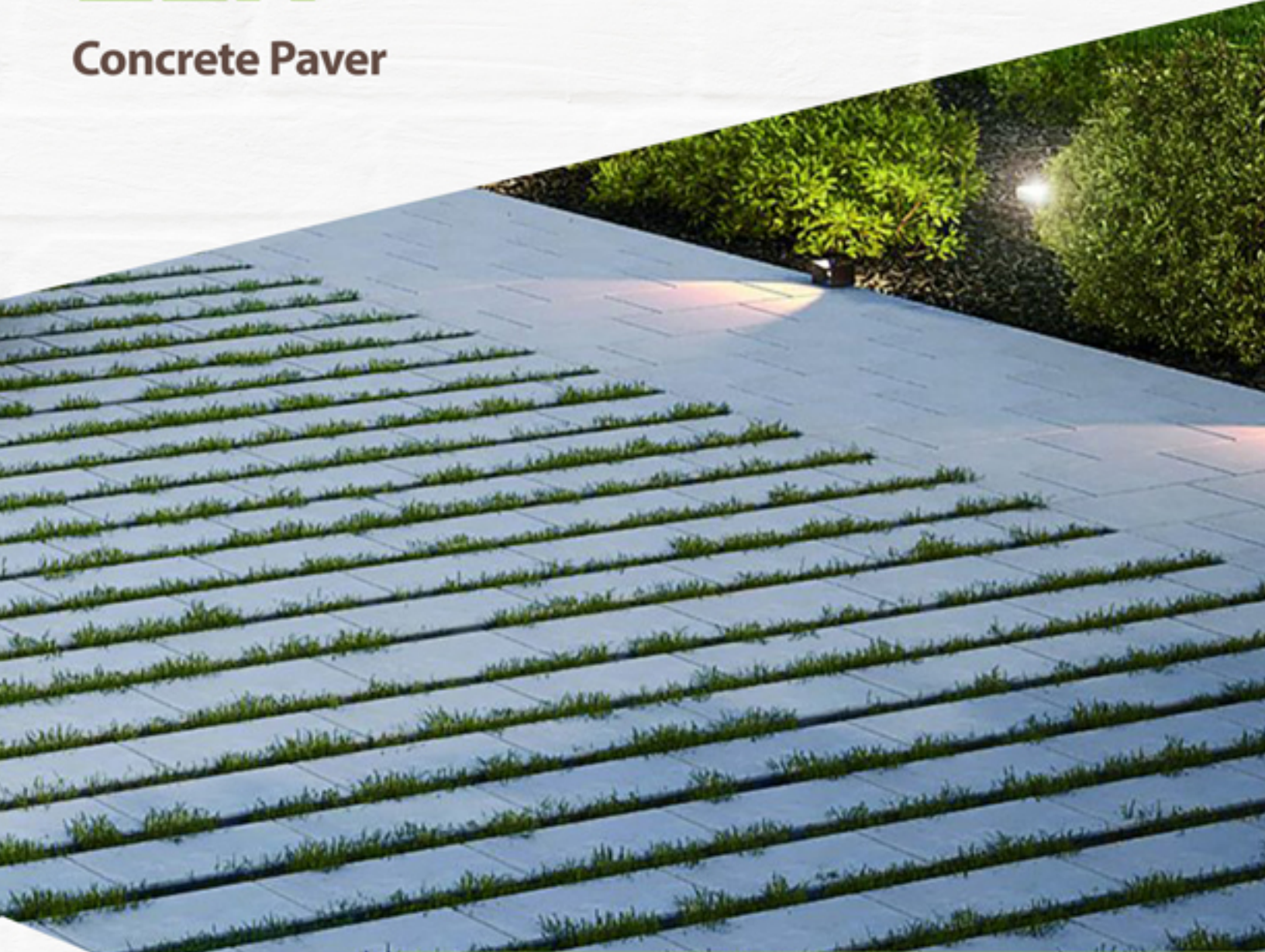


ZEN

Concrete Paver

PERMACON



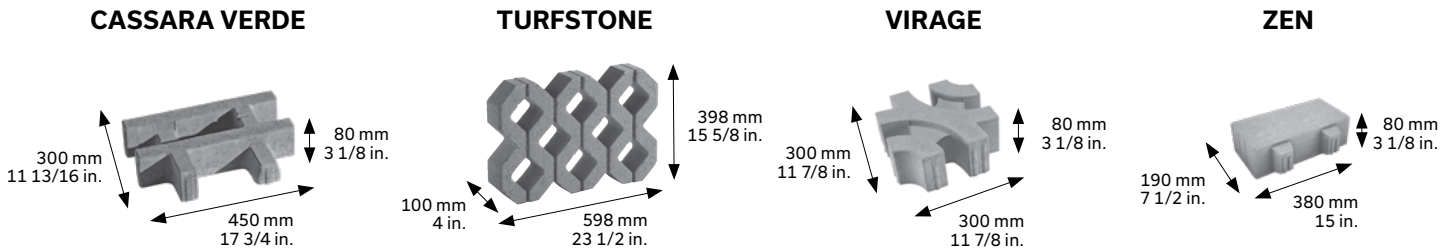
Installation Guide

VB
VAN BEEK'S
LANDSCAPE SUPPLY

www.vanbeeks.com

Ecological Pavers

SPECIFIC DETAILS



RESIDENTIAL VEHICULAR VEGETATED PAVEMENTS INCORPORATING PAVERS WITH MULTI-CAVITY

Whether they are filled with clean aggregates to improve water infiltration into the soil or vegetated to reduce urban heat islands and capture harmful CO₂ from the air, permeable pavers allow you to create an environment-friendly space tailored to your taste.

ADVANTAGES

- > Significantly reduces heat island effects
- > Better management of rainwater: slow-down of runoff water
- > Improves air quality
- > Create more natural and soothing spaces for the population

APPLICATIONS

- > Residential parking, driveways, picnic areas and pedestrian walkways

IMPLEMENTATION

Filling paver cells: Soil mix for grassing, sodding and tree planting. Professional blend composed of mineral soil, sand, fibrous black earth and compost. Available at bulk landscape suppliers, specialized garden centres and soil mix manufacturers. Fill the cells. Pass vibrating plate. Water the surface. Spread the grass seeds.

GRASS SEED : two recommended brands

Minimum maintenance blend (2-week germination):

63% Fescue, 20% Perennial Ryegrass, 17% Kentucky Bluegrass

Sports field blend - high traffic resistance (3-week

germination): 65% Kentucky Bluegrass, 20% Fescue, 15%

Perennial Ryegrass

SEED BED

Cover the grass seeds with a maximum of 10 mm of soil mix for grassing, sodding and tree planting, then water slightly.

FERTILIZERS: NITROGEN (N), PHOSPHORUS (P), POTASSIUM (K)

Application of fertilizers is recommended for the first year. An organic-based fertilizer is adequate. The following ratios (N-P-K) may be used: 4-1-2, 3-1-1, 2-1-1 (formulation example: 19-6-4)

GERMINATION COVER FOR SEED BED PROTECTION

A woven fabric designed to protect the seed bed allows moisture retention and prevents soil erosion during heavy rains.

IRRIGATION

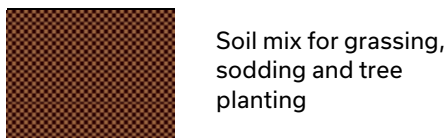
During the first year of implementation, you must provide an irrigation system for 7 to 8 weeks.

Then irrigate as needed in the morning such that the soil throughout the depth of the cells is moistened.

| Product | Void Opening | Infiltration Rate |
|---------------------|--------------|-------------------|
| Cassara Verde Paver | 50% | N/A |
| Turfstone Paver | 40% | 2544 in./hour |
| Virage Paver | 47% | N/A |
| Zen Paver | 27% | N/A |

ECOLOGICAL PAVERS

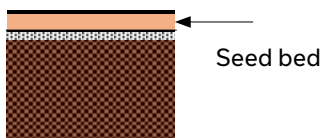
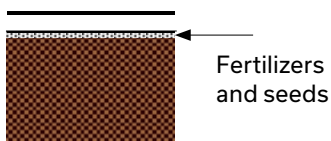
PLANTING DIAGRAM OF LAWN GRASSES IN ECOLOGICAL PAVERS



COMPACT



WATER



WATER

STAGES OF FILLING AND ESTABLISHMENT OF GRASS

- > Fill the cells with soil mix for grassing, sodding and tree planting
- > Spread without compacting
- > Level with the paver surface
- > Apply (vibrating plate with rubberized protection)
- > Compact the pavers (vibrating plate with rubberized protection)
- > Water to obtain soil packing enabling the addition of the seed bed
- > Ensure 5-10 mm of clearance under the paver surface and adjust (if required)
- > Spread out fertilizers and seeds
- > Spread the seed bed and level
- > Water lightly to moisten the seed bed

NOTE: The seed bed is the soil mix for grassing, sodding and tree planting. Shown here on the left are the grass filling and planting steps. The succession of steps should prevent the seeds from being more than 10 mm below the seed bed so that they do not rot.

MAIN INTERVENTION TO MAINTAIN THE INITIAL VEGETATION IN PLACE

EXTENSIVE APPROACH WITH MINIMAL MAINTENANCE REQUIRED:

- > A traditional vegetation planting approach: selection of undemanding plants
- > One fertilization per year: from irrigation process to planting
- > Minimal interventions for natural growth of the vegetation in the cells

INTENSIVE APPROACH WITH MULTIPLE INTERVENTIONS (GREATER CHANCE OF SUCCESS):

- > A traditional approach of planting vegetation (grass)
- > Regular irrigations in season (mandatory in drought period)
- > Periodic manual weeding (preferred)
- > Replacement of vegetation as needed (reseeding)
- > Addition of soil mix annually
- > Regular fertilization in season

ECOLOGICAL PAVERS

USE OF HERBACEOUS PERENNIALS TO REPLACE LAWN GRASSES

It is important to note that the turf installed in the ecological pavers is demanding in terms of water and fertilizer and is not very resistant to dryness. Intensive maintenance interventions approach increase the chances of success. In addition, hardy ground cover crops that are very drought-resistant and low in fertilizer may provide a better alternative.

In this sense, several plants were selected and tested to establish their drought resistance and their demand for water and fertilizer. Overall, the plants that we propose here exceed the potential of the more demanding lawn. The use of these plants should be considered when an extensive approach (minimal maintenance interventions) is recommended.

- > Veronica Repens
- > Pilosella aurantiacum (hawkweed)
- > Sedum album *Coral Carpet*
- > Thymus serpyllium *Magic Carpet*
- > Sedum acre

TIPS

- > Use plants produced in multi-cell at the rate of 2 per single alveolus
- > Cutting implantation (for SEDUM) is possible and takes root more quickly
- > Plants exposed to full sun will have smaller leaves than normal because they adapt
- > Plants are available in specialized horticultural centers (Aux Aubepines for example)
- > The substrate (potting soil) to be considered must not contain an excessive mineral component

MAINTENANCE RECOMMENDATION

SEASONAL IRRIGATION

Irrigation is necessary during the first year of planting

MOWING

Mowing to 8-10 cm - 3 and 4 in. is recommended for the entire growing season. Avoid mowing during drought periods.

WEEDING CONTROL

Extensive approach: leave what nature provides
Intensive approach: manual weeding can be performed in season

FERTILIZATION PROGRAM (N-P-K)

Proceed with at least one fertilization per year (extensive approach). For optimal results, three fertilizations per year are required.

ADDING SOIL MIX

Addition of soil mix is performed from the end of August to mid-September as well as in the spring. It maintains fertility and restores the filling level (if packing is observed) for optimum clearance (6 to 10 mm) below the paver surface.

RESEEDING

Increases grass density. The dense presence of vegetation associated with a strong root system avoids compaction. Reseeding is performed at the same time as the addition of soil mix, between mid-August and mid-September and in the spring.

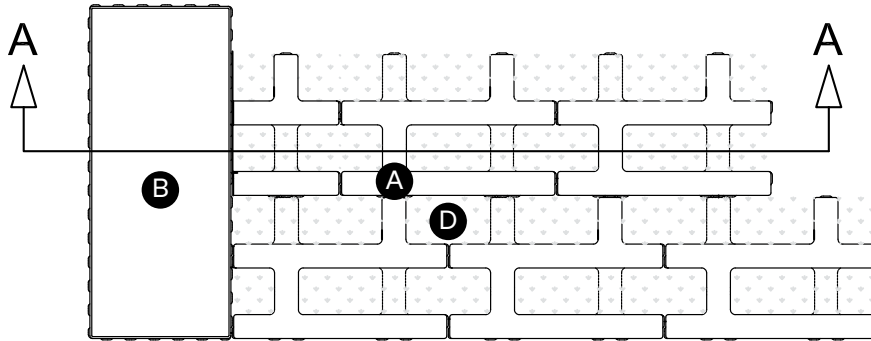
WINTER

De-icing salts application is prohibited. Ice clumps under vehicles are also a threat to the plants. Snow removal height must be adapted to leave a tamped snow cover of 2 to 4 cm, which will protect the plants from cold spells and prevent their uprooting during snow removal.

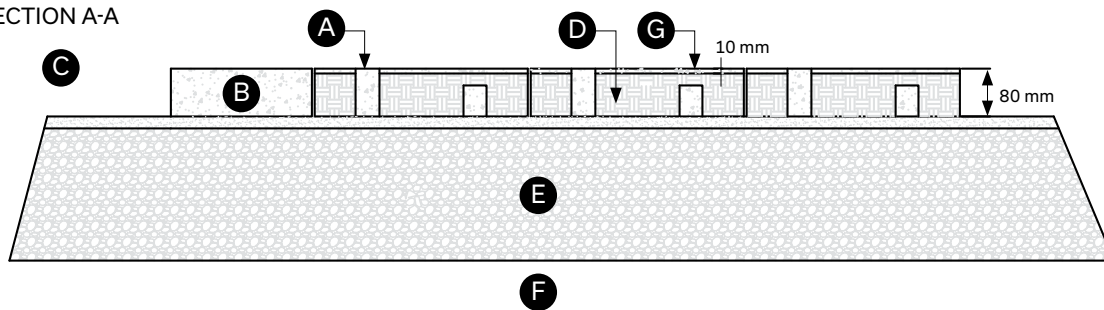
ECOLOGICAL PAVERS

CASSARA VERDE PAVERS CROSS-SECTION - RESIDENTIAL DRIVEWAY

PLAN VIEW



CROSS-SECTION A-A



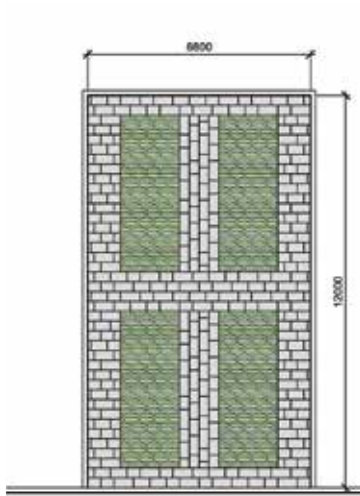
- Ⓐ Cassara Verde paver (80 x 300 x 450 mm)
- Ⓑ Cassara Large Rectangle paver
- Ⓒ Installation bed 12 to 25 mm: concrete sand (0 to 5 mm)
- Ⓓ Soil mix for grassing, sodding and tree planting (inside the multi-cavity).
The soil mix is also used as seed bed (for grass).
- Ⓔ Clean stone, 200 to 300 mm (0 to 20 mm) compacted to 95% modified Proctor
- Ⓕ Existing soil with adequate bearing capacity (minimum of 150 kN/m²)
- Ⓖ Maximal clearance of 10 mm under the paver surface

NOTE: The Cassara Verde paver is used in combination with the Cassara Large Rectangle, Esbelto or Melville pavers.

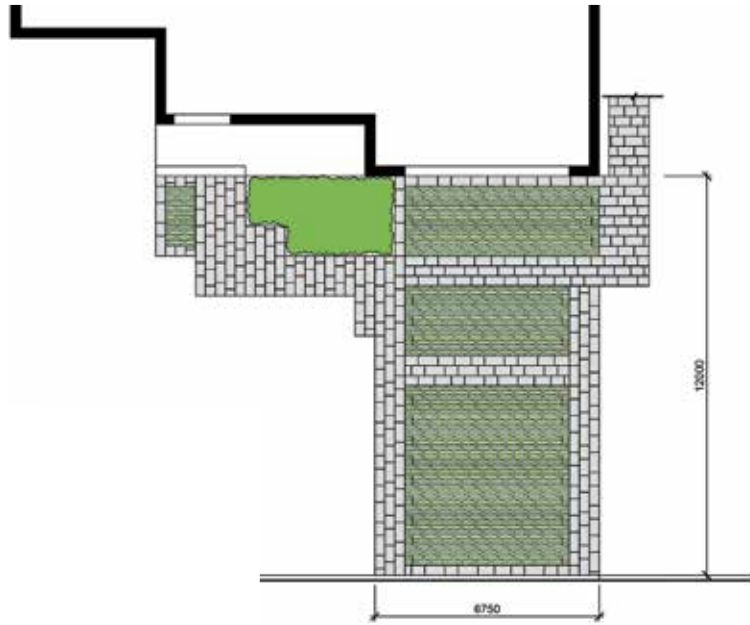
ECOLOGICAL PAVERS

EXAMPLE OF INSTALLATION

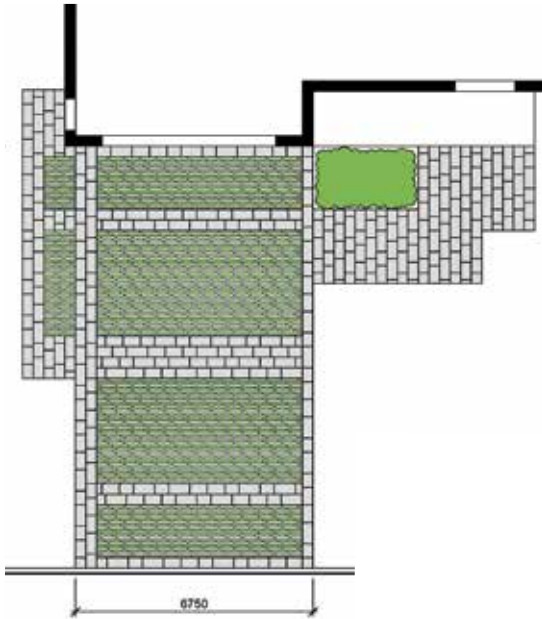
Residential driveway. Cassara Verde paver.



OPTION ①



OPTION ②



OPTION ③