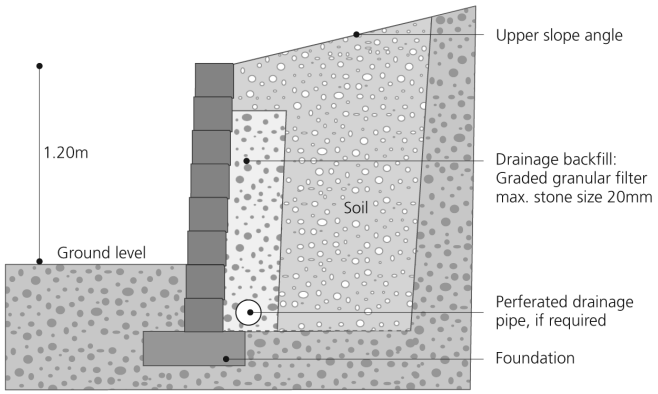
# secura grand v1.0

Tobermore

## guidelines for constructing a gravity wall up to 1.2m




### Foundations and drainage pipe

**1** Prepare the foundation, excavating any unsuitable material and replacing it with 100mm Type 1/CL804, clean compacted material. The depth and width of the trench depends on which Secura product you have choosen. *(Please refer to the table below for dimensions and recommended block courses below ground).*

**2** Lay the drainage pipe if required at the back of the wall and cover with granular filter, maximum stone size 20mm.

| product | max. gravity wall height | min. internal radius | max. external radius | trench width (mm) | trench depth (mm) | foundation material | foundation depth (mm) | block courses below ground |
|---|---|---|---|---|---|---|---|---|
| SECURA GRAND | 1.2m | 3m | 3m | 600 | 350 | Type 1/CL804 | 100 | 2 |

### Laying the blocks

**1** Remove the nib from the base of the blocks to be used on the first course using a bolster and club hammer.

**2** Using a spirit level, ensure your first row of blocks are level as this will dictate the general appearance of the finished wall.

**3** Leave a gap of 2-3mm between the blocks to maintain perpendicular joint alignment and to allow for any movement of the ground.

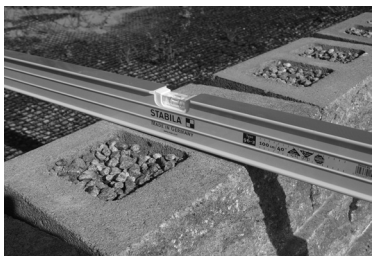
**4** Before laying subsequent layers, brush the top surface of the blocks to remove any debris which may affect the wall level.

**5** To achieve a staggered bond, place a block approximately half a block width from its final position and slide sideways into place. Ensure the nib at the back of the block is placed against the block below.

**6** Build the wall up at four courses at a time to the required height and backfill. Voids should be filled after each row is built. Use a spirit level to ensure the blocks are level as you build each row.

**7** To install copings place two strips of adhesive cord 50mm from the front and rear faces of the blocks on the final two rows of walling. This cord should be dry or slightly damp (never wet). Alternatively copings can be glued on using an appropriate concrete adhesive.

**It is good practice to use a spirit level and straight edge frequently during the construction of the wall. This will help to ensure the wall is built correctly.**




### Backfilling and drainage

**1** Backfill the wall with graded granular filter, maximum stone size 20mm, to improve drainage. This should be 125mm wide and be finished 300mm below the top of the finished wall.

**2** Please note the wall should be backfilled every four courses to avoid undue deformation of the wall.

**3** Fill in remainder of area with clean soil.

**Notes**

- When the angle of the upper slope is greater than $30^0$ the retaining wall height should be reduced or soil reinforcement introduced.
- A hammer and chisel or circular saw can be used to cut or split blocks. Eye protection should be worn at all times when using any of these tools.
- Always use a coping to cap the top of the wall.

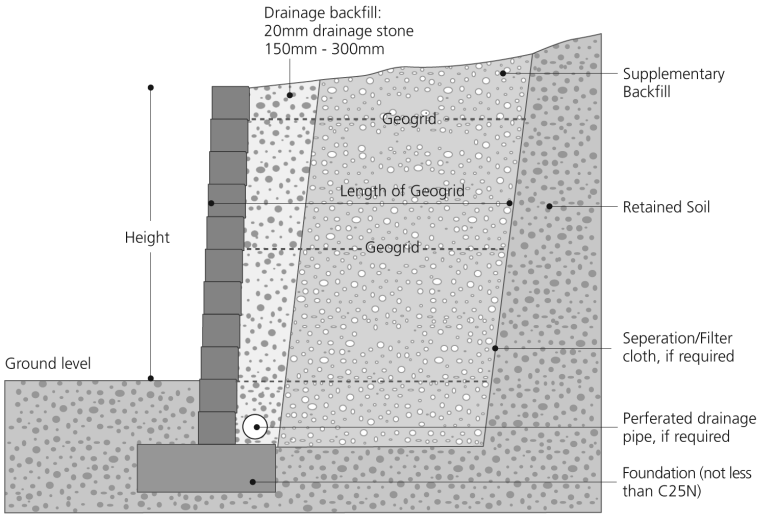
# guidelines for constructing a reinforced wall above 1.2m

## Foundations and drainage pipe

**1** Prepare the foundation, excavating any unsuitable material and replacing it with acceptable compacted material. The depth and width of the trench depends on which Secura product you have choosen. *(Please refer to the table below for dimensions and recommended block courses below ground)*

**2** Cast a mass concrete footing using C25N plain concrete or a compacted DTP Type 1 (or Clause 804 unbound mixture) levelling pad as specifiied.

**3** Lay the drainage pipe at the back of the wall and cover with granular filter, maximum stone size 20mm.




| product | max. gravity wall height | min. internal radius | max. external radius | trench width (mm) | trench depth (mm) | foundation material | foundation depth (mm) | block courses below ground |
|---|---|---|---|---|---|---|---|---|
| SECURA GRAND | 1.2m | 3m | 3m | 600 | 350 | Type 1/CL804 | 100 | 2 |

## Laying the blocks

**1** Remove the nib from the base of the blocks to be used on the first course using a bolster and club hammer.

**2** Using a spirit level, ensure your first row of blocks are level as this will dictate the general appearance of the finished wall.

**3** Leave a gap of 2-3mm between the blocks to maintain perpendicular joint alignment and to allow for any movement of the ground.

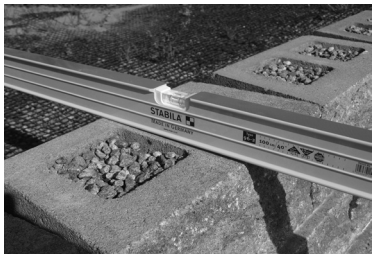
**4** Before laying subsequent layers, brush the top surface of the blocks to remove any debris which may affect the wall level.

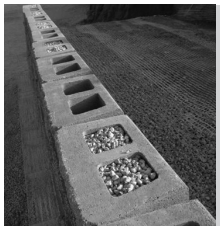
**5** To achieve a staggered bond, place a block approximately half a block width from its final position and slide sideways into place. Ensure the nib at the back of the block is placed against the block below.

**6** Build the wall up four courses at a time, placing Geogrid on top of each specified block layer and backfilling until you reach the required height. Voids should be filled after each row is built. Use a spirit level to ensure the blocks are level as you build each row. *(See guidelines for using Geogrid, backfilling and drainage)*

**7** Place two strips of adhesive cord 50mm from the front and rear faces of the blocks on the final two rows of walling. This cord should be dry or slightly damp (never wet). Alternatively copings can be glued on using an appropriate concrete adhesive.

**It is good practice to use a spirit level and straight edge frequently during the construction of the wall. This will help to ensure the wall is built correctly.**



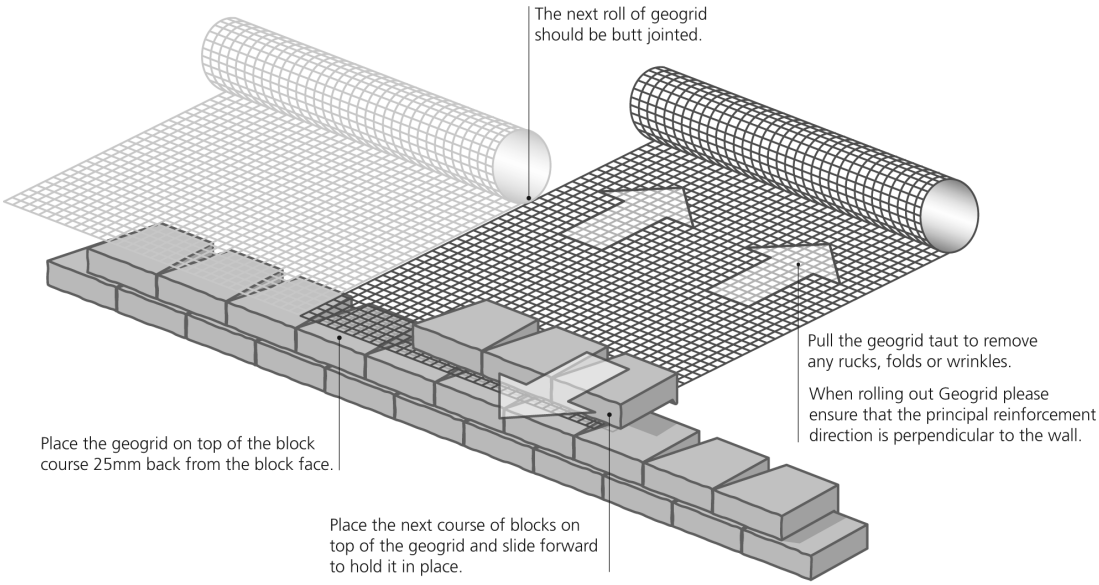



**Notes**

- Secura Grand has two voids in the block. We recommend filling these voids using graded granular filter, with a maximum stone size 20mm. These voids should be filled before building the next row. When using Secura Grand it is advisable to use a coping to finish off the wall due to the voids in the blocks.
- A hammer and chisel or circular saw can be used to cut or split blocks. Eye protection should be worn at all times when using any of these tools.

guidelines for

# drainage, geogrid & backfill




## Drainage

**1** Lay a drainage pipe at the back of the wall and cover with graded granular filter, maximum stone size 20mm.

## Geogrid

**For all reinforced retaining walls using Tobermore Secura products we would recommend a Fortrac Geogrid. No substitutes allowed. Fortrac geogrids are available from Tobermore.**

**1** Place the Geogrid on top of the block at the specified course ensuring that the edge is 25mm back from the front of the block.

**2** Roll out Geogrid ensuring that the principal reinforcement direction is perpendicular to the wall. Also ensure that the Geogrid is butt joined and never overlapping. Cut geogrid to required length.

**3** Place the next course of blocks on top of the Geogrid and slide forward to hold in place.

**4** Further courses of blocks may be placed in position up to the next specified Geogrid course.

**5** Lay the Geogrid on top of the compacted backfill, ensuring that it is lying flat on the backfill. Pull the Geogrid taut to remove any rucks, folds or wrinkles.

**6** Continue building the wall, placing the Geogrid and compacting the backfill as above to the required height.

## Geogrid guidelines

The following tables are based on a retained soil friction angle of $35^0$ and surcharge loading of 100 P.S.F. These and others factors will have an impact on the design specifiactions. Therefore we would always advise that an independent engineer be consulted prior to construction.

| wall height (mm) | number of layers of geogrid | geogrid length (mm) | geogrid elevation above top of footing (mm) | | | |
|---|---|---|---|---|---|---|
| | | | layer 1 | layer 2 | layer 3 | layer 4 |
| 2600 | 4 | 2100 | 400 | 1000 | 1600 | 2200 |
| 2000 | 3 | 1600 | 400 | 1000 | 1600 | |
| 1600 | 2 | 1300 | 600 | 1200 | | |
| 1200 | **Maximum gravity wall height** | | | | | |

## Backfilling

**1** Place the supplementary backfill on the Geogrid and spread it out away from the wall, leaving a gap of 150mm - 300mm between the wall and the supplementary backfill.

**2** Fill the gap between the wall and the compacted layer with drainage backfill, maximum stone size 20mm.

**3** Compact the supplementary backfill in 250mm layers, working from the wall towards the rear of the Geogrid.

**4** Compaction by plate vibrator is recommended. Vibrating or static rollers should not be used within 1 metre from the back of the wall. Compacting specifications can be obtained from Tobermore.

**Notes**

- The above diagram illustrates the construction of straight walls using Geogrid. *(For the construction of curved walls please contact Tobermore)*
- Backfill material should be used in accordance with 6I & 6J.

# instructions & warnings

(as referred to in Tobermore's Conditions of Sale)

Any technical information provided by Tobermore in relation to any product (whether before or after order) is provided by way of GUIDANCE ONLY and, to the fullest extent permitted by law, without liability on the part of Tobermore for any loss or damage suffered as a result of relying upon it. Such technical information should not be relied upon in substitution for obtaining independent expert advice prior to using any product from both a suitably qualified engineer and building contractor, in particular, as to the suitability of the product for use at the intended site for the intended scheme.

## CORE TERMS (PAVING & WALLING)

### Product

All products should be carefully inspected for defects or damage upon delivery and prior to being laid or fitted.

### Product Information

Within Tobermore, design and development of products is a continuing process, and product information is subject to change without notice. Accordingly, please check with Tobermore to ensure that the product information you have represents the most up-to-date product information.

### Installation

All products should be installed in accordance with the latest British Standard.

### Colour

Tobermore produces paving and walling products with excellent density and durability, however, as with all concrete products, slight colour variations and/or weathering may occur.

Although every effort is made to ensure consistency of product colour, variations between production batches can occur. Tobermore therefore recommends that when purchasing products, especially in larger quantities, they all come from the same batch and that products are thoroughly mixed on site by drawing from a minimum of 3 pallets.

The colour of new paving blocks, flags and walling products will inevitably vary compared to those which have been laid for a period of time.

All colour illustrations in Tobermore's brochures are as accurate as the printing process will allow. For a more accurate colour match, please refer to actual product samples available from any of Tobermore's Paving and Walling Centres.

### Efflorescence

Efflorescence is a white crystalline deposit that occurs naturally on the surface of concrete materials. If it occurs, efflorescence may mask the colour of the product for a period of time, but tends to be washed away gradually by rain.

### Surface Scratches

Minor scuffs or bruises may occur during installation (for example, during any plate vibrating process). In Tobermore's experience, these marks usually weather off through time.

### Ordering

To avoid waste, please ensure that your contractor accurately measures the area on site before ordering products. In Tobermore's experience, dimensions taken from a project plan can vary significantly from the final layout.

### Manufacturing & Quality systems

Tobermore is a BS EN ISO 9001:2000 and BS EN ISO 14001 registered company. Tobermore uses an integrated management system to manage all health & safety and environmental issues.

### Product Maintenance

Routine cleaning and maintenance is required to keep the overall appearance of products in pristine condition.

Laying multi-blend coloured paving blocks, flags and walling products
To achieve an even blend of colour when laying multi-blend paving blocks, flags and walling products, it is desirable to mix from 3 or 4 different pallets.

### Queries & Complaints

Please contact one of Tobermore's Paving & Walling Centres or offices (contact details at www.tobermore.co.uk) with any queries or complaints. Any complaints must be notified to Tobermore without delay.

## FOR SECURA PRODUCTS

### Installation - Secura

All Secura products should be installed in accordance with British Standard BS8002. When constructing a retaining wall, ensure that you follow the design provided by the scheme engineer.

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www.tobermore.co.uk