Vario Wall

DESCRIPTION

The Vario wall, the wall that does it all. Install a block unit, slide another one over it, and so on. This results in a modern wall with clean lines.

Versatile and innovative, this product can be used for retaining walls, creating privacy spaces and outdoor kitchens. Available in two heights (90 or 180 mm), the Vario wall is perfect for steps and modular installations.

Note that all units are double-sided, and that they are all (including corner units) on the same pallet. Their popular colours fit perfectly with Permacon's numerous cappings.

BENEFITS:

> Quick and easy to install

> No accessories required

> All double-sided units

> 90 mm and 180 mm heights, ideal for steps and modular installations

> Smooth texture

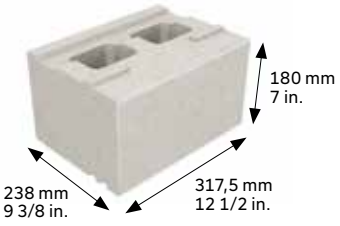
> Available in trendy colours that match slabs, pavers and capping units

> Build retaining walls, raised gardens, double-sided walls, outdoor kitchens, and more!

180 mm UNITS

SHORT UNIT

ISOMETRIC VIEW

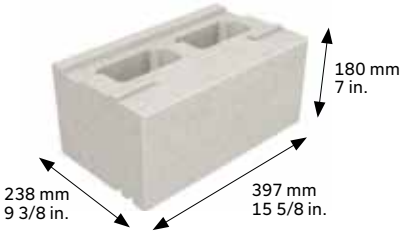


FRONT VIEW

PLAN VIEW

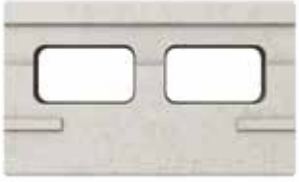
MEDIUM UNIT

ISOMETRIC VIEW



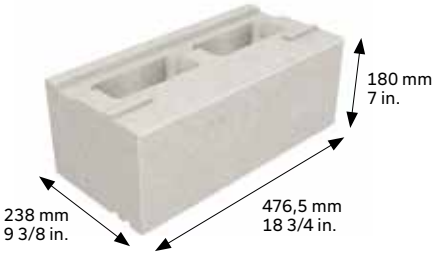
FRONT VIEW

PLAN VIEW



LONG UNIT

ISOMETRIC VIEW



FRONT VIEW

PLAN VIEW

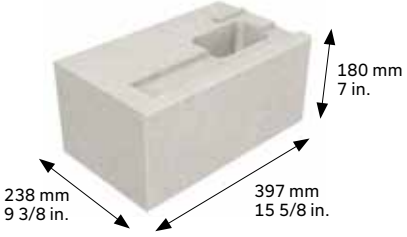
Note that Short, Medium and Long units are packaged on the same cube.

180 mm RIGHT CORNER UNITS

Only Long and Medium units are available as corners. On corner units, the groove does not run the full length and there's only one cavity.

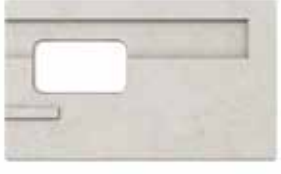
CORNER UNIT MEDIUM - RIGHT

ISOMETRIC VIEW



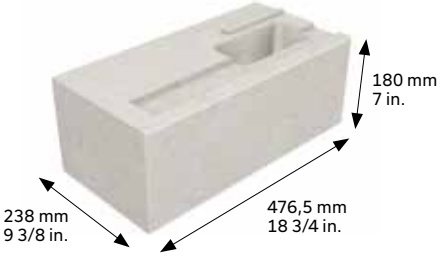
FRONT VIEW

PLAN VIEW



CORNER UNIT LONG - RIGHT

ISOMETRIC VIEW



FRONT VIEW

PLAN VIEW

180 mm LEFT CORNER UNITS

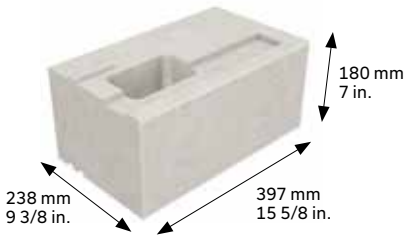
Only Long and Medium units are available as corners. On corner units, the groove does not run the full length and there's only one cavity.

ISOMETRIC VIEW

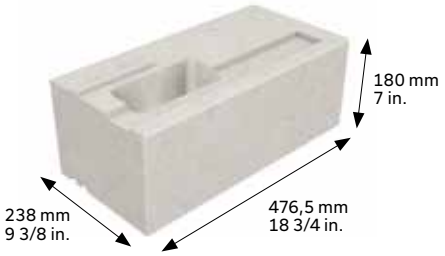
FRONT VIEW

PLAN VIEW

CORNER UNIT MEDIUM - LEFT

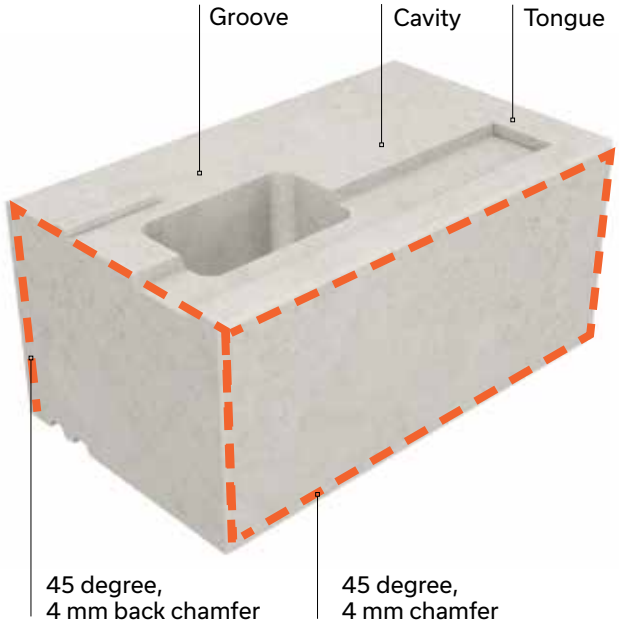


CORNER UNIT LONG - LEFT

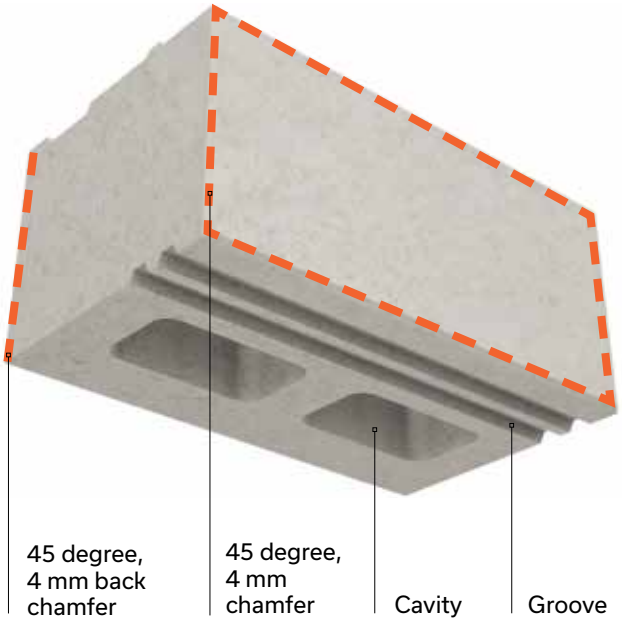


BASIC PRINCIPLES

180 mm medium left corner unit



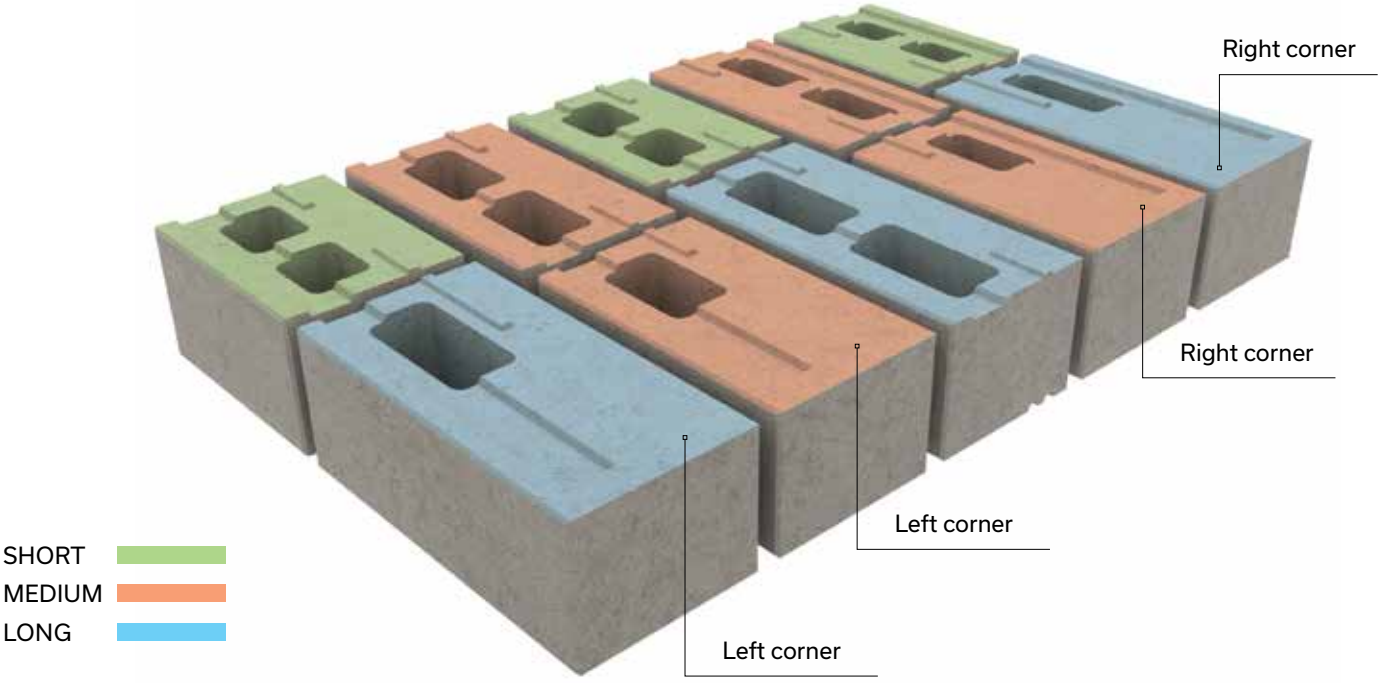
180 mm medium underside unit



VARIO WALL 180 mm

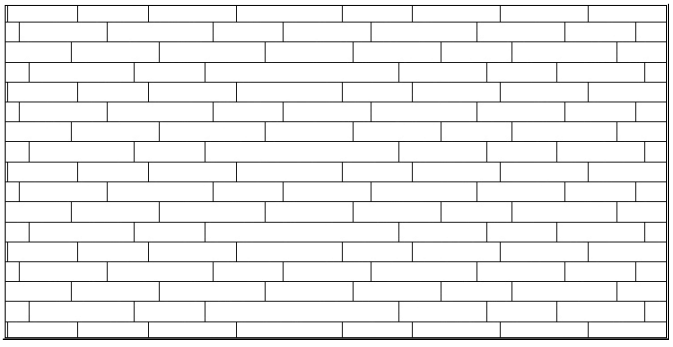
TYPICAL ROW

4 integrated corners per row: 1 right long, 1 right medium, 1 left long, 1 left medium

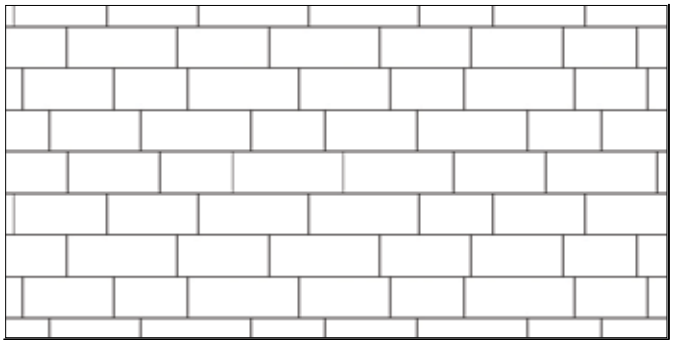


LAYING PATTERNS

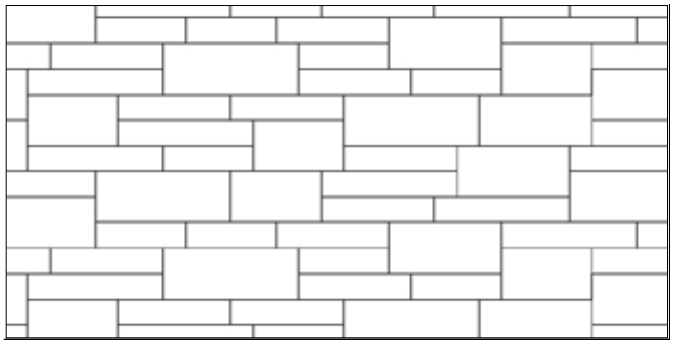
LINEAR PATTERN - 100% VARIO 90



LINEAR PATTERN - 100% VARIO 180



MODULAR PATTERN - 50% VARIO 90 AND 50% VARIO 180



CROSS-SECTION - SETBACK WALL

Vario Wall 180 mm installed with a setback (30 mm per row) can go up to 4 row (total height of 720 mm or 28 in.)

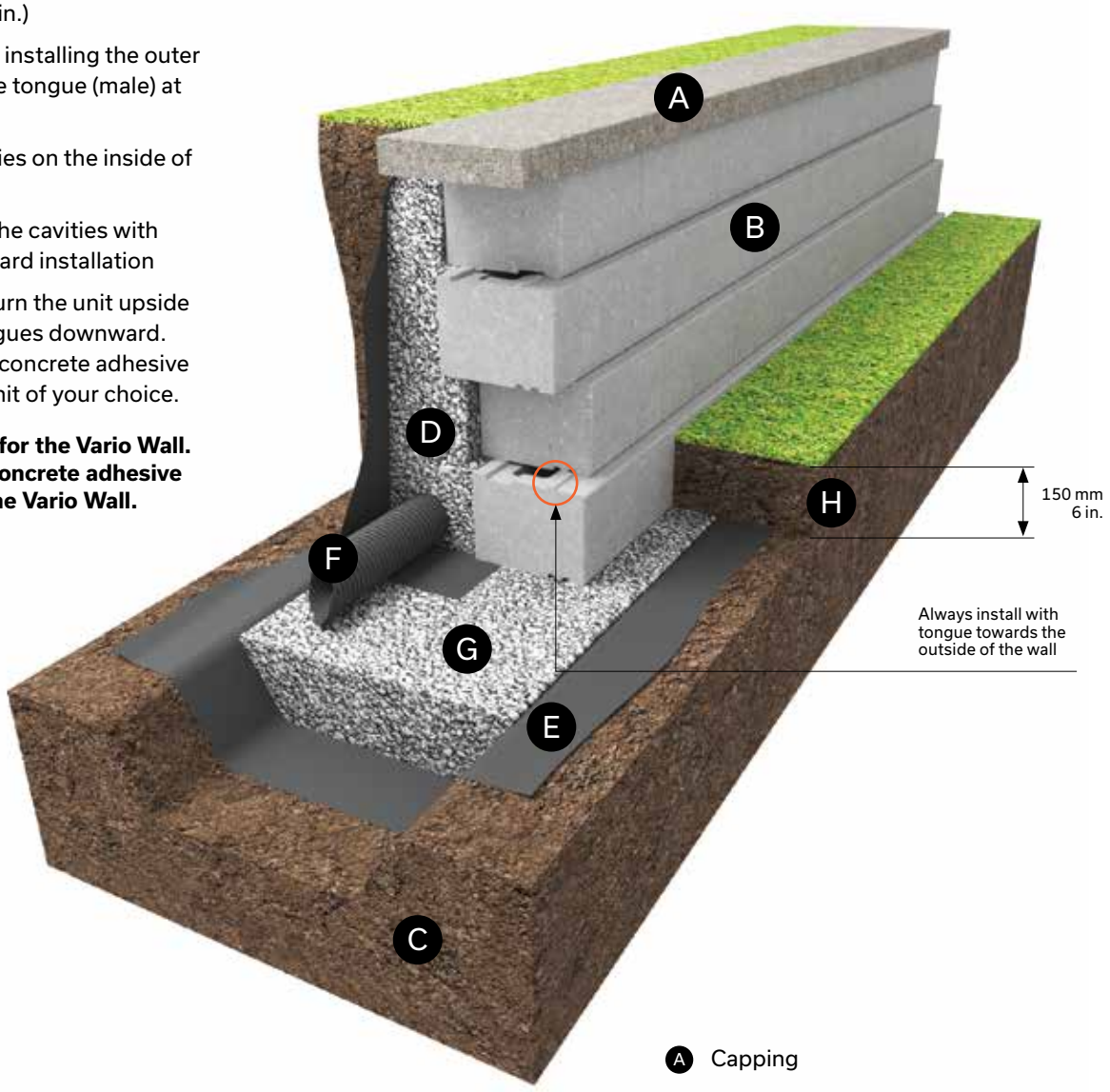
> Create the setback by installing the outer groove (female) on the tongue (male) at every row

> Always have the cavities on the inside of the wall

> You don't have to fill the cavities with clean stone in a standard installation

> At the very last row, turn the unit upside down to have the tongues downward. Then, use Techniseal concrete adhesive to glue the capping unit of your choice.

No accessory required for the Vario Wall. You don't have to use concrete adhesive between each row of the Vario Wall.

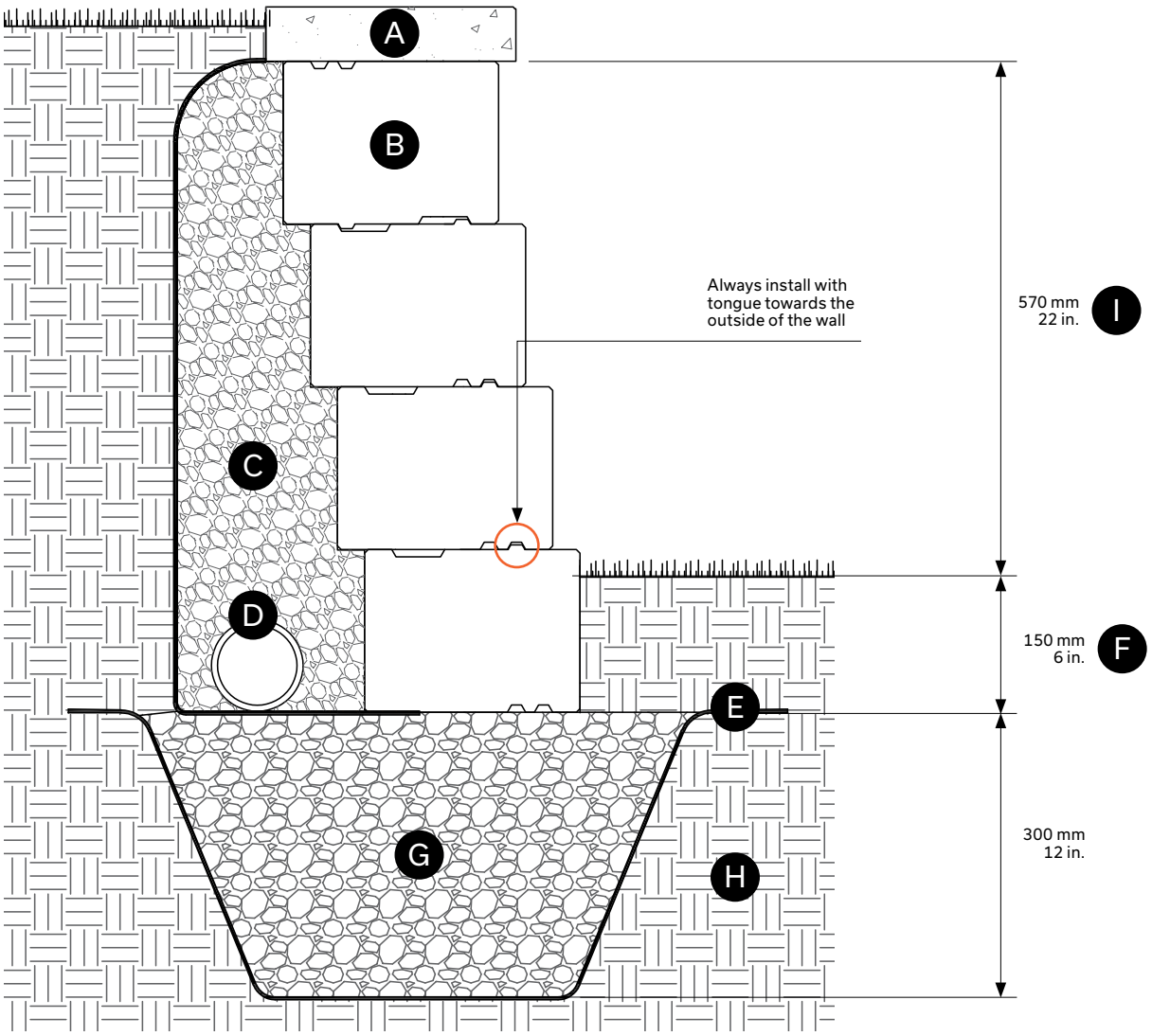


ISOMETRIC VIEW

- A Capping
- B Vario Wall 180 mm
- C Undisturbed soil
- D Clean stone 20 mm - 3/4 in. - Depth: 300 mm - 12 in. minimum
- E Geotextile membrane
- F Perforated drain connected to services: 100 mm Ø - 4 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. Depth: 300 mm - 12 in. minimum
- H Minimum buried depth 150 mm - 6 in.

Maximum gravity wall heights assume no slopes or surcharge behind the wall and that the wall retains sand or gravel (phi = 34 degrees, gamma = 19 kN/m3)[2]

CROSS-SECTION - SETBACK GRAVITY WALL



- A Capping
- B Vario Wall 180 mm
- C Clean stone 20 mm - 3/4 in. - Depth: 300 mm - 12 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping

Maximum gravity wall heights assume no slopes or surcharge behind the wall and that the wall retains sand or gravel (phi = 34 degrees, gamma = 19 kN/m3)[2]

VARIO WALL 180 mm

CROSS-SECTION - VERTICAL WALL

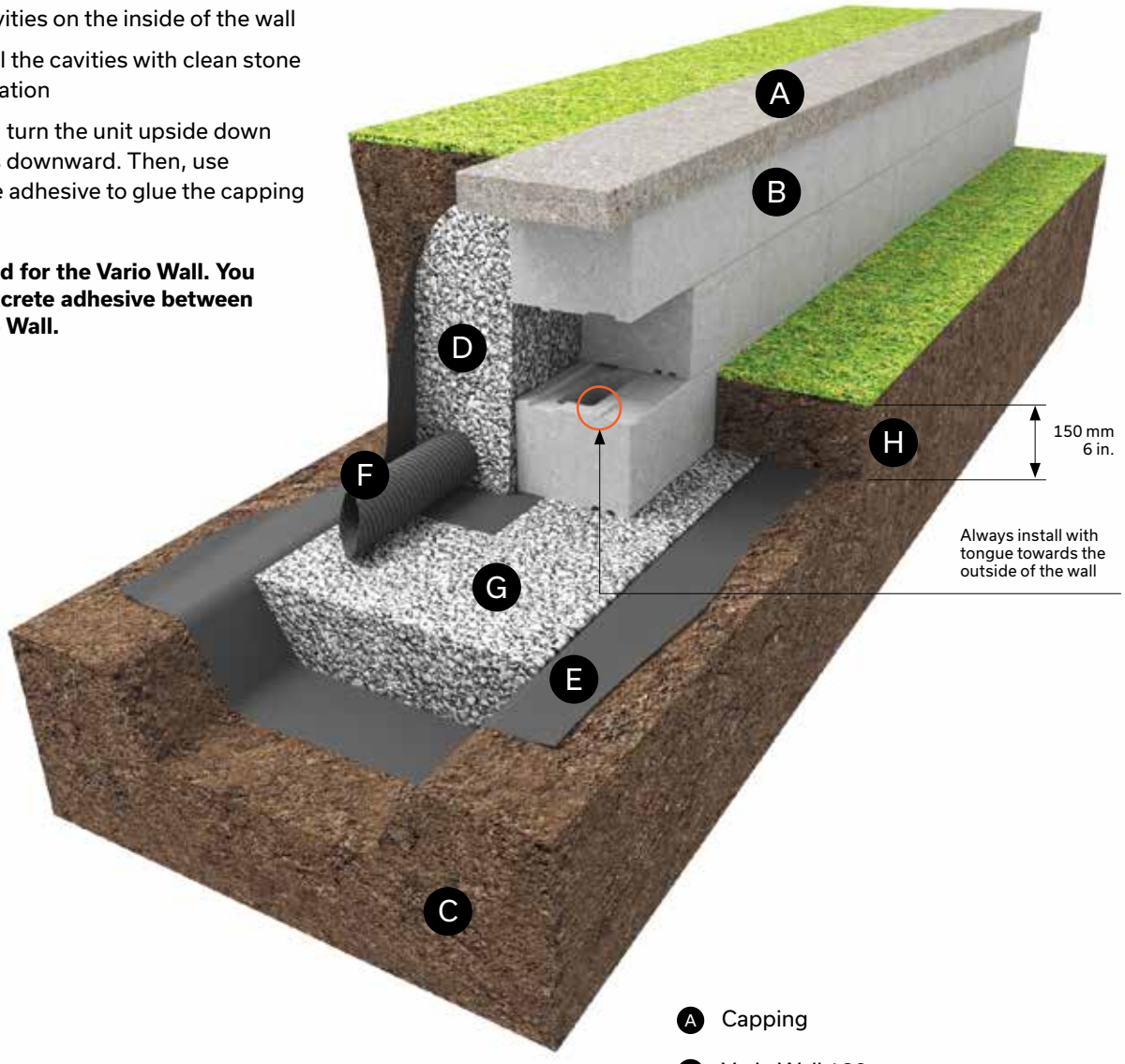
Vario Wall 180 mm installed in a vertical application can go up to 3 rows (total height of 540 mm or 21 in.).

> Always have the cavities on the inside of the wall

> You don't have to fill the cavities with clean stone in a standard installation

> At the very last row, turn the unit upside down to have the tongues downward. Then, use Techniseal concrete adhesive to glue the capping unit of your choice.

No accessory required for the Vario Wall. You don't have to use concrete adhesive between each row of the Vario Wall.

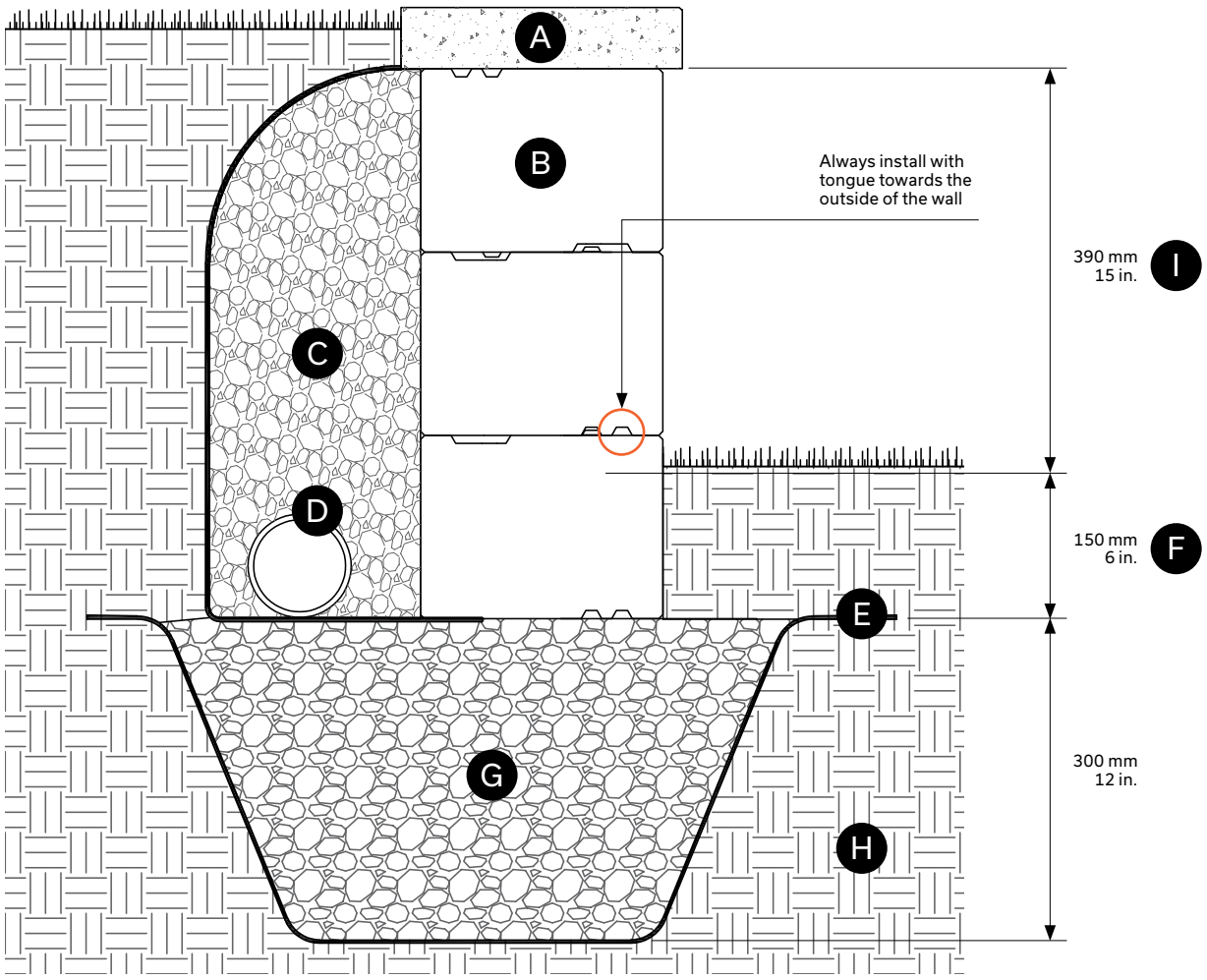


ISOMETRIC VIEW

- A Capping
- B Vario Wall 180 mm
- C Undisturbed soil
- D Clean stone 20 mm - 3/4 in. - Depth: 300 mm - 12 in. minimum
- E Geotextile membrane
- F Perforated drain connected to services: 100 mm Ø - 4 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. Depth: 300 mm - 12 in. minimum
- H Minimum buried depth 150 mm - 6 in.

Maximum gravity wall heights assume no slopes or surcharge behind the wall and that the wall retains sand or gravel (phi = 34 degrees, gamma = 19 kN/m3)[2]

CROSS-SECTION - VERTICAL GRAVITY WALL



Maximum gravity wall heights assume no slopes or surcharge behind the wall and that the wall retains sand or gravel (phi = 34 degrees, gamma = 19 kN/m3)[2]

- A Capping
- B Vario Wall 180 mm
- C Clean stone 20 mm - 3/4 in. - Depth: 300 mm - 12 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height without surcharges or slopes behind the wall, excluding the buried units and capping

CROSS-SECTION - DOUBLE-SIDED WALL

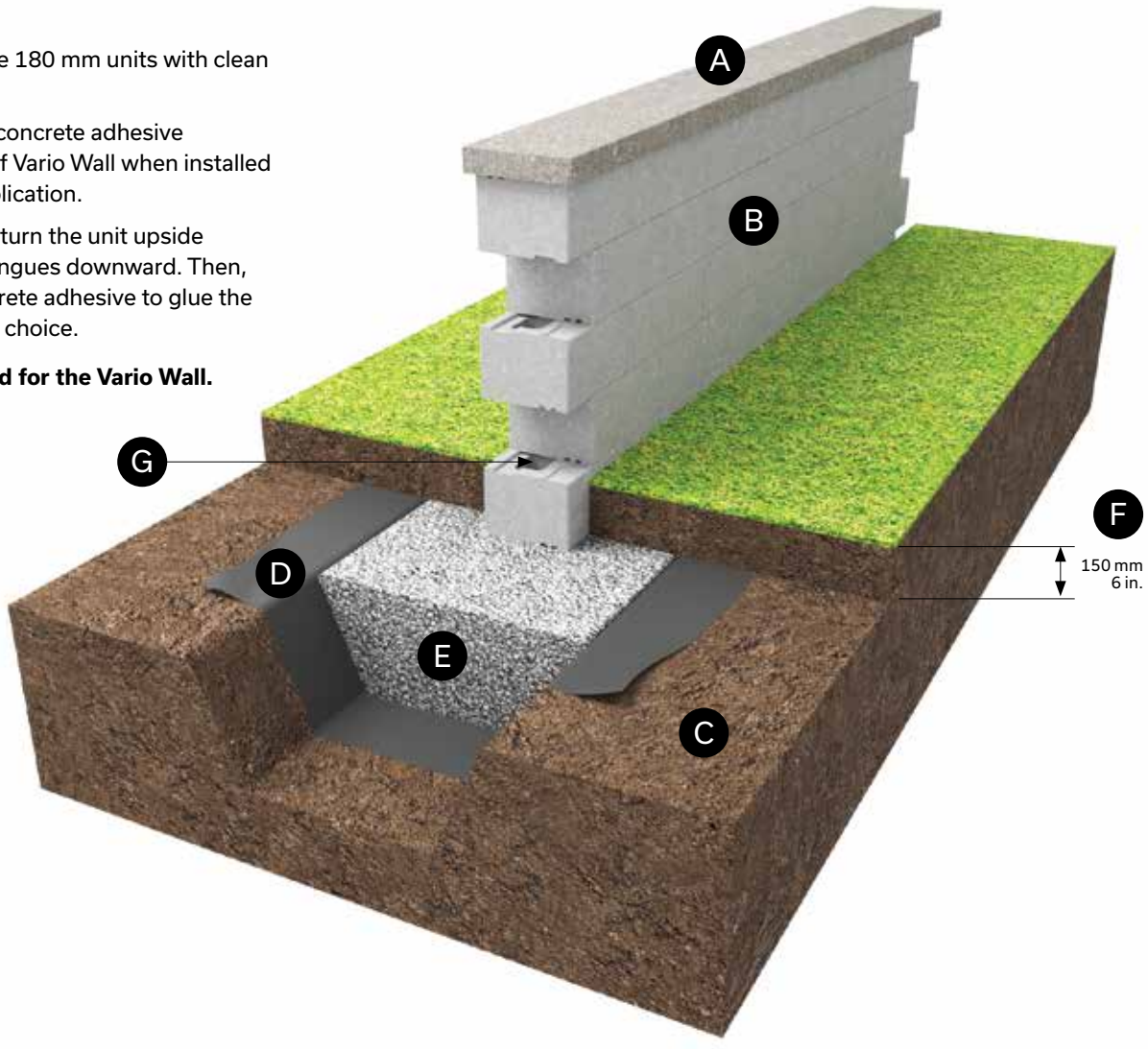
Vario Wall 180 mm installed in a double-sided application can go up to 5 rows (total height of 900 mm or 35 in.).

> Fill the cavities of the 180 mm units with clean stone.

> It is required to use concrete adhesive between each row of Vario Wall when installed in a doule-sided application.

> At the very last row, turn the unit upside down to have the tongues downward. Then, use Techniseal concrete adhesive to glue the capping unit of your choice.

No accessory required for the Vario Wall.

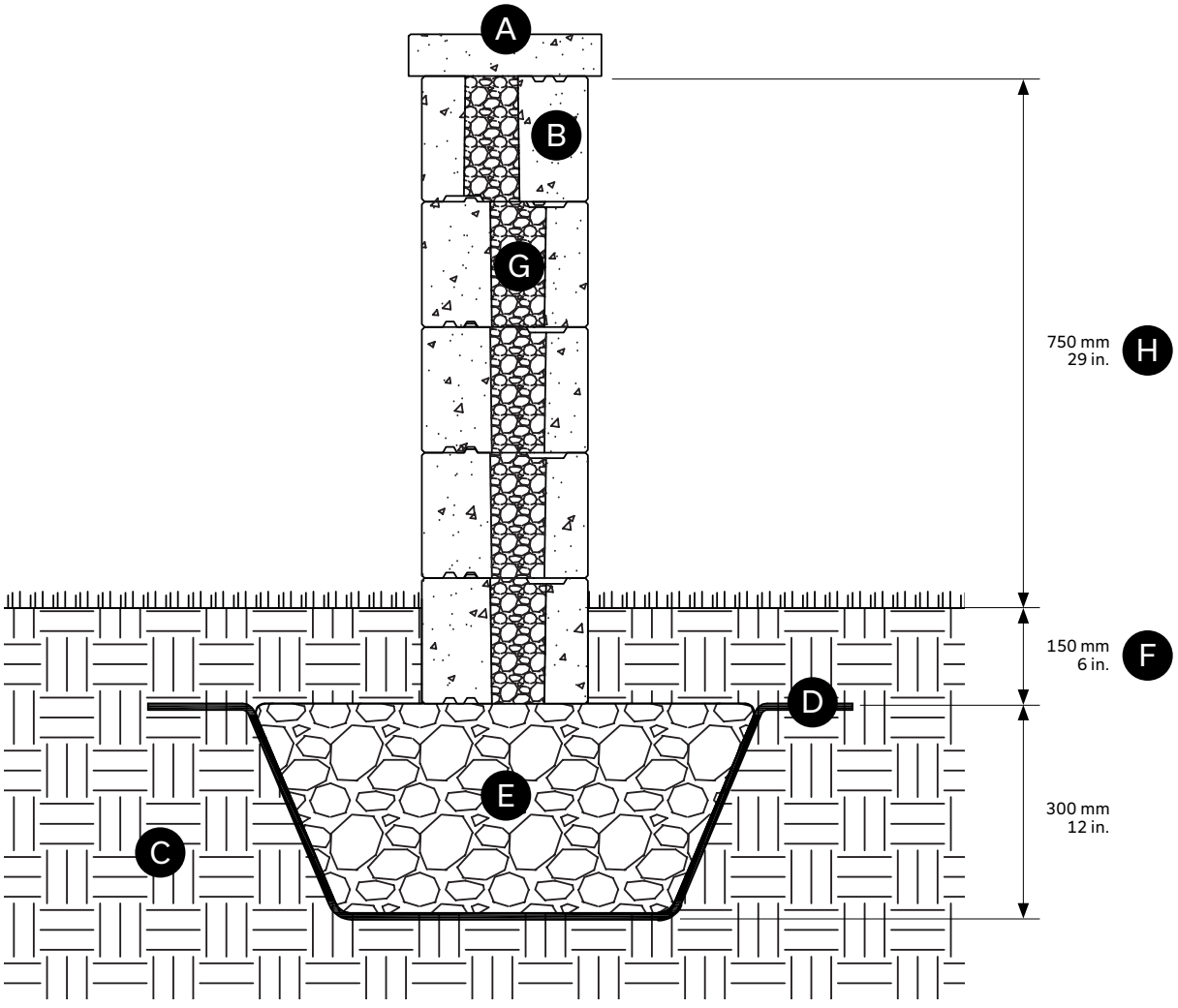


ISOMETRIC VIEW

Maximum double-sided wall heights assume there is no soil to retain nor any surcharge

- A Capping
- B Vario Wall 90 mm
- C Undisturbed soil
- D Geotextile membrane
- E Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. Depth: 300 mm - 12 in. minimum
- F Minimum buried depth 150 mm - 6 in.

CROSS-SECTION - DOUBLE-SIDED WALL



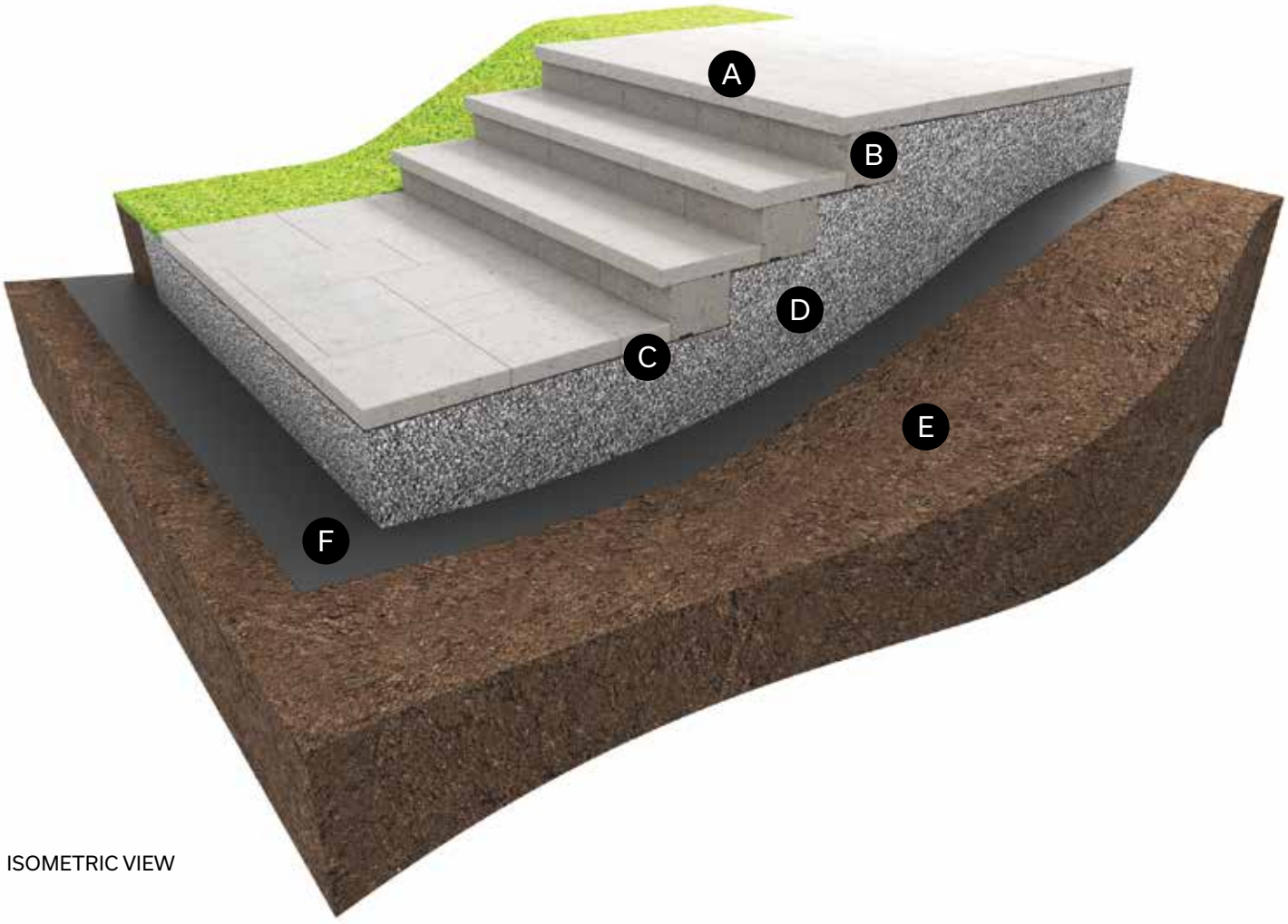
- A Capping
- B Vario Wall 90 mm
- C Undisturbed soil
- D Geotextile membrane
- E Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. Depth: 300 mm - 12 in. minimum
- F Minimum buried depth 150 mm - 6 in.
- G Clean stone (in the wall cavities)
- H Maximum height without surcharges or slopes behind the wall, excluding the buried units and capping

CROSS-SECTION - CREATING VARIO WALL STEPS

To create steps, install the Melville Plus 60 step combined with the Vario wall units used as risers, as detailed below:

To complete the last row, turn the exposed unit upside down to have the tongues downward. Then, use Techniseal concrete adhesive to glue the step unit.

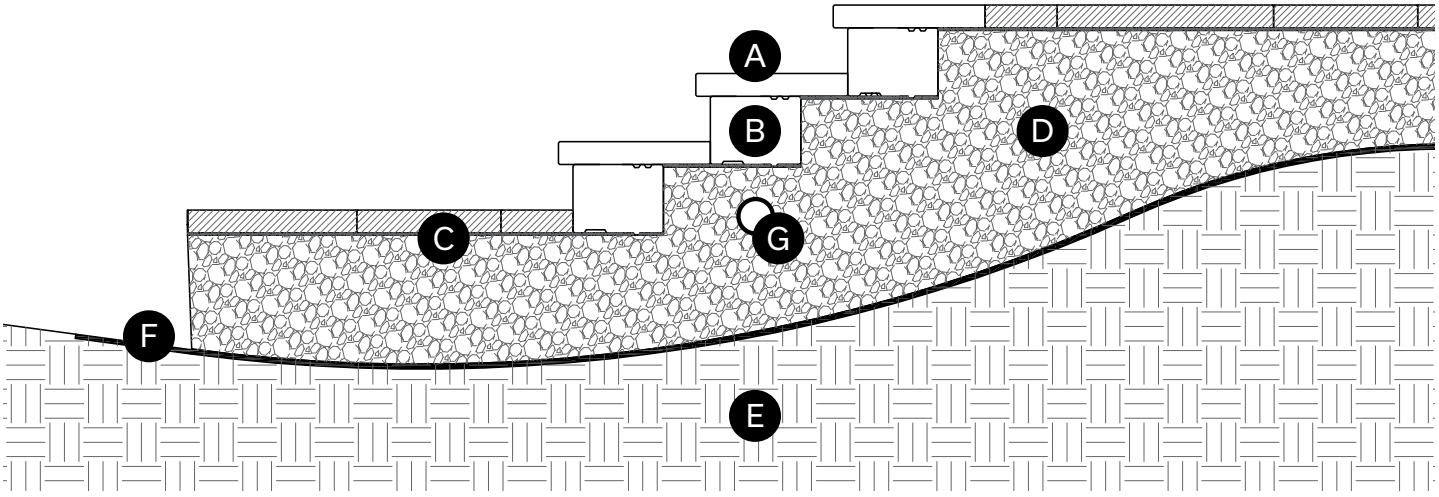
No accessory required for the Vario Wall. You don't have to use concrete adhesive between each row of the Vario Wall.



ISOMETRIC VIEW

- A Melville Plus 60 Step
- B Vario Wall 180 mm
- C Laying bed: 25 mm -1 in.
- D Compacted granular foundation:
  0 to 20 mm - 0 to 3/4 in.
  Depth: 300 mm - 12 in. minimum
- E Undisturbed soil
- F Geotextile membrane

CROSS-SECTION - WALL STEP INSTALLATION



- A Melville Plus 60 Step
- B Vario Wall 180 mm
- C Laying bed: 25 mm -1 in.
- D Compacted granular foundation:
  0 to 20 mm - 0 to 3/4 in.
  Depth: 300 mm - 12 in. minimum
- E Undisturbed soil
- F Geotextile membrane
- G Perforated drain connected to services:
  100 mm Ø - 4 in.

6 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed with a setback and geogrid – 6 rows (total height of 1080 mm or 42 in.). With surcharge behind the wall (5kPa), no slope.

> Create the setback by installing the groove (female) on the inner tongue (male) of every row

> Always install with tongue towards the outside of the wall

> Fill the cavities of the 180 mm units with clean stone

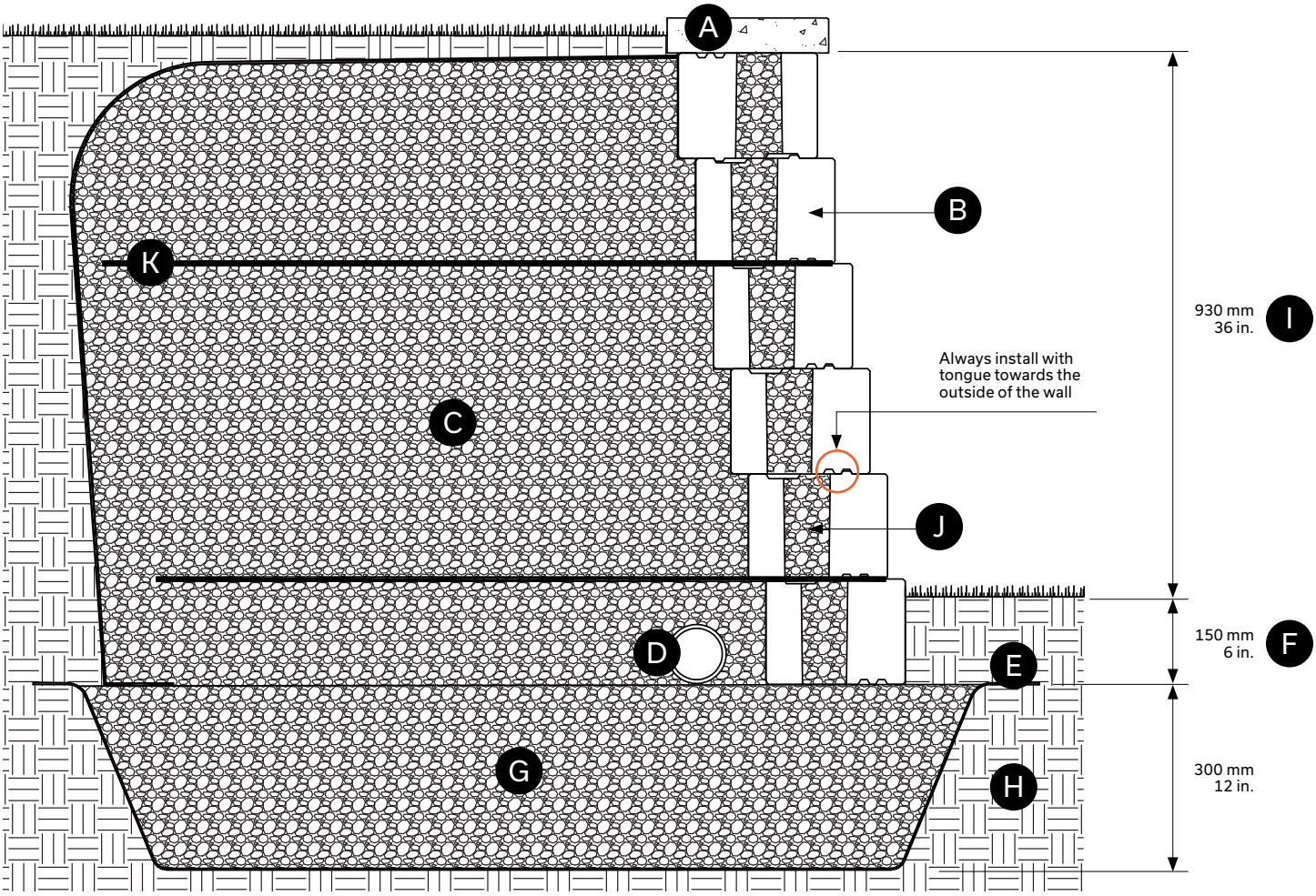
> Add a geogrid of 1250 mm (50 in.) long over the Vario wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

> You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 6 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm (setback angle: 9.46 degrees, 150 mm)
- C Clean stone 20 mm - 3/4 in. - Depth: 1400 mm - 55 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the unit cavities)
- K Geogrid 1250 mm - 50 in.

9 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed with a setback and geogrid – 9 rows (total height of 1620 mm or 63 in.). With surcharge behind the wall (5kPa), no slope.

> Create the setback by installing the outer groove (female) on the tongue (male) at every row

> Always install with tongue towards the outside of the wall

> Fill the cavities of the 180 mm units with clean stone

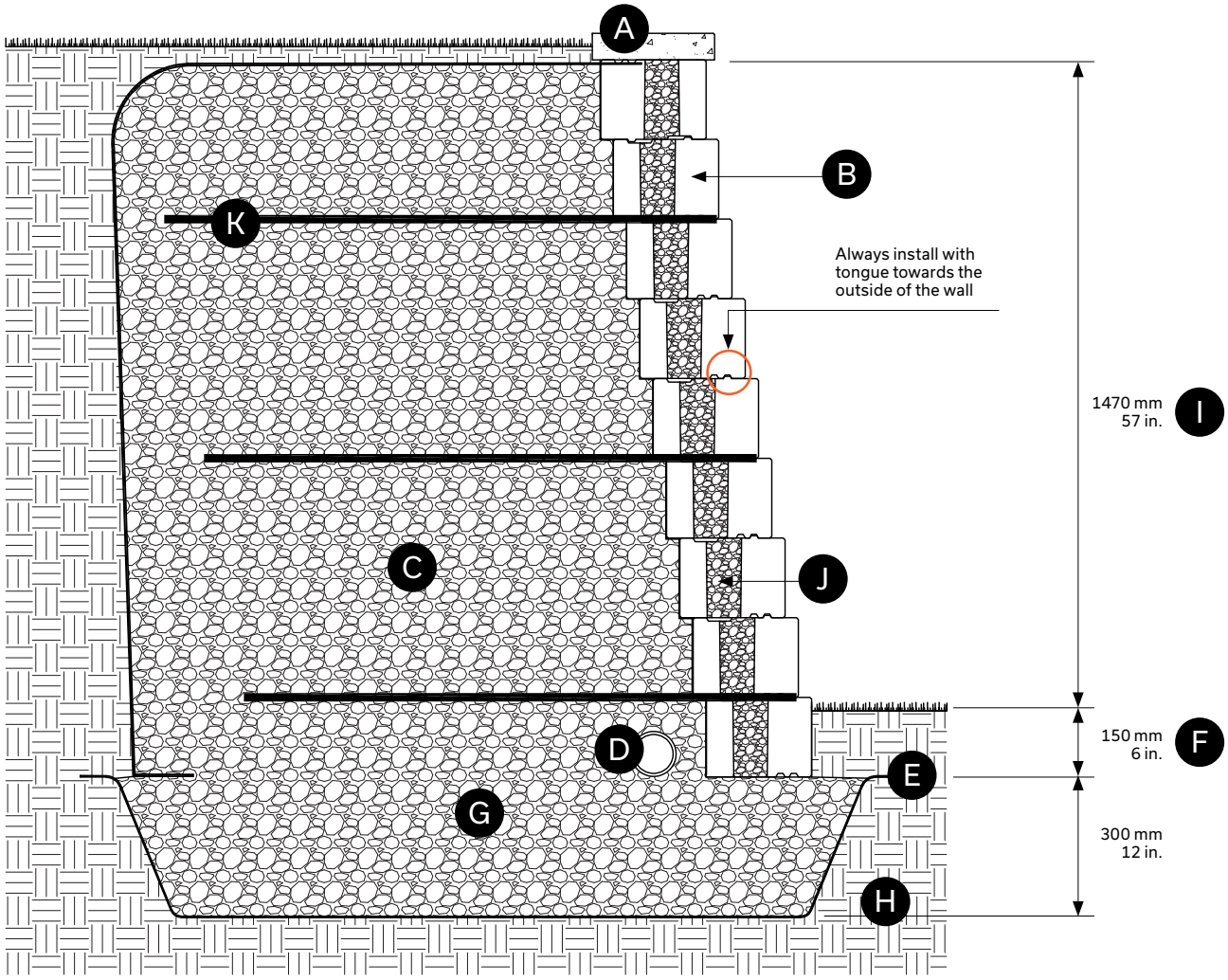
> Add a geogrid of 1250 mm (50 in.) long over the Vario wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 9 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm (setback angle: 9.46 degrees, 240 mm)
- C Clean stone 20 mm - 3/4 in. - Depth: 1490 mm - 59 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the wall cavities)
- K Geogrid 1250 mm - 50 in.

12 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed with a setback and geogrid – 12 rows (total height of 2160 mm or 84 in.). With surcharge behind the wall (5kPa), no slope.

> Create the setback by installing the outer groove (female) on the tongue (male) at every row

> Always install with tongue towards the outside of the wall

> Fill the cavities of the 180 mm units with clean stone

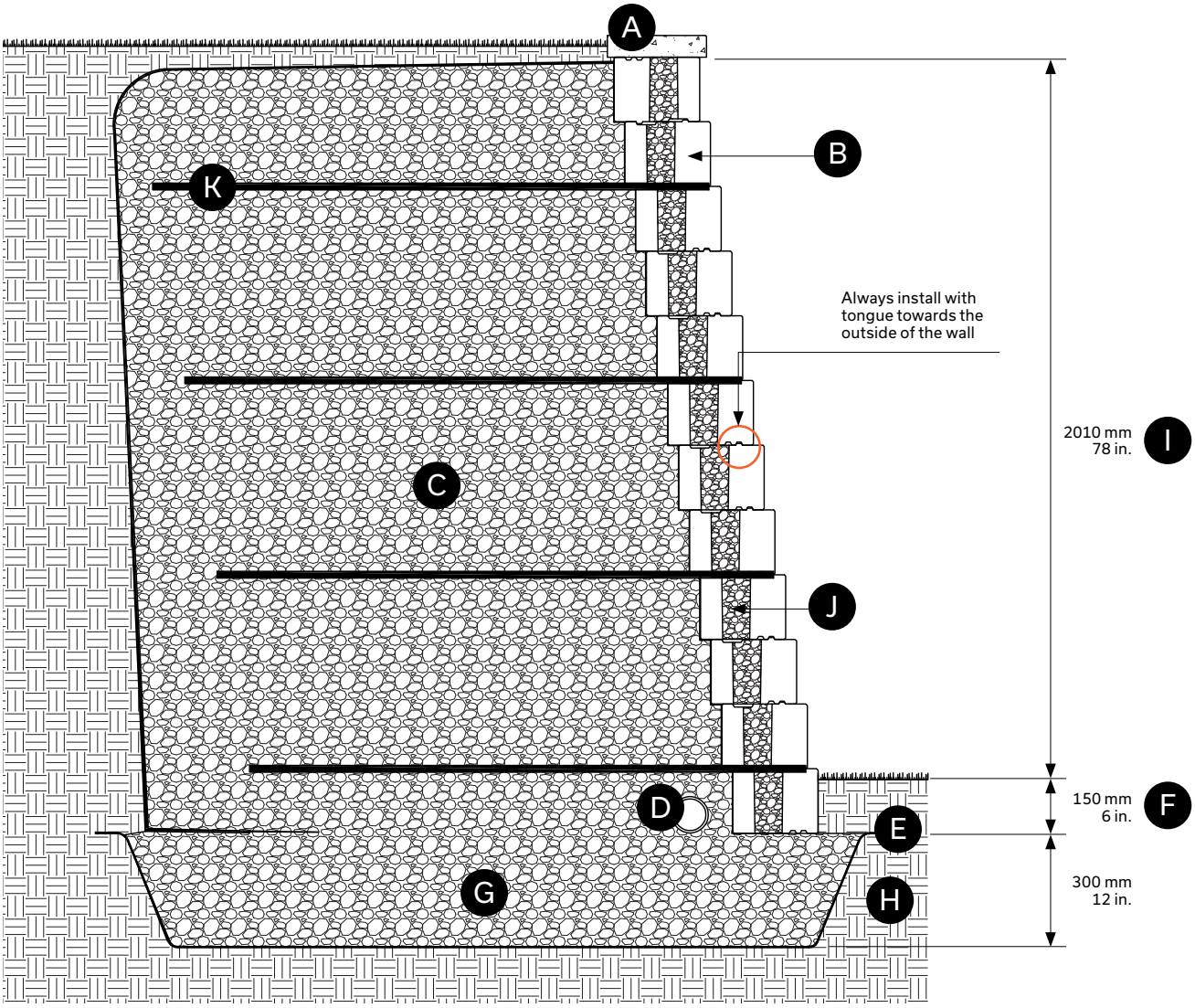
> Add a geogrid of 1550 mm (61 in.) long over the Vario wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 12 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm (setback angle: 9.46 degrees, 330 mm)
- C Clean stone 20 mm - 3/4 in. - Depth: 1880 mm - 74 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the wall cavities)
- K Geogrid 1550 mm - 61 in.

15 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed with a setback and geogrid – 15 rows (total height of 2700 mm or 105 in.). With surcharge behind the wall (5kPa), no slope.

> Create the setback by installing the outer groove (female) on the tongue (male) at every row

> Always install with tongue towards the outside of the wall

> Fill the cavities of the 180 mm units with clean stone

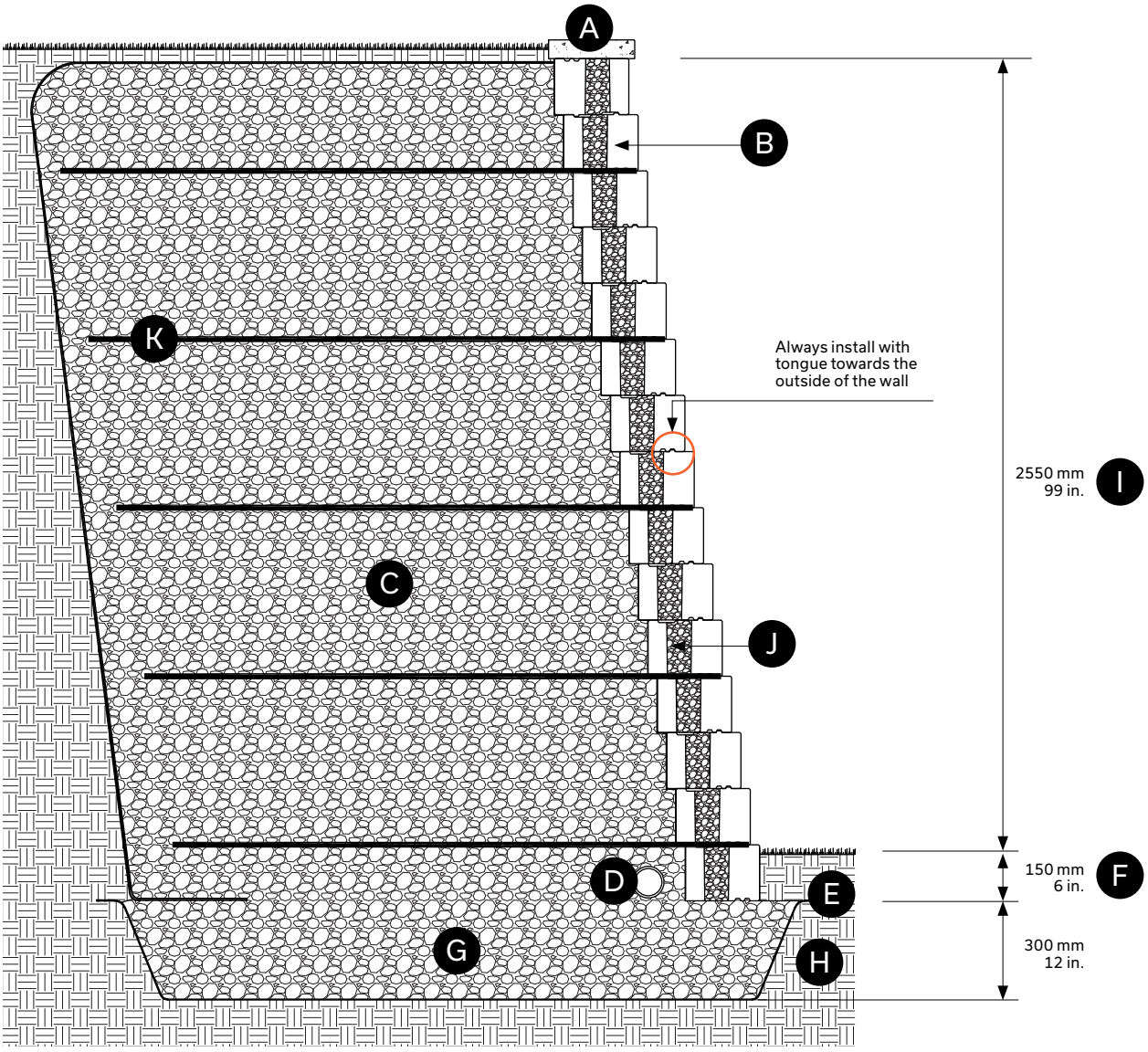
> Add a geogrid of 1885 mm (74 in.) long over the Vario wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 15 ROW SETBACK WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm (setback angle: 9.46 degrees, 420 mm)
- C Clean stone 20 mm - 3/4 in. - Depth: 2270 mm - 89 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the wall cavities)
- K Geogrid 1885 mm - 74 in.

6 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed in a vertical application with geogrid – 6 rows (total height of 1080 mm or 42 in). With surcharge (5 kPa), no slope.

> With surcharge (5 kPa), no slope.

> Always position the tongue on the outer side of the wall

> Fill the cavities of the 180 mm units with clean stone

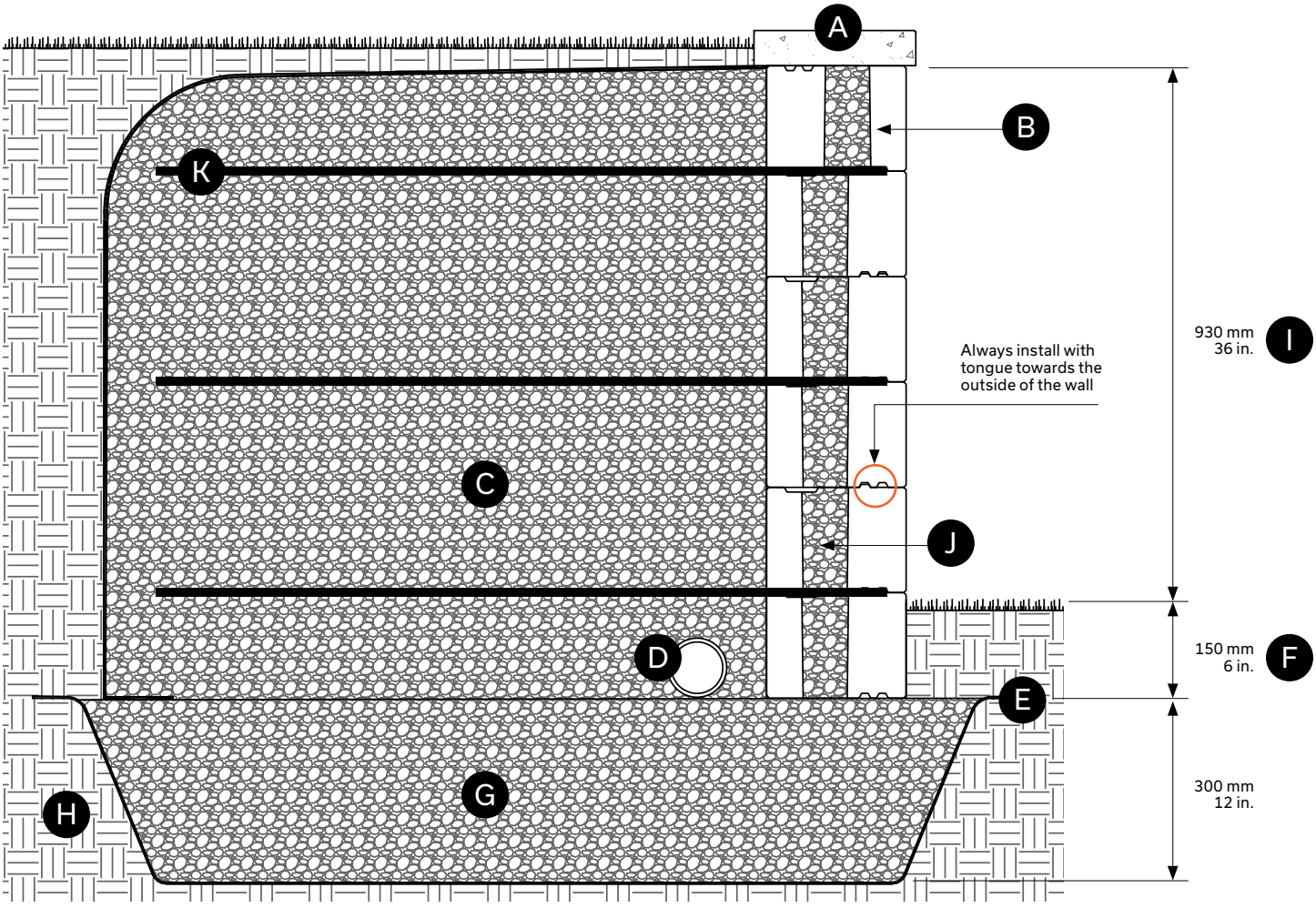
> Add a 1250 mm long geogrid (50 in.) over the Vario Wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 6 ROW VERTICALWALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm
- C Clean stone 20 mm - 3/4 in. - Depth: 1400 mm - 55 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the unit cavities)
- K Geogrid 1250 mm - 50 in.

9 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed in a vertical application with geogrid – 9 rows (total height of 1620 mm or 63 in). With surcharge (5 kPa), no slope.

> Always position the tongue on the outer side of the wall

> Fill the cavities of the 180 mm units with clean stone

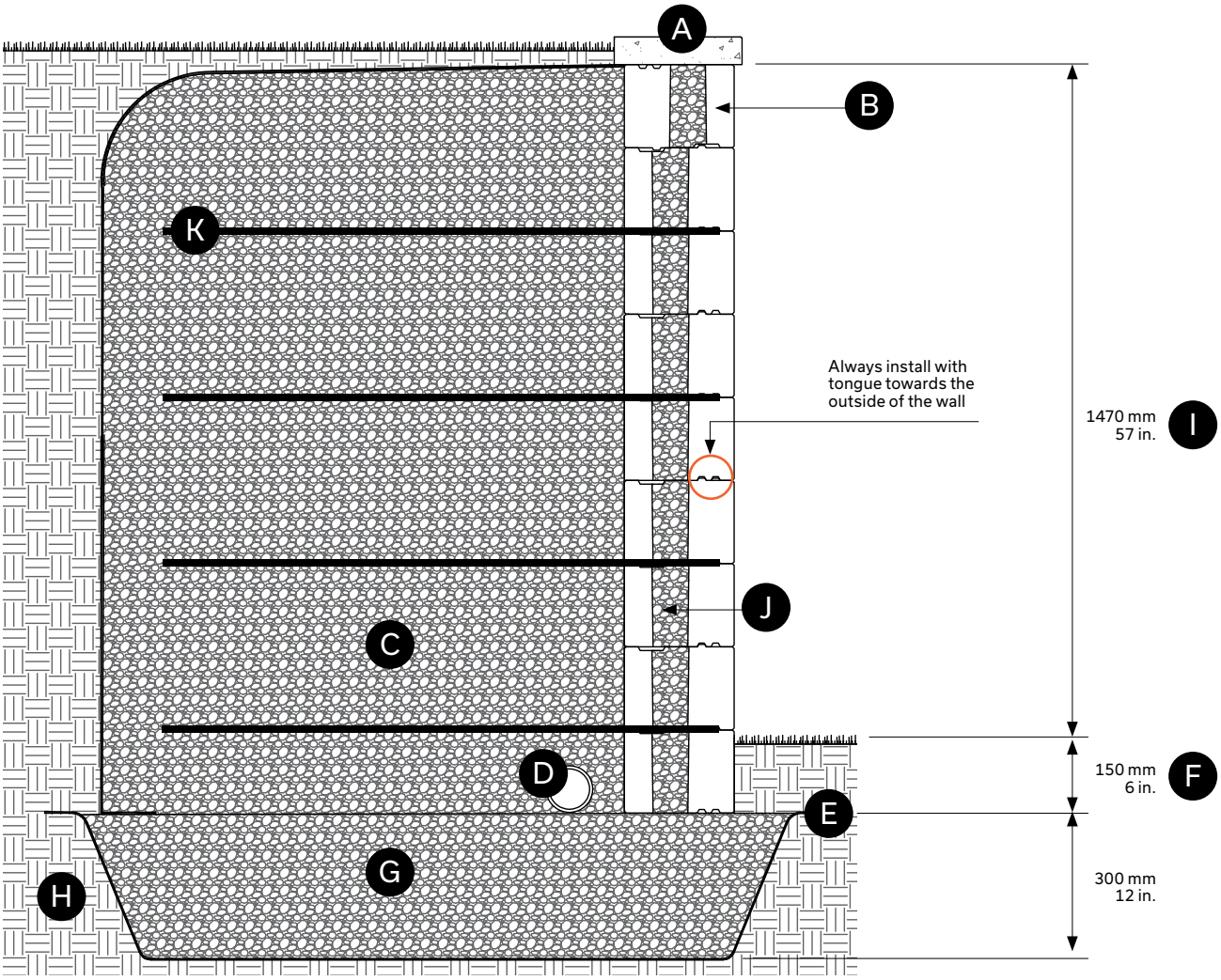
> Add a 1250 mm long geogrid (50 in.) over the Vario Wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 9 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm
- C Clean stone 20 mm - 3/4 in. - Depth: 1490 mm - 59 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the wall cavities)
- K Geogrid 1250 mm - 50 in.

12 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed in a vertical application with geogrid – 12 rows (total height of 2160 mm or 84 in). With surcharge (5 kPa), no slope.

> Always position the tongue on the outer side of the wall

> Fill the cavities of the 180 mm units with clean stone

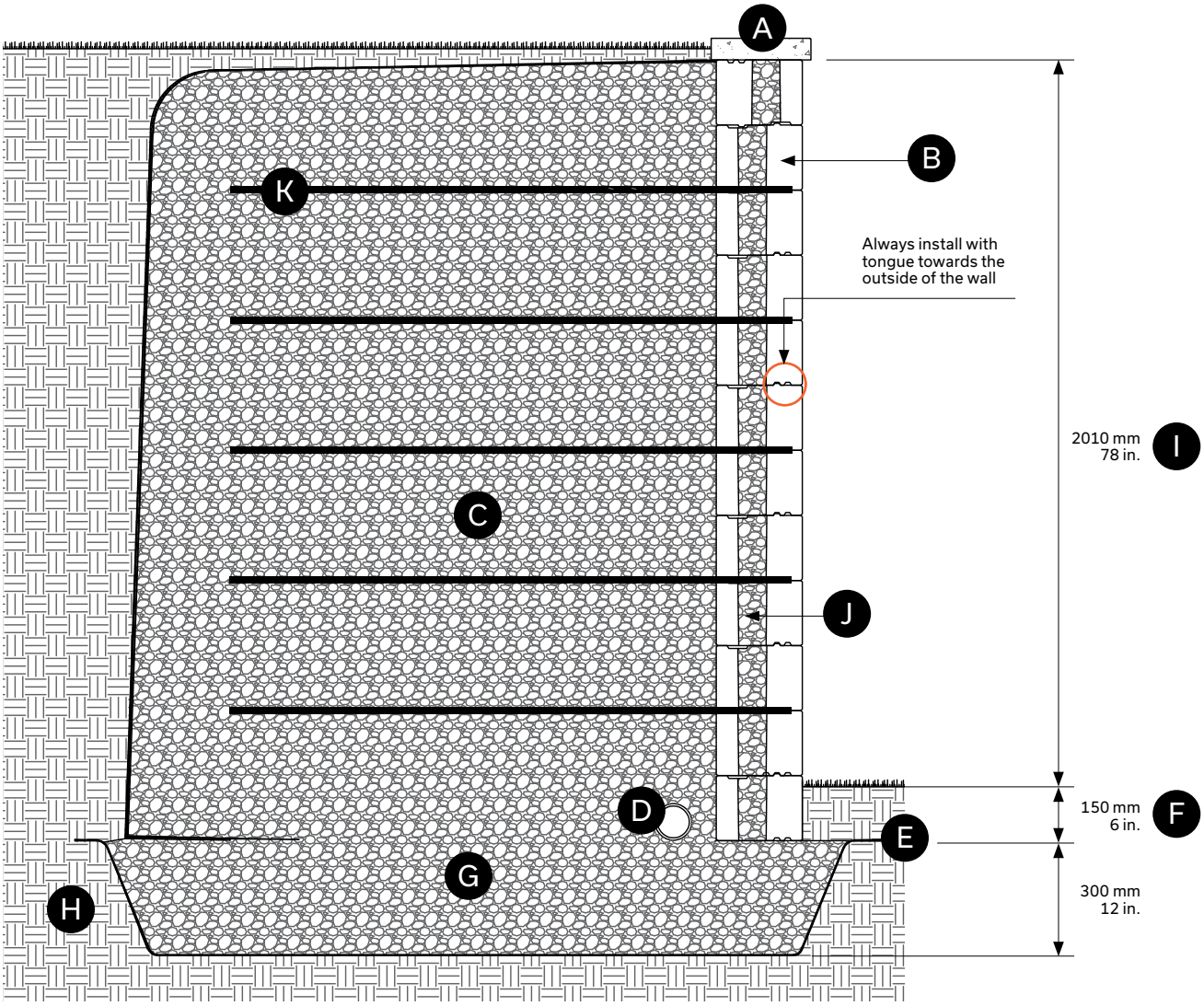
> Add a 1550 mm long geogrid (61 in.) over the Vario Wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 12 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm
- C Clean stone 20 mm - 3/4 in. - Depth: 1880 mm - 74 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the wall cavities)
- K Geogrid 1550 mm - 61 in.

15 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE

Vario Wall 180 mm installed in a vertical application with geogrid – 15 rows (total height of 2700 mm or 105 in). With surcharge (5 kPa), no slope.

> Always position the tongue on the outer side of the wall

> Fill the cavities of the 180 mm units with clean stone

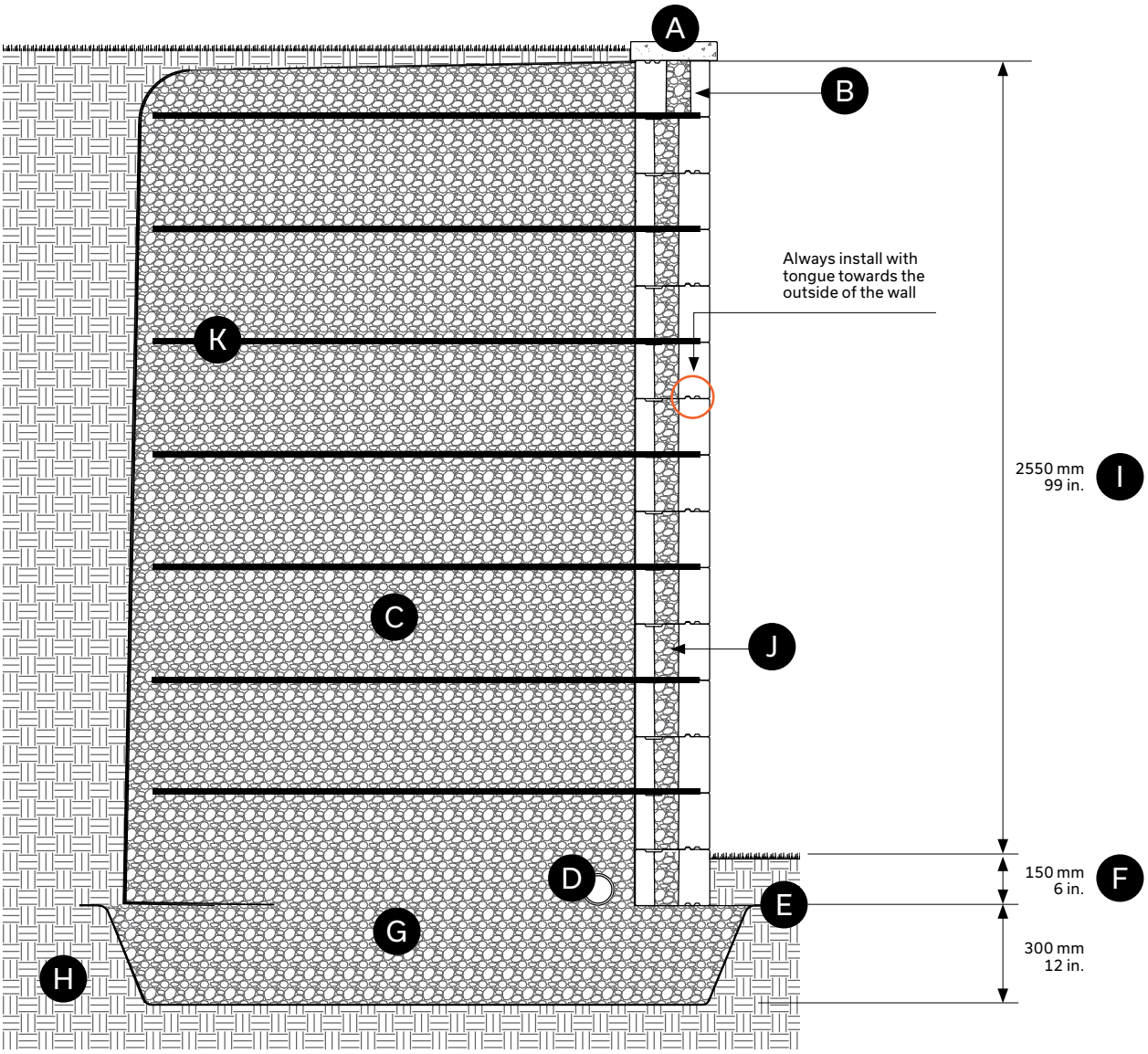
> Add a 1885 mm long geogrid (74 in.) over the Vario Wall unit. The geogrid is held by the tongue and groove system and the weight of the clean stone. Recommended geogrid: Miragrid 2XT

> At the very last row, turn the unit upside down to have the tongue downward. Then, use Techniseal concrete adhesive to glue the Permacon capping of your choice.

You don't have to use concrete adhesive between each row of the Vario Wall.

Maximum wall heights assume there is a 5kPa surcharge behind the wall and no slope, and that the wall retains sand or gravel [phi = 34 degrees, gamma = 19 kN/m3).

CROSS-SECTION - 15 ROW VERTICAL WALL – WITH SURCHARGE, NO SLOPE



- A Capping
- B Vario Wall 180 mm (setback angle: 9.46 degrees, 420 mm)
- C Clean stone 20 mm - 3/4 in. - Depth: 2270 mm - 89 in. min.
- D Perforated drain connected to services: 100 mm Ø - 4 in.
- E Geotextile membrane
- F Minimum buried depth 150 mm - 6 in.
- G Compacted granular foundation: 0 to 20 mm - 0 to 3/4 in. - Depth: 300 mm - 12 in. minimum
- H Undisturbed soil
- I Maximum height with surcharge and no slope behind the wall, excluding the buried units and capping
- J Clean stone (in the wall cavities)
- K Geogrid 1885 mm - 74 in.