

# DISABLED FRIENDLY POLICY



Subramanya Education Society  
**EAST WEST INSTITUTE OF  
TECHNOLOGY**  
Bengaluru-560091  
[www.ewit.edu.in](http://www.ewit.edu.in)

  
Principal  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91

**Subramanya Education Society<sup>®</sup>**  
**EAST WEST INSTITUTE OF TECHNOLOGY**  
(Affiliated to VTU Belagavi, Approved by AICTE, New Delhi, Recognized by Govt. of Karnataka,  
Accredited by NAAC & Recognized U/S 2 (f) & 12 (b) of the UGC Act 1956)



**POLICY**  
**ON**  
**DIFFERENTLY ABLED**  
**(DIVYANGJAN)**

  
Principal  
East West Institute of Technology  
Off. Magadi Main Road, Bangalore-81

# POLICY ON DIFFERENTLY ABLED

## Introduction:

The right to Education focuses on the need to have inclusive education, which means that educating students with **learning difficulties and identified disabilities** have the right fulfillment of their educational needs. Differently abled (Divyangjan) friendly resources available in the Institution. The Institute provides equal opportunities to all students of the Institute in congruence with the guidelines given by the State government. The Institute has also introduced the **Learning Disability Friendly Initiative** to support students with Learning Disabilities. This was done specifically to create an environment of acceptance and nurturance.

## Motto:

“Ensure the differently abled **Receive Day-To-Day Needs and perform in far with the regular students**”.

## Objectives:

1. To ensure that students with disabilities get equal opportunities to explore their educational potentials.
2. To provide a nurturing and motivating environment for students with learning disabilities to accommodate their pedagogic needs.
3. To eradicate any kind of stigmatization and segregation so that they can become confident individuals.

## Services for the Differently abled

The institute encompasses, Barrier free Centre, Adapted Library, Training Programs, and Sensitization Programs.

The students are provided the concessions which are appended below and are cases specific.

- i. Provision of writers, if requested.
- ii. Procedures, reservation, policies, etc., pertaining to differently abled persons.
- iii. Assess the educational needs of differently abled persons enrolled in the Institute to determine the types of assistive devices to be procured.

- iv. Conduct awareness programmes for teachers on approaches to teaching, evaluation Procedures, etc. which will be helpful for them to facilitate differently abled students.
- v. Assess the ability of differently abled students and assist them in getting appropriate employment through training and placement.
- vi. Celebrate important days pertaining to disability such as the **World Disabled Day** in order to create awareness about differently abled persons
- vii. Ensure maintenance of special assistive devices procured by the Institute.
- viii. A meeting with the parents and students is scheduled to understand their interests.

### **Sensitization programs**

- The institute conducts sensitization programme at various levels with the theme of prevention of disabilities, Rights of persons with disabilities, Breaking the Barriers of Inclusion, Human Rights for persons with disabilities etc. to the public and students.
- The Faculty and non-teaching staff of the institute are being sensitized about disability, inclusive pedagogy and technologies that can assist students with disabilities. Along with those students from various disciplines, librarians and volunteers are being sensitized on their role for developing an Inclusive society.

### **Infrastructural and Physical support**

- Ramps and Lifts in all buildings in the campus have been provided for easy commute of the disabled students
- Wheel Chair of a specific make to accommodate the special requirement of students
- Access to western toilet is permitted to students (students who / physically disabled / on medical grounds).

\*\*\*\*



Subramanya Education Society

# EAST WEST INSTITUTE OF TECHNOLOGY

*Bhaskar*  
Principal  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91

No. 63, East West College Road, Off, Magadi Main Rd, Vishwaneedam Post, Bharath Nagar,  
Anjana Nagar, Bengaluru, Karnataka 560091 [www.ewit.edu.in](http://www.ewit.edu.in)



Subramanya Education Society ®

# EAST WEST INSTITUTE OF TECHNOLOGY

(Affiliated to VTU Belagavi, Approved by AICTE, New Delhi, Recognized by Govt. of Karnataka, Accredited by NAAC & Recognized U/S 2(f) and 12(B) of the UGC Act 1956)

# 63, Off Magadi Main Road, Vishwanedam Post, Near Anjana Nagar, Bengaluru - 560 091  
Ph : 080-23286732; Fax : 080-23288244; Email : principal@ewit.edu.in; Website : www.ewit.edu.in

## LIBRARY AND INFORMATION CENTRE

Date: 16-02-2023

### Software for Visual Impaired students:

Central Library has the Non-Visual Desktop Access Software for the Visual Impaired Students.

Non-Visual Desktop Access (NVDA) is a free, open source (the code is accessible to anyone), Portable screen reader software. It has been translated into more than 53 languages, and been used by the people in more than 175 Countries.

### Major Features:

- Support for popular applications including web browsers such as Mozilla Firefox and Google Chrome, email clients, internet chat software, music players, and office programs such as Microsoft Word and Excel.
- Built in speech synthesizer supporting over 55 languages, plus support for many other 3<sup>rd</sup> party voices.
- Reporting of textual formatting where available such as font name and size, style and spelling errors.
- Automatic announcement of text under the mouse and optional audible indication of the mouse position.
- Support for many refreshable Braille displays, including input of Braille via Braille displays that have a Braille keyboard.
- Ability to run entirely from a USB flash drive or other portable media without the need for installation.
- Easy to use talking installer.
- Support for modern windows operating systems including both 32 and 64-bit variants.
- Ability to run on windows logon and other secure screens.
- Announcing controls and text while interacting with gestures on touch screens.

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.

Librarian,



# TAX INVOICE

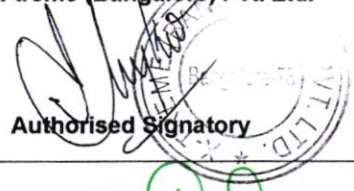


## X-treme (Bangalore) Pvt. Ltd.

# 32, 1<sup>st</sup> Floor, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

GSTIN : 29AAACX0479R1ZH				<input checked="" type="checkbox"/> Original for Recipient			
PAN: AAACX0479R				<input type="checkbox"/> Duplicate for Supplier/Transporter			
Reverse Charge : Nil				Transportation Mode: Vehilce Number: Date of Supply: Place of Supply:			
Invoice No : 181/2017-18							
Invoice Date : 28 <sup>th</sup> November 2017				State Code 29			
State : Karnataka				State Code 29			
Details of Receiver /Billed to:				Details of Consignee /Shipped to:			
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URD				To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URD			
State: Karnataka		State Code 29		State: Karnataka		State Code 29	
P.O No.: Verbal		Date:		Delivey Note No:		Date:	
SL No	Description of Goods And Services	HSN/ SAC	GST Rate	Qty	Units	Rate (Lump sum) In Rs. (Exclusive of Tax)	Total Taxable Value
1.	Supply & Installation for Sewage Treatment Plant.	998739	18%	01	LS	25,96,000.00	4,23,729.00
Ref:- 2 <sup>nd</sup> Payment Received - 5,00,000/-							
<b>Total</b>							<b>4,23,729.00</b>
Total Invoice Amount In Words : Rupees Five Lakh Only.				Gross Amount Before Tax		4,23,729.00	
				CGST @ 9%		38,135.61	
				SGST @ 9%		38,135.61	
				Round off		(-)0.22	
				Tax Amount : GST		76,271.00	
				Total Amount After Tax		5,00,000.00	
				GST Payable on Reverse Charge		NIL	
Certified that the particulars given above are true and correct For X-treme (Bangalore) Pvt. Ltd.							
<b>: Terms and Conditions:</b>				 Authorised Signatory			
1. Interest @ 24% will be charged if not paid within ____ days from the date of delivery. 2. Subject to Bangalore Jurisdiction only.							

ot file  
11/12/17



**Principal**  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91

# TAX INVOICE



## X-treme (Bangalore) Pvt. Ltd.

# 32, 1<sup>st</sup> Floor, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

**An ISO 9001-14001 Certified Company**

GSTIN : 29AAACX0479R1ZH		Original for Recipient					
PAN: AAACX0479R		Duplicate for Supplier/Transporter					
Reverse Charge : Nil		Triplicate for Supplier					
Invoice No : 368/2018-19 Invoice Date : 22 <sup>nd</sup> January 2019 State : Karnataka		Transportation Mode: Vehicle Number: Date of Supply: Place of Supply:					
State Code 29		State Code 29					
Details of Receiver /Billed to: To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP		Details of Consignee /Shipped to: To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP					
State: Karnataka		State: Karnataka					
P.O No.: Verbal		Delivery Challan No:					
Date:		Date:					
SL No	Description of Goods And Services	HSN/SAC	GST Rate	Qty	Units	Rate (Lump sum) In Rs. (Exclusive of Tax)	Total Taxable Value
1.	Supply & Installation for Sewage Treatment Plant.	995468	18%	01	LS	25,96,000.00	2,54,237.00
Ref:- Bill raised up to 52.2316% on PO Value ( Incl of Tax) 1 <sup>st</sup> bill value - 5,00,000.00 2 <sup>nd</sup> bill value - 5,00,000.00 3 <sup>rd</sup> bill value - 3,00,000.00 This bill value - 3,00,000.00 16,00,000.00  Adv Received - 16,00,000.00							
<b>Total</b>							<b>2,54,237.00</b>
Total Invoice Amount In Words : Rupees Three Lakh Only.						Gross Amount Before Tax	2,54,237.00
						CGST @ 9%	22,881.33
						SGST @ 9%	22,881.33
						Round off	(+)0.34
						Tax Amount : GST	45,763.00
						Total Amount After Tax	300,000.00
						GST Payable on Reverse Charge	NIL
: Terms and Conditions:  1. Interest @ 24% will be charged if not paid within _____ days from the date of delivery. 2. Subject to Bangalore Jurisdiction only.						Certified that the particulars given above are true and correct For X-treme (Bangalore) Pvt. Ltd.  Receiver's Seal & Signature  Authorised Signatory	

**Principal**  
 East West Institute of Technology  
 Off. Magadi Main Road, Bengaluru-91



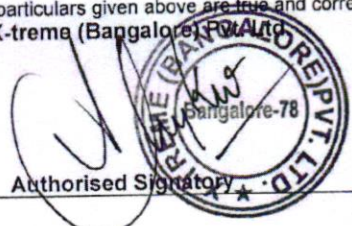
# PROFORMA INVOICE



## X-treme (Bangalore) Pvt. Ltd.

# 32, 1<sup>st</sup> Floor, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

**An ISO 9001-14001 Certified Company**

GSTIN : 29AAACX0479R1ZH				<input checked="" type="checkbox"/> Original for Recipient <input type="checkbox"/> Duplicate for Supplier/Transporter <input type="checkbox"/> Triplicate for Supplier			
PAN: AAACX0479R				Transportation Mode: Vehicle Number: Date of Supply: Place of Supply:			
Reverse Charge : Nil							
Invoice No : 020/2020-21							
Invoice Date : 14 <sup>th</sup> October 2020							
State : Karnataka				State Code		29	
Details of Receiver /Billed to:				Details of Consignee /Shipped to:			
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP				To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP			
State: Karnataka				State Code		29	
P.O No.: Verbal				Date:		Delivery Challan No:	
SL No	Description of Goods And Services	HSN/SAC	GST Rate	Qty	Units	Rate (Lump sum) In Rs. (Exclusive of Tax)	Total Taxable Value
1.	Supply & Installation for STP - 350KLD SBR Rework	995468	18%	01	LS	72,762.00	72,762.00
<b>Total</b>							<b>72,762.00</b>
Total Invoice Amount In Words: Rupees Eighty Five Thousand Eight Hundred And Fifty Nine Only.						Total Amount Before GST	72,762.00
HSN/SAC	Taxable Value	CGST		SGST		Total Amount Inclusive of GST	85,859.00
--	--	Rate	Amount	Rate	Amount		
--	--	--	--	--	--		
<b>Terms and Conditions:</b>				Certified that the particulars given above are true and correct For X-treme (Bangalore) Pvt. Ltd.  Authorised Signatory			
1. Interest @ 24% will be charged if not paid within ___ days from the date of delivery. 2. Subject to Bangalore Jurisdiction only.							
				Receiver's Seal & Signature			

  
**Principal**  
 East West Institute of Technology  
 Off. Magadi Main Road, Bengaluru-91

# TAX INVOICE



## X-treme (Bangalore) Pvt. Ltd.

# 32, 1st Floor, 1st Main, 2nd Cross, BDA Layout, Bikasipura, BSK 5th Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

**An ISO 9001-14001 Certified Company**

GSTIN : 29AAACX0479R1ZH		<input checked="" type="checkbox"/>		Original for Recipient			
PAN : AAACX0479R		<input type="checkbox"/>		Duplicate for Supplier/Transporter			
		<input type="checkbox"/>		Triplicate for Supplier			
Invoice No : 124/2021-22		Transportation Mode:					
Invoice Date : 12 <sup>th</sup> August 2021		Vehicle Number :					
State : Karnataka		Date of Supply :					
State Code - 29		State Code - 29					
Details of Receiver /Billed to:			Details of Consignee /Shipped to:				
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP			To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP				
State: Karnataka		State Code - 29		State: Karnataka			
State Code - 29		State Code - 29		State Code - 29			
P. O No.: Verbal		Date:		Delivery Challan No :			
Date:		Date:		Date:			
SL NO	Description of Goods And Services	HSN /SAC	GST Rate	QTY	Units/ UoM	Rate (Lump Sum) In Rs. (Excl of Tax)	Total Taxable Value
1	Supply & Installation for Sewage Treatment Plant of Capacity - 350KLD  Ref:- Bill raised up to 88.23% On PO <u>Value ( Incl of Tax)</u> 1 <sup>st</sup> to 6 <sup>th</sup> bill value - 2,100,000.00 This bill value - 150,000.00 2,250,000.00 Amount Received - 2,250,000.00 As per PO Value Balance Receivable- 299,980.00	995468	18%	1	LS	2,161,000.00	127,119.00
<b>TOTAL</b>							<b>127,119.00</b>
Total Invoice Amount in Words: Rupees One Lakh Fifty Thousand Only.				Gross Amount Before Tax		127,119.00	
				CGST @ 9%		11,440.71	
				SGST @ 9%		11,440.71	
				IGST		-	
				Round off		-0.42	
				Tax Amount :GST		22,881.00	
				Amount After Tax		150,000.00	
<b>Terms and Conditions</b>  1. Interest @ 24% will be charged if not paid within - days from the date of delivery. 2. Subject to Bangalore Jurisdiction only				Certified that the particulars given above are true and correct <b>For X-treme (Bangalore) Pvt. Ltd</b>			
				Receiver's Seal & Signature			

*Final settlement subject*

*Principal*

East West Institute of Technology  
Off Magadi Main Road, Bengaluru-91



# EAST WEST INSTITUTE OF TECHNOLOGY

No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

## PAYMENT VOUCHER

Paid to X. Tarane (Bangalore) Head of A/c. STP.


Voucher No. 160 L.F. PUT Date \_\_\_\_\_

Received with thanks from East-West Institute of Technology, Bangalore

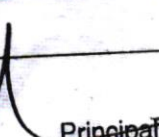
A sum of Rs. 500000 (Rupees Five Lacs Only)


through Cash / Cheque No. 637598 dated 3/11/17

towards STP Materials Purchase

  
Administrative Officer

  
Secretary

  
Principal

 9/11/17  
Receiver's Signature & Name

  
Principal

East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91



# EAST WEST INSTITUTE OF TECHNOLOGY

No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

## PAYMENT VOUCHER

Paid to Xireme Bangalore <sup>part</sup> Head of A/c. STP.

Voucher No. (304) L.F. \_\_\_\_\_ Date \_\_\_\_\_

Received with thanks from East-West Institute of Technology, Bangalore

A sum of Rs. 3,00,000/- (Rupees Three Lakhs only)

through Cash / Cheque No. 639541 dated 5/1/18

towards STP Part payment

Administrative Officer

Secretary

Principal

Receiver's Signature & Name

**Principal**  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91



**EAST WEST INSTITUTE OF TECHNOLOGY**  
No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

**PAYMENT VOUCHER**

Paid to Xtreme Bangalore Pvt. Ltd Head of A/c. STP

Voucher No. \_\_\_\_\_ L.F. \_\_\_\_\_ Date 7/2/19

Received with thanks from East-West Institute of Technology, Bangalore

A sum of Rs. 2,00,000/- Rupees Two Lakh only

through Cash / Cheque No. 928840 dated 6/2/19

towards \_\_\_\_\_

Administrative Officer

Secretary

[Signature]  
Principal

[Signature]  
Receiver's Signature & Name

[Signature]  
Principal  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91



# EAST WEST INSTITUTE OF TECHNOLOGY

No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

## PAYMENT VOUCHER

Paid to Xtreme Bangalore Pvt. Ltd Head of A/c. STP

Voucher No. \_\_\_\_\_ L.F. \_\_\_\_\_ Date 2/3/19

Received with thanks from East-West Institute of Technology, Bangalore

A sum of Rs. 2,00,000.00 (Rupees Two Lakh only)

through Cash / Cheque No. 928845 dated 28/2/19

towards \_\_\_\_\_

Administrative Officer

Secretary

Baly  
Principal

Praveen  
9740010459  
2/3/19  
Receiver's Signature & Name



# EAST WEST INSTITUTE OF TECHNOLOGY

No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

## PAYMENT VOUCHER

Paid to Xtreme Bangalore Pvt. Ltd Head of A/c. STP

Voucher No. \_\_\_\_\_ L.F. \_\_\_\_\_ Date 16/1/19

Received with thanks from East-West Institute of Technology, Bangalore

A sum of Rs. 3,00,000.00 (Rupees Three Lakh only)

through Cash / Cheque No. 928901 dated 10/1/19

towards \_\_\_\_\_

Administrative Officer

Secretary

Baly  
Principal

Prasad  
16/1/19  
Receiver's Signature & Name

PRASAD HENDRE

Baly  
Principal

East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91





# EAST WEST INSTITUTE OF TECHNOLOGY

No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

## PAYMENT VOUCHER

Paid to Spectra Sales & Services Head of Alc. 02

Voucher No. 489 L.F. \_\_\_\_\_ Date 04/01/2022

Received with thanks from East-West Institute of Technology, Bangalore

A sum of Rs. 26,000/- (Rupees Twenty Six thousand only)

through Cash / Cheque No. 391702 dated \_\_\_\_\_

towards Water Purifier Service charges for the month of December

Administrative Officer

Secretary

Principal

Receiver's Signature & Name

*[Handwritten Signature]*

*[Handwritten Signature]*

9731153275

कनरा बैंक Canara Bank

BANGALORE EAST WEST INSTITUTIONS  
BANGALORE, KARNATAKA - 560091  
IFSC Code: CNRB0003152

"Valid for three months only from the date of issuance"

MULTI-CITY SB

04012023  
D D M M Y Y Y Y

Pay Spectra Sales & Services

या धारक को Or Bearer

Rupees Twenty Six thousand only

अदा करें

₹

26,000/-

खा सं.  
A/c. No.

3152101000004

FOR PRINCIPAL EAST WEST INSTITUTE OF TECHNOLOGY BANGALORE 560091

391702

"Payable at par at all our branches in India"

*[Handwritten Signature]*

AUTHORISED SIGNATORIES

Please sign above

⑈391702⑈ 5600151561 000618⑈ 31

*[Handwritten Signature]*

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



# NEW SUN SOLAR SYSTEM

## TAX INVOICE

TO ADDRESS MR/MRS: EAST WEST COLLAGE MAGADI MAIN ROAD BANGALORE		Invoice No :2696					
MOB : 9900254750		Delivery Date :24/03/2022					
		Purchase order No:					
		Date :					
CARRIER L R NO :		EWAY BILL :					
SLNO	DESCRIPTION	HSN CODE/QTY	Rate per unit PS	RS	GST%	Amount RS.	PS.
01	SOLRA WATER HEATER OBASWAR SHEET	841919 08	6000	00		45714	29
			TOTAL			45714	29
			CGST		2.5%	1142	86
			SGST		2.5%	1142	86
			G/TOTAL			48000	00
RECEIVED SEAL &SIGNATURE		AMOUNT IN WORD: FOURTY EIGHT THOUSAND RUPEES ONLY.					

TIN NO : 29950685619

GST NO : 29BYJPP5669L1ZD

FOR NEW SUN SOLAR SYSTEM

for Pavithamma Building hostel - Solar Rectified  
work completed, can be paid

*Chit*  
24/may/22



*R. Haulu*  
Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



# E.W.G.I. HOSTEL

Sy. No. 63, Off Magadi Road, Vishwaneedam Post, Bengaluru - 560 091

## PAYMENT VOUCHER

Paid to New Sun Solar System Head of A/c 7664

Voucher No. .... L.F. .... Date 29/03/2022

Received with thanks from East West Group of Institution, Bengaluru

A sum of Rs. 48000/- Rupees Forty Eight thousand only dated .....

through Cash / Cheque No. ....

Towards Solar rectified work Savithamma Building Hostel

Administrative Officer

[Signature]  
Secretary

Warden

[Signature]  
Receiver's Signature & Name

केनरा बैंक Canara Bank

BANGALORE EAST WEST INSTITUTIONS Branch  
BANGALORE KARNATAKA 560091  
IFSC : CNRB0003152

Valid for three months only from the date of instrument

MULTI-CITY SB

31032022  
D D M M Y Y Y

Pay New Sun Solar System

या धारक को Or Bearer

Rupees रुपये Forty Eight thousand only

अदा करें ₹ 48,000/-

A/c. No. 3152101007664

290995

[Signature]

EWIT GIRLS HOSTEL  
Please sign above

Payable at par at all our branches in India

290995 5600 15 156 000 27 1 3 1

[Signature]  
Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



# EAST WEST GROUP OF INSTITUTIONS

(Recognised by Govt. of Karnataka, Affiliated to Bangalore University & VTU,  
Rajiv Gandhi University of Health Science & Approved by INC, PCI, AICTE, New Delhi)

Sy. No. 63, Off Magadi Road, Vishwaneedam Post, Bengaluru - 560091

Tel : +91-80-22740770, 23286732, 23288237 Fax : +91-80-23482825 Email : ewit@ewit.edu / info@ewit.edu

Ref. :

Date :

## Purchase Order

### Vendor Details:

#### **Dhaksha Groups,**

Ground Floor, # 2322, Hadya Complex  
Seegehalli Gate, Magadi Road  
Bangalore - 560091  
Contact Person- Mr. Rangaswamy; #: 9900917764

Ref. Number : Quotation No 50

Date: 05-09-2022

### Billing Address:

East West College Boys Hostel,  
No.63, Off Magadi Road, Viswaneedam Post,  
Anjananagar, Bangalore - 560091

PO Number : EWGI 09 / 2022 / 112

Purchase Order Date : 14/09/2022

### Servicing Address:

East West College Boys Hostel,  
No.63, Off Magadi Road, Viswaneedam Post,  
Anjananagar, Bangalore - 560091

Hello Sir,

As specified in the tab below we have approved the solar panels reconditioning, servicing & re-installation at our boys hostel

Sl. No	Description	Amount
1	Supply, Rectification, re-installation of solar panels The existing panels (total 48 panels) Rectification - 15 Nos New Panels - 17 Nos Tank repair Plumbing reconditioning and rectification Warranty period - 1 Year	255,000

Total Costing in words: **Rupees Two Lakhs Fifty Five Thousand Only**

### Terms & Conditions

1. Taxes are inclusive.
2. Payment Terms: 40% against the PO  
60% against the completion of works.
3. Warranty period will be for 1 years from the date and servicing of the solar panels will be rendered every Six months
4. Installations and completion of work 2~3 weeks from the date of PO.

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.

5. Transportation charges are inclusive.

6. Please mention PO No. in Invoice, Invoicing and payment shall happen as per actuals, in any case it should not exceed the total PO value

7. Supply should be rendered as per our end user members satisfaction.

For East West Group of Institution

*Chit*  
16/sep/22

HR & Admin Manager

For East West Group of Institution

*[Signature]*

16/9/22

Director - Academics

Authorised Signatory

EAST WEST GROUP OF INSTITUTIONS

Off. Magadi Road, Anjana Nagar,

Bengaluru-560 091



Boys Hostel Clean Work

*[Signature]*

15/2/22

EWIT HOSTEL

Survey No. 63 Near Bhanu Nagar,  
03 Magadi Road, IT Park, Bengaluru  
BANGALURU 560 091

*[Signature]*

*[Signature]*

A/c's  
payment can be  
released  
*[Signature]*

*[Signature]*

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



# EAST WEST INSTITUTE OF TECHNOLOGY

Sy. No. 63, Near B.E.L. Layout, Off Magadi Road, Vishwaneedam Post, Bangalore-91

## PAYMENT VOUCHER

Paid to Dhaksha Groups Head of A/c. 11  
Date 15/02/2023

Voucher No. \_\_\_\_\_ L.F. \_\_\_\_\_

Received with thanks from East-West Institute of Technology, Bangalore  
A sum of Rs. 1,53,000/- (Rupees one Lakh Fifty three thousand only)

through Cash / Cheque No. \_\_\_\_\_ dated \_\_\_\_\_

towards Salary repair & Service charges. EWIT Boys Hostel. Final Settlement

Administrative Officer

dy  
Secretary

Principal

Parvati  
Receiver's Signature & Name  
8150639236

"Valid for three months only from the date of instrument"

03032023  
D D M M Y Y Y Y

MULTI-CITY SB

BANGALORE EAST WEST INSTITUTIONS  
BANGALORE, KARNATAKA - 560091  
IFSC Code: CNRB0003152

Canara Bank

या धारक को Or Bearer

Paid to Dhaksha Groups

Rupees रुपये One Lakh Fifty three thousand only

अदा करें

₹ 1,53,000/-

FOR EWIT HOSTEL

खा सं. A/c. No. 3152101000011

481473

Dhaksha  
AUTHORISED SIGNATORIES  
Please sign above

"Payable at par at all our branches in India"

481473 5600151561 000634 31

Dhaksha  
Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



EAST WEST  
GROUP OF  
INSTITUTIONS

# EAST WEST GROUP OF INSTITUTIONS

(Recognised by Govt. of Karnataka, Affiliated to Bangalore University & VTU,  
Rajiv Gandhi University of Health Science & Approved by INC, PCI, AICTE, New Delhi)

Sy. No. 63, Off Magadi Road, Vishwaneedam Post, Bengaluru - 560091

Tel : +91-80-22740770, 23286732, 23288237 Fax : +91-80-23482825 Email : ewit@ewit.edu / info@ewit.edu

Ref. :

Date :

## Purchase Order

### Vendor Details:

#### **Dhaksha Groups,**

Ground Floor, # 2322, Hadya Complex

Seegehalli Gate, Magadi Road

Bangalore - 560091

Contact Person- Mr. Rangaswamy, #: 9900917764

Ref. Number : Quotation No 50

Date: 05-09-2022

### Billing Address:

East West College Boys Hostel,

No.63, Off Magadi Road, Viswaneedam Post,

Anjananagar, Bangalore - 560091

PO Number : EWGI 09 / 2022 / 112

Purchase Order Date : 14/09/2022

### Servicing Address:

East West College Boys Hostel,

No.63, Off Magadi Road, Viswaneedam Post,

Anjananagar, Bangalore - 560091

Hello Sir,

As specified in the tab below we have approved the solar panels reconditioning, servicing & re-installation at our boys hostel

Sl. No	Description	Amount
1	Supply, Rectification, re-installation of solar panels The existing panels (total 48 panels) Rectification - 15 Nos New Panels - 17 Nos Tank repair Plumbing reconditioning and rectification Warranty period - 1 Year	255,000

Total Costing in words: **Rupees Two Lakhs Fifty Five Thousand Only**

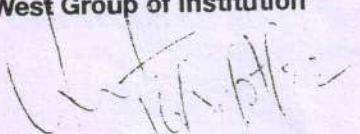
### Terms & Conditions

1. Taxes are inclusive.
2. Payment Terms: 40% against the PO  
60% against the completion of works.
3. Warranty period will be for 1 years from the date and servicing of the solar panels will be rendered every Six months
4. Installations and completion of work 2~3 weeks from the date of PO.

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.


5. Transportation charges are inclusive.
6. Please mention PO No. in Invoice, Invoicing and payment shall happen as per actuals, in any case it should not exceed the total PO value
7. Supply should be rendered as per our end user members satisfaction.

For East West Group of Institution



HR & Admin Manager

For East West Group of Institution

  
16/9/22

Authorised Signatory

Director - HR & Admin  
16/9/22

  
Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



# E.W.G.I. HOSTEL

Sy. No. 63, Off Magadi Road, Vishwaneedam Post, Bengaluru - 560 091

## PAYMENT VOUCHER

Paid to Dhaksha Groups Head of A/c 11

Voucher No. .... L.F. .... Date 19/09/2022

Received with thanks from East West Group of Institution, Bengaluru

A sum of Rs. 1,02,000 / (Rupees one Lakh two thousand only)

through Cash / Cheque No. .... dated .....

Towards Supply, Rectification, Re-Installation of Solar panels, East west Boys Hostel.

Administrative Officer [Signature] Secretary

Warden

G. Ragswamy  
Receiver's Signature & Name

केनरा बैंक



Canara Bank

BANGALORE EAST WEST INSTITUTIONS  
BANGALORE, KARNATAKA - 560091  
IFSC : CNRB0003152

Valid for three months only from the date of instrument

MULTI-CITY SB

22092022  
D D M M Y Y Y Y

Pay Dhaksha Groups

या धारक को or Bearer

Rupees रुपये One Lakh Two Thousand only

अदा करें

₹ 1,02,000/-

A/c. No.

3152101000011

680905

For EWET HOSTEL

[Signature]  
Authorised Signatories

Payable at par at all our branches in India

Please sign above

⑈680905⑈ 560015156⑈ 000207⑈ 31

[Signature]

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091.



Quita

Invoice No. : S2-8

Date: 18/04/2023

GSTIN : 29AYTPA8214D1ZD

HEERA ELECTRICALS

Bydarhali Magadi Main Road  
Vishwanedam Post  
Bangalore-560091  
Telephone No.Mob : 9632338904  
Email : ashokseervihe0@gmail.com

Place of Supply To : 29 (KARNATAKA)  
Tax is Payable On Reverse Charge : No

Details of Receiver (Billed To)  
M/s EAST WEST COLLEGE

Details of Consignee (Shipped To)

State Code : 29 KARNATAKA  
GSTIN :

Sr.	Product Name	HSN / SAC	Quantity	Unit	Rate	Discount	Taxable Amt	GST %	GST Amt	Amount
1	36WATTS LED BATTAN	9405	50.00	NO.	550.00	15.25 %	23306.25	18.00	4195.12	27501.37
Total			50.00				23306.25		4195.12	27501.37

Lights for Boatman's Court

negotiable  
18/4/2023

ROUNDING OFF -0.37

Total Invoice Value (In Figure)

₹ 27501.00

Total Invoice Value (In Words) ₹ Twenty-seven Thousand Five Hundred One Only

TAX %	Gross Amt	Disc Amt	Taxable Amt	CGST %	CGST Amt	SGST %	SGST Amt	IGST %	IGST Amt	Total Amount
GST @ 0 %	0.00	0.00	-0.37		0.00		0.00		0.00	-0.37
GST @ 5 %	0.00	0.00	0.00		0.00		0.00		0.00	0.00
GST @ 12 %	0.00	0.00	0.00		0.00		0.00		0.00	0.00
GST @ 18 %	27500.00	4193.75	23306.25	9.00 %	2097.56	9.00 %	2097.56		0.00	27501.37
GST @ 28 %	0.00	0.00	0.00		0.00		0.00		0.00	0.00
Total	27500.00	4193.75	23306.88		2097.56		2097.56		0.00	27501.00

(Handwritten signature)

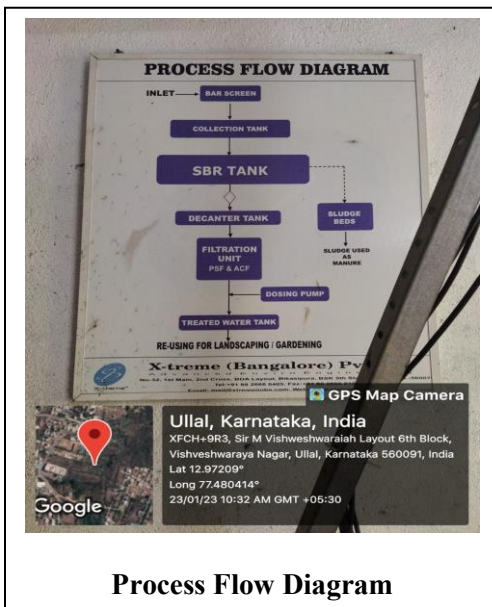
(Handwritten signature)

Principal & Director  
East West Institute of Technology  
Bengaluru - 560 091

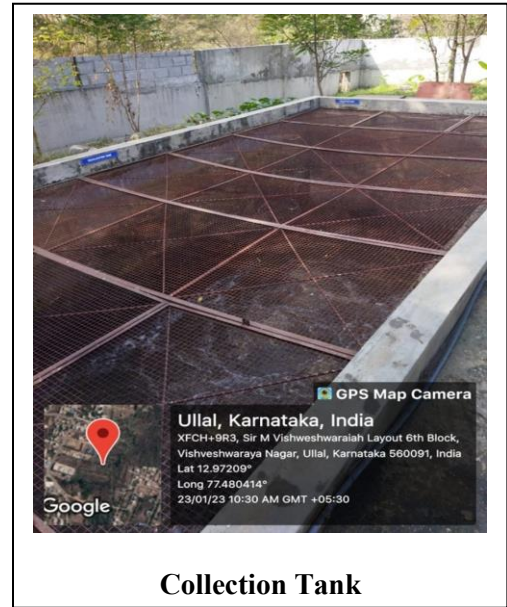
For HEERA ELECTRICALS

### Sewage Treatment Plant (STP)

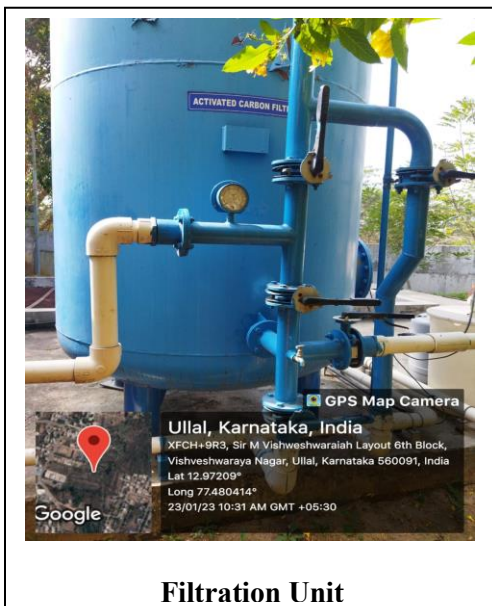
There is a Sewage Treatment Plant of 350 Kilo Litre per day capacity. Waste water received from domestic, commercial, and residential sources is treated by removing toxic materials that may otherwise cause damage to the environment. All sewage and liquid waste are treated in the STPs and around 1 lakh liters of treated water are used per day for irrigation of landscaping, gardening projects and for flush in hostels within the campus.



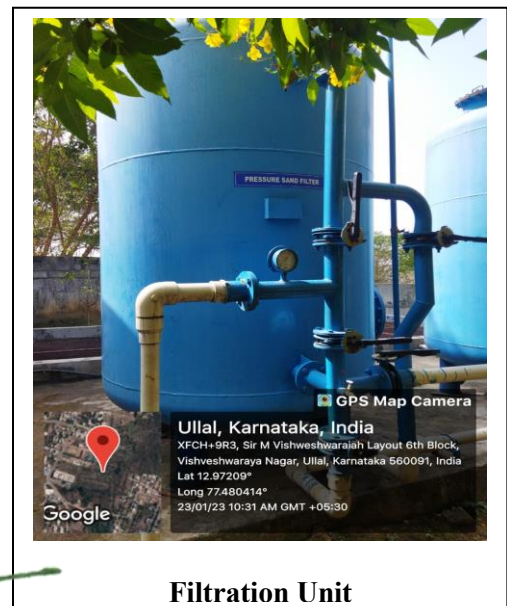
**Process Flow Diagram**



**Collection Tank**

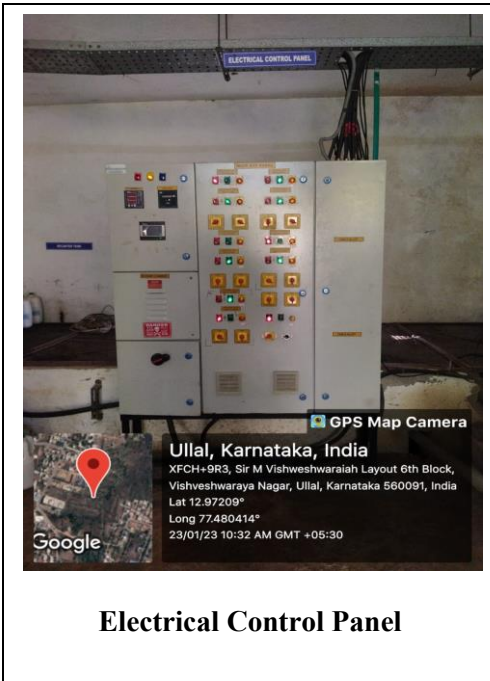


**Filtration Unit**

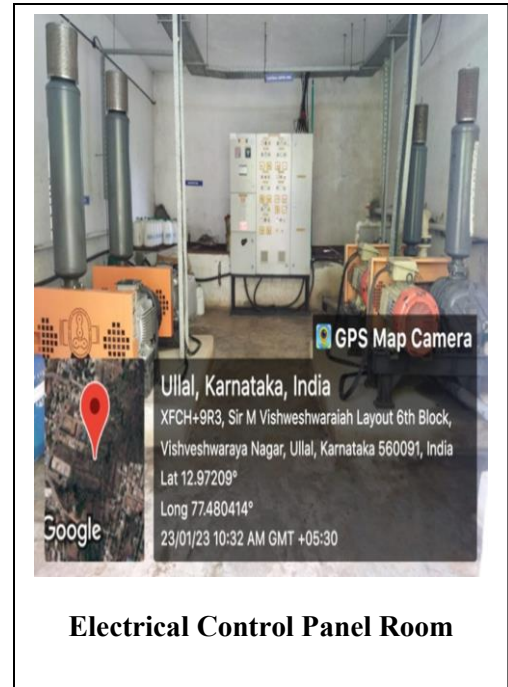


**Filtration Unit**

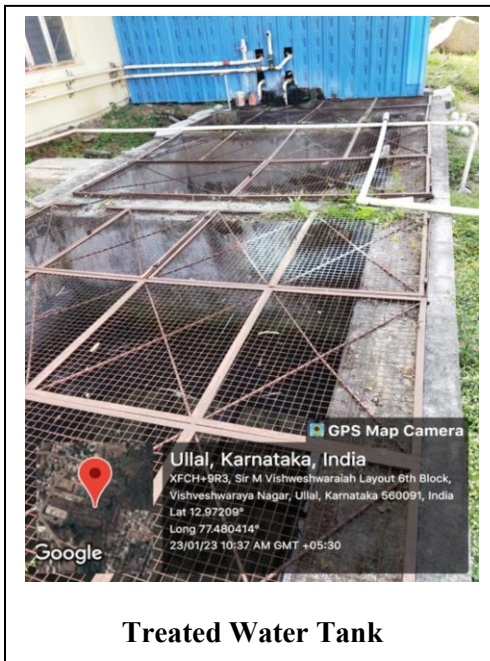
*R. Hauke*



**Electrical Control Panel**



**Electrical Control Panel Room**



**Treated Water Tank**



**Treated Water Usage**

*R. Shanku*  
 Principal & Director  
 East West Institute of Technology  
 Bengaluru - 560 091.

IMG\_294\_10\_21\_1634811072360.jpg  
 7th Cross Rd, BEL Layout, Phase 2, Bedarahalli,  
 Bengaluru, Karnataka 560091, India 21/10/2021 3:41 pm

Satellites	Latitude	Longitude	Weather	Altitude	Azimuth	VA	HA	Zoom
7	12.975285	77.482087	28° / Over / Sunny	731.60	NW 43°	2.92°	35.23°	1.0x

Author: 23/10/2021 9:31 am  
 SAMSUNG SM-A205F

**Water distribution system in the campus**

IMG\_294\_10\_21\_1634811184667.jpg  
 East West Institute Of Technology Ewit Mechanical  
 & Civil Block, BEL Layout, Phase 2, Bedarahalli,  
 Bengaluru, Karnataka 560091, India 21/10/2021 3:43 pm

Satellites	Latitude	Longitude	Weather	Altitude	Azimuth	VA	HA	Zoom
17	12.975834	77.482171	28° / Over / Sunny	775.00	SE 62°	3.49°	30.67°	1.0x

Author: 23/10/2021 9:30 am  
 SAMSUNG SM-A205F

**Water distribution system in the campus**

*R. H. H. H.*  
 Principal & Director  
 East West Institute of Technology  
 Bengaluru - 560 091.



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Total 13/12/11

## SEQUENCING BATCH REACTORS – Automatic System

### **INTRODUCTION**

Sewage treatment is the process that removes the majority of the contaminants from wastewater and produces both a liquid effluent suitable for disposal to the natural environment and sludge that can be used as manure. To be effective, sewage must be conveyed to a treatment plant by appropriate pipes and infrastructure and the process itself must be subject to regulation and controls. Other wastewaters require often different and sometimes specialized treatment methods. At the simplest level treatment of sewage and most wastewaters is through separation of solids from liquids, usually by settlement. By progressively converting dissolved material into solid, usually a biological flock and settling this out, an effluent stream of increasing purity is produced.

With ever-growing population and rise in living standards, urbanization and industrialization the demand of water has increased rapidly. The total supply of fresh water is itself limited by the nature and at the same time, drought, depletion of aquifers; deforestation and pollution have reduced the availability of good water. On the contrary, providing safe and sufficient drinking water and proper sewerage system remains as the challenging tasks for many developing countries particularly so, in urban areas.

### **OBJECTIVE OF THE REPORT**

The primary objective of preparing this report is to identify sources of Pollution i.e. both municipal and industrial wastewaters to treat from the proposed group so as to evolve a technically feasible and comprehensive treatment of Sequencing Batch Reactor in wastewater system.

- a) To enhance the design and operation of SBR's that will ultimately provide more effective wastewater treatments.

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East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-56




- b) To estimate the quantity of influent wastewater generated from the building and to define effluent requirements in the process of planning and upgrading the current operations.
- c) To understand present method of collection and treatment of wastewater.
- d) To understand the method of disposal of wastewater after treatment.

The goal of the technical write-up is to provide operational information and design considerations to enhance SBR treatment performances.

## **I. TREATMENT METHODOLOGY**

The SBR (Sequencing Batch Reactor) process utilizes fill and draw reactor with complete mixing during batch reaction step (after filling) and where as the subsequent steps of aeration and clarification occur in same tanks. The SBR is a conventional activated sludge system with common steps carried: -

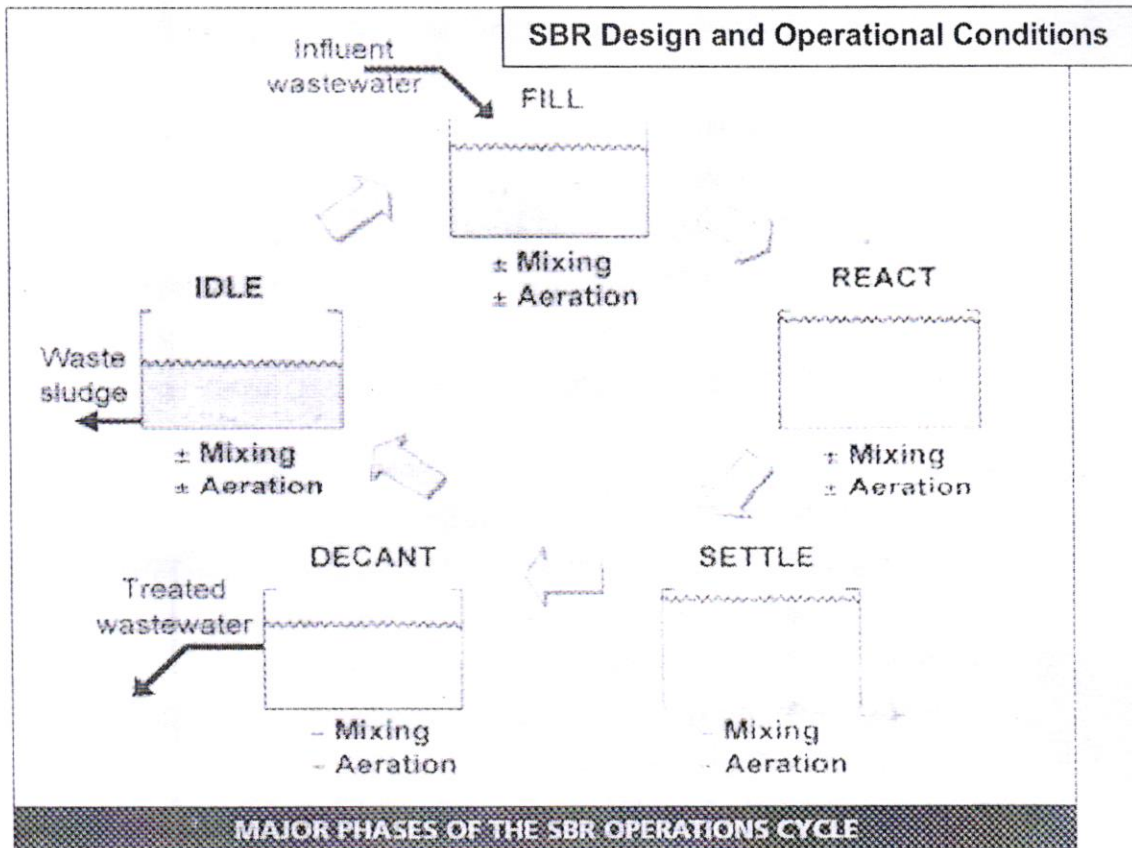
1. Fill
2. React (aeration)
3. Settle (sedimentation/clarification)
4. Draw (decant)
5. Idle

  
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**1.1. The description of operational steps for SBR is as follows: -**

### 1. Fill

During the filling operation, volume and substrate (raw wastewater or primary effluent) are added to the reactor. The fill process typically allows the liquid level in the reactor to rise from 75% of capacity (at the end of the idle period) to 100%. When two tanks are used the fill process may last about 50% of the full cycle time. During the fill the reactor may be mixed only or mixed and aerated to promote biological reactions with the influent wastewater.

### 2. React (aeration)

During the react period the mechanical mixing and aeration units are on, the biomass consumes the substrate under controlled environmental conditions, as there is no additional volume and

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organic loadings into the tank as the rate of organic removal increases.

Most of the carbonaceous BOD removal occurs in the react phase. Further nitrification occurs by allowing the mixing and aeration to continue. The majority of denitrification takes place in the mixed-fill phase where mechanical mixers are active, but the aerators remain off. Under anaerobic conditions the phosphorus released during mixed fill plus some additional phosphorus is taken up during the react phase.

### **3. Settle (sedimentation/clarification)**

During this phase, no flow enters the basin and no aeration /mixing takes place. Activated sludge is allowed to separate from the liquid under quiescent conditions. The activated sludge tends to settle as a flocculent mass, forming a distinctive interface with the clear supernatant that can be discharged as effluent.

### **4. Draw (decant)**

Clarified effluent (supernatant) is removed during the decent period. Many types of decanting mechanisms i.e. the decanter to initiate the opening of an effluent-discharge valve like the floating or adjustable weirs and fixed-arm decanters that can be used.

The vertical distance from the decanter to the bottom of the tank should be maximized to avoid disturbing the settled biomass.

### **5. Idle**

This step occurs between decant and the fill phases. An idle period is used in a multi tank system to provide time varies, based on the influent flow rate and the operating strategy form one reactor to complete fill phase before switching to another unit. Because idle is not a necessary phase, it is sometimes omitted. During this phase, a small amount of activated sludge at the bottom of the SBR basin is pumped out for a process called wasting.

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### **1.2. The practical aspects of selecting SBR over other treatment facilities: -**

1. The areas where limited amount space is available for treatment, the treatment that takes place in a single basin instead of multiple basins allowing for smaller footprint.
2. The treatment cycle can be adjusted to undergo aerobic, anaerobic and anoxic conditions in order to achieve biological nutrient removal, including nitrification, denitrification and some phosphorus removal.
3. Older wastewater treatment facilities can be retrofitted to an SBR because the basins are already present.
4. Wastewater discharge permits are becoming more stringent and SBR offers cost effective way to achieve lower effluent limits.

## **II. TREATMENT METHODOLOGY**

### **2.1 Preliminary/Primary Treatment**

Preliminary treatment includes screening, grit removal, and flow monitoring. Primary treatment includes sedimentation and floatation. SBRs generally do not have primary settling tanks; therefore, effective removal or exclusion of grit, debris, plastics, excessive oil or grease, and scum, as well as screening of solids should be accomplished prior to the activated sludge process.

#### **2.1.1 Screening Influent Wastewater**

Bar screens or mechanical screens should be used instead of grinders or shredders. Screening influent wastewater is a positive means of removing rags, sticks, and other debris before they can enter the treatment process. Screens also provide protection for the pumps.

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East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91



### 2.1.2 Influent-Flow Equalization

Flow equalization is critical where significant variations in flow rates and organic mass loadings are expected. Flow equalization is also important if a plant is expected to receive a significant amount of seepage or is taking in a significant amount of industrial wastes. Flow equalization is strongly recommended when a plant needs to achieve nitrification and denitrification. A plant utilizing an influent equalization basin will be able to have a true batch reaction.

Influent-flow equalization benefits the SBR process in the following ways:

- Allows for a smaller SBR-basin size because it allows for storage until the process cycle is complete.
- Allows for one basin to be taken off line for maintenance or for seasonal variations. Routine maintenance is necessary for all tanks.
- Allows for scum and grease removal at a single point before it enters the SBR tank. Entrainment by mixing should not be the sole means of scum control. A mechanism or process for removing scum, grease, and floatables should be provided in the equalization tank.
- Allows plants that must denitrify to ensure that an adequate amount of carbon is available in the denitrification fill phase.
- Allows for an equal flow volume into the basin, keeping the food to microorganism ratio (F/M) fairly stable. As stated previously, each SBR design is unique and in some situations influent-flow equalization basins may not be required to obtain optimum treatment.
- The influent-equalization basin should have a form of agitation or mixing to keep the solids in suspension. A mechanical-mixing unit can be used for this purpose. Maintenance on this basin should be minimal as the solids

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East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91



are in suspension due to the agitation. Influent-flow equalization should be designed to hold peak flows long enough to allow the active treatment cycle to be completed.

## 2.2. Piping for Alkalinity Addition (if required)

Ideally, facilities should provide piping for adding alkalinity at both the influent equalization basin and the SBR basin. It is also desirable to be able to measure alkalinity at each location. Alkalinity addition should be based on the amount measured during the decant phase, not on incoming flow. Alkalinity should be kept in a range of 40-70 mg/L as CaCO<sub>3</sub> prior to the decant phase to be sure the nitrification cycle is complete. Consider implementing a method of alkalinity addition even if a facility is not designed to nitrify.

### 2.2.1. Options for Adding Alkalinity

- 1. Sodium Bicarbonate**, Baking Soda (NaHCO<sub>3</sub>) - Sodium bicarbonate is most often recommended for alkalinity addition because it is not a strong base and it has a pH of 8.3. It is beneficial to alkalinity addition by providing the bicarbonate species at a pH near neutrality.
- 2. Sodium Carbonate**, Soda Ash (Na<sub>2</sub>CO<sub>3</sub>) - Soda ash is safer to handle than other alkalis and tends to maintain stable prices over time, hence more and more treatment plants are choosing soda ash for their alkalinity needs. While soda ash is less expensive than sodium bicarbonate, it is generally less effective than sodium bicarbonate and sodium hydroxide. Soda ash is a moderately fast acting agent, but it generates carbon dioxide, which can lead to foaming problems.

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**Principal**

**East West Institute of Technology**  
Off. Magadi Main Road, Bengaluru-91



### III. STP DESIGN BASIS

The treatment plant is designed to treat the effluent of following characteristics,

Flow: **350 KLD**

Batches: **3 Batches Considered**

Operation: Considering 24 hrs.

**TABLE: ANTICIPATED QUALITY OF RAW SEWAGE**

S. No.	Particulars	Anticipated Quality Of Raw Sewage
1	pH	6.5 - 8.5
2	BOD <sub>5</sub> @ 20°C	300 mg./lit.
3	COD	500 mg./lit.
4	TSS	300 mg./lit.

**TABLE: ANTICIPATED QUALITY OF TREATED SEWAGE**

S. No.	Particulars	Quality Of Treated Sewage
1	pH	6.5 - 7.5
2	BOD <sub>5</sub> @ 20°C	≤ 10 Mg/lit.
3	COD	≤ 50 Mg/lit
4	Turbidity	≤ 2 NTU.
5	TSS	≤ 10 Mg/lit
6	E-coli	NIL
7	Residual Chlorine	≤ 1 Mg/lit.

#### ASSUMPTIONS/NOTES

- Effluent generation time considered same as sewage treatment time.
- No other parameter which exceeds the treated effluent limits as per KSPCB or which is hazardous in nature will present in the raw effluent.
- No TDS removal is envisaged.

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East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91



X-treme™

- Non-qualified personnel loading or unloading, moving or installing the equipment,
- Fire, Explosion Flood or similar perils,
- Unauthorized modifications or alterations of the equipment,
- Improper or inadequate maintenance.

#### **NON-CONSUMABLE PARTS**

From the date of installation of machine for a period not to exceed 12 months or 13 months from the date of dispatch, whichever is shorter

#### **CONSUMABLE PARTS**

No warranty is, however, offered for the consumable parts.

#### ***Instruction Manual:***

On successful commissioning of the plant, we will provide 1-sets of operations and instructions manual.

#### ***Time Required for Completion of Work:***

The time required to complete the work is 60 days from the date of confirmed order along with advance.

#### ***Validity:***

The above Prices are valid for 30 days from this offer date.

#### ***Scope of work:***

- *Design of the Sewage Treatment Plant.*
- *Supply of Equipment's as out lined above.*
- *Erection & Commissioning of the entire plant.*
- *Providing all drawings will be under our scope of work.*
- *Electrical work as related to STP works.*


#### ***Exclusion:***

- *Construction roads inside the plant and approach roads.*
- *Construction of fencing to the plant.*
- *Supply of all types of laboratory equipment's.*
- *Plants and area illumination.*
- *Air conditioning/ ventilation system/ exhaust fans from plant buildings (Mandatory to be provided).*
- *Emergency power supply and illumination system*

#### **X-treme (Bangalore) Pvt. Ltd.**

No.32, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage, Bangalore – 560 078

Tel: +91 80 26660405 Fax: +91 80 26660102 E-mail: mail@xtremeindia.com Web: www.xtremeindia.com

  
**Principal**  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91




X-treme™

- All piping beyond the termination points shown in our P&I diagram.
- Fire fighting system including appliances.
- Lightening protection & earthing
- Commissioning consumables, chemicals, etc.
- Testing charges shall be charged extra.
- Liaison & Official Fees for KSPCB shall be extra for Project/ Building (CFO) except STP, which would be at our cost.
- Treated Water Discharge Facility (Pump for discharge)

**Facilities to be provided at site:**

1. Safe storage space for equipment's supplied.
2. III Phase Power supply during erection.
3. Canalizing of Sewage to Treatment Plant.
4. Water & Lighting supply to the Plant Room

  
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**X-treme (Bangalore) Pvt. Ltd.**

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Tel: +91 80 26660405 Fax: +91 80 26660102 E-mail: mail@xtremeindia.com Web: www.xtremeindia.com



**INTERPLANT PIPING & VALVES:**

Supply and laying of MS/ UPVC pipes of TATA/ Supreme/ Equivalent make of pressure 6 KSC with specials like bends, tees, reducers, pipe ends, flanges, etc. supply and providing 'B' Class MS/uPVC pipes of TATA make for air line and also supply and fixing of CI Butterfly valves for pumps.

**Lump sum** **Rs. 2, 50, 000.00**

**INTERPLANT ELECTRICALS (WITH CONTROL PANEL, HMI & PLC):**

Supply and installation of non-compartmentalized motor control center of suitable capacity including laying of required cables from MCC to respective motors etc. complete within battery limits. (SIEMENS COMPONENTS ONLY)

**Lump sum** **Rs. 4, 35, 000.00**

**ERECTION, HANDLING & COMMISSIONING CHARGES:**

**Lump sum** **Rs. 1, 00, 000.00**


**CONSULTING CHARGES:**

**Lump sum** **Rs. 75, 000.00**

**X-treme (Bangalore) Pvt. Ltd.**

No.32, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage, Bangalore – 560 078

Tel: +91 80 26660405 Fax: +91 80 26660102 E-mail: mail@xtremeindia.com Web: www.xtremeindia.com

  
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Off: Magadi Main Road, Bengaluru-91



#### IV. COMMERCIAL TERMS & CONDITIONS

##### Abstract:

S. No.	Description	Amount (Rs.)
1.	Civil Works	Client's Scope
2.	Mechanical Equipment's	17, 36, 000.00
3.	Interplant Piping & Valves	2, 50, 000.00
4.	Interplant Electrical	4, 35, 000.00
5.	Erection, Handling & Commissioning Charges	1, 00, 000.00
6.	Consulting Charges	75, 000.00
<b>Total</b>		<b>25, 96, 000.00</b>

In Words: Rupees Twenty Five Lacs Ninety Six Thousand Only

##### Taxes:

VAT @ 4 % on 100% of the Total Contract Value

Service Tax @15% on 40% of the Total Contract Value

##### Payment Terms:

1. 30% advance along with the order.
2. 60% during the progress of work on pro-rata basis.
3. 10% on Commissioning of the plant.

##### Warranty:

Our suppliers warrant its product to be free from defect in material and workmanship upon leaving its factory. The obligation shall be limited to repair or replacement and in no event shall the liability exceeds said parts repair or replacement for the period hereof.

##### The Warranty does not cover the damage caused by:

- Improper Electrical supply,

X-treme (Bangalore) Pvt. Ltd.

No.32, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage, Bangalore – 560 078

Tel: +91 80 26660405 Fax: +91 80 26660102 E-mail: mail@xtremeindia.com Web: www.xtremeindia.com

*Handwritten: 5 Lacs + 5 Lacs = 10 Lacs*

*Signature: [Handwritten Signature]*  
Principal  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91





### 3.1 OUR SCOPE OF WORK

- ❖ Design Engineering
- ❖ Supply of Mechanical, Electrical and Instrumentation Items
- ❖ Supply of Piping and Valves
- ❖ Erection of Supplied Items
- ❖ Commissioning of the System

  
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Off. Magadi Main Road, Bengaluru-91

**X-treme (Bangalore) Pvt. Ltd.**

No.32, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage, Bangalore – 560 078

Tel: +91 80 26660405 Fax: +91 80 26660102 E-mail: mail@xtremeindia.com Web: www.xtremeindia.com



### 3.2 LIST OF CIVIL WORK & THEIR SPECS:

S. No.	Description	Unit Size	MOC	Nos.	Amount (Rs.)
1.	Bar Screen	01 m <sup>3</sup>	RCC	1	<b>Client's Scope</b>
2.	Collection cum Equalization Tanks	200 m <sup>3</sup>	RCC	1	
3.	SBR Reactor Tank	260 m <sup>3</sup>	RCC	1	
4.	Decanter Tank	130 m <sup>3</sup>	RCC	1	
5.	Treated Water Tank	100 m <sup>3</sup>	RCC	1	
6.	Sludge Beds	02 m <sup>3</sup>	BBM	5	
7.	Control Room (Approx.)	440 sq. ft.	-	1	

### 3.3 LIST OF ELECTRO-MECHANICAL EQUIP. & THEIR SPECS:

Sl. No.	Description	Size/ Capacity	Quantity in Nos.	Specifications	Amount (Rs.)
1.	Bar Screen	-	01	MS	20, 000.00
2.	Sewage Transfer Pumps	5 HP	01 + 01	Kirloskar/ Equivalent	90, 000.00
3.	Sludge Removal Pumps	1 HP	01	Kirloskar/ Equivalent	20, 000.00
4.	Filter Feed Pumps	5 HP	01 + 01	Kirloskar/ Equivalent	55, 000.00
5.	Treated Water Pumps	Clients Scope based on Distance			-
6.	Air Blowers (CT, TWT & SHT)	300 m <sup>3</sup> /hr @ 0.5 KSC	01 + 01	Everest/ Equivalent	2, 80, 000.00
	Air Blowers (SBR)	390 m <sup>3</sup> /hr @ 0.6 KSC	01 + 01		3, 80, 000.00
7.	Course Bubble Diffuser (Fixed Type)	800 mm	38	S-Cogan/ Equivalent	76, 000.00
8.	Fine Bubble Diffuser (Fixed Type)	1000 mm	50	S-Cogan/ Equivalent	1, 25, 000.00
9.	Pressure Sand Filter (1.6 m dia. x 1.8 m HOS)	F - 20 m <sup>3</sup> /hr	01	MS/ X-treme	2, 65, 000.00
10.	Activated Carbon Filter (1.6 m dia. x 1.8 m HOS)	F - 20 m <sup>3</sup> /hr	01	MS/ X-treme	3, 45, 000.00
11.	Online Chlorine Dozer	4 Lph	01	Milton Roy/ Equivalent	20, 000.00
12.	Decant Valve	6"	01	Marck & Aira/ Equivalent	60, 000.00

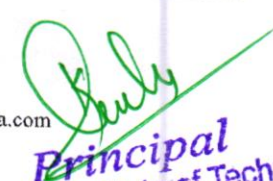
#### **OPTIONAL: (IF REQUIRED)**

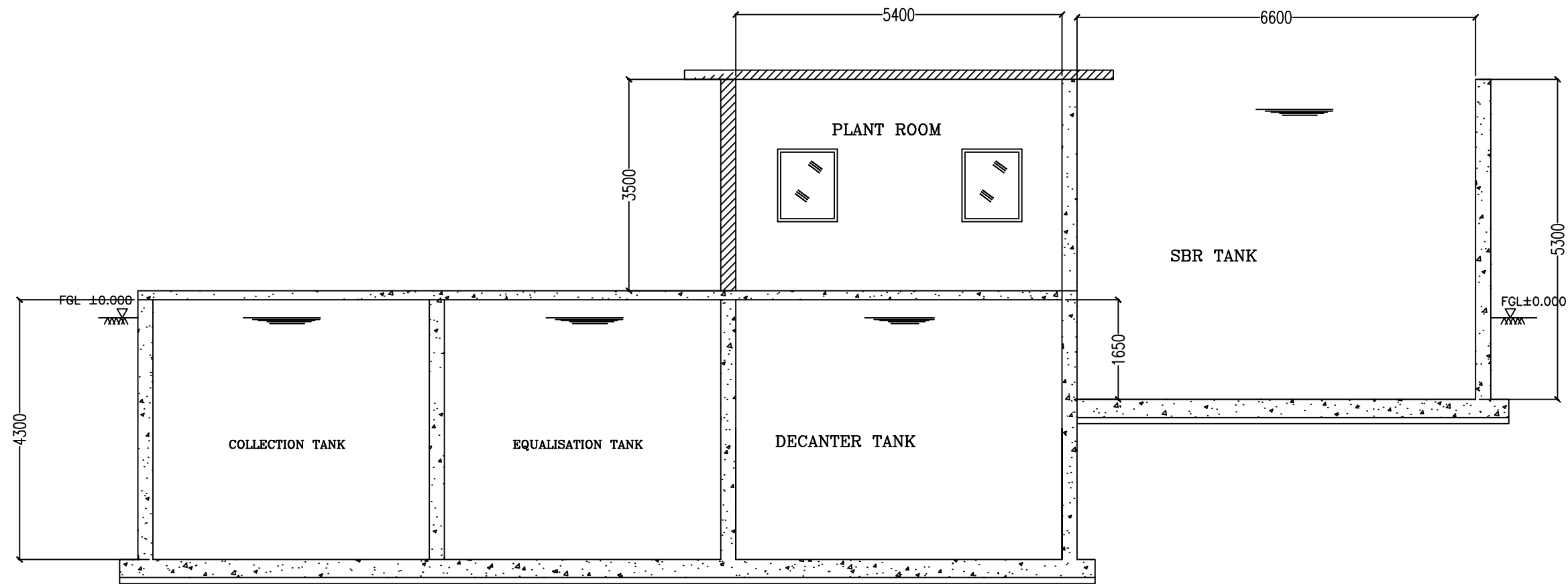
a)	Drum Type Centrifugal Sludge Handling System	2 HP	01	X-treme/ Equivalent	2, 00, 000.00
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#### **X-treme (Bangalore) Pvt. Ltd.**

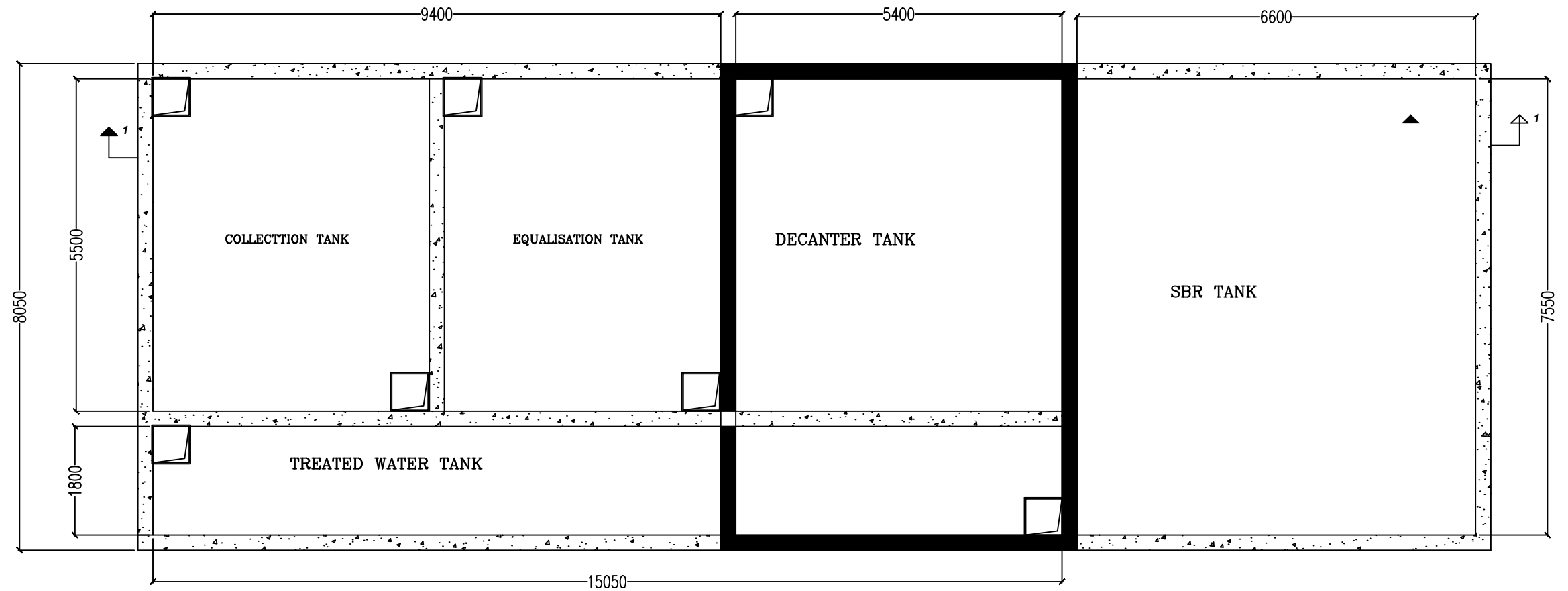
No.32, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage, Bangalore – 560 078

Tel: +91 80 26660405 Fax: +91 80 26660102 E-mail: mail@xtremeindia.com Web: www.xtremeindia.com

  
**Principal**  
 East West Institute of Technology  
 Off. Magadi Main Road, Bengaluru-91



SECTION-1 1



**GENERAL NOTES**

1. ALL DIMENSIONS ARE IN MILLIMETER.
2. ALL DIMENSIONS ARE INSIDE & CLEAR FINISHED DIMENSIONS.
3. ALL STRUCTURAL DESIGNS/SPECS FOR MOC, WATER PROOFING ETC BY STRUCTURAL CONSULTANT/OWNERS.
4. DRAWINGS ARE TO BE READ AND NOT TO BE SCALED
5. ALL HANDRAILING/LADDERS/PUDDLE FLANGES BY CIVIL CONTRACTOR

PROJECT NAME  
**EAST WEST COLLEGE**  
 MAGADI ROAD, BANGALORE

DRAWING TITLE :  
**STP LAYOUT DRAWING 350KLD**

STP CONSULTANTS  
**X-TREME (BANGALORE) PVT. LTD.**  
#32, 1st MAIN, 2nd CROSS, BIKASIPURA, BDA LAYOUT, BSK 5th STAGE, BANGALORE 560078  
OFFICES @ BANGALORE, MANGALORE, COCHIN, AHMEDABAD, BARODA  
TEL: +91 80 26660405 FAX: +91 80 26660102  
MAIL: mail@xtremeindia.com WEB: www.xtremeindia.com

DESIGNED : AK	CHECKED : TJN
DRAWN : TNS	APPROVED : AK
DATE : 13.12.2016	SCALE : NTS
DWG. NO : <b>XBPL-EWC-001-00</b>	REV NO : --

# TAX INVOICE

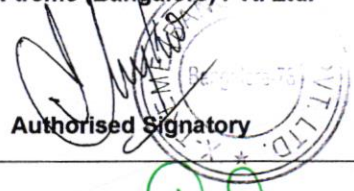


## X-treme (Bangalore) Pvt. Ltd.

# 32, 1<sup>st</sup> Floor, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

GSTIN : 29AAACX0479R1ZH				<input checked="" type="checkbox"/> Original for Recipient			
PAN: AAACX0479R				<input type="checkbox"/> Duplicate for Supplier/Transporter			
Reverse Charge : Nil				Transportation Mode: Vehicle Number: Date of Supply: Place of Supply:			
Invoice No : 181/2017-18							
Invoice Date : 28 <sup>th</sup> November 2017				State Code 29			
State : Karnataka				State Code 29			
Details of Receiver /Billed to:				Details of Consignee /Shipped to:			
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URD				To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URD			
State: Karnataka		State Code 29		State: Karnataka		State Code 29	
P.O No.: Verbal		Date:		Delivey Note No:		Date:	
SL No	Description of Goods And Services	HSN/ SAC	GST Rate	Qty	Units	Rate (Lump sum) In Rs. (Exclusive of Tax)	Total Taxable Value
1.	Supply & Installation for Sewage Treatment Plant.	998739	18%	01	LS	25,96,000.00	4,23,729.00
Ref:- 2 <sup>nd</sup> Payment Received - 5,00,000/-							
<b>Total</b>							<b>4,23,729.00</b>
Total Invoice Amount In Words : Rupees Five Lakh Only.				Gross Amount Before Tax		4,23,729.00	
				CGST @ 9%		38,135.61	
				SGST @ 9%		38,135.61	
				Round off		(-)0.22	
				Tax Amount : GST		76,271.00	
				Total Amount After Tax		5,00,000.00	
				GST Payable on Reverse Charge		NIL	
				Certified that the particulars given above are true and correct For X-treme (Bangalore) Pvt. Ltd.			
<b>: Terms and Conditions:</b>				 Authorised Signatory			
1. Interest @ 24% will be charged if not paid within ____ days from the date of delivery. 2. Subject to Bangalore Jurisdiction only.							

ot file  
11/12/17



**Principal**  
East West Institute of Technology  
Off. Magadi Main Road, Bengaluru-91

# TAX INVOICE



## X-treme (Bangalore) Pvt. Ltd.

# 32, 1<sup>st</sup> Floor, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

**An ISO 9001-14001 Certified Company**

GSTIN : 29AAACX0479R1ZH		Original for Recipient					
PAN: AAACX0479R		Duplicate for Supplier/Transporter					
Reverse Charge : Nil		Triplicate for Supplier					
Invoice No : 368/2018-19 Invoice Date : 22 <sup>nd</sup> January 2019 State : Karnataka		Transportation Mode: Vehicle Number: Date of Supply: Place of Supply:					
State Code 29		State Code 29					
<b>Details of Receiver /Billed to:</b>		<b>Details of Consignee /Shipped to:</b>					
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP		To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP					
State: Karnataka		State: Karnataka					
State Code 29		State Code 29					
P.O No.: Verbal		Date:					
Date:		Delivery Challan No:					
Date:		Date:					
SL No	Description of Goods And Services	HSN/ SAC	GST Rate	Qty	Units	Rate (Lump sum) In Rs. (Exclusive of Tax)	Total Taxable Value
1.	Supply & Installation for Sewage Treatment Plant.	995468	18%	01	LS	25,96,000.00	2,54,237.00
Ref:- Bill raised up to 52.2316% on PO Value ( Incl of Tax) 1 <sup>st</sup> bill value - 5,00,000.00 2 <sup>nd</sup> bill value - 5,00,000.00 3 <sup>rd</sup> bill value - 3,00,000.00 This bill value - 3,00,000.00 16,00,000.00  Adv Received - 16,00,000.00							
<b>Total</b>							<b>2,54,237.00</b>
<b>Total Invoice Amount In Words :</b>						<b>Gross Amount Before Tax</b>	2,54,237.00
Rupees Three Lakh Only.						<b>CGST @ 9%</b>	22,881.33
						<b>SGST @ 9%</b>	22,881.33
						<b>Round off</b>	(+)0.34
						<b>Tax Amount : GST</b>	<b>45,763.00</b>
						<b>Total Amount After Tax</b>	<b>300,000.00</b>
						<b>GST Payable on Reverse Charge</b>	<b>NIL</b>
						Certified that the particulars given above are true and correct For X-treme (Bangalore) Pvt. Ltd.	
<b>: Terms and Conditions:</b>						Receiver's Seal & Signature  Authorised Signatory	
1. Interest @ 24% will be charged if not paid within _____ days from the date of delivery. 2. Subject to Bangalore Jurisdiction only.							

**Principal**  
 East West Institute of Technology  
 Off. Magadi Main Road, Bengaluru-91

# PROFORMA INVOICE



## X-treme (Bangalore) Pvt. Ltd.

# 32, 1<sup>st</sup> Floor, 1<sup>st</sup> Main, 2<sup>nd</sup> Cross, BDA Layout, Bikasipura, BSK 5<sup>th</sup> Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

**An ISO 9001-14001 Certified Company**

GSTIN : 29AAACX0479R1ZH				<input checked="" type="checkbox"/> Original for Recipient <input type="checkbox"/> Duplicate for Supplier/Transporter <input type="checkbox"/> Triplicate for Supplier			
PAN: AAACX0479R				Transportation Mode: Vehicle Number: Date of Supply: Place of Supply:			
Reverse Charge : Nil							
Invoice No : 020/2020-21							
Invoice Date : 14 <sup>th</sup> October 2020							
State : Karnataka				State Code		29	
Details of Receiver /Billed to:				Details of Consignee /Shipped to:			
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP				To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP			
State: Karnataka				State Code		29	
P.O No.: Verbal				Date:		Delivery Challan No:	
SL No	Description of Goods And Services	HSN/SAC	GST Rate	Qty	Units	Rate (Lump sum) In Rs. (Exclusive of Tax)	Total Taxable Value
1.	Supply & Installation for STP - 350KLD SBR Rework	995468	18%	01	LS	72,762.00	72,762.00
<b>Total</b>							<b>72,762.00</b>
Total Invoice Amount In Words: Rupees Eighty Five Thousand Eight Hundred And Fifty Nine Only.						Total Amount Before GST	72,762.00
HSN/SAC	Taxable Value	CGST		SGST		Total Amount Inclusive of GST	85,859.00
--	--	Rate	Amount	Rate	Amount		
--	--	--	--	--	--		
<b>Terms and Conditions:</b> 1. Interest @ 24% will be charged if not paid within ___ days from the date of delivery. 2. Subject to Bangalore Jurisdiction only.				Receiver's Seal & Signature		Certified that the particulars given above are true and correct For X-treme (Bangalore) Pvt. Ltd.  Authorised Signatory	

**Principal**  
 East West Institute of Technology  
 Off. Magadi Main Road, Bengaluru-91

# TAX INVOICE



## X-treme (Bangalore) Pvt. Ltd.

# 32, 1st Floor, 1st Main, 2nd Cross, BDA Layout, Bikasipura, BSK 5th Stage,  
Bangalore – 560 078. Phone No: 080-26660405, Fax No: 080-26660102  
E-Mail: mail@xtremeindia.com. Web: www.xtremeindia.com

**An ISO 9001-14001 Certified Company**

GSTIN : 29AAACX0479R1ZH				<input checked="" type="checkbox"/> Original for Recipient			
PAN : AAACX0479R				<input type="checkbox"/> Duplicate for Supplier/Transporter			
Invoice No : 124/2021-22				Transportation Mode: Vehicle Number : Date of Supply : Place of Supply :			
Invoice Date : 12 <sup>th</sup> August 2021							
State : Karnataka							
State Code - 29				State Code - 29			
Details of Receiver /Billed to:				Details of Consignee /Shipped to:			
To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP				To, M/s. EAST WEST INSTITUTE OF TECHNOLOGY No.63, Anjananagar, Off Magadi Road, Near BEL Layout, Bengaluru, Karnataka – 560 091 GSTIN: URP			
State: Karnataka		State Code - 29		State: Karnataka		State Code - 29	
P. O No.: Verbal		Date:		Delivery Challan No :		Date:	
SL NO	Description of Goods And Services	HSN /SAC	GST Rate	QTY	Units/ UoM	Rate (Lump Sum) In Rs. (Excl of Tax)	Total Taxable Value
1	Supply & Installation for Sewage Treatment Plant of Capacity - 350KLD  Ref:- Bill raised up to 88.23% On PO <u>Value ( Incl of Tax)</u> 1 <sup>st</sup> to 6 <sup>th</sup> bill value - 2,100,000.00 This bill value - 150,000.00 <hr/> 2,250,000.00 Amtount Received - 2,250,000.00 As per PO Value Balance Receivable- 299,980.00	995468	18%	1	LS	2,161,000.00	127,119.00
<b>TOTAL</b>							<b>127,119.00</b>
Total Invoice Amount in Words: Rupees One Lakh Fifty Thousand Only.				Gross Amount Before Tax 127,119.00			
				CGST @ 9% 11,440.71			
				SGST @ 9% 11,440.71			
				IGST -			
				Round off -0.42			
				Tax Amount :GST 22,881.00			
				Amount After Tax 150,000.00			
<b>Terms and Conditions</b>  1. Interest @ 24% will be charged if not paid within - days from the date of delivery. 2. Subject to Bangalore Jurisdiction only				Certified that the particulars given above are true and correct <b>For X-treme (Bangalore) Pvt. Ltd</b>			
				Receiver's Seal & Signature			

*Final settlement subject*

*Principal*

East West Institute of Technology  
63 Magadi Main Road, Bengaluru-91



# SLN TESTING LABORATORY



Recognized by : MOEF & CC and An ISO 9001 : 2015  
and OHSAS Certified Laboratory

# 15, Premnagar, Pipeline Road, Lager e, Bangalore - 560 058.

Mob. : 9844086162, 9538888098, E-mail : slntestinglaboratory@gmail.com, Web : www.slnlabs.com

## TEST REPORT

Page No. 1 of 1

Report No : SLNLT2201200572	Report Date : 22/12/2022
Issued To: M/s. East west institute of technology No.63, East west college road, Off magadi main road Vishwaneedam post, Bharat nagar, Anjan nagar, Bangalore-560091.	Customer Reference : Verbal
	Date of Receipt : 17/12/2022
	Date of test start : 17/12/2022
Sample Collected By: Customer	Date of Completion of test : 22/12/2022
	Sample Particulars: STP Treated Water

Sl. No	Parameters	Test Method	Units	Results	KSPCB Standard
01	pH Value	IS:3025/Part-11	---	8.16	6.5 - 9.0
02	Total Suspended Solids	IS:3025/Part-17	mg/L	15.0	20 Max
03	Biochemical Oxygen Demand (3days @27°C)	IS:3025/Part-44	mg/L	7.0	10 Max
04	Chemical Oxygen Demand	IS:3025/Part-58	mg/L	42.0	50 Max
05	Total Nitrogen	IS:3025/Part-34	mg/L	8.9	10 Max
06	Ammonical Nitrogen as NH <sub>4</sub> -N	IS:3025/Part-34	mg/L	2.4	5 Max
07	Faecal Coli form	IS 1622-1981	MPN/100ml	17	100 Max

Inference: As per KSPCB Standards, The above tested results are within the standards.

\*\*\*\*\*End of the Report\*\*\*\*\*

Sir,  
for your information

*[Signature]*  
23.12.22



Authorised Signatory

Note : 1. The results listed pertain only to the tested samples and applicable parameters.  
2. Samples will be destroyed after 15 days from the date of issue of test certificates unless & otherwise specified and all applicable samples will be destroyed immediately after tests conducted





# EAST WEST INSTITUTE OF TECHNOLOGY

## Bangalore -560091

### **RAIN WATER HARVESTING**

Water is one of the most commonly substances on our earth. We need water for all our activities in day to day life. Water in urban areas is always short against the total demand. Surface water is inadequate to meet our demand and we have to depend on ground water. Due to rapid urbanization, infiltration of rainwater into the subsoil has decreased drastically and recharge of ground water has diminished. This scenario requires an alternative source to bridge the gap between demand and supply. Rainwater which is easily available and is the purest form of water would be an immediate source to augment the existing water supply by catching water wherever it falls.

Rain Water Harvesting (RWH) can be defined as the process of collecting and storing rainwater in a scientific and controlled manner for future use along with a provision for artificial recharge of ground water, which is more important in a country like INDIA, which is monsoon dependent.

### **COMPONENTS OF RAINWATER HARVESTING SYSTEM:**

A rainwater harvesting system consists of the following basic elements:

- ❖ Collection System
- ❖ Conveyance System
- ❖ Filtration System
- ❖ Storage Facilities

#### **❖ Collection System:**

- **Catchments:** The catchment of a water harvesting system is the surface, which directly receives the rainfall and provides water to the system. It can be paved area like a terrace or an unpaved area like a lawn.
- **Coarse Mesh:** It is provided at the roof at the point of initiation of the pipes to prevent the passage of debris into them. These help in ensuring a smooth flow of water through the pipes without any noticeable blockage.

  
**Principal & Director**  
**East West Institute of Technology**  
**Bengaluru - 560 091.**

#### ❖ **Conveyance system:**

- **Gutters:** These are channels, which are provided all around the edge of a sloping roof and are meant to collect and transport rainwater to a storage tank.
- **Conduits:** Conduits are pipelines or drains that carry rainwater from the catchment to the harvesting system.

#### ❖ **Filtration System:**

- **First Flush:** A first flush device is a valve that ensures that runoff from the first spell of rain is flushed out and does not enter the system. This needs to be done since the first spell of rain carries a relatively larger amount of pollutants from the air and catchment surface.
- **Filter:** The filter is used to remove suspended pollutants from rainwater collected over the roof. A filter unit is a chamber filled with filtering media such as fibers, coarse sand and gravel layers and serves to remove debris and dirt from water before it enters the storage tank or recharge structure.

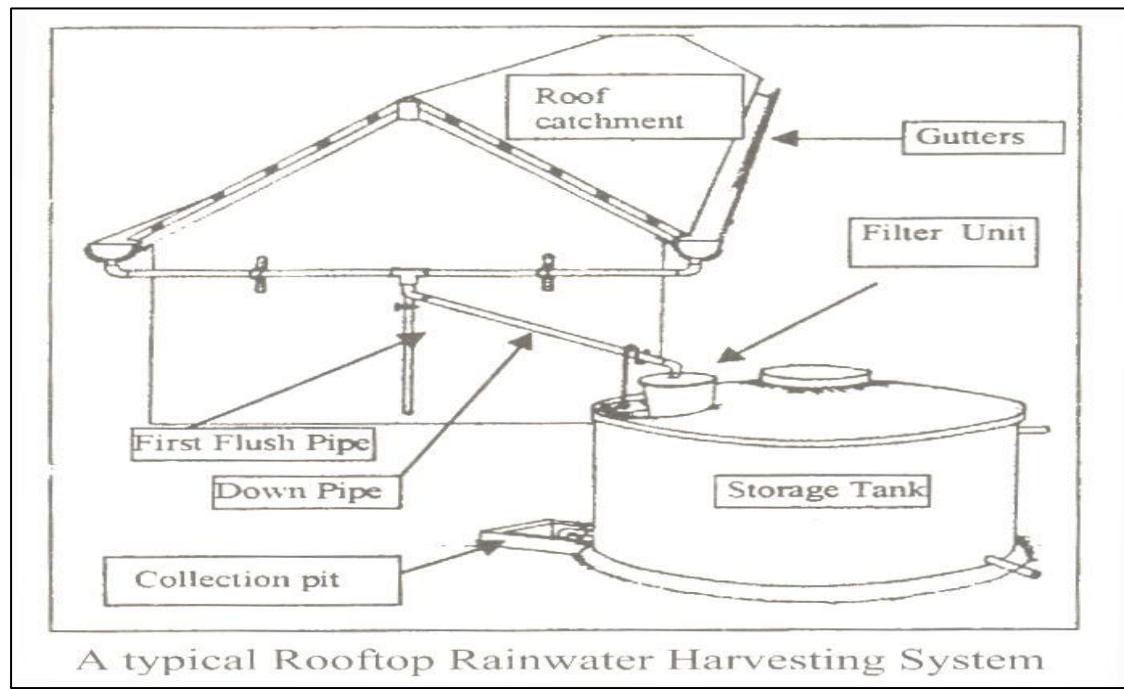
#### ❖ **Storage Facilities:**

The rainwater collected from the rooftop can be diverted after filtration to a storage structure or it can be recharged into the ground. Storage structure may be of the following types:

- Overhead Tanks
- Surface Tanks
- Underground Sump
- **Overhead Tanks:** These are elevated tanks to which water is pumped from the underground sump / well. Overhead tanks may be circular, rectangular, square or any other shape. These could be of masonry, plastic or metal material. These are provided with inlet, outlet, drainpipe and air ventilation pipes.
- **Surface Tanks:** These tanks are mounted on small structure or on the ground. These could be of various shapes. The tank is provided with an inlet and outlet pipe. Normally there is no distribution system attached to it.
- **Underground Sump:** These are usually made of masonry structure or reinforced cement concrete. The sump is provided with an inlet pipe and a manhole to enter. Water is lifted out from the sump by using a pumping device.

In many cases rainwater harvesting has been introduced as part of an integrated water supply system.

## TYPICAL RAINWATER HARVESTING SYSTEM:



## RAINWATER HARVESTING POTENTIAL:

The total amount of water that is received in the form of rainfall over an area is called the rainwater endowment of that area. Out of this, the amount that can be effectively harvested is called the water harvesting potential.

### Factors Influencing The Rainwater Harvesting Potential Are:

1. Eco-climatic Conditions
2. Catchment Characteristics

### 1. Eco-Climatic Conditions:

**a) Rainfall Quantity:** To determine the potential rainwater supply for a given catchment, reliable data are required, preferably for a period of at least 10 years. Also, it would be far better to use rainfall data from the nearest station with comparable conditions.

**b) Rainfall Pattern:** The number of annual rainy days also influences the need and design for rainwater harvesting. The fewer the annual rainy days or longer the dry period, the more the need for rainwater collection in a region.

### 2. Catchment Area Characteristics:

Runoff depends upon the area and type of catchment over which it falls as well as surface features. All calculations relating to the performance of rainwater catchment system involve the use of runoff coefficient.

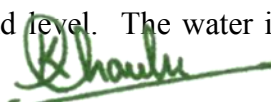
Rainwater harvesting can be implemented in the following types of surfaces:

1. Rooftops
2. Paved and unpaved areas
3. Water bodies
4. Storm water drains

### **EAST WEST INSTITUTE OF TECHNOLOGY CAMPUS:**



The Campus of East West Institute is located 14 kms away from the centre of Bangalore city. The location of the study area is  $12^{\circ}57'18''$  N latitude and  $77^{\circ}39'27''$  E longitude. The campus covers an area of 13.78 acres (55793.3 sq.mts). The probability of annual and monthly rainfall is about 834 and 80 mm (calculated for the period of 29 years), type of soil is Red Loamy and the type of the catchment is rocky and impermeable (roof top). The annual mean minimum and mean maximum temperature in the study area is  $15^{\circ}$  and  $36^{\circ}$ . Number of floating and non floating population in the campus is 6760 nos. (As per the data collected). As the Campus is involved with a large number of people and the requirement of water are phenomenal for a variety of uses. Currently, the campus is depending on 6 bore wells, with depth of the bore well ranging from 400 ft to 450 ft below the ground level. The water is

  
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being pumped to the overhead tanks which are placed on the roof of each building and underground sumps. The pumping of bore wells is continuous with a pumping capacity of 1500 lts to 3000 lts per hour. Out of 13.78 acres (55793.3 sq.mts) of the campus area, the building with flat roof covers 8432.04 sq.mts, garden area of 14040 sq.mts and the roads on campus covers 8441.43 sq.mts. The impermeable area (flat roof tops) contributes for a maximum yield of rainfall which is available for harvesting.

<b>REQUIREMENT OF WATER FOR EWIT CAMPUS PER DAY</b>			
<b>Block name</b>	<b>No of students</b>	<b>Per capita</b>	<b>Quantity-litre/day</b>
Civil, Mech, management	633	10	6330
Main Block	1556	10	15560



*R. Shankar*

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## PROCESS OF ROOF TOP RAINWATER HARVESTING:

### COLLECTION:

Roof can be broadly categorized into two types: - Flat Roofs and Sloping Roofs. Flat roofs normally with RCC have waterproofing on the surface as a surface finishing. This top surface is provided with slope towards down water pipes. For efficient collection and effective usage, slope on the roof need to be given towards the storage device placed for RWH. This will minimize pipe length to the storage system.

Sloping of roofs either with RCC, Mangalore tiles, asbestos sheets or steel carry water to the lower edge of the roof. For RWH, a gutter made out of sheet metal or PVC has to be installed at the lower edge to collect and channel water to the down water pipe.

### ROOF AREA CALCULATION:

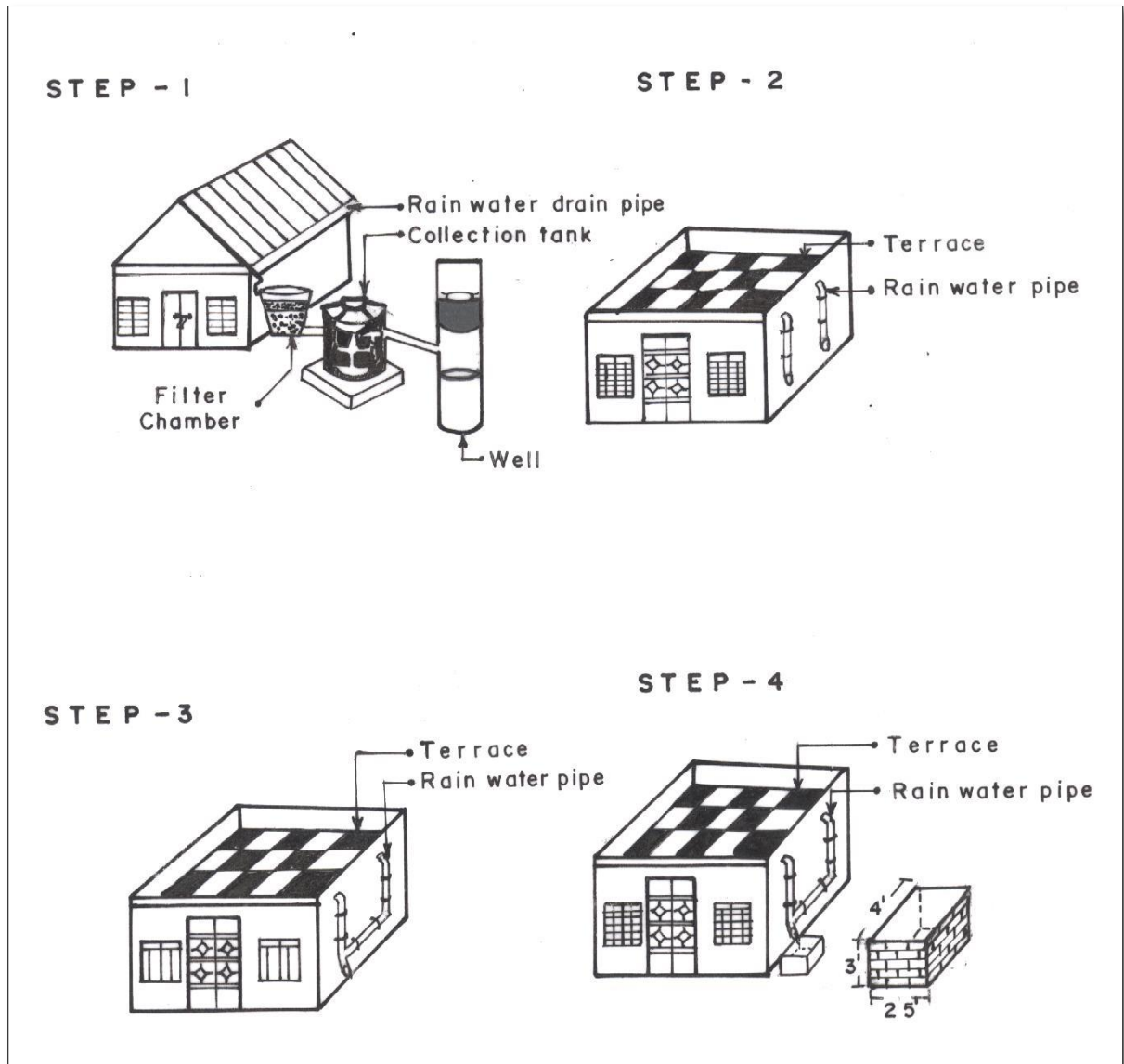
Flat roofs, when made with reinforced cement concrete normally have waterproofing course on the surface as a finish. The waterproof course is done with a small slope towards the down take pipes. Usually practice is to use lime surkhi, in recent times a rich cement mortar is used, weatherproof tiles are also laid on cement mortar. These types of roofs are ideal for rooftop RWH.

Effective roof area is excluding the peripheral wall thickness and any other opening.

TOTAL ROOF TOP AREA		
Sl no	Name of the building	Area m2
1	Main block	1824.69
2	Auditorium	1295.4
3	Civil, Mech, Management	709.56



# DESIGN OF STORAGE TANK



## STORAGE TANK CALCULATIONS BELOW G.L (SUMP):

### Specimen Calculation:

#### For East West Institute of Technology (EWIT)

The capacity of the storage tank is designed for  $52 \text{ m}^3$ , assuming 0.5 mts as Free Board

Assuming  $h = 1.50 \text{ mts}$

$$L \times B \times H = 52 \text{ m}^3$$

Consider  $L = 2 \times B$

$$L \times B \times 1.5 = 52.00$$

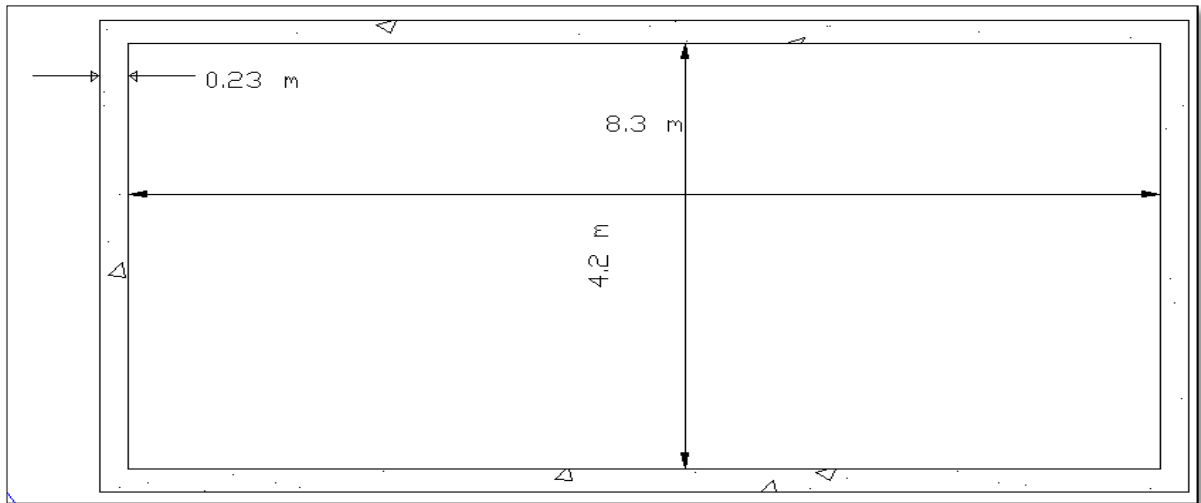
Hence,

$$B = 4.2 \text{ Mts}$$

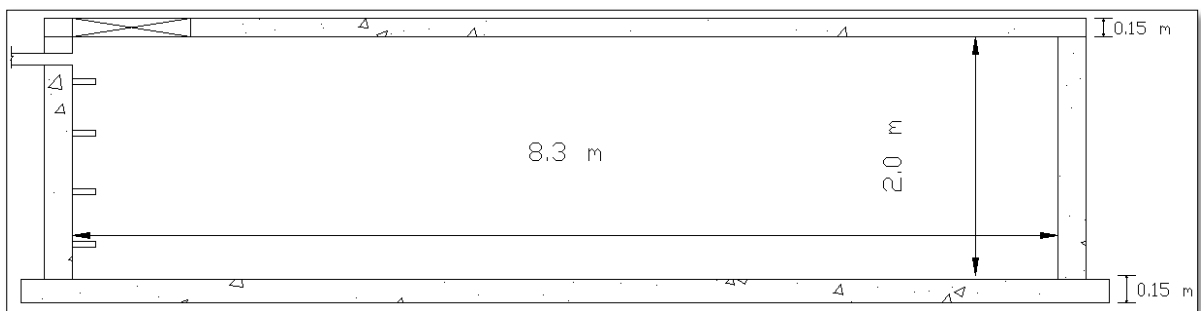
$$L = 8.3 \text{ Mts}$$

$$H = 2.0 \text{ Mts}$$

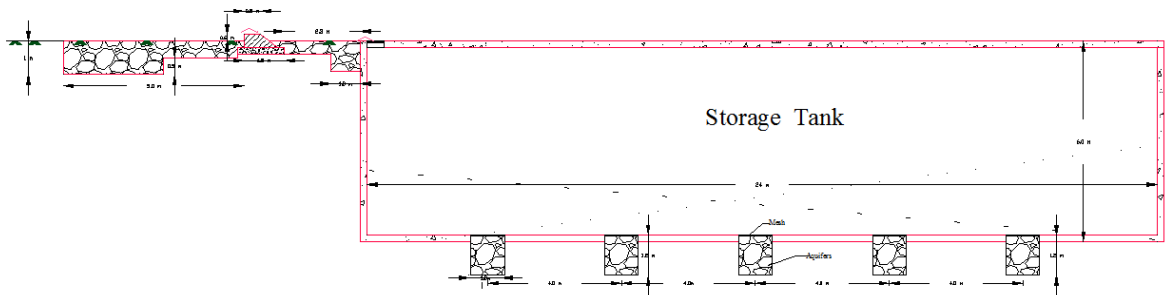
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**PLAN**



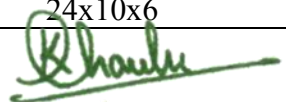
**CROSS SECTION**



**Cross section Of Ground Storage Tank**

The average dimensions of storage tank that is proposed are listed below:-

VOLUME OF STORAGE TANK FOR BUILDING				
Sl no	Name of the building	Area sq.m	Volume of water stored m <sup>3</sup>	Size of storage tank
1	Civil, Mech, management	709.56	52	8.3x4.2x2
2	Main block	1824.69	127.5	(23x1.5x2)&(5x3x2)&(5X3X2)&(4X3X2)
3	Auditorium	1295.4	88.4	10x5x2
4	Ground		1440	24x10x6

  
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A Storage Tank for East West Institute of Technology (EWIT) has been proposed below the Quadrangle, which is located centrally in the internal premises of the Institute. A side open drain of 1 ft x 1 ft is proposed to collect the rainwater and then allowed to the storage tank by means of pipes connected to either sides of the tank. A mesh or filter gratings are to provide on the either sides of tank to avoid the entry of the dirt, rubbish and sand particles which is carried by rainwater into the storage tank by side open drain.



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## ESTIMATION:

An estimate of the said proposal is worked out by taking into consideration all the factors involved in the implementation of the same. An estimate is prepared to construct a storage tank (sump) of required dimensions.

### Quantity Estimate for the Storage Tank of dimensions 8.3 x 4.3 x 2.0 mts

Centre to Centre Length of Long Wall =  $\{(0.23/2) + 8.3 + (0.23/2)\} = 8.53$  mts

Centre to Centre Length of Short Wall =  $\{(0.23/2) + 4.3 + (0.23/2)\} = 6.53$  mts

Sl No	Particulars	No	L (mts)	B (mts)	D (mts)	Qty	Remarks
01	Earthwork in excavation in foundation	1.0	9.16	5.16	2.20	103.98	103.98
	<b>103.98 m<sup>3</sup> ~ 104.0 m<sup>3</sup></b>						
02	Cement Concrete in Bed in Foundation 1:4:8	1.0	9.16	5.16	0.2	9.45	9.45 m <sup>3</sup>
	Steel for bed concrete: 1% of total quantity of bed concrete volume (1/100) X 9.45 X 7850(density of steel)					742kg	742kg
03	RCC Wall 1:4 : 8 Long Wall	2.0	8.76	0.23	2.0	8.05	12.0m <sup>3</sup>
	Short Wall	2.0	4.3	0.23	2.0	3.95	
	Steel for Wall: 1% of total quantity of wall volume (1/100) X 12 X 7850(density of steel)					942kg	942kg
<b>12.0 m<sup>3</sup> and 942kg</b>							
04	Internal 12mm Cement Plaster 1:3 with smooth finish Long Wall	1.0	16.60	-	2.0	33.20	50.4 m <sup>2</sup>
	Short Wall	1.0	8.60	-	2.0	17.20	
	<b>50.40 m<sup>2</sup></b>						
05	12mm Cement Concrete flooring 1:3	1.0	8.30	4.30	-	35.69	35.70
	<b>35.70m<sup>2</sup></b>						
06	RCC roof slab of 1 : 2 : 4, 15cm thick	1.0	8.76	4.76	0.15	6.25	6.10 m <sup>3</sup>
	Deduction for opening (manhole cover)	1.0	1.0	1.0	0.15	0.15	
	Steel for Wall: 1% of total quantity of roof volume; (1/100) X 6.10 X 7850(density of steel)					478.85	479kg
Sl. No	Particulars	Qty	Unit	Rate	Per	Amount Rs. Ps	
01	Earthwork in excavation in foundation	104.0	m <sup>3</sup>	160.00	m <sup>3</sup>	16640	
02	Cement Concrete in Bed in Foundation 1:4:8(except steel)	9.45	m <sup>3</sup>	3850.0	m <sup>3</sup>	36382.5	
03	RCC Wall 1:4 : 8(except steel)	12.0	m <sup>3</sup>	3850.0	m <sup>3</sup>	46200	
05	Internal 12mm Cement Plaster 1:3 with smooth finish	50.40	m <sup>2</sup>	40.00	m <sup>2</sup>	2016	

  
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06	12mm Cement Concrete flooring 1:3	35.70	m <sup>2</sup>	60.00	m <sup>2</sup>	2142
07	RCC roof slab of 1 : 2 : 4, 15cm thick(except steel)	6.10	m <sup>3</sup>	3850.0	m <sup>3</sup>	23485
08	Mild steel	2163	kg	55	kg	118965
<b>Total</b>						<b>245830.5</b>

Area of the Tank = 8.3 x 4.2 = 34.86 m<sup>2</sup>

Rate / Sq.Mts = 245830.5

34.86

= Rs. 7051.93

Rate / Sq.Mts = Rs. 7052 / -

### 6.3 Cost of Materials:

Sl. No	Particulars	Qty	Unit	Rate	Per	Amount Rs. Ps
01	Total Cost of Constructing a RCC Tank					245830.5
02	PVC Pipes, Tee's, Bends, Mesh, filling aggregate & sand Popup filter with first flush	20% of total cost of constructing a RCC Tank				49166
<b>Total</b>						<b>294996.5</b>

**Table**

Area of the tank including the materials = **Rs. 294996.5**

Area of the Masonry Tank = 8.3 x 4.2 = 34.86 m<sup>2</sup>

Rate / Sq.Mts = 294996.5

34.86

= Rs. 8462.32 ~ Rs. 8462

Rate / Sq.Mts = Rs. 8462.00

The Cost of Constructing of a masonry storage tank for various buildings in the EWIT Campus is listed below:-

Name of the Building	Roof Top Area (m <sup>2</sup> )	Storage Tank Dimensions (mts)	Rate / m <sup>2</sup>	Amount Rs. Ps
Civil, Mech, management	709.56	8.3x4.2x2	8462.00	294996
Main block	1824.69	(23x1.5x2)(5x3x2) (5x3x2)(4x3x2)	8462.00	647343
Auditorium	1295.4	10x5x2	8462.00	423100

The cost of constructing the storage tanks (sumps) has been calculated for the various buildings located in the Campus.

- ❖ Area of the catchment is 8432 sq.mts
- ❖ Implementing Cost / sq.mtr of RWH system is Rs. 8462 /-
- ❖ The water collected will be utilized for gardening and flushing of toilets
- ❖ A rain gauge can be implemented to study the actual rainfall in the study area
- ❖ The runoff of first rain should not be allowed into the rainwater harvesting structures. Thus it should be drained off through a bye pass arrangement provided near the harvesting structures.
- ❖ Water scarcity can be met throughout the year
- ❖ The existing bore wells can be recharged by means of recharge pits
- ❖ The water flowing on the paved surface can be allowed to flow in the side drains which has a recharging pit
- ❖ Water can be recharged into bore wells by using perforated pipe, and the area where perforated pipes are used should be free from leaking sanitary lines

We can say that on an average two and a half months of rain water is harvested and the water from other sources are saved.

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