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Ref.No. : 154 /Raigarh

Date : 03.02.21

CERTIFICATE
OF
RAIN WATER HARVESTING WORK

This is to certify that I have Installed/Inspected Rain Water Harvesting System in the Industrial Premises of M/s. Shambhavi Ispat
Gevani Raigarh (C.G.)
03 Nos. of Recharge Well of Roof Top Rain Water Harvesting.

Necessary Precautions :

- (1) First two flushes of rain-water are not for use of recharging. It must be flushed out.
- (2) This System Works in Rainy Season only (July-Nov.) every year.
- (3) The System is designed for Purely Rain Water Harvesting, Please Ensure that Run-Off Water is purely Rain Water/fresh Water only & Contaminated Free.
- (4) Save Water-Save Life.


VILISH GUPTA
[M.Tech.]
Hydrogeologist
Raigarh (C.G.)

RAIN WATER HARVESTING POTENTIAL CALCULATION

OR

ASSESSMENT

For

M/S. SHAMBHAVI ISPAT

VILLAGE & POST GERWANI, RAIGRH (C.G.)

Presented By :

Vilish Gupta (M.Tech.)

(Hydrogeologist)

FIGURE-1 :
LOCATION OF RAIN WATER HARVESTING WELL+PIT IN PLANT
PREMISES, 3 NOS OF RECHARGE WELL+PIT

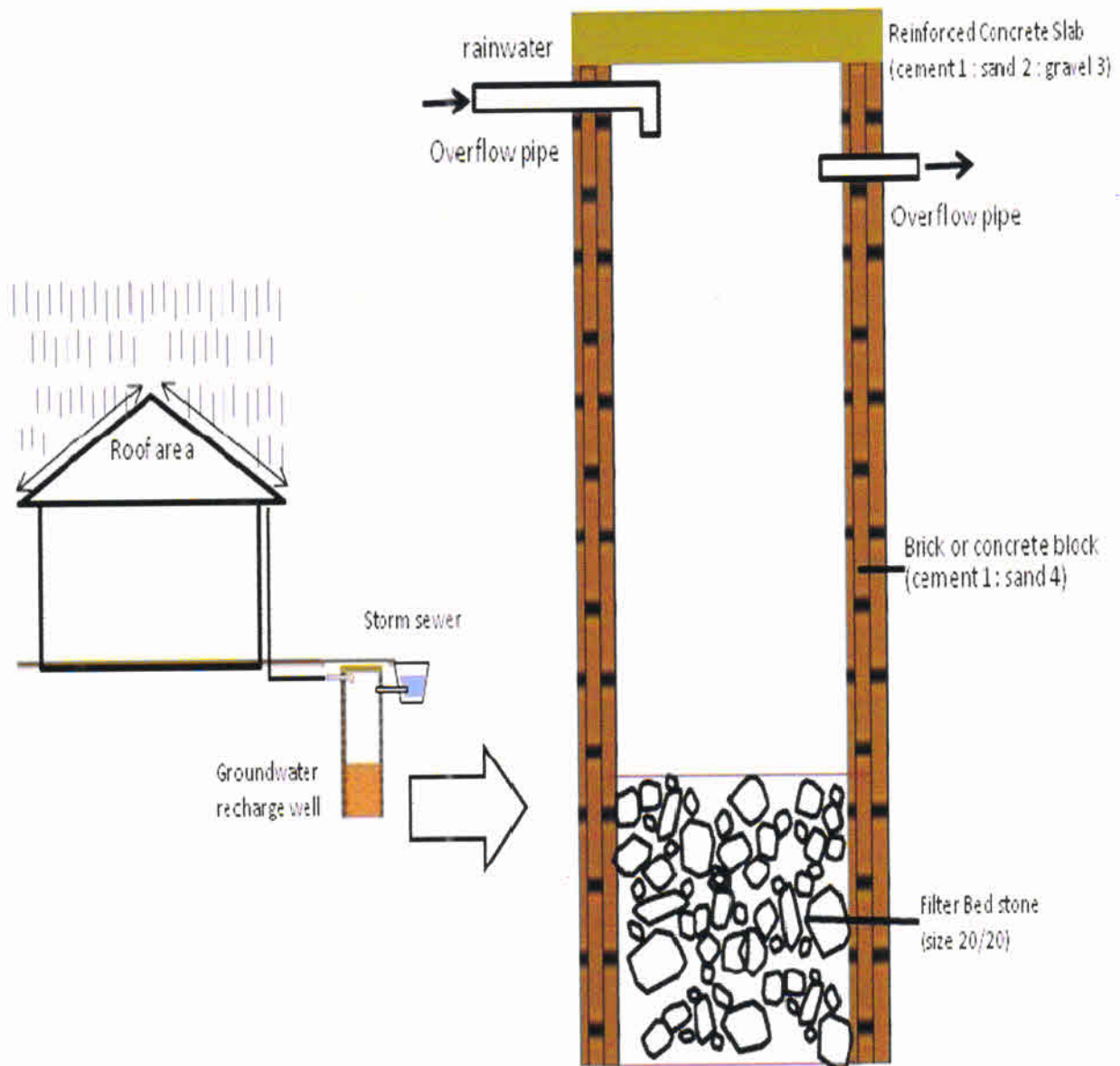
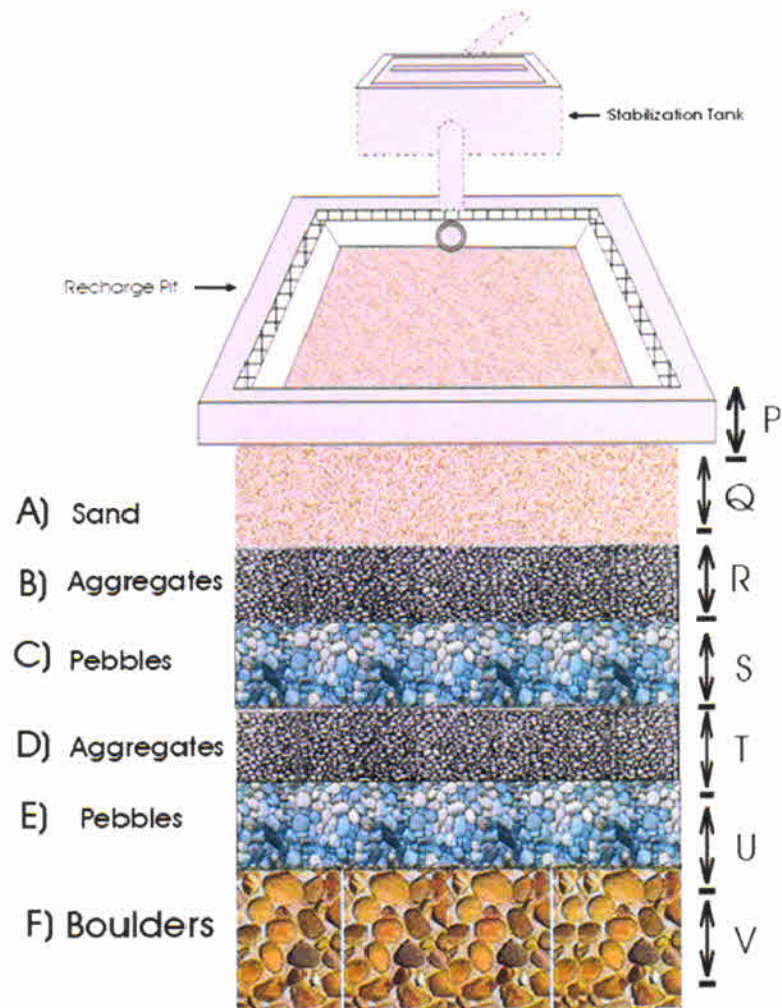


FIGURE-2 :

**LOCATION OF RAIN WATER HARVESTING WELL+PIT IN
PLANT PREMISES, 3 NOS OF RECHARGE WELL+PIT**



PROJECT DESCRIPTION

Name of the Project	M/S. SHAMBHAVI ISPAT
Address	VILLAGE & POST GERWANI, RAIGRH (C.G.)
Total Plant Area	80937.2 Sq.mts (20.000 Acre)
Total Rainwater Available for Recharge	878.00 M³/year
Total Numbers of Recharge Well / Pit	3 Nos
Area covered by each Pit	Diameter - 6x6 fit and Depth - 8 Fit.
Photo Graphs	Enclosed

Rainwater Harvesting Potential Estimation :

AREA STATEMENT :

S.No.	Particulars	Area in Mtr.
1	Building and Shed	7978.53
2	Road/Paved Area/Pond	1011.72
3	Open Area	47665.79
4	Green Belt Area	24281.16
Total Area :		80937.195

1 Roof top rainwater run-off (A) :

$$\text{Available roof top rainwater runoff} = A * R_f * A_v R_c$$

Where,

A = Roof top area,

R_f = Rainfall,

A_vR_c = Average run-off coefficient

The roof top area for the project is 7978.53 Mtr. with average rainfall an around 1240.0 m.m. i.e. 1.24 m and Average runoff coefficient as 85% then

$$\begin{aligned} \text{Available roof top rainwater runoff} &= A * R_f * A_v R_c \\ &= 7978.53 * 1.24 * 0.85 \\ &= 8409.371 \text{ Cum or Say } \mathbf{8409 \text{ Cum}} \end{aligned}$$

2 Road/Paved area rainwater run-off (B) :

$$\text{Road/Paved area rainwater runoff} = A * R_f * A_v R_c$$

Where,

A = Road/Paved area,

R_f = Rainfall,

A_vR_c = Average run-off coefficient

The Road/Paved area for the project site is 1011.72 Mtr. with average rainfall an around 1240.0 m.m. i.e. 1.24 m and Average runoff coefficient as 70% then

$$\begin{aligned} \text{Available Road/Paved area rainwater runoff} &= A * R_f * A_v R_c \\ &= 1011.72 * 1.24 * 0.70 \\ &= 878.1686 \text{ Cum or Say } \mathbf{878 \text{ Cum}} \end{aligned}$$

3 Open land area rainwater run-off (C) :

$$\text{Road/Paved area rainwater runoff} = A * R_f * A_v R_c$$

Where,

A = Open land area,

R_f = Rainfall,

AvRc = Average run-off coefficient

The Open land area for the project site is 47665.79 Mtr. with average rainfall an around 1240.0 m.m. i.e. 1.24 m and Average runoff coefficient as 40% then
Available open area rainwater runoff = $A * R_f * A_v R_c$
= 47665.79 * 1.24 * 0.40
= 23642.23 Cum or Say **23642 Cum**

4 Green Belt Area rainwater run-off (D) :

Gren Belt area rainwater runoff = $A * R_f * A_v R_c$

Where,

A = Green Belt Area

Rf = Rainfall,

AvRc = Average run-off coefficient

The Green belt area for the project site is 24281.16 Mtr. with average rainfall an around 1240.0 m.m. i.e. 1.24 m and Average runoff coefficient as 40% then
Available open area rainwater runoff = $A * R_f * A_v R_c$
= 24281.16 * 1.24 * 0.40
= 12043.46 Cum or Say **12043 Cum**

So the Total Rainwater available for recharge

$$\begin{aligned} &= A + B + C + D \\ &= 8409 + 878 + 23642 + 12043 \\ &= 44,972 \text{ Cum} \end{aligned}$$

So the total rainwater thus available from roof top, green belt and open land area will be diverted to recharge wells designed in our plant having size of 6x6 Fit Diameter and 8 Fit Depth through rainwater drains and injected into the aquifer after passing through the filter pit.

Thus, total rainwater [44,972] is being recharged in our plant premises though recharge wells, and on the other hand, in future, if required, we will increase the number of Recharge Wells.

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Bill^{of} Impact assesment report
of Rainwater harvesting of

M/s Shambhavi Sapat Goveni
Raigarh, and Consultancy

11500/- (Eleven thousand five
hundred only)

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03.02.21