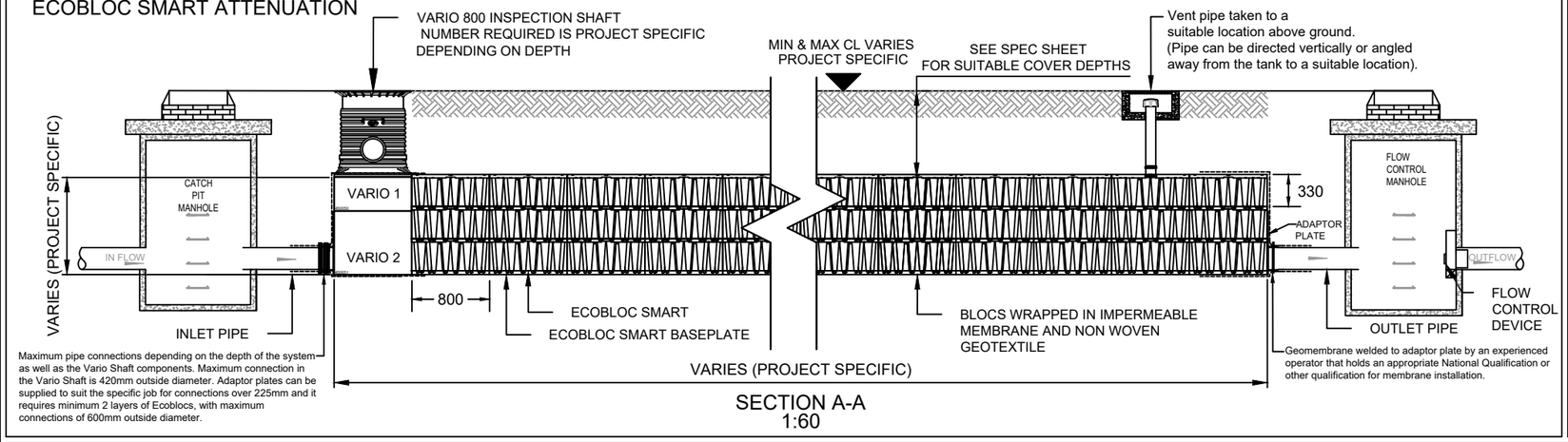
# ECOBLOC SMART ATTENUATION

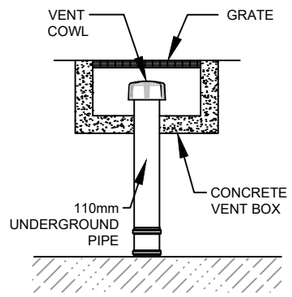



Maximum pipe connections depending on the depth of the system as well as the Vario Shaft components. Maximum connection in the Vario Shaft is 420mm outside diameter. Adaptor plates can be supplied to suit the specific job for connections over 225mm and it requires minimum 2 layers of Ecoblocs, with maximum connections of 600mm outside diameter.

Geomembrane welded to adaptor plate by an experienced operator that holds an appropriate National Qualification or other qualification for membrane installation.

SECTION A-A
1:60

## VENT DETAIL




1:25

NB. The attenuation tank must be vented to a suitable location above ground and it is recommended to have one Ø100mm vent pipe for every 7,500m² of impermeable catchment area. For recommendation on venting size, please contact GRAF Australia.



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2. All dimensions are nominal and may vary within manufacturing tolerances.
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4. Graf products to be installed in strict accordance with Graf recommendations.
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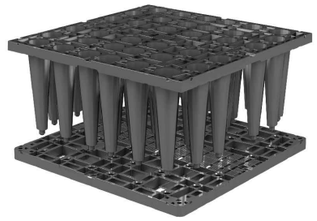
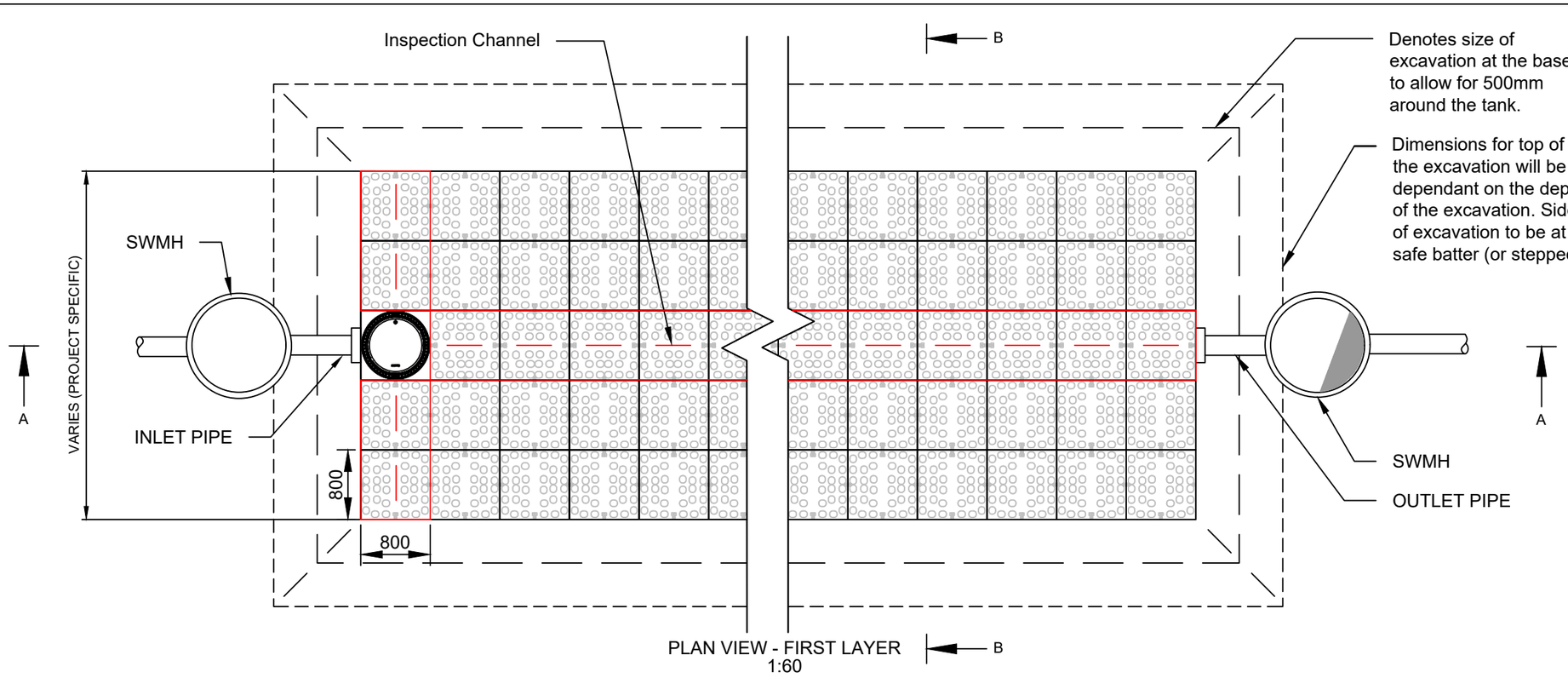
## ECOBLOC SMART



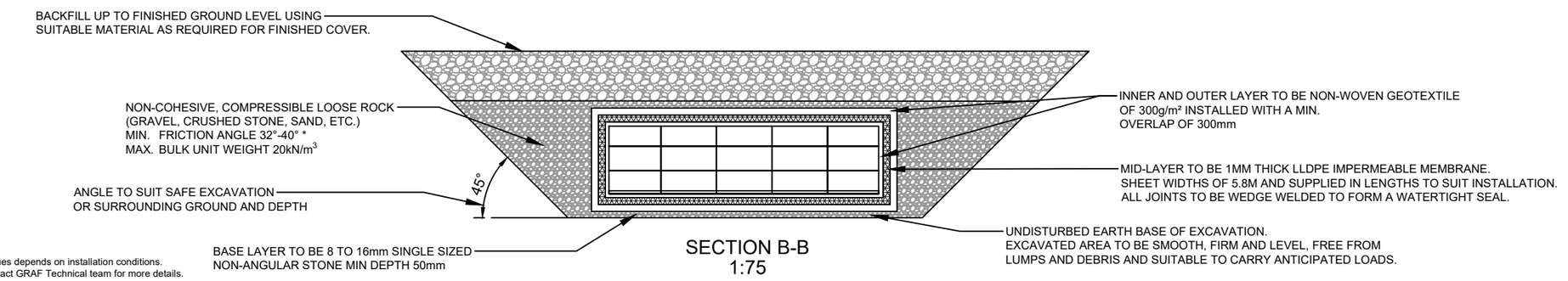
| | Ecobloc | Baseplate |
|---|---|---|
| Dimensions (mm) | 800 x 800 x 330 | 800 x 800 x 40 |
| Gross Volume (m3) | 0.211m³ | 0.025m³ |
| Net Volume (m3) | 0.202m³ | 0.024m³ |
| Material | Polypropylene | Polypropylene |
| Weight | 9.9kg | 4.2kg |
| Void Ratio | >96% depending on number of layers | |
| Inspectable | Yes | |

Comply to load requirements of AS5100




PLAN VIEW - FIRST LAYER
1:60

**NOTE: EXCAVATION TO EXCEED TANK SIZE BY 500MM ON ALL SIDES TO ALLOW FOR ACCESS. IF THERE IS ANY GROUND WATER CONDITIONS TO BE CONSIDERED PLEASE CONTACT GRAF TECHNICAL TEAM.**




SECTION B-B
1:75

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

| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 2 | LATEST REVISION | AA | 05.01.2023 |
| 1 | LATEST REVISION | MV | 15.09.2022 |

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DRAWN : AA DATE : 05.01.2023
CHECKED : MV SCALE : VARIOUS@A3

PROJECT
GRAF STANDARD DETAILS

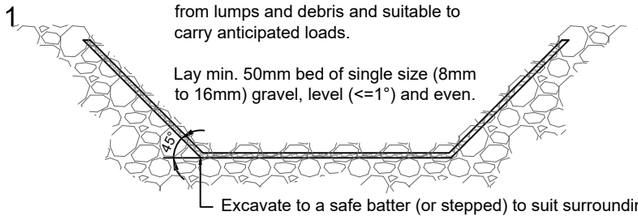
DESCRIPTION
ATTENUATION TANK
using GRAF ECOBLOC SMART &
VARIO SHAFT

DRAWING No. DWG-359 REV. 2 (Pg.1)

1

Excavation to comply with the size and depth of the tank proposed. Excavation area to be smooth, firm and level, free from lumps and debris and suitable to carry anticipated loads.

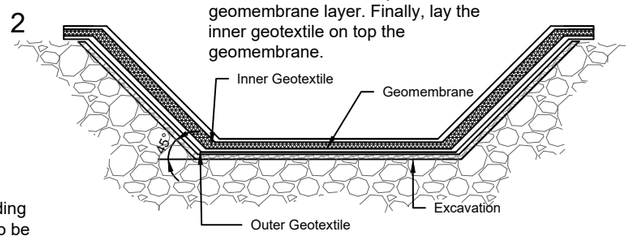
Lay min. 50mm bed of single size (8mm to 16mm) gravel, level (<=1°) and even.



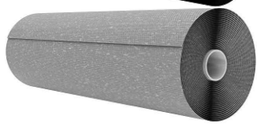

Excavate to a safe batter (or stepped) to suit surrounding ground and depth. Maximum height of vertical sides to be according to local regulations.

2

Lay the outer geotextile on the base of the excavation and up the sides of the trench followed by the geomembrane layer. Finally, lay the inner geotextile on top the geomembrane.



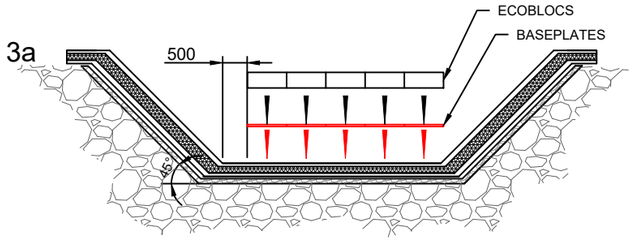

Geomembrane:
1mm Thick LLDPE Geomembrane



Geotextile:
300g/m² Non-woven

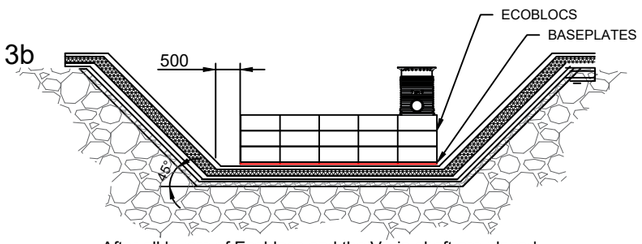
Geomembranes and Geotextiles with characteristics less than those specified are unlikely to be suitable and are therefore not recommended for use with Graf Australia systems for this application

3a



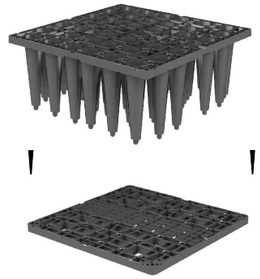

Place the Baseplates on the inner geotextile layer followed by the first layer of Ecoblocs securing them with connectors. Make sure the Vario shaft is the correct position for inspection.

3b

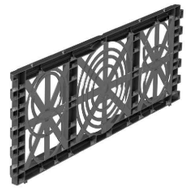



After all layers of Ecoblocs and the Vario shaft are placed and secure, install the EndPlates. Endplates are clipped to the tank where it is required.

Assemble EcoBloc Smart module and Baseplate as shown below.



ECOBLOC
Smart

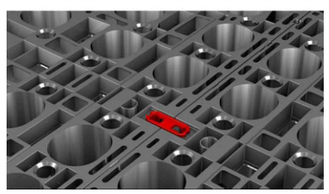


ENDPLATE

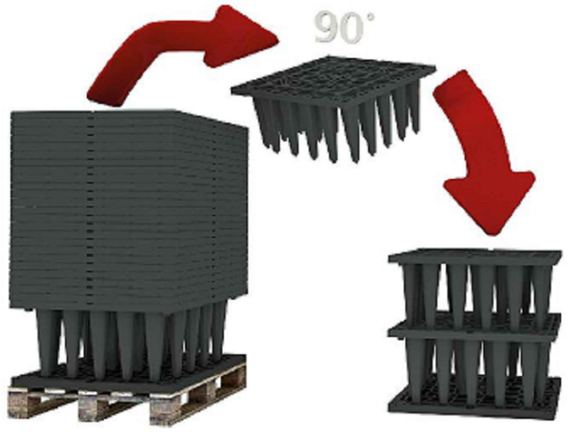
BASEPLATE

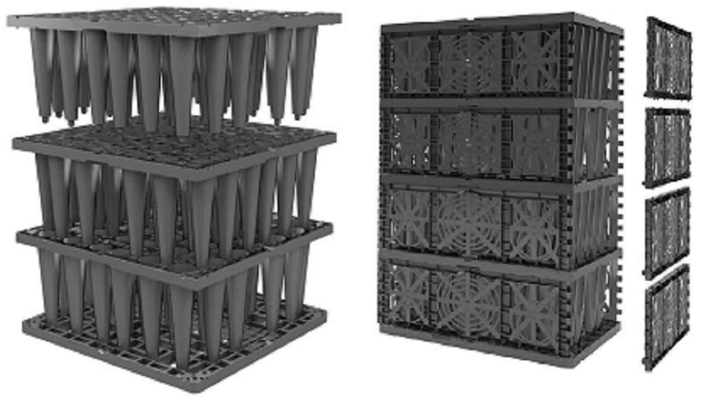
Place the one layer of Ecoblocs on top of the previously placed layer ensuring the connector are clipped locking the Ecoblocs together.

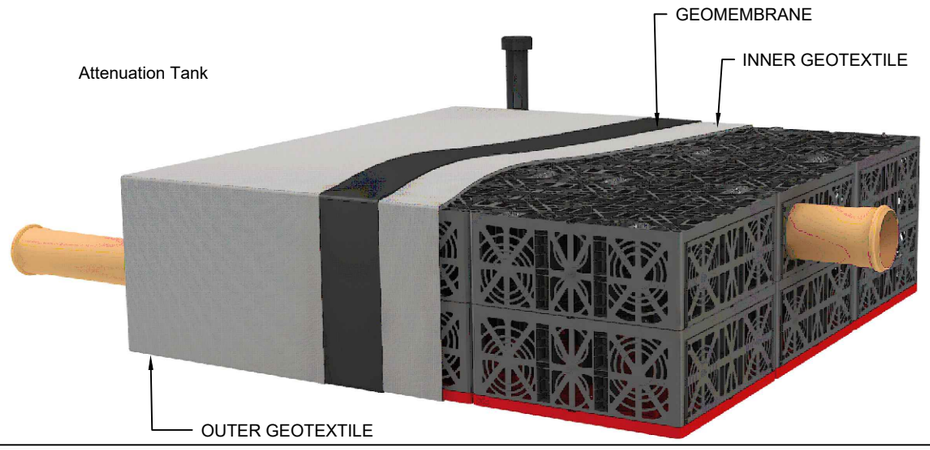




Connector clips are Red for illustration purposes only and are Grey in colour

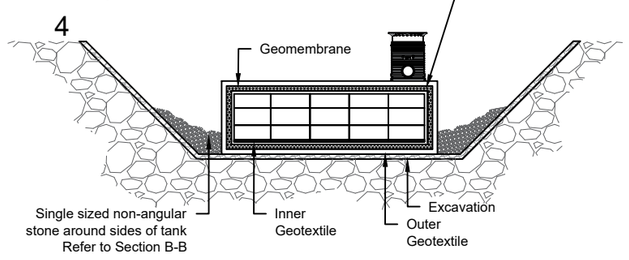





Finally, wrap the blocs with the inner geotextile followed by the geomembrane ensuring it is heat welded then wrap with the outer geotextile to protect the membrane. Geomembrane must be joined by an experienced operator that holds an appropriate National Qualification or other qualification for membrane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

4



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INSTALLATION METHOD:

1. a) 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).
   b) Mark out the position of the tank including inlets and outlets.
   c) Lay min. 50mm of single sized non angular stone (8 to16mm) as a base for the tank. This can be laid to a maximum fall of 1°.

2. a) Lay the outer geotextile over the base of the excavation and up the sides of the trench, overlapping any joins by a minimum of 300mm.
   b) Lay the geomembrane on top of the outer geotextile.
   c) 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.
   d) Lay the inner geotextile over the geomembrane before starting to build the tank.
   e) The geomembrane and geotextile used must meet the specification stated on the drawing.

3. a) Place EcoBlocs Smart Baseplates onto the inner of the geotextile, according to inspection orientation. Baseplates do not require clipping. If a Vario shaft is to be included within the tank make sure the Vario shaft base is in position located (Vario sahft base do not require a Ecobloc baseplate).
   b) Place EcoBlocs Smart on the baseplates according to inspection orientation, position leg ends into corresponding holes in the Baseplate. The bloc will only fit in the correct orientation. Push down firmly to ensure the EcoBloc is located correctly, clipping each adjacent bloc using the connectors until the first layer is completed.
   c) Make sure the row of EcoBlocs Smart are in the correct located position where inspection run is required.
   d) To install the next layer of blocs remove from the stack and turn 90° and position directly above the bloc below. Push down firmly to ensure the bloc is located correctly.
   e) Continue until all EcoBlocs Smart have been installed, ensuring clips are used to secure each bloc.
   f) 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.

4. a) Fix adaptor plates to the sides of the blocs in the required position for the inlet and outlet pipes if required.
   b) Cut a hole in the geomembrane and geotextile for inlet and outlet connections.
   c) Pull geomembrane up around the sides and fully wrap the blocs, securing the top in place by heated wedge welding to the side panels.
   d) Cover the top and sides with the outer geotextile to protect the geomembrane.
   e) Install vent pipe connection into the top of the tank at a suitable location.
   f) Backfill around the tank in 300mm layers increments using non-cohesive, compressible loose rock (gravel, crushed rock, sand, etc).
   g) Connect inlet/outlet pipes and weld/glue them to have a watertight connection.
   h) 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.

| REV. | DESCRIPTION | BY | DATE |
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| 2 | LATEST REVISION | MV | 05.01.2023 |
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DRAWN : AA DATE : 05.01.2023
CHECKED : MV SCALE : VARIOUS@A3

PROJECT
GRAF STANDARD DETAILS

DESCRIPTION
ATTENUATION TANK
using GRAF ECOBLOC SMART & VARIO SHAFT

DRAWING No. DWG-359 REV. 2 (Pg.2)

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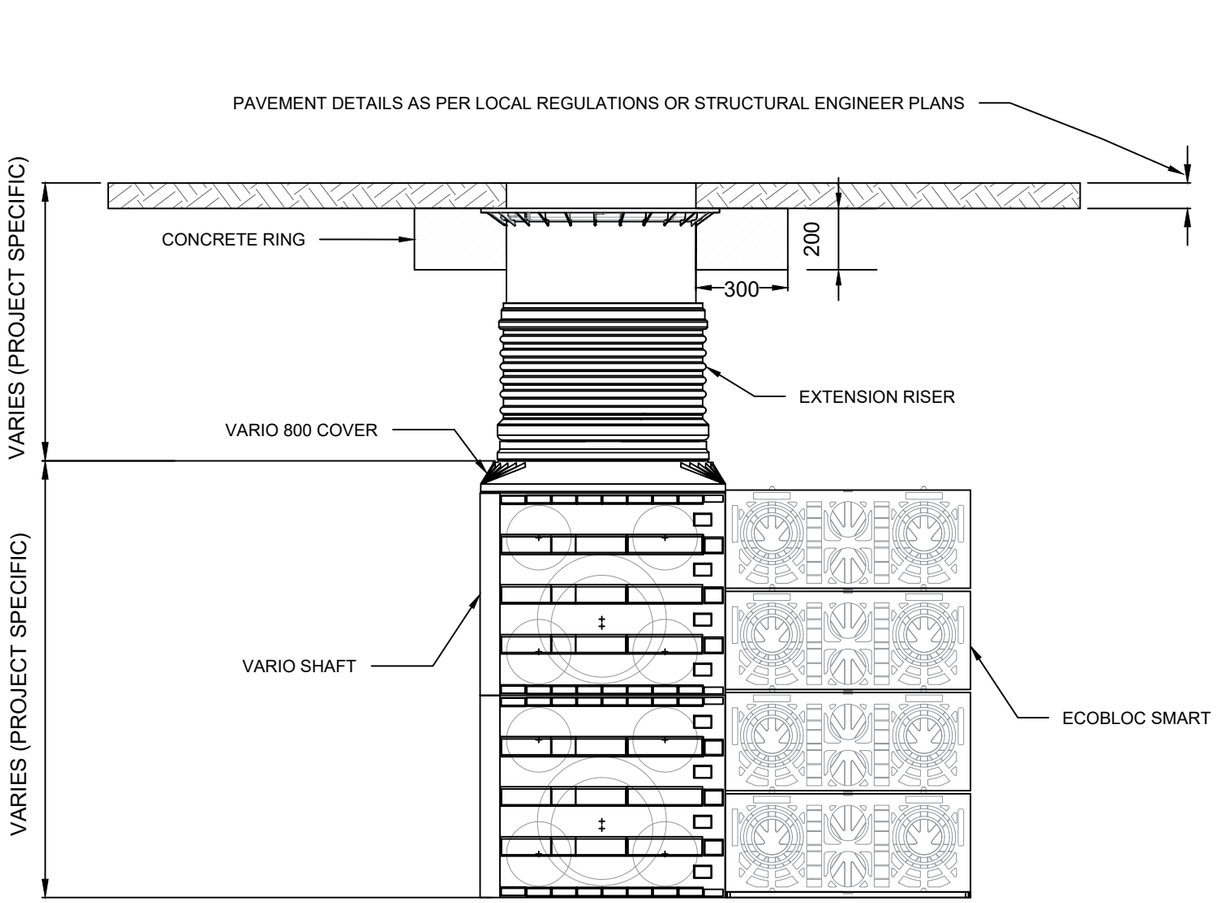
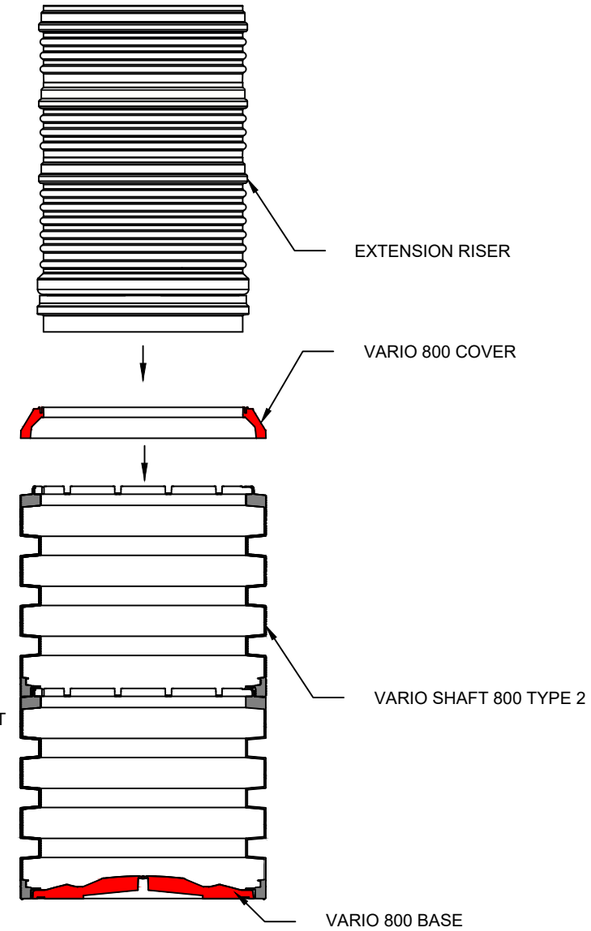



EXTERNAL VIEW




INTERNAL VIEW

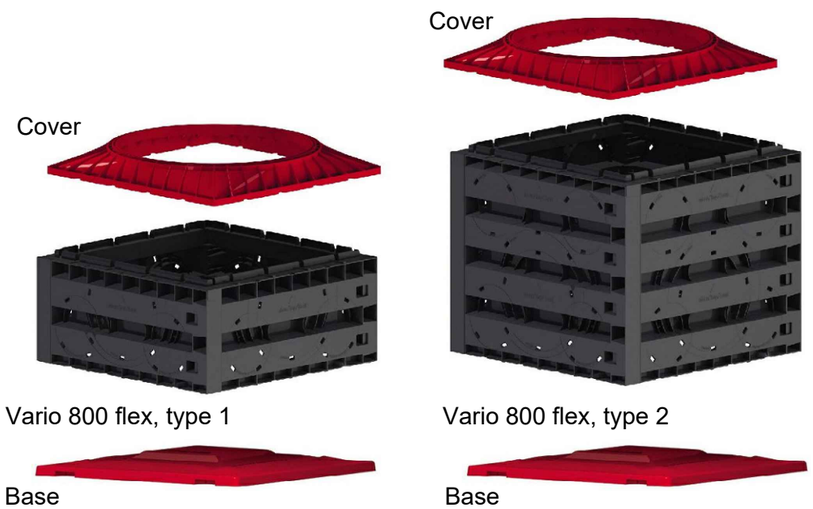
**VARIO 800 TYPE 1**

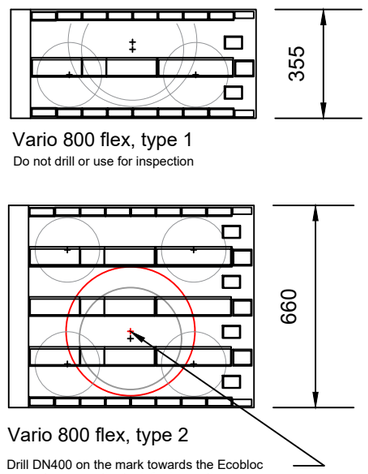
Dimensions (mm) 800 x 800 x 355
Weight 14kg
Volume 230 (litres)

**VARIO 800 TYPE 2**

Dimensions (mm) 800 x 800 x 660
Weight 24kg
Volume 420 (litres)

**VARIO 800 BASE/COVER SET**
Dimensions (mm) 800 x 800 x 100
Weight 11kg




Vario 800 are modular and are easily assembled in a push fit manner.

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PROJECT
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DESCRIPTION
ATTENUATION TANK
using GRAF ECOBLOC SMART & VARIO SHAFT

DRAWING No. DWG-359 REV. 2 (Pg.3)