

# KETKI CONSULTANCY ENGINEERING SERVICES

CIVIL ENGINEERING CONSULTANCY  
KARAM TOLI CHOWK, OPP. KARAM TOLI TALAB  
RANCHI - 834008, JHARKHAND  
MOB. NO. - 9234657476, 9234657477, 7004043636  
E-Mail:-kcesranchi@gmail.com



Dated: -02/02/2023

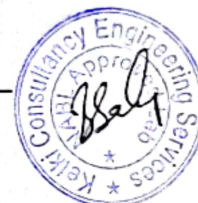
1. Test conducted as per I.S. Code :- 3025
2. Name of Applicant:- M/S Vinaika Infra Through its Partners Vinay Kumar Agrawal, Ajay Kumar Agrawal.
3. Proposed to build :- Commercial Building
4. Plot No :- 352,360,1000,1002,1013,1014,351,356,363,364,365,325,1011, 342,343,345,346,347,348,349,1001,999,1007,1008,1009,1010, 1011,1112.
5. Ward. :- NA
6. Khata No :- 36,44,13
7. Holding No. :- NA
8. Thana No :- 04
9. Thana :- Oramnhji
10. Date of Sample Received :- 05/01/2023
11. Date of Test Conducted :- 05/01/2023
12. Approximate B. Area :- 13317.56 Sq.mt.
13. Sample given :- By the Client.
14. Type of Test :- Water test. Required for building construction
15. Village :- Madhuka, Ormanhji, District: - Ranchi.

This test will be required for Construction of Building.

Sl No.	Parameter	Unit	Results
1	pH		6.9
2	Turbidity	NTU	<5
3	Co lour	Hazen unit	<5
4	Total dissolved solid	Mg/l	276
5	Total Hardness (as CaCO3 )	Mg/l	288
6	Alkalinity	Mg/l	136
7	Calcium (as Ca)	Mg/l	33
8	Magnesium (as Mg)	Mg/l	13
9	Chloride (as Cl)	Mg/l	89
10	Sulphate (as SO4)	Mg/l	21
11	Fluoride (as F)	Mg/l	Nil
12	Iron (as Fe)	Mg/l	Nil

*Praveen Kumar*  
Environmental Engineering Lab  
Ketki Consultancy Engineering Service  
RANCHI (Jharkhand)

Institution of Engineer Member (India) : M-1603579, M-1603587  
Institute of Applied Quality Management : LQA/17025/18-3-12  
R.R.D.A. Registration : 0038/2015/RRDA  
R.M.C. Registration : RMC/LE/0005/15-16, R/N NO. - 9237  
NABL ACCREDITED LAB.  
AN ISO 9001:2015 CERTIFIED FIRM CERTIFICATE NO. - 200908608  
MSME Registration No. - UDYAM-JH-20-0005630



- A. Discharge: - 7171.67 L/hr.  
 i) Extraction allowed: -7171.67 L/hr.  
 ii) Maximum extraction: - 40986.41 L/day.
- B. Physically water odorless & Colorless.
- C. Roof top rain water harvesting (to recharge the aquifer) details enclosed. Applicant of proposed building will have to utilize rainwater on roof top and from open space such as parking, pathway etc. through recharge pits & trenches.
- D. I do hereby declare that the informing given hereinabove are true to the best of my knowledge and belief and based on the basis of engineering/ field tests. This is based on data collected. Certified that the test has been conducted at site.
- E. Over all requirement of Water: - Approximate 27000.00 lit.
- F. Requirement & store of over Head tank / Surge: - Approximate 27100.00 lit.
- G. Number of Cottage:- 19, Room: -40 nos.
- H. Number of Visitors: - 200 persons.

**Calculation of Discharged at Bore well**

**Bore- BH-1**

- |   |                     |
|---|---------------------|
| 1. Total depth of Bore well                                 | : 510'              |
| 2. Diameter of the well                                     | : 6"                |
| 3. Diameter of outlet Pipe                                  | : 4"                |
| 4. Details of pump<br>(Type of Pump)                        | : 1.5 hp subm. Pump |
| 5. Static water level<br>(Before starting pump)             | : 63' BGL           |
| 6. Pump started at  | : 7.30 A.M.         |
| 7. Discharge measured up to                                 | : 8.30 A.M.         |
| 8. Maximum draw -down as noticed at: (After 8.30 A.M. 100') |                     |
| 9. Water level draws down                                   | : (163'B.G.L.)      |
| 10. Discharge   | : 1836 L/hr         |

Calculation of discharge of bore well measured by taking volume Vs time method in account a container of 250 liters is taken and found that the container was filled in 490 Seconds.

Hence the rate of discharge can be calculated as follows:

$$Q = 250/490 \times 60 = 0.51 \times 60 = 30.61 \times 60 = 1836 \text{ L/hr.}$$

Extraction allowed: -1836.0 L/hr.

Maximum allowed: -13241 L/day.



Calculation of Discharged at Bore well

Bore BH-II

- |   |                     |
|---|---------------------|
| 1. Total depth of Bore well                                 | : 590'              |
| 2. Diameter of the well                                     | : 6"                |
| 3. Diameter of outlet Pipe                                  | : 4"                |
| 4. Details of pump<br>(Type of Pump)                        | : 1.5 hp subm. Pump |
| 5. Static water level<br>(Before starting pump)             | : 80' BGL           |
| 6. Pump started at  | : 9.30 A.M.         |
| 7. Discharge measured up to                                 | : 10.30 A.M.        |
| 8. Maximum draw-down as noticed at: (After 10.30 A.M. 110') |                     |
| 9. Water level draws down                                   | : (190' B.G.L.)     |
| 10. Discharge   | : 2432.45 L/hr      |

Calculation of discharge of bore well measured by taking volume Vs time method in account a container of 250 liters is taken and found that the container was filled in 370 Seconds.

Hence the rate of discharge can be calculated as follows:

$$Q = 250 / 370 \times 60 = 0.67 \times 60 = 40.54 \times 60 = 2432.45 \text{ L/hr.}$$

Extraction allowed: -2432.45 L/hr.

Maximum allowed: -12648.64 L/day.



Calculation of Discharged at Bore well

Bore BH-III

1. Total depth of Bore well : 615'
2. Diameter of the well : 6"
3. Diameter of outlet Pipe : 4"
4. Details of pump : 1.5 hp subm. Pump  
(Type of Pump)
5. Static water level : 55' BGL  
(Before starting pump)
6. Pump started at : 8.30 A.M.
7. Discharge measured up to : 9.30 A.M.
8. Maximum draw-down as noticed at: (After 9.30.30 A.M. 120')
9. Water level draws down : (175' B.G.L.)
10. Discharge : 2903.22 L/hr

Calculation of discharge of bore well measured by taking volume Vs time method in account a container of 250 liters is taken and found that the container was filled in 310 Seconds.

Hence the rate of discharge can be calculated as follows:

$$Q = \frac{250}{310} \times 60 = 0.80 \times 60 = 48.38 \times 60 = 2903.22 \text{ L/hr.}$$

Extraction allowed: -2903.22 L/hr.

Maximum allowed: -15096.77 L/day.



Remarks: -

- a) Since the bore wells are yielding water 7171.67 L/hr is providing at par sufficient/insufficient water for above-mentioned consumption.
- b) One more bore well is required:- One more required.  
The rate of extraction will not exceed by 7171.67 l/hr and the extraction period will under no circumstances will exceed 3 hrs at a stretch limited to 40986.41 L/day. This will help in recharging the water bodies (Aquifer) falling under cone of depression.
- c) The Site has D.W.S.D. water supply connection/Pipe line crossing through the plot will also cater the need of people of apartment which reduces the extraction of ground water.
- d) Roof top harvesting of rainwater to recharge ground water on the plot must be restored to as per the design and plan for the as per architect drawing.
- e) Regarding the recharging the aquifer by rainwater proposed apartment has got approximate 6198.00sqm Approx open roof area, which can retain annual rainwater of given magnitude area. Average annual rainfall of Ranchi is approx 1.4 mts (1400mm).As per ours calculation annual volume of water recharge approx. total 8677200 L/year.
- f) The construction of rainwater recharge pit including 4.5" – 6" dia drilling up to desired depth (Depth variable as per litho logy of area) in the recharge pit in the building premises to facilitate harvesting of rainwater to recharge ground water should be technically supervised by Engineer.

Seen and understand.

Signature of Applicant/ Attorney holder/Architect.

Date: - 02/02/2023

For Ketki Consultancy Engineering Services

Place: - Ranchi

*Praveen Kumar*  
(Praveen Kumar)

