LIFE GREEN SYSTEMS

Green Cities | Clean Waters | Better Life

Modular Rain Water Harvesting and Ecological Channel / Urban Sustainable Drainage System

Case Study

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When it rains...
We recharge it for your future use...

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Introduction – Life Green Systems Limited

Established in 2000, Life Green Systems (LGS) is a Sustainability expert assisting its Clients and partners in planning, designing and implementing innovative Green solutions to our pressing problems. Our Clients include Architects, City Planners, Builders & Developers, Multinational companies and other end users.

Life Green Systems provides cutting edge technology and customer friendly consultation, along with execution of projects related to - Rain water harvesting, Rooftop gardens, Vertical gardens, Permeable pavers, Efficient subsurface drainage, Watershed management, Recharging groundwater, Ecological storm water drains, Lake Clean-up, Urban flood mitigation, Grey/wastewater treatment and many more. Our products and solutions qualify for Green Ratings, obtaining Carbon Credits as well as LEED points.

Life Green Systems would like to help you create sustainable and vibrant living and working spaces. We are proud of meeting and exceeding the expectations of our clients in terms of customer service, project schedule and end product.

Central Ground Water Board Requirement for Rainwater Harvesting

Category	Stage of Development (%)	Recycle / Reuse	Other Water Conservation Practices	Withdrawal permitted (%age of proposed recharge)
Safe	< 70	**Mandatory recycling and reuse of water**	**Water audit measures to be adopted**	**RWH to be adopted.**
Semi-critical	70 – 100	**Efficient utilization of recycled water and reuse of water should be mandatory.**	**Water audit measures to be adopted**	**At least 50% recharge is made mandatory.**
Critical	90 – 100	**Efficient utilization of recycled water and reuse of water should be mandatory.**	**Water audit measures to be adopted**	The quantum of recharge should be **equal to or more than the proposed withdrawal.**
Over-exploited	>100	**Efficient utilization of recycled water and reuse of water should be mandatory.**	**Water audit measures to be adopted**	**Withdrawal may be permitted up to 60 % of proposed recharge.** Also withdrawal should not exceed a maximum limit of 1500 m^3/day for each unit.

Rainwater yield depends largely on roof size, tank capacity and the frequency and magnitude of rainfall, but also on the daily water requirements of the household.

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Modular Rainwater Harvesting with Ecological Channels

Client: A renowned name as one of the global leaders in the automotive climate control sector

Project Location: RICCO Industrial Area, Bhiwadi, Rajasthan

Date of Commencement: October, 2014

Date of Completion: November, 2014

Project Summary:

The Client has been witnessing the acute issue of flood water in their premises at Bhiwadi in Rajasthan, INDIA. Life Green Systems' expert team visited the site and suggested the most innovative solution i.e., Modular Rainwater Harvesting Solution and Ecological Channels / Urban Sustainable Drainage System to resolve the issue permanently. The installation of modular and customized water management solution has been executed at the client site in order to resist the flood water and recharge the rainwater or runoff. We have designed an efficient drainage system for the client to cut the water flow and recharge the ground water.

Life Green Systems' modular rainwater harvesting is indeed a sound environmental and economic investment when the effects on water conservation and storm water management are considered.

Design Solution:

Life Green Systems has designed and developed modular rainwater harvesting at Bhiwadi in Rajasthan, India. Our in-depth knowledge and expert civil work are the crucial element behind the successful installation by Life Green Systems. The architects involvement and civil contractor honest work were the prime reason behind the successful installation at the client site.

Technical Specification:

Total one Modular Rainwater Harvesting Pit of recharge capacity: 40 cum/hr. Modular rain water harvesting pit size 3.425 (L) x 3.264 (W) x 1.74 (H) with 02 Nos. 25 mtr. Deep recharge wells. Installation of Ecological Channels of size 450 (W) x 408 (H) x 90m long with 02 Nos. 25 mtr.

- Drilling of Borewell – 4 Number
- Installation Modular Rainwater Harvesting pit - 1
- Deep recharge wells
- Total Recharge Capacity: 40 cum/hr.
- 90m long Ecological Channels for effective drainage
- Installation of catch pit and flow meter

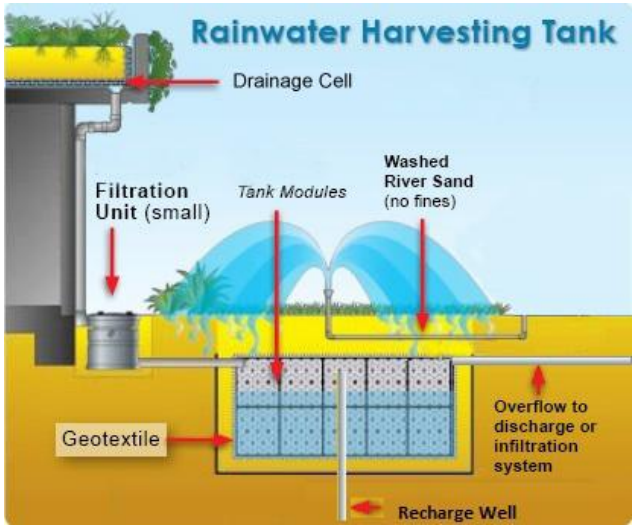
Life Green Systems' Urban Sustainable Drainage System / Ecological Channels are modular & low maintenance solution to facilitate a high performance drainage system at client site and emulate the flow of natural waterways.

The ecological channels provide permanent underground waterways that restore water quality and recharge the rain water. Our underground Ecological Channel system provides a unique way of working with nature to solve the enormous problems currently associated with open concrete channels.

The client has required a cost effective and low maintenance solution to make the premises future ready.

The ecological channel is hollow from inside and its load bearing capacity is 20-25 tons per sqm. Furthermore, the ecological channel will be wrapped with 400 GSM Geotextile fabric. The property of the geo-textile membrane is to avoid soil insertion and allow surrounding water to insert to Green Systems Ecological Channels.

The design is based on seeping water from the earth which will route through Life Green Systems' Ecological Channels after getting percolated through Geotextile membrane which has wrapped the entire channel. In Ecological Channel installed a pump with automatic float switch. The outlet of the pump is connected with Nearest Drainage line. Whenever the Ecological Channels will fill with water the pump would automatically start working and pump put water from the Ecological Channel to Drainage Line. This method also helped the client to avoid water seepage from the earth to pump room floor. This entire water will be carried out as per the route to the outside premise.



Life Green Systems examines the problem and installed our high-end intelligent harvesting modular technology to provide an ultimate solution to the client. We also uphold the CGWB norms while installing the system, this way we conserve and recharge the ground water for the future use. To stop the excess flood water in the client's premises, we made use of highly effective and innovative gate wall that solves its purpose to bring out the best possible results.

The solution was to design and install LifeRain™ modular structure and Ecological Channels, which can substantially ensure high performance than stone aggregate as they have a 90% void area in comparison to the 40% of stone. The volume required for the management of storm water was reduced to more than half of what was originally considered, producing significant saving in earth movement and labour, as well as being able to accelerate the installation of the works.

COST EFFECTIVE AND FUTURE ORIENTED SOLUTION

Why Life Green Systems' LifeRain™ for Modular Rainwater Harvesting and Ecological Channels?

The Life Green Systems' Modular Rainwater Harvesting and Ecological Channels have been chosen for this site for the following reasons:

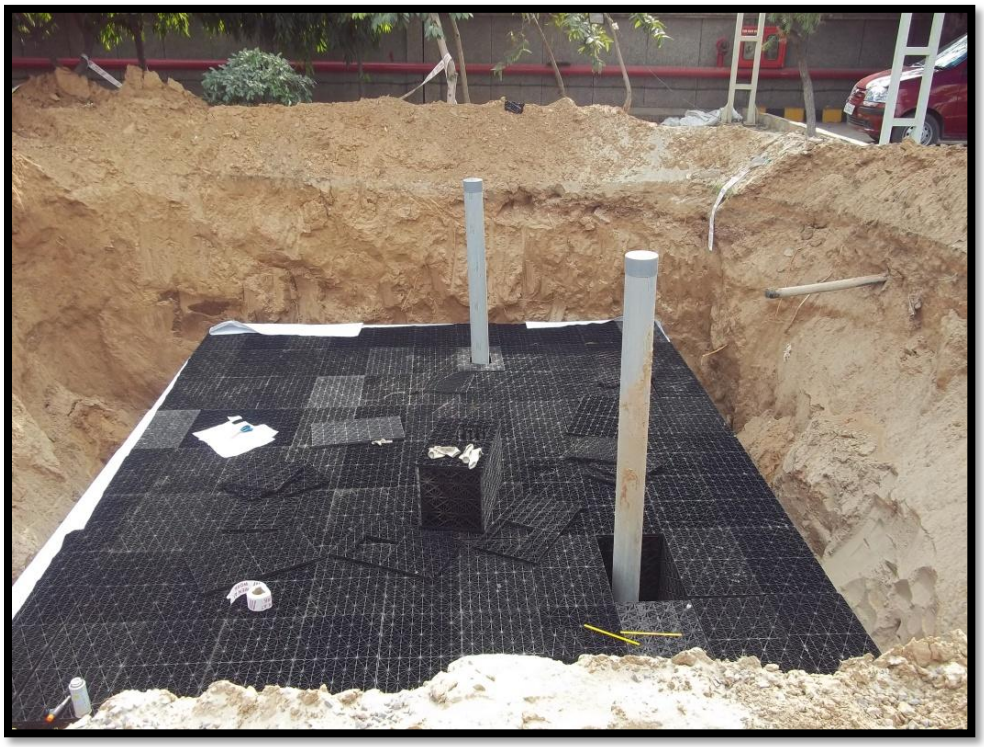
- The product cost was found to be less than the cost of the equivalent storage volume of perforated pipe or chambers typically used in French drain systems.
- The Life Green Systems trench provided maximum utilization of excavated area because the volume of the finished trench is the volume available for detention.
- No gravel thrust-blocking was required to support the trench which eliminated the costs associated with excavating for and handling of gravel.
- Compared to pipe or chamber perforations, the large ex-filtration surface of the walls and bottom of the Life Green Systems trench, will allow a lot more water to ex-filtrate into the ground.
- Due to high ultimate load bearing capacity yet open structure and open surface area, the trench is highly un-susceptible to long-term clogging caused by long-term compaction or silt migration.

- **High performance aesthetics:** Strong Structural design & lightweight.
- **Economical & Efficient:** It saves time and money in installation and less civil works costs in any kind of soil.
- **Smart Utilization of space:** Top surface can be used for Parking lots, Gardens, Lawns, Children's playground, sports fields, etc.
- **Safety first:** Completely underground and no easy access to storage space. No risk, even for applications in schools.
- **Water Quality:** Ensures improved water quality of recharge water through LifeRain™ capillary action.
- **Low Maintenance:** Easy to maintain unlike conventional rain water harvesting systems.
- **Environmental Friendly:** LifeRain™ is made of 100% recycled Polypropylene.
- **Future Benefits:** It increases the value of the property and protects it from flash flooding and water shortage problems as the mains water dependence is significantly reduced after LifeRain™ installation.

Specifications of LifeRain™:

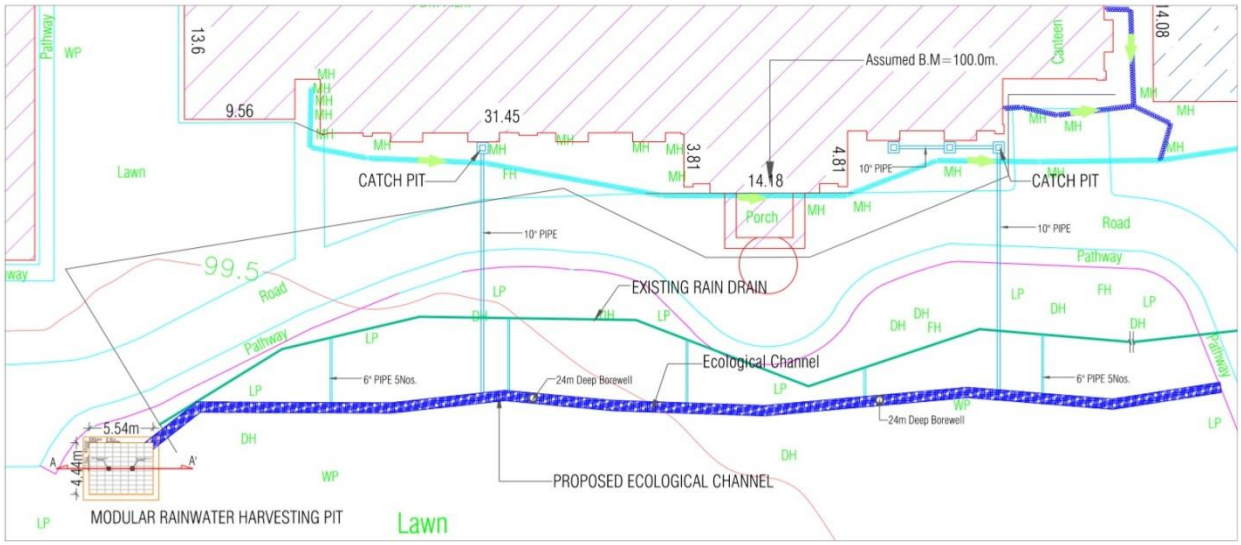
- Void surface area up to 96.4%
- Crash load capacity is 20 tons per sq. m.
- Load bearing capacity is up to 40 tons per sq. m. (Depending upon the plate configuration)
- Material used is recycled polypropylene
- Vertical dimensions to ensure maximum strength

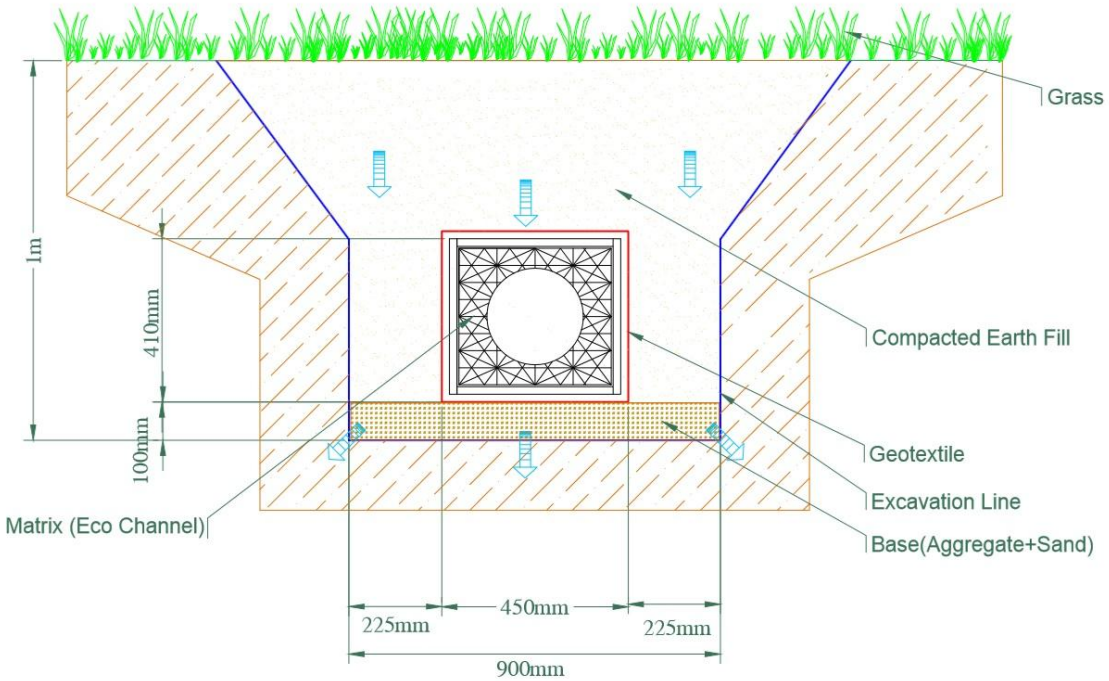
Installation – Pictorial Presentation




CAUTION
सावधान
DANGER
खतरा

Cross Section Drawings





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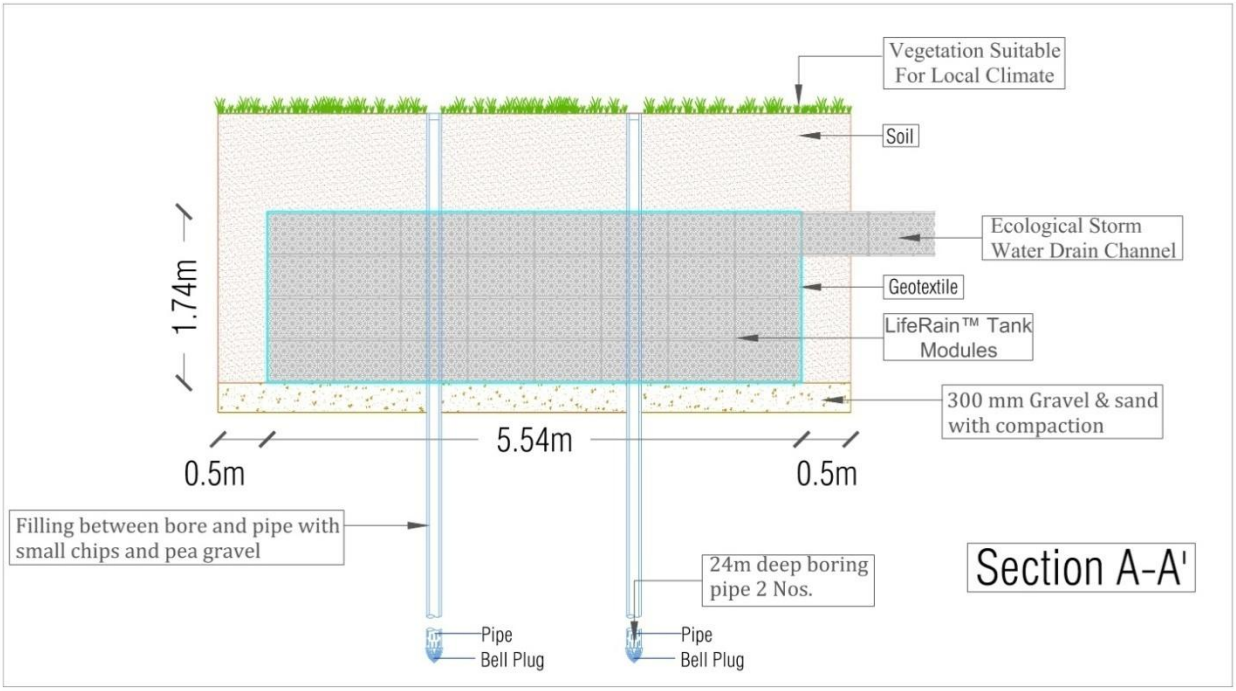

Together we can work to achieve your fresh water resource goals. We look forward to helping you find your balance.

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