HIDROSTANK

HIDROBOX

SUSTAINABLE URBAN DRAINAGE SYSTEMS (SUDS)

Rainwater management solutions to reproduce the natural water cycle prior to urbanization process.

www.hidrostank.com

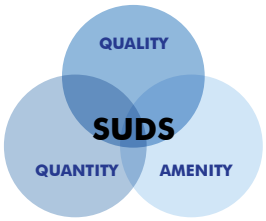
info@hidrostank.com
Pol. Ind. La Nava, s/n Apdo. de correos, 128. 31300 TAFALLA (Navarra) SPAIN
Tel. +34 948 74 11 10 / Fax +34 948 74 18 90

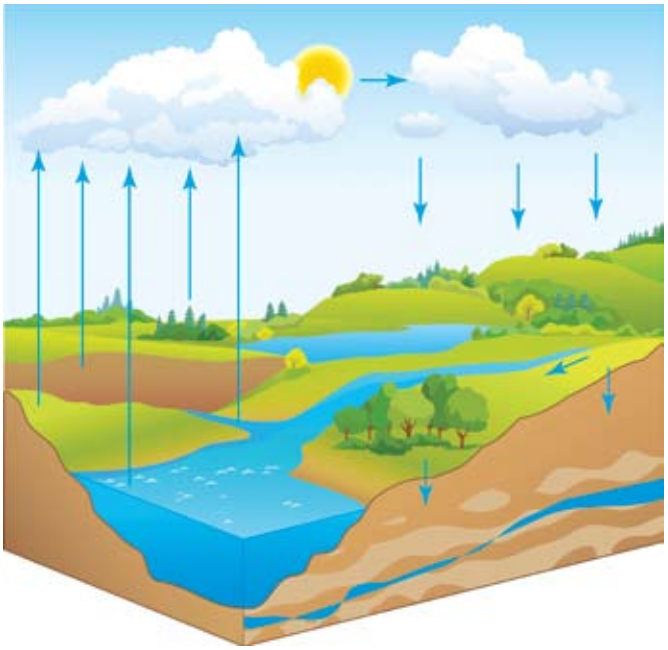
CERT ISO 9001

SUSTAINABLE DRAINAGE

Conventional drainage systems, based on pipe networks, aim to move downstream the stormwater runoff captured in urbanized areas. Their abuse can cause serious flooding problems, but also pollution on the natural channels because of the discharge of water that carries high concentrations of diffuse pollution (heavy metals, oils, etc.).

The sustainable urban drainage systems (SUDS) are a set of advanced technical solutions for stormwater management, contributing to a more sustainable urban development, as they take into account not only the problem of the quantity of water, but also its quality and amenity issues (biodiversity, landscape potential, enabling natural habitats, reuse of water for other uses).





These systems are more sustainable than traditional drainage methods because they:

- Manage runoff volumes and flow rates (reducing the impact of urbanisation on flooding)
- Protect or enhance water quality, natural flow regimes in watercourses, natural groundwater recharge, underground rivers…Enable the evapotranspiration from vegetation and surface water
- Generate social and landscape value, create better places to live, work and play
- Provide a habitat for wildlife in urban watercourses
- Enable the use of rainwater for other uses (irrigation, street cleaning ...).

SUDS also allow new developments in areas where existing sewerage systems are close to full capacity.

It is recommended a runoff control at origin: By the dealing with runoff at source the volume of water and the potential amount of contamination is less, and allow infiltration of the surface water to the ground. Only if the water cannot be managed on site (too much runoff or bad quality to infiltrate) should be slowly conveyed elsewhere. As last option, runoff could be conveyed through pipes and discharged to a wetland or detention

TYPES OF SUDS

1. Source control: Green roofs, Permeable pavings…
2. Swales & conveyance channels
3. Filtration: Filter strips, Filter trenches, Bioretention area…
4. Infiltration: Soakaways, Infiltration trenches, Infiltration basins
5. Retention & detention: Detention basins, Retention ponds, Geocellular drainage
6. Wetlands

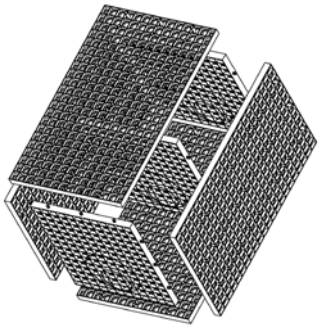
GEOCELLULAR SYSTEMS

The **geo-structures** or **geocellular modular systems** allow the above functions easily and with high integrability in current urban design (of high building density). They can be used in the source or the runoff can be conveyed to the area of infiltration / retention by a drainage pipe or channel. The modular nature of geocellular systems means that they can be tailored to suit the specific requirements of any site.

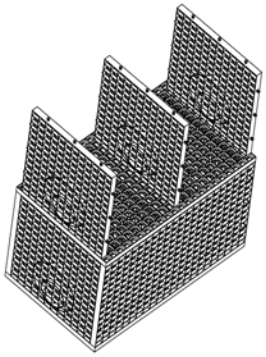
HIDROBOX INFILTRATION CELL

The HIDROBOX is a geocellular modular plastic system of high strength that allows implementing elements for rainwater harvesting, accumulation and underground transport in a modular and simple way.

With a very simple and manual assembly, the HIDROBOX supports various configurations depending on the required strength.

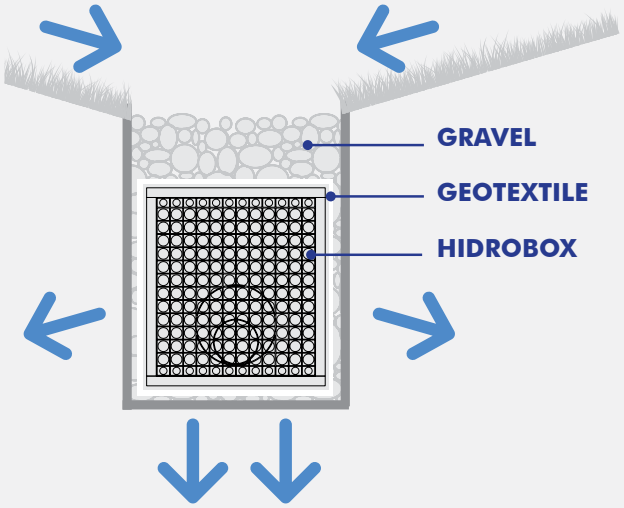


HIDROBOX 1.1



HIDROBOX 2.1.
(shared intermediate lateral)

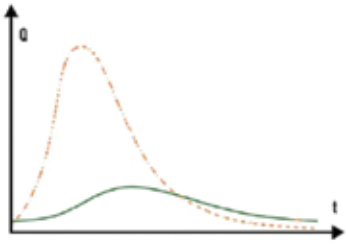
Its modularity provides greater flexibility during the design of the project and allows the installation of any configuration depending on the available area(tailored designed). They can also be configured to allow traffic loads(can be installed under roads and car parks) as well as less demanding applications such as parks or pedestrian areas.



TECHNICAL OFFICE

Hidrostank has a technical office that can advise on both the designing and as on the assembly and installation of SUDS, taking into account:

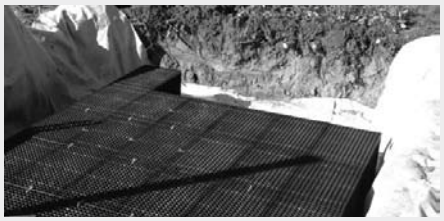
- Terrain: sand, gravel, clay ... (infiltration test)
- Rainfall in the area (rain for a return period of X years)
- Area and runoff coefficient



HIDROBOX SYSTEM APPLICATIONS

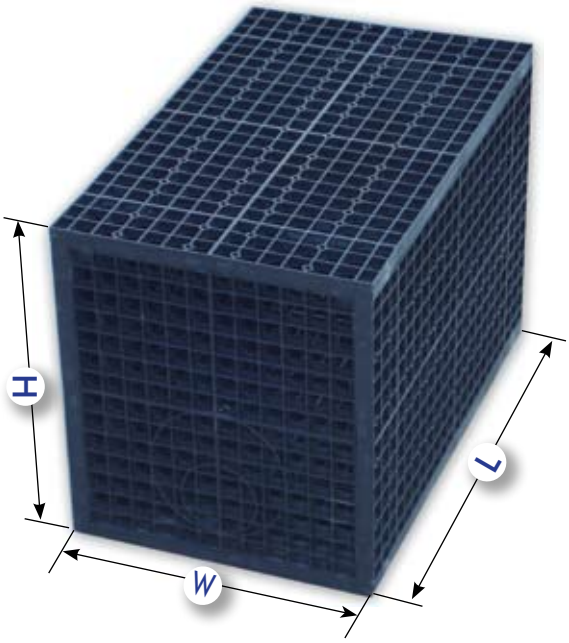
FILTER/INFILTRATION TRENCHES: increase the retention volume and safety in highways.

INFILTRATION/DETENTION TANK: depending on the required application, appropriate accessories and geotextiles or geomembranes are used.

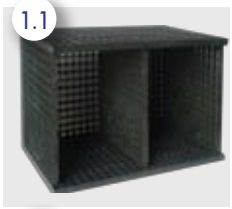


SEPTIC TANK INFILTRATION: improve efficiency in the distribution of the effluent from septic tanks, versus drainage pipes or gravel trenches.

HIDROBOX
TECNICAL CHARACTERISTICS



- **Large volume per cell** (95% void ratio versus 20% of gravel)
- **High resistance to compression** (breaking load up to 790 KN/m2)
- **Quick and easy installation**: manual handling, without machinery
- **Modularity:** allows tailored dimensioning for each project
- **Ecological:** 100% recycled and recyclable
- **Easy transport and storage**, as shipped disassembled
- **Easy maintenance**, thanks to filtration before the cell. Can be inspected easily with a CCTV camera
- **Economics:** minimizing excavation, labor, machinery …

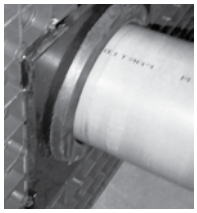
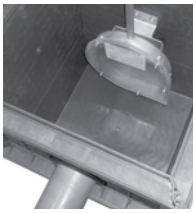
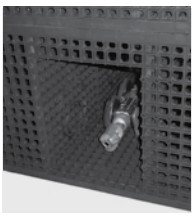


			VOLUME OF GROUND						RETENTION VOLUME		
HIDROBOX	HI001	HI002	L (m)	W (m)	H (m)	Weight (kg)	Volume/cell (m^3)	Cell/m^3	V retention (m^3)	Cell/m^3	Void ratio
1.1	4	3	0,728	0,445	0,495	11,85	0,1604	6,24	0,1509	6,63	94%
2.1	7	6	0,728	0,445	0,966	21,63	0,3129	3,20	0,2956	3,38	94%
3.1	10	9	0,728	0,445	1,437	31,41	0,4655	2,15	0,4404	2,27	95%
4.1	13	12	0,728	0,445	1,908	41,19	0,6181	1,62	0,5852	1,71	95%
5.1	16	15	0,728	0,445	2,379	50,97	0,7707	1,30	0,7299	1,37	95%

HI001: 728x445 mm lateral piece – HI002 : 445x401mm vertical piece

ACCESORIES

- Inspection chambers / ventilation chamber
- Pipe inlet couplers
- Channels for CCTV inspection
- Flow regulator Chambers (vortex)
- Pretreatment Deposits (filtration chambers)


The SUDS will be installed as late as possible, protecting surfaces to prevent silting of percolation surface during construction. Request the "Assembly and installation recommendations for the SUDS" to install them properly and make maintenance easier.