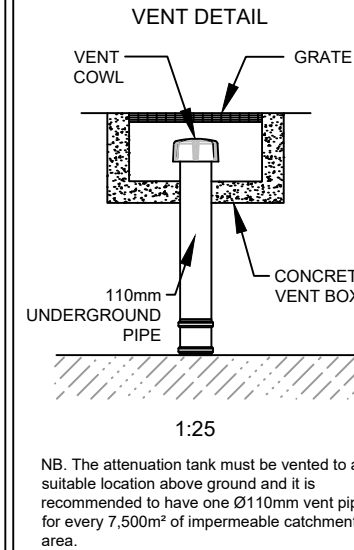
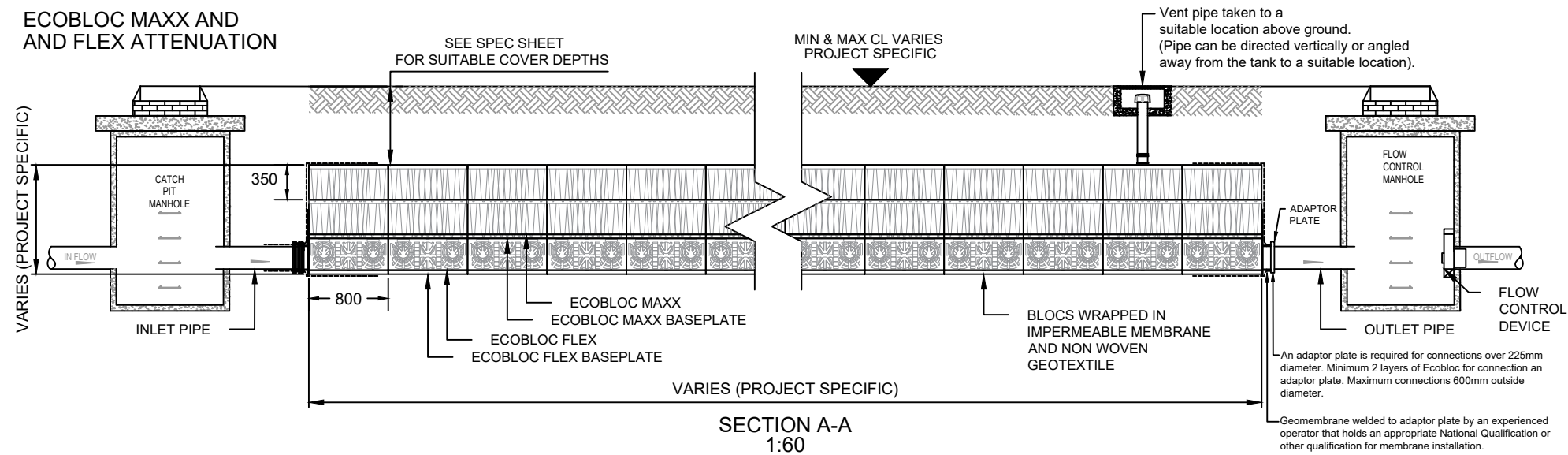


## ECOBLOC MAXX AND AND FLEX ATTENUATION



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**DO NOT SCALE - IF IN DOUBT ASK**

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Graf Australia Pty Ltd makes no warranty or guarantee in relation to the suitability of any of the layout details shown on this drawing in relation to a particular scheme.

### NOTES:-

1. All dimensions in mm, unless otherwise stated.
2. All dimensions are nominal and may vary within manufacturing tolerances.
3. All site temporary enabling works by others.
4. Graf products to be installed in strict accordance with Graf recommendations.
5. This drawing is intended for guidance only. Confirmation of the suitability for a particular project should be sought from the consulting engineers prior to final design or commencement of any construction works.

## ECOBLOC MAXX

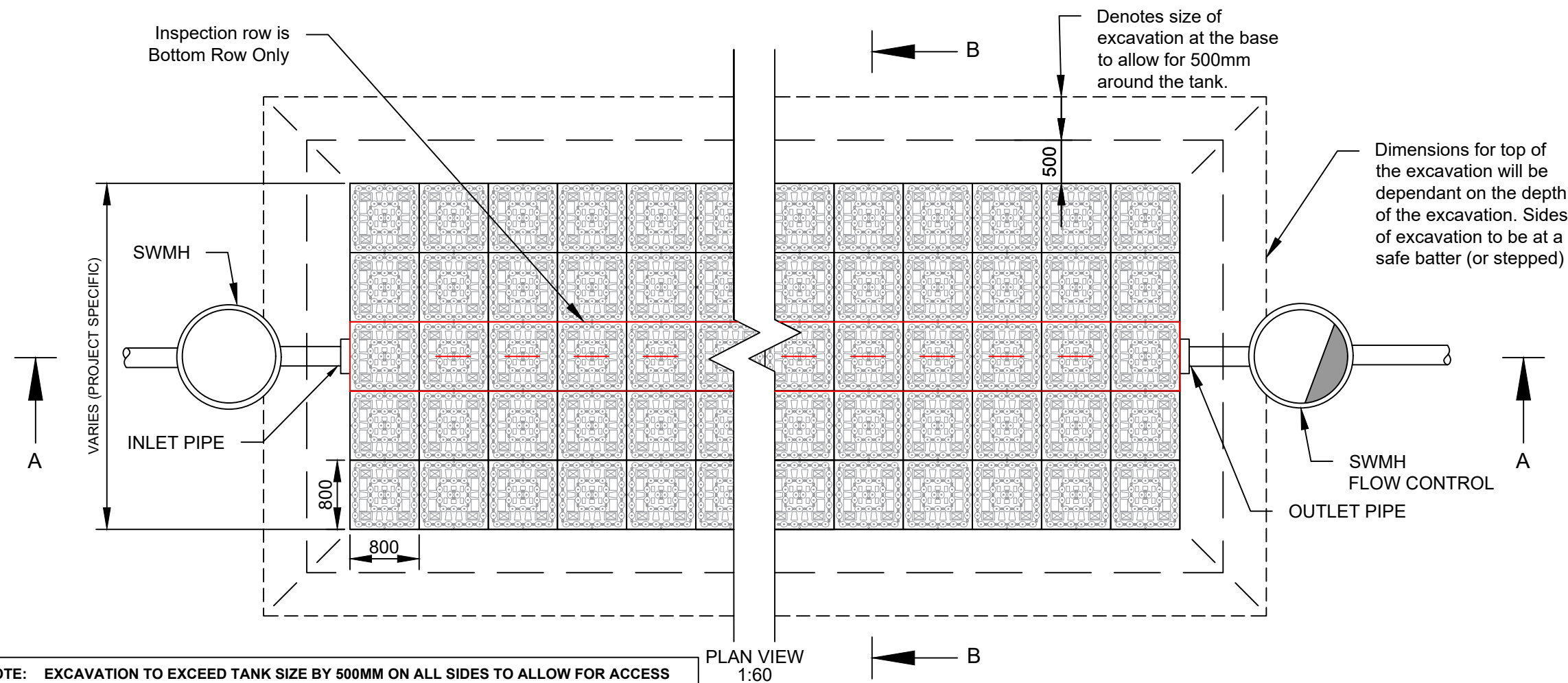
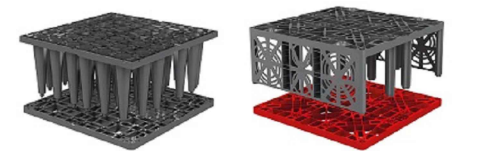
|                   | Ecobloc                              | Baseplate           |
|-------------------|--------------------------------------|---------------------|
| Dimensions (mm)   | 800 x 800 x 350                      | 800 x 800 x 40      |
| Gross Volume (m3) | 0.225m <sup>3</sup>                  | 0.025m <sup>3</sup> |
| Net Volume (m3)   | 0.217m <sup>3</sup>                  | 0.020m <sup>3</sup> |
| Material          | Polypropylene                        | Polypropylene       |
| Weight            | 9kg                                  | 4kg                 |
| Void Ratio        | >96% depending on number of layers   |                     |
| Inspectable       | Yes, when combined with EcoBloc Flex |                     |

## ECOBLOC FLEX

|                   | Ecobloc                            | Baseplate           |
|-------------------|------------------------------------|---------------------|
| Dimensions (mm)   | 800 x 800 x 320                    | 800 x 800 x 40      |
| Gross Volume (m3) | 0.205m <sup>3</sup>                | 0.025m <sup>3</sup> |
| Net Volume (m3)   | 0.195m <sup>3</sup>                | 0.020m <sup>3</sup> |
| Material          | Polypropylene                      | Polypropylene       |
| Weight            | 8kg                                | 4kg                 |
| Void Ratio        | >96% depending on number of layers |                     |
| Inspectable       | Yes                                |                     |

## MAXX AND FLEX COMBINATION

Conform to load requirements of AS5100



BACKFILL UP TO FINISHED GROUND LEVEL USING  
SUITABLE MATERIAL AS REQUIRED FOR FINISHED COVER.

NON-COHESIVE, COMPRESSIBLE LOOSE ROCK  
(GRAVEL, CRUSHED STONE, SAND, ETC.)  
MIN. FRICTION ANGLE 30°-35° \*  
MAX. BULK UNIT WEIGHT 20kN/m<sup>3</sup>

ANGLE TO SUIT SAFE EXCAVATION  
OR SURROUNDING GROUND AND DEPTH

\* These values depends on installation conditions.  
Please, contact GRAF Technical team for more details.

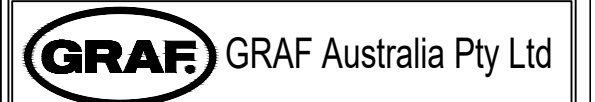
BASE LAYER TO BE 8 TO 16mm SINGLE SIZED  
NON-ANGULAR STONE MIN DEPTH 50mm

## SECTION B-B 1:75

INNER AND OUTER LAYER TO BE NON-WOVEN GEOTEXTILE  
OF 300g/m<sup>2</sup> INSTALLED WITH A MIN.  
OVERLAP OF 300mm

MID-LAYER TO BE 1MM THICK LLDPE IMPERMEABLE MEMBRANE.  
SHEET WIDTHS OF 5.8M AND SUPPLIED IN LENGTHS TO SUIT INSTALLATION.  
ALL JOINTS TO BE WEDGE WELDED TO FORM A WATERTIGHT SEAL.

UNDISTURBED EARTH BASE OF EXCAVATION.  
EXCAVATED AREA TO BE SMOOTH, FIRM AND LEVEL, FREE FROM  
LUMPS AND DEBRIS AND SUITABLE TO CARRY ANTICIPATED LOADS.



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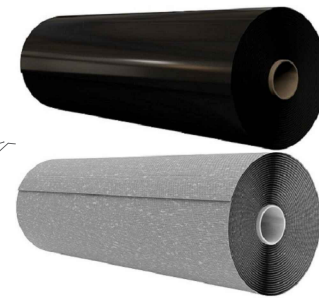
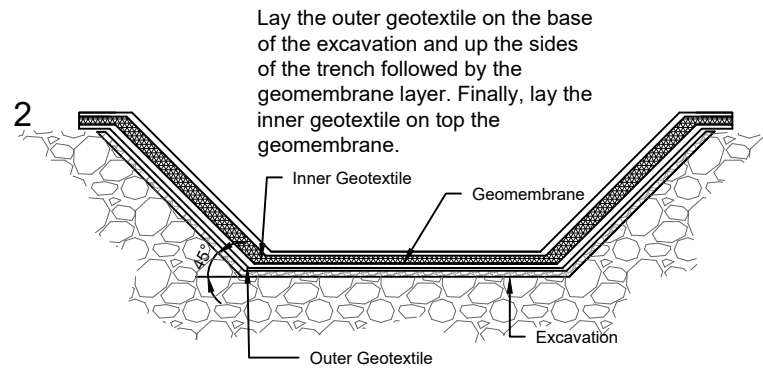
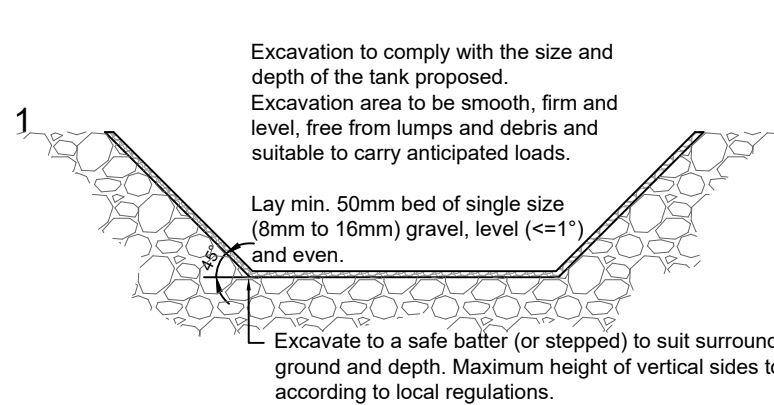
DRAWN : MV DATE : 04.01.2022  
CHECKED : LB SCALE : VARIOUS@A3

PROJECT  
**GRAF STANDARD DETAILS**

DESCRIPTION  
**ATTENUATION TANK  
using GRAF ECOBLOC  
MAXX AND FLEX**

DRAWING No. **DWG-345** REV. **2**  
(Pg.1)

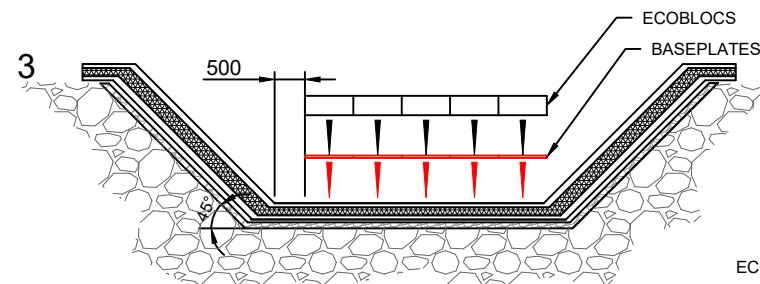
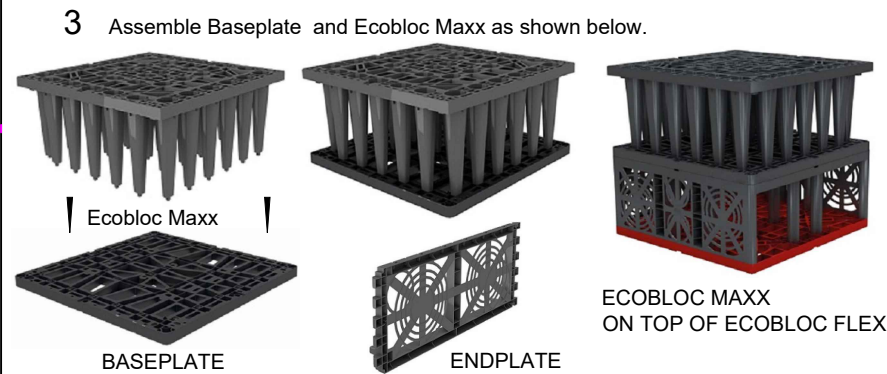




Geomembrane:  
1mm Thick LLDPE Geomembrane

Geotextile:  
300g/m<sup>2</sup> Non-woven

Geomembranes and Geotextiles with characteristics less than those specified are unlikely to be suitable and are therefore not recommended for use with Graf Australia systems for this application



Place the Baseplates on the inner geotextile layer and lock them together using the connectors. Place the first layer of Ecoblocs on top of the baseplates and lock them together using the connectors. After all layers of Ecoblocs are placed and secure, install the End Plates. Endplates are clipped to the tank where it is required.

Mix of Ecobloc Maxx and Flex to be constructed as labeled below, according to inspection row

|      |      |      |      |      |
|------|------|------|------|------|
| MAXX | MAXX | MAXX | MAXX | MAXX |
| MAXX | MAXX | MAXX | MAXX | MAXX |
| MAXX | MAXX | FLEX | MAXX | MAXX |

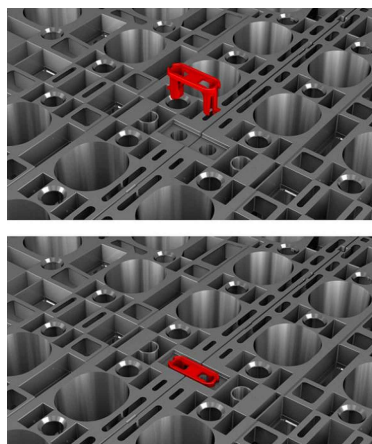
ECOBLOC MAXX BASEPLATE

ECOBLOC MAXX BASEPLATE

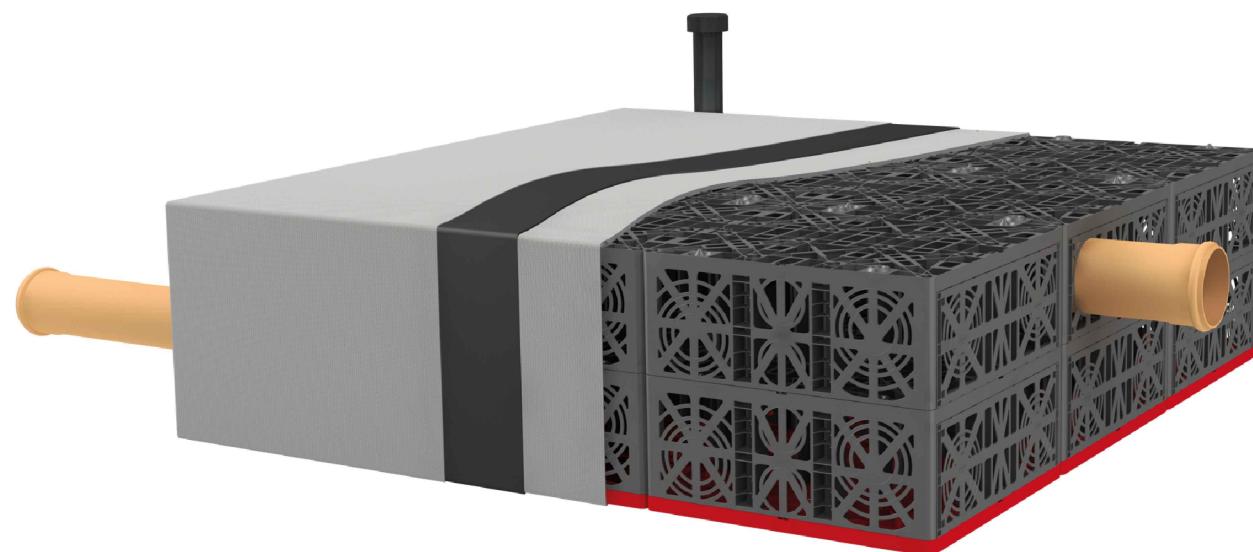
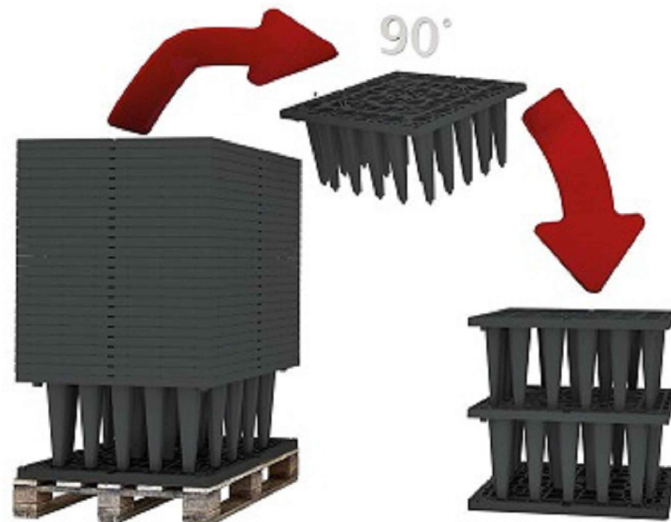
ECOBLOC FLEX BASEPLATE

ECOBLOC FLEX BASEPLATE

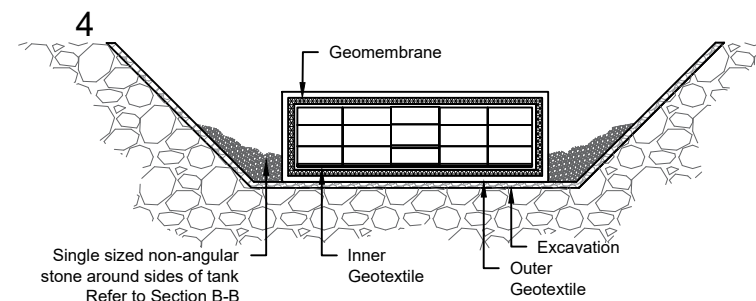
Place the one layer of Ecoblocs on top of the previously placed layer of Baseplates ensuring the connector clips are clipped locking the Ecoblocs together.



Connector clips are Red for illustration purposes only and are Grey in colour



Finally, wrap the blocs with the inner geotextile followed by the geomembrane ensuring it is heat welded then wrap with the outer geotextile to protect the geomembrane. Geomembrane must be joined by an experienced operator that holds an appropriate National Qualification or other qualification for membrane installation.



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#### INSTALLATION METHOD:-

- Excavate the trench with a safe batter (or stepped) ensuring the footprint allows for sufficient space between tank and the sides. (minimum 500mm around all sides of the tank).
  - Mark out the position of the tank including inlets and outlets.
  - Lay min. 50mm of single sized non angular stone (8 to 16mm) as a base for the tank. This can be laid to a maximum fall of 1°.
- Lay the outer geotextile over the base of the excavation, overlapping any joins by a minimum of 300mm.
  - Lay the geomembrane on top of the geotextile over the base and up the sides of the trench.
  - Geomembrane must be joined by thermal fusion heated wedge welding by an experienced operator that holds an appropriate National Qualification or other qualification for membrane installation. It is recommended that the Dual Seam method is used as this generates an unwelded channel which can be pressured with air to check the integrity of the weld.
  - Lay the geotextile over the geomembrane before starting to build the tank.
  - The geomembrane and geotextile used must meet the specification stated on the drawing.
- Place EcoBloc Flex Baseplates and EcoBloc Maxx Baseplates on top of the inner geotextile according to inspection orientation and design of the tank until the bottom of the tank is completed. Clip Baseplates together using the connectors.
  - Place Ecoblocs Flex and Maxx on the respective Baseplates clipping each adjacent bloc using the connectors. Ecoblocs will only fit in the correct orientation considering the inspection orientation. Push down firmly to ensure the Ecobloc is located correctly.
  - Install the next layer of Ecoblocs on top of the first layer until all the layers are completed. Ensure the Ecobloc has the correct direction and ensure each bloc is secure with connectors. NOTE: You will need to place an additional row of Ecobloc Maxx Baseplates directly on top of the EcoBloc Flex only. No more base plates are required.
  - Fit Endplates to the sides of each bloc by positioning the bottom in place then pushing firmly on the top section to locate into place.
- Fix adaptor plates to the sides of the blocs in the required position for the inlet and outlet pipes if required.
  - Cut a hole in the geomembrane and geotextile for inlet and outlet connections.
  - Pull geomembrane up around the sides and fully wrap the blocs, securing the top in place by heated wedge welding to the side panels.
  - Cover the top and sides with outer geotextile to protect the geomembrane.
  - Install vent pipe connection into the top of the tank at a suitable location.
  - Backfill around the tank in 300mm layers increments using non-cohesive, compressible loose rock (gravel, crushed rock, sand, etc).
  - Connect inlet/outlet pipes and weld/glue them to have a watertight connection.
  - In order to prevent silt from entering the tank it is recommended that silt traps or catchpit manholes are installed upstream of any inlet. These should be regularly maintained to avoid the buildup of any silt.

N.B. Installation method may vary depending on depth of the tank and is project specific. For more information or technical questions please contact our Technical Department at Graf Australia.

|      |                 |    |            |
|------|-----------------|----|------------|
| 2    | LATEST REVISION | MV | 04.01.2022 |
| 1    | LATEST REVISION | MV | 06.12.2021 |
| REV. | DESCRIPTION     | BY | DATE       |

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|           |    |         |            |
|-----------|----|---------|------------|
| DRAWN :   | MV | DATE :  | 04.01.2022 |
| CHECKED : | LB | SCALE : | VARIOUS@A3 |

|         |                       |
|---------|-----------------------|
| PROJECT | GRAF STANDARD DETAILS |
|---------|-----------------------|

|             |                                                         |
|-------------|---------------------------------------------------------|
| DESCRIPTION | ATTENUATION TANK<br>using GRAF ECOBLOC<br>MAXX AND FLEX |
|-------------|---------------------------------------------------------|

|             |         |      |             |
|-------------|---------|------|-------------|
| DRAWING No. | DWG-345 | REV. | 2<br>(Pg.2) |
|-------------|---------|------|-------------|