast-iron frame must not rest directly on the riser in any way, to avoid point loads on the structure.**

Note: a minimum backfill of 450 mm above the structure is required before allowing any traffic above the structure.