Auvergne-Rhône-Alpes - Outstanding operations for rainwater management

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Rue Emile Decorps

Villeurbanne (Rhône)

Ground-level infiltration in parking spaces

The project

CONTEXT

Change of use of the street with improved integration of soft traffic modes.

STAKEHOLDERS

Project manager: Métropole de Lyon
Project contractor: Métropole de Lyon

DATE

2018-2019

COST

Information unavailable

- ➔ Public-Private project
- ➔ Urban zone
- ➔ Scale: Public space (roadway)

AIMS

- ➔ Hydraulic management of rainwater

SOLUTIONS ADOPTED

Techniques for implementation

- ➔ Porous road surface
- ➔ Infiltration trenches

Operating principle

- ➔ Infiltration

Regional observatory for outstanding operations in rainwater management
Led by: Graie - Group of research, technical coordination and water information
Partners: RMC and LB water agencies - Région Auvergne-Rhône-Alpes
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The reasons behind alternative management of rainwater

The Métropole de Lyon is committed to an environmental policy of 'zero discharge in water networks'. It is thus engaged in designing new developments which integrate rainwater management in the immediate vicinity of its falling point.

The street Rue Emile Decorps was re-designed to integrate soft mode traffic (pedestrian and cycle). The footpaths were thus widened to 3 metres and cycle lanes were created on either side of the road. The highly mineral design provides a considerable number of parking spaces, which also represents a large area for the infiltration of rainwater.

Parking space with alveolar slabs raised over the infiltration trenches.

Sizing hypotheses

Active surface area: 5340m^2
Return period: 30 years
Usable storage volume: 184m^3
Volume of matter (30% air space): 562m^3
Leakage rate: 0m^3/sec.
Topography: flat
Ground permeability: 7.10^{-5} m/sec.

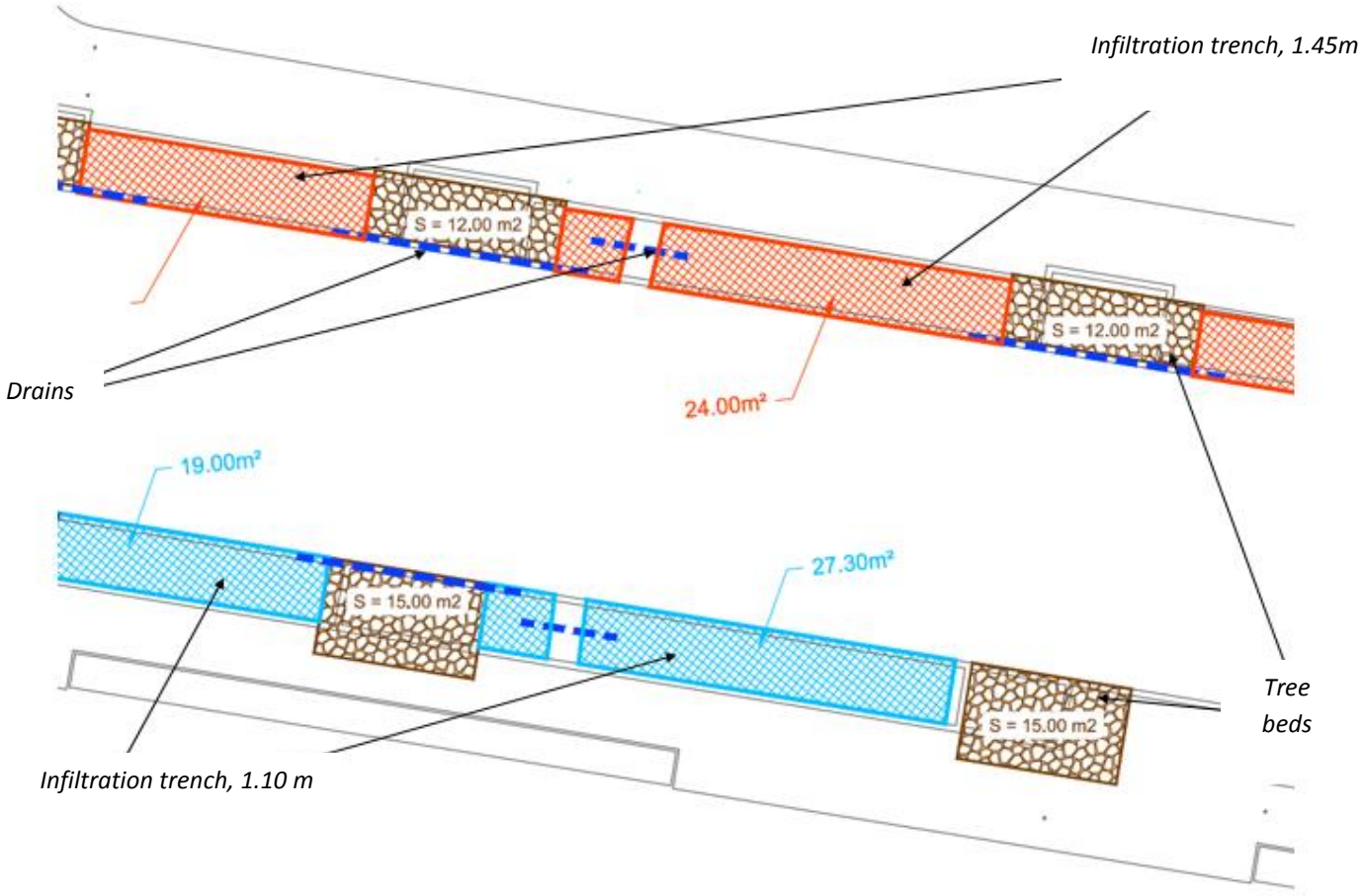
Tree bed separating two parking spaces

How does it work?

The roadway slants on both sides to enable rainwater to run towards the parking spaces located on either side of the road. Runoff from the footpath is also guided towards the parking spaces.

The parking spaces consist in permeable alveolar slabs which guide the water towards an infiltration trench. The trenches come in two depths (1.10m or 1.45m), enabling the drainage of rainwater from the most permeable soil horizons. The trenches are interrupted at certain points (driveways, presence of utility networks) but are linked to each other by drains operating on a system of connecting vessels.

In areas where it was not possible to build permeable parking spaces (road intersections), rainwater is collected in catchment drains. It then flows through pipelines to pits which infiltrate small volumes (porous concrete base) and which, in the event of an increase in load charge, disperse the water via the drains into the trench. The pits have a porous base to avoid stagnant water and thus the proliferation of mosquitoes.



Plan view of the infiltration system below the parking space

Operation of the facility

In charge of maintenance: Ville de Villeurbanne for the base of the trees and Métropole de Lyon for the hydraulic facilities for rainwater management, trees and mineral surfaces.

Maintenance operations: Maintenance requirements for grids and dredging are to be defined according to use. No specific maintenance is planned for the alveolar slabs.

Feedback

What worked well

➔ At the time this document was drafted, works had just been completed and it is thus too soon to establish feedback on this operation.

Aims set aside

➔ The trenches were to be designed initially in different sizes to accommodate the various permeability levels of the soils measured. This customised design proved to be too complex to implement during building, thus only two sizes were retained in the works phase.

Photo credits:

Métropole de Lyon and GRAIE

For more information

To visit the site:

Location: Rue Emile Decorps, 69100 Villeurbanne
GPS: 45°45'21.8"N ; 4°53'58.4"E

➔ **Open to the public**

For more information or to visit the operation, contact:

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