LIFE GREEN SYSTEMS

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CASE STUDY

DESIGNING OF MODULAR RAINWATER HARVESTING SYSTEM & STORM WATER DRAIN INSTALLATION OF LATEST DESIGN & TECHNOLOGY AT BAHRAMPUR GOVT. SCHOOL

By

LIFE GREEN SYSTEMS LIMITED

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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.

We provide cutting edge technology and customer friendly consultation, along with execution of projects related to - *Rooftop gardens, Vertical gardens, Permeable pavers, Efficient subsurface drainage, Rain water harvesting, 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.

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Modular Rain Water Harvesting with Storm Water Drain Installation

Project Location: Bahrampur Govt. School, Haryana

Work: Installation of Modular Rainwater Harvesting System and Storm Water Drain Channel

Date of Commencement: 3rd August 2015

Date of Completion: 2nd Sep 2016

We, at Life Green Systems believe at the power of change and change is where the technology is. We take leverage of innovative green technologies to create green cities and clean waters. We installed our modular rain water harvesting and storm water drain at the site.

This project has been done under CSR activity of the renowned client, as there was acute water logging issue during rainy season at the school. Life Green Systems designed and installed modular rainwater harvesting and storm water drain work at Bahrampur Govt. School based out in Haryana to resolve the water logging issue.

The site is spread over 9000 square meters area. Overall installation work has taken the lesser time than committed to client and received acknowledgement after completion of the project.

Modular Rainwater Harvesting and Storm Water Drain Installation for ground water recharge have been undertaken by the efficient project team of Life Green Systems.

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Design work involved:

Modular Rainwater Harvesting

- Drilling of Borewell – 1 Number
- Installation of Recharge Pit - 1 Number
- Installation of LifeRain™ Filter – 1 Number
- Recharge Capacity – 30Cum/Hr.
- Annual Recharge Capacity – 38880 Cum

Storm Water Drain Installation

- 6'' inch diameter – Pipe
- Collection Chamber - 7 with SS Filters
- Gradient. 100 : 1
- Length: 48 meter storm water drain

Cost Effective and Future Oriented Solution

Why Life Green Systems LifeRain™ for Modular Rain Water Harvesting?

Life Green Systems' Modular Rain Water Harvesting and Storm Water Drain have been chosen for this site for the following reasons:

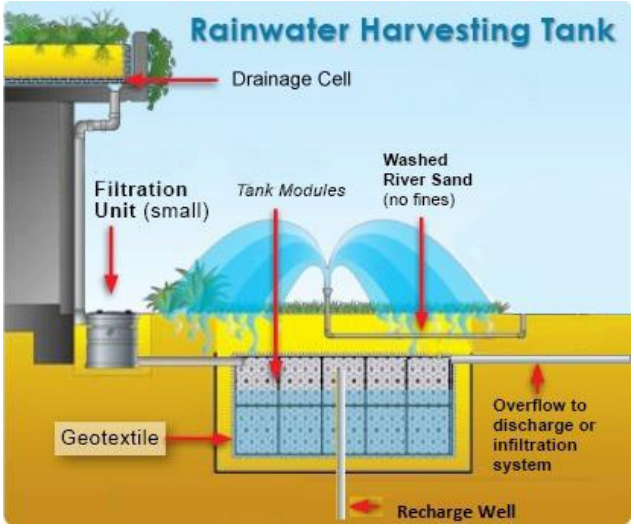
- The product cost was found to be less than the cost of the equivalent storage volume of perforated pipe or chambers typically used in French drain systems.
- The trench provided maximum utilization of excavated area because the volume of the finished trench is the volume available for detention.
- 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 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.
- Moving Load bearing capacity is up to 40 tons per sq. m.
- Material used is recycled polypropylene
- Vertical dimensions to ensure maximum strength

Visit: www.liferain.net to know more about the LifeRain™ product.

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Comparison Between LifeRain™ & Conventional Rain Water Harvesting System

Benefits and value additions of LifeRain™

Criteria	LifeRain™ Modular RWH	Conventional RWH
Clog prevention and reliability	Advanced dual-step Pre filtration, subject to prompt maintenance.	Gravel based filtration.
Time for installation (tank only)	This process takes merely 1 to 15 days irrespective of the tank size.	45 days to several months to layout PCC, brickwork, plaster, steel framework, RCC.
Effective Detention Volume (storage capacity)	96.5% of tank volume, very compact and optimal space utilization.	Tank volume less – Free board space (0.5 to 2m) Filter media volume (20 – 30% of tank volume).
Space utilization	Top surface can be used for Parking lots, Gardens, Lawns, Children's playground, Sports fields, etc.	Generally, located where land use is demarcated as unusable. Requires over designing of cover slab to accommodate lawns or parking lots at the surface level.
Load bearing challenges	Load bearing capacity of these panels is very high and can take up to 40 tonnes/m2 without requiring special load bearing designs depending on the configuration,	Architects involvement and civil contractors honest work essential to ensure load bearing of cover slab.
Safety	Completely underground and no easy access to storage space. No risk involved, even for applications in schools / colleges / kindergartens.	Manhole access to hollow storage space. History of accidents during maintenance. Accumulation of poisonous and odorous gases, owing to deterioration of organic matter inside the tank.
Environmental impact	Material is made of 100% recycled Polypropylene. Can be recycled in the future as well. Eco-friendly, qualifies for Green Rating LEED Points.	Sourcing gravels and pebbles is a challenge. RCC material is used for construction.
Life and material standardization	Modules, Geotextile, and waterproof liners are lab tested based on various criteria. Quality assured. Very long life (100 years for the RWH structure) and can be endlessly recycled.	Life with good quality work is 20-30 year. Poor quality of work may cause the project to fail. Quality assurance is a challenge.
Reduce/extend	Tank size could easily be extended or reduced or even relocated as per future use.	Requires construction of a new tank, if future usage or requirement changes.
Seasonal challenges	Could be installed between rainfall events.	Work completion dependent on good weather. Monsoon season pretty much stalls all work.

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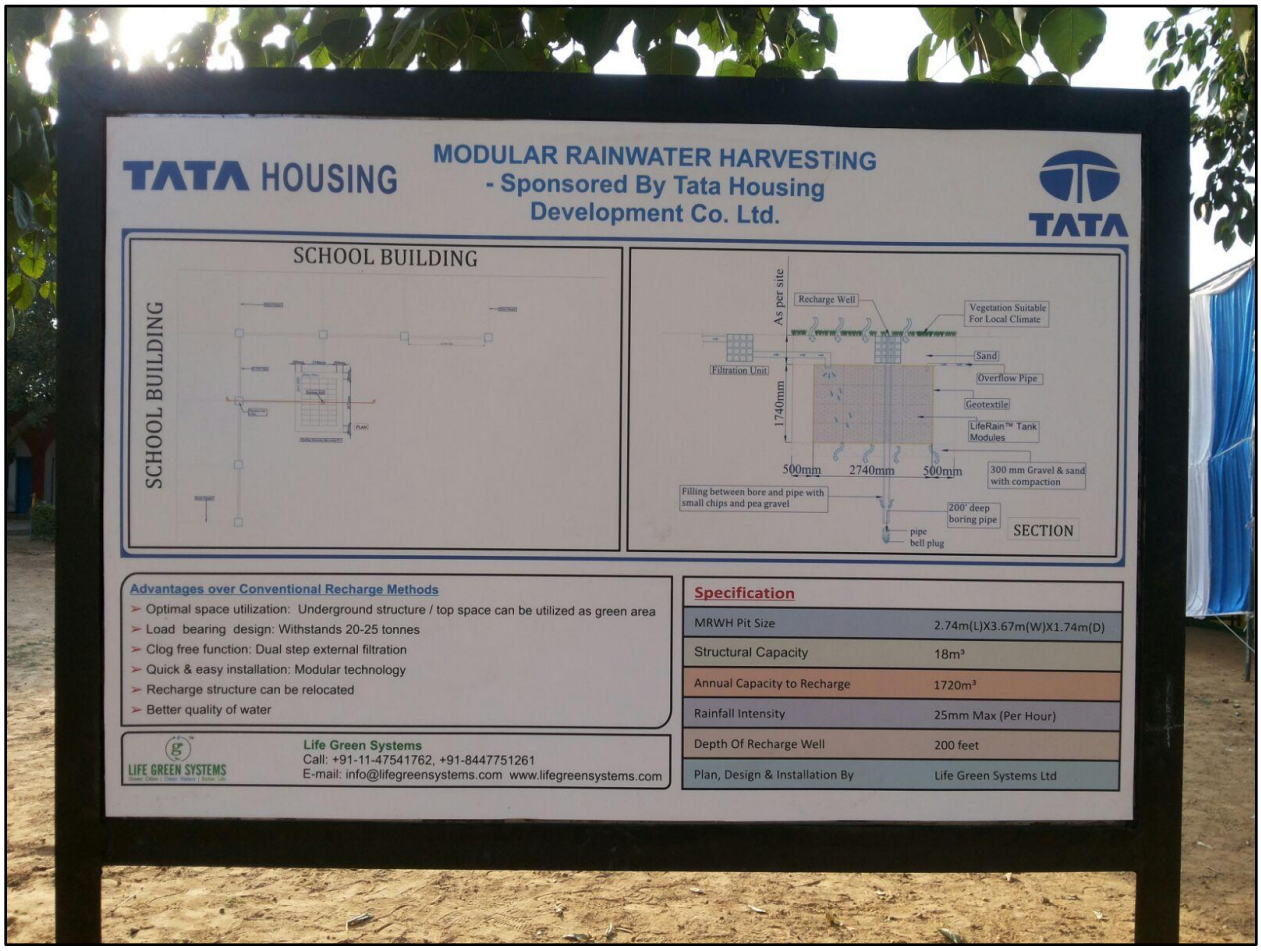
Installation – Pictorial Representation



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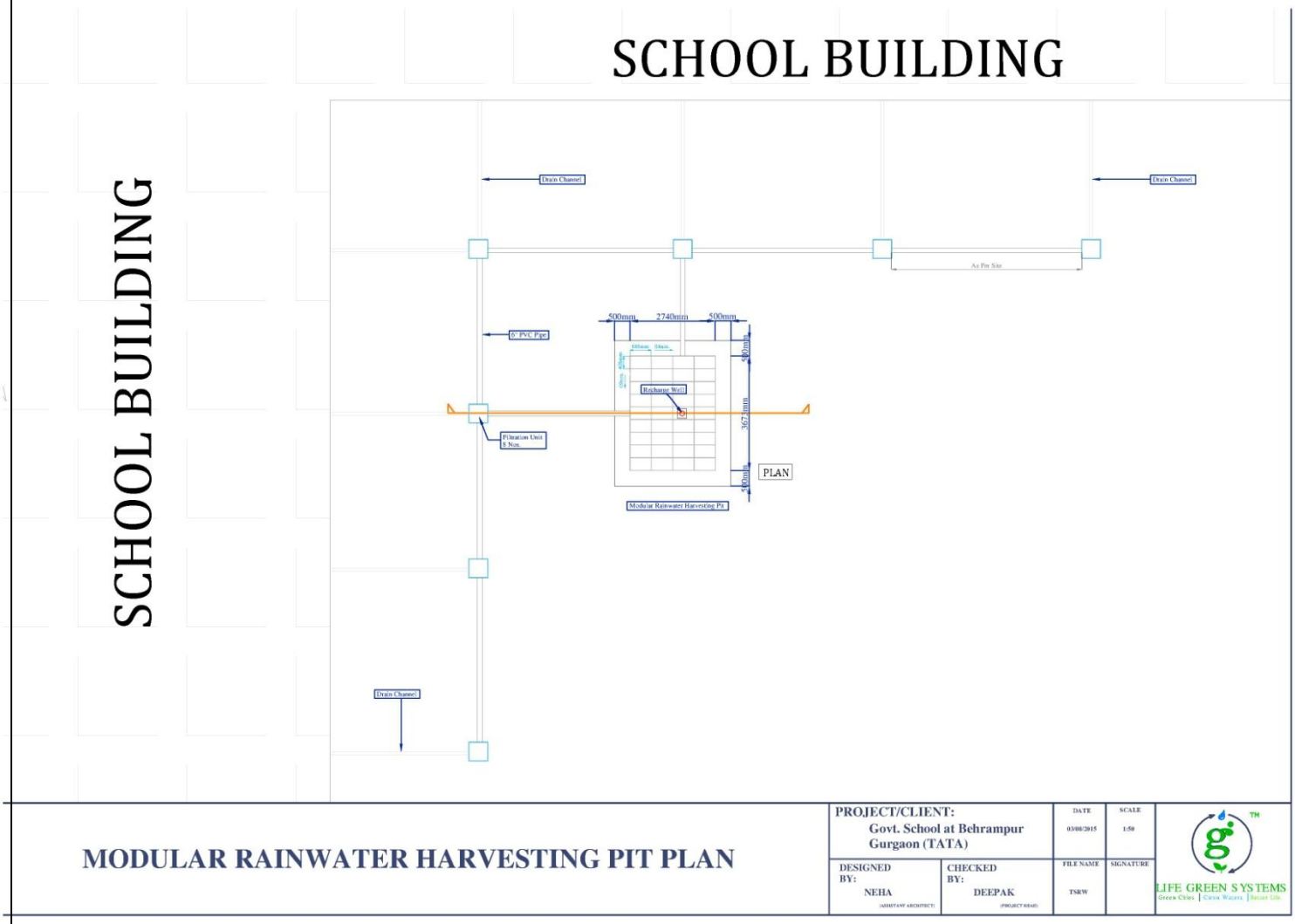
Cross Sectional Drawing



MODULAR RAINWATER HARVESTING PIT PLAN

PROJECT/CLIENT: Govt. School at Behrampur Gurgaon (TATA)		DATE 03/08/2015	SCALE 1:50
DESIGNED BY: NEHA (ASSISTANT ARCHITECT)	CHECKED BY: DEEPAK (PROJECT HEAD)	FILE NAME TSRW	SIGNATURE

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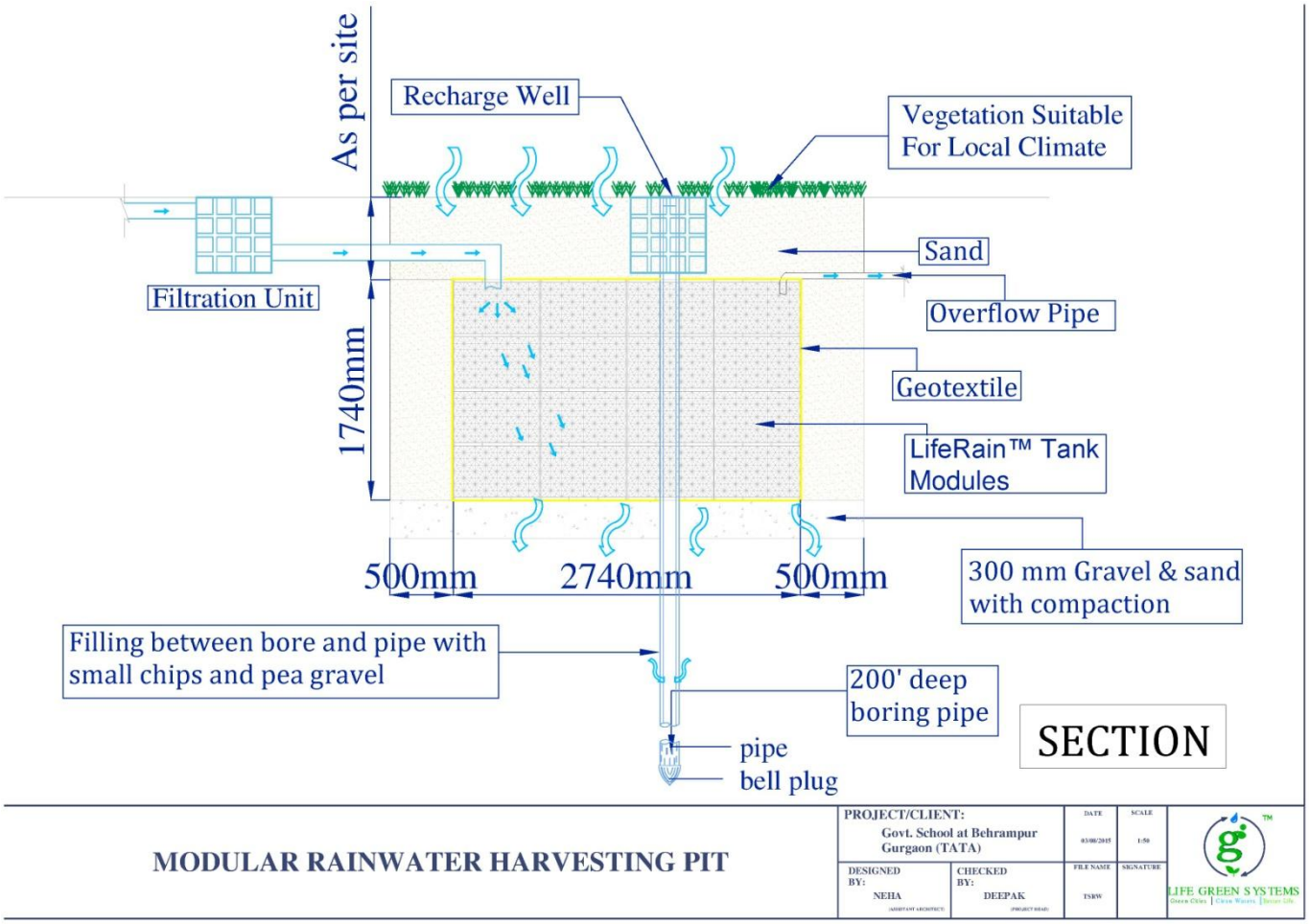

Together we can work to achieve your fresh water resource goals. We look forward to helping you find your balance.

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