InorBlock®

SIMPLE SOLID STABLE

FACING SYSTEM FOR REINFORCED EARTH RETAINING STRUCTURES

www.inorblock.com

inora®

SYSTEM DESCRIPTION

InorBlock® is an earth reinforced retaining wall system developed by INORA® company, working in the geotechnical field since 1991. The system consists of vibro pressed concrete blocks, geosynthetic reinforcements (geogrids or wovens), a drainage layer and a backfill. Depending on the wall construction method there are two systems available: an Active Facing System, where the main reinforcements is anchored between the concrete blocks or a Passive Facing System, where concrete blocks are anchored with special geosynthetic inserts to a reinforced soil block. For more details please visit www.inorblock.com.

InorBlock® wall system details:

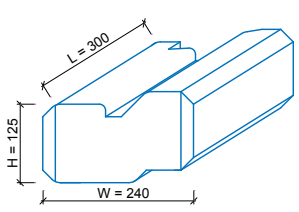
- vibro pressed InorBlock® concrete blocks,
- drainage layer,
- geosynthetic reinforcements.

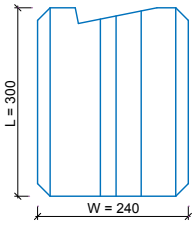
APPLICATIONS

- ramps and access roads to engineering structures,
- bridge abutments and wings (incl. an earth pressure relief function - partial or complete replacement of traditional concrete structures),
- reinforced steep slopes and landslide protection.

PRODUCT DETAILS

Block dimensions (L x H x W):	300 x 125 x 240 [mm]
Compressive Strength:	≥ 30/37 [MPa]
Mass:	18,50 [kg]
Quantity for 1 m² of facing:	27 [pcs]





DEVELOPMENT

InorBlock® blocks and system are the effect of long time experience of INORA® company in the geotechnical and geosynthetics constructions. The shape of the block provides stability and high friction angel between block and geosynthetic, allowing to build, even very high structures. Thanks also to the size and simplicity of blocks there is a great easiness of building process achieved. The large pull-out tests program was performed in Kiwa Deutschland GmbH laboratory (previously tBU), providing the detailed data for designers.

ADVANTAGES

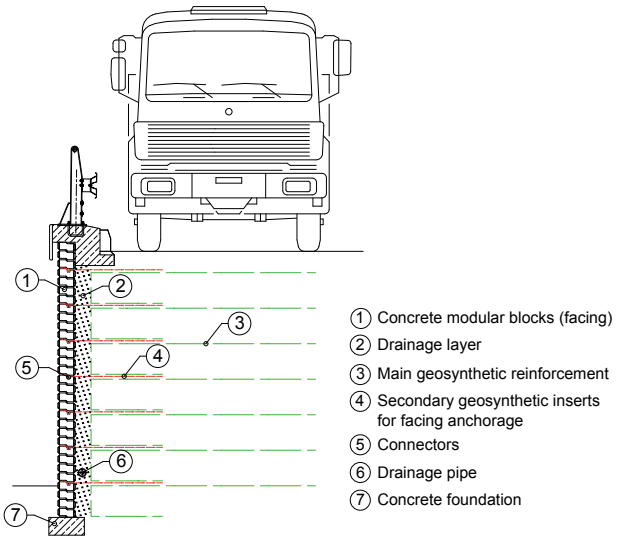
- possibility of construction of vertical walls (land savings),
- aesthetic facing view because of surface imitating crushed stone texture,
- flexibility in a wall shape design,
- compatible with many geosyntetic materials (geogrids, wovens),
- eco friendly.

BENEFITS

- patented product,
- complete / turnkey solution from reliable supplier (design, static calculations, delivery, supervision),
- easy installation providing time & money savings in comparison to traditional concrete structures,
- cost-effective solution among other earth reinforced retaining walls.

InorBlock® - PASSIVE SYSTEM (PS)

The main bearing function in this system has the earth reinforced block, which at the first will be constructed, using the wrapped around main reinforcements (geogrids or wovens). Simultanously, the short secondary reinforcement inserts are placed for the later anchorage of the block facing in front of the earth reinforced block.



1. Concrete modular blocks (facing)
2. Drainage layer
3. Main geosynthetic reinforcement
4. Secondary geosynthetic inserts for facing anchorage
5. Connectors
6. Drainage pipe
7. Concrete foundation

After finishing of settlements deformations of the earth reinforced block a final facing system can be installed in front of it, using a layer--by-layer method. The gap between the blocks and the front of the earth reinforced block is filled with drainage layer (for example gravel) and the secondary inserts are anchored between the concrete blocks.

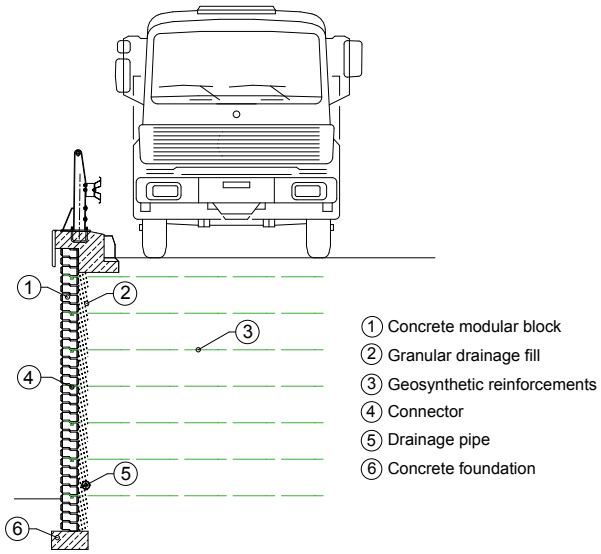
In the Passive System the facing is only a final element, giving the last form and shape to the structure. The reinforced soil block creates an independent main bearing element - facing is only attached by the secondary inserts anchored in it.

The earth reinforced block can be constructed using movable formworks. The gap between the reinforced earth block and internal part of the facing wall is filled with light, well permeable, material (like gravel or granulates) to minimize the earth pressure on the block wall and to ensure a proper drainage behind the blocks. The facing wall and the earth reinforced block create independent structure, which is the biggest advantage of this system.

In the first step a contractor can build up the earth reinforced block and the facing wall can be installed later, after the subsoil is fully stabilized and settlements & deformations are finished (i.e. a consolidation process is practically completed). The facing wall is easilly connected with previously placed secondary reinforcements on some levels of the earth reinforced block. The next advantage of this technology is the possibilty of the use of heavy equipment (like a vibrating compactor) for the compaction of filling material close to the edge of the earth reinforced block. It allows to achieve high level of compaction, which reduces the risk of possible post construction facing deformations. The movable formworks could be easily rented by INORA®.

InorBlock® - ACTIVE SYSTEM (AS)

By the construction of facing walls in the Active System the geosynthetic reinforcements are installed horizontally and anchored directly between the facing blocks (lack of additional anchoring inserts).



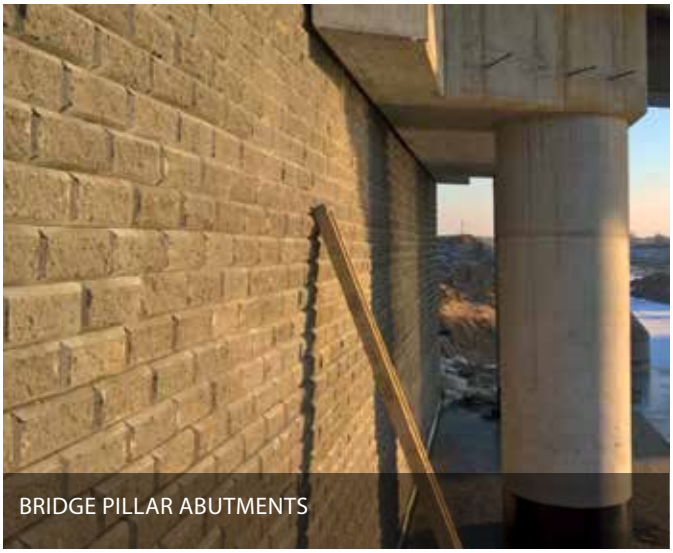
1. Concrete modular block
2. Granular drainage fill
3. Geosynthetic reinforcements
4. Connector
5. Drainage pipe
6. Concrete foundation

In the Active System the earth reinforced block and facing wall create an inseparable structure, i.e. reinforcements work in the earth reinforced block and in the modular block facing.

The construction of such walls is performed by layer-by-layer method: the facing block wall is arranged in the lead and acts also as formwork for the next layer of the earth reinforced structure. This system allows the usage of only light equipment for ground compaction close to the edge of the facing wall. The Active Facing technology is cheaper compared with the Passive System thanks to the smaller amount of geosynthetic materials used. However, the Active System has much higher requirements and lower tolerance for the ground type and the quality of earth works. Structures with Active System are possible to be build only in locations (areas) where the risk of ground settlements is minimized, a filling material has high geotechnical parameters and there are no collisions with infrastructure.

EXAMPLE APPLICATIONS


RAMPS AND ACCESS ROADS


BRIDGE PILLAR ABUTMENTS


ROAD AND RAILWAY EMBANKMENTS


COMPLETE BRIDGE ABUTMENTS


BRIDGE WING WALLS

PARKINGS, TERRACES

SELECTED REALIZATIONS

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