Energy and Water Saving Concept for Three Storey Building

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Abstract - **Today's world is developing rapidly. In this development they using natural energy resources in large amount. In that development the energy resources which are uses are most of the non-renewable sources. That is what human development is doing in the industrial development but for the next generation the formation of the dark nature is also done. Greenhouse effect, hole in ozone layer is reason of the earth warming. The level of sea is increasing but the level of drinking water sources goes down. The proportion of underground water is decreasing at significant level. It is time to come that we should start this development so that we can come forward strongly to sustain our world for long time. For this the world has come out with great efforts and world is becoming awake. In India's budget 2019-20 "pollution free india with green mother earth and blue skies" and "water, water management, clean river" it has been conceptualized and with this Gujarat state also conceptualized to save energy and water in their commodity budget of Gujarat state 2019-20. Therefore, the future of world as well as the future of india becomes the duty of youth like us that we, it is our duty to help fulfill this new world new conceptualized thinking. Construction of such energy sources as well as water management and water preservation is called as green building. In "india green building council" is functioning for its implementation and we keep measurement attention in our mind and the new way of giving new momentum to human's life. In our project energy and water saving consumption for the three story building. We give a boost to the development of this small but new innovative as well as trying to give strength full project to become a strength full future of our world as well as India.**

keywords - **Green building , Sustainable building, Eco friendly building**

I. INTRODUCTION

The energy wasting and water wasting ratio increased day by day in the world. The pollution ratio also increased day by day into the world. It is a biggest problem in the world now a day. We have to thinking more and more about energy saving, water management and pollution free concept on practical and economical possibility bases.

Forest ratio day by day decreases in the world due to 4th generation industrial and development revolution. The health of environment is reach on critical stage due to the decreasing of forest ratio. The earth temperature is increasing day by day on earth. In 2050 the average temperature of world should be increased 274k and in 2080 it should bi 275k increment done from research data. The level of sea water should be increased day to day but the water level of drinking water decreases day by day. The level of ground water is decreasing at very high significant level. So the saving of energy, pollution and water is the biggest challenges for future world. Our project should be very helpful for it.

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II. PROJECT OBJECTIVE

Produced electricity from solar panel, which used as common light of building. (Street light, passage light, compound light, decorative light of building, fountain energy etc.). To developed U.G thank for saving monsoon rain water and use it after monsoon. Developed forest type area for keep outdoor environment pollution free and that area should as same as compare to total build up area of building.

III. PROJECT SCOPE

This type of project is the demand of future. We have to think more and more about environment, energy and water management. It is the main requirement of human beings. To save our world this type of project is being necessary of future world.

- From designing Energy And Water Saving Concept For Three Storey Building we build the idea of awareness for energy, water management and saving and put a idea for pollution free world on small scale but it gives result to us on large or very huge scale because to change human beings mentality from small scale is spread very fast on large scale. To fulfill this project we have to change the human mentality and needed awareness for pollution free and healthy India. This is the scope of our for building new India and healthy pollution free India.
- Many government and private company and organization thinking about new and new idea for building pollution free, energy saver and water saving & management concept. Our project helps them to progress their work for building new world. So That are the scope of our project.

IV. PREPARE YOUR PAPER BEFORE STYLING

In this project we had done work for sustainable source and uses of energy saving , water saving and environmental aspect project. That we had calculate the common maintenance electricity demand and water demand and also research about air quality index. From that data we had made plan for three storey building with detail design of solar panel , U.G water tank and greenery area in under rules and guideline for construction in india.

CALCULATION:

SOLAR PANEL & ENERGY REQUIREMENT

TABLE 1: CALCULATION OF REQUIREMENT ELECTRICITY SOURCE : SELF MADE

SR. NO.	TYPES	UNIT (NOS.)	TOTAL(WATT)
1.	PASSAGES LIGHT 22W	11	231 W
2.	STAIRCASE LIGHT 15W	5	75 W
3.	PARKING LIGHT 12W	15	180 W
4.	DECORATIVE LIGHT 15 W	6	90W
5.	MOTER + EXTRA	2	(500+250) = 750 W
6	TOTAL		1326 W

TABLE 2: TOTAL ELECTRICITY NEEDED PER DAY. SOURCE : SELF MADE

SR NO.	TYPES & TOTAL WATT	WORKING HR.	TOTAL.
1	PASSAGE 231 W	12	2772 W
2	STAIRCASE 75 W	24	1800 W
3	PARKING 180 W	12	2160 W
4	DECORATIVE 90 W	7	630 W
5	MOTER + EXTRA 750 W	3	2250W
TOTAL			9612= 10000 W/DAY = 10 KW / DAY

NOW ABOUT CALCULTION OF SOLAR PANEL:

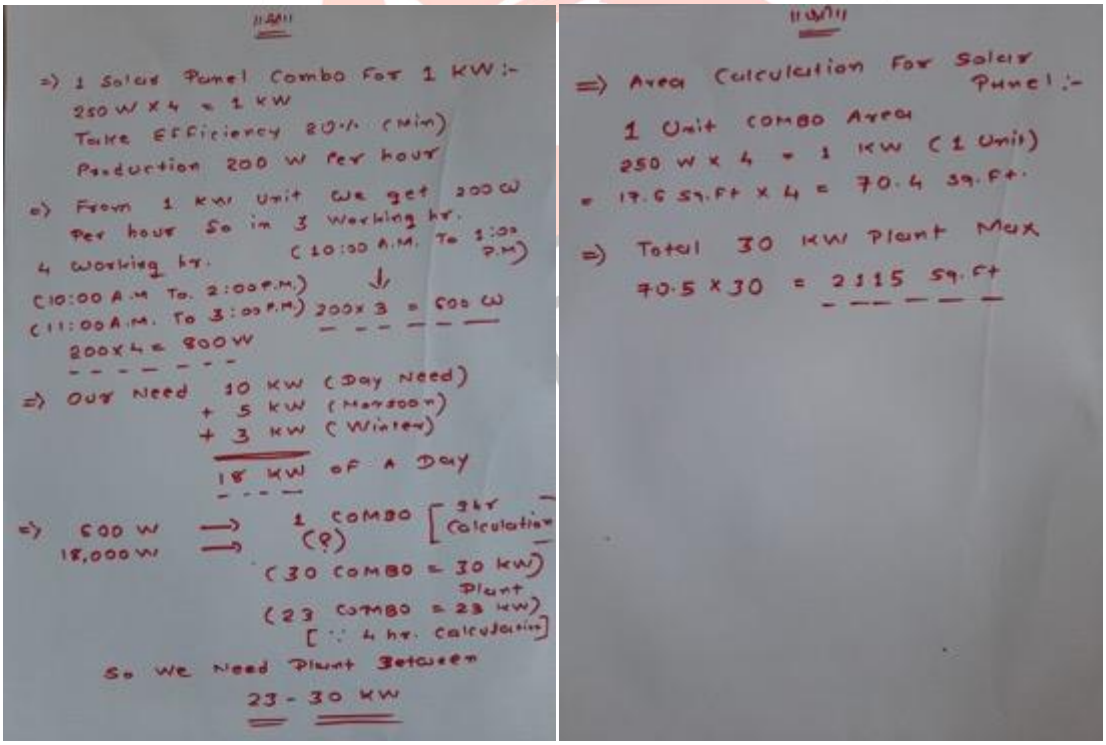

PHOTO 1, 2: CALCULATION OF SOLAR PANEL. SOURCE: SELF MADE

U.G WATER TANK CALCULATION

In general form we calculate water demand from water demand data. So in our project we also calculate our water demand from that data. From India's data we can say that in India per capita demand of people are 135 liter/ day. So we can calculate the demand of 6 members family are 135*6 = 810 liter/day. In our project of three storeys residential there are 4 flats on each floor so there is 810*4= 3,240 liter / day per floor. So 3,240*3 = 9720 equal to 10000 liter + 15% = 11500 equal to12000 liter per day required for home use. But in building common uses like building cleaning, car washing, floor washing, amenities cleaning & cleaning of swimming pool required 900 liter per day. So that all calculation reach on 12900 liter per day equal to 13000 liter per day. So in any 3 months for using water from U.G tank it 13000*93 days=12, 09,000 liters needed. Now an

average rainfall in Surat is 1192mm per year. So now to capacity of our project to catching this water is calculated by the formula= average rainfall in city (mm) * particular area in (Meter square) = Total liter catching capacity. So from this data our project had almost 800 meter square * 1192 mm = 9,53,600 liter per year we have to storage. So from it we can say that we can easily survive 3 month without municipal water with help of our rain water storage U.G thank. Now we have to calculate 10, 00,000 liter U.G tank area for construction. So we are requirement of 1000 meter cube U.G tank. But our limitation of built up area for our project is too small. So we have not to enough places to construct that huge water tank. We have to think practically and economically. So we have capacity to construct 10,00,000 liter rain water saving U.G tank. Now we explain it by calculation. Our each flat 140 square meter carpet area so 140*4 = 560 meter square + 40% = 784 square meter area. So we can built 15.18*9.60*7.5 = 1092 cubic meter U.G tank which can store and clear a water up to 10 lakh liter easily. Extra water should be gone directly to the ground area via piping. So in this phenomena in monsoon season when rain water starts to saving via U.G tank the municipal water source closed by society and starting using of rain water in regular bases. When the tank to be overflow, one line should be starting delivered water for increasing ground water level. So in monsoon season it tank should be refilling day by day from rain water and we can use. From this way in one rainy season only from 800 square meter area we can save up to 1200000 liter water. From it just imagines this concept should be very helpful in future. We have to develop it in very huge way day by day. After rainy season to cleaning this tank proper manhole & drainage also should be build in it. All calculation on paper in easy form is display below of this portion.

PLANTATION CALCULATION

We have to plan for making environment clean equal area as our project build of area. So for it first of all we have to research for best trees which produced high rate of oxygen & less production of carbon dioxide in night. Neem , Peepal & Areca palm are the best three trees for oxygen production. We have to be plant 1/3 of total built up area as proper way of plantation. Its area like as forest. So from it step we can make environment clean atmosphere near our project. From it we also work for making green and pollution free India. From that way we can fulfil the motto of union budget 2019-20 “pollution free India with green mother earth &blue skies” and also “water, water management, clean rivers.” So our project is ideal for next generation construction. It is small way to big thinking and planning for better world. We had tried to make the innovative ideas for constructing eco friendly green building. This idea also matches with green building policy of green building council of India in residential sector. Our plan is also useful for industrial sector.

ESTIMATION OF OUR PROJECT

SR. NO.	ITEM	RATE	TOTAL
1.	BUILDING (R.C.C + MASONRY + PLASTER +PLUMBING +ELECTRICAL +COLOUR +ALL FINSHING WORK)	1000 RS. / SLAB SQ. FT.	TOTAL SQ. FT. FOR WORK = 30,000 * 1000 RS. = 30,000,000.00 RS.
2.	U.G. TANK WITH PURIFING UNIT & EXTRA PLUMBING	12 RS. / LITER	10 LAKH LITER TANK * 12 = 1.2 CR. RS.
3.	PEEPAL TREE	200/ UNIT	1500*200 = 3,00,000 .00RS.
4.	GREENARY WITH LEVELING & DEVLOPING WORK	80/SQ.FT	9000 SQ.FT * 80 RS. = 7,20,000.00RS
5.	BLOCKING WORK	80/ SQ.FT	10,000 SQ.FT* 80 RS. = 8, 00,000.00 RS.
6.	BOUNDRY WALL(5 FT HIGHT)	300 / FT	2500 FT * 300 RS. = 7, 50,000.00 RS.
7.	SOLAR PANNEL WITH INVATOR	5 LAKH / 10KW PLANT	50 KW * 10 KW = 50 LAKH RS,
8.	LAND VALUE	1200 RS. / SQ.FT WITH ALL CHARGES	26,522 *1200 = 3.18 CR. RS.
9	BUILDER PROFIT	20 %	1.57 CR RS.
10.	T.D.C		9.45 CR. RS
11	PER SQ. FT PAYABLE VALUE FOR CONSUMER		9.45 CR. / 18000

V. USING

We can use this project in general basis in tropical regions that can they receives sun light , rain and better climate in proper way and we can utilized it for consumption. From it we can save environment in proper way for upcoming futures. We gives a stage to our upcoming generation for making better world.

VI. ACKNOWLEDGMENT

It is our privilege to express our sincerest regards to our project coordinator **Mr. Shyam Doshi** for his valuable input, able guidelines, and support of our project. His technical background about the **Energy, Water & Environment Saving Concepet.** Which we have used for our project work, has made everything clear and easy for us to understand. We are really appreciating his encouragement during the whole project.

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[7] Mr. shyaam doshi: (department of civil engineering , Bhagwan Mahavir College Of Engineering & Technology,surat) Help us in autocad drawing & help in solving problem in our project.

[8] Mr. Kumareshbhai Aggarbattiwala: (Architect, A.R House, Construction & Devlopment Company , Surat.) Help us to planning and all.

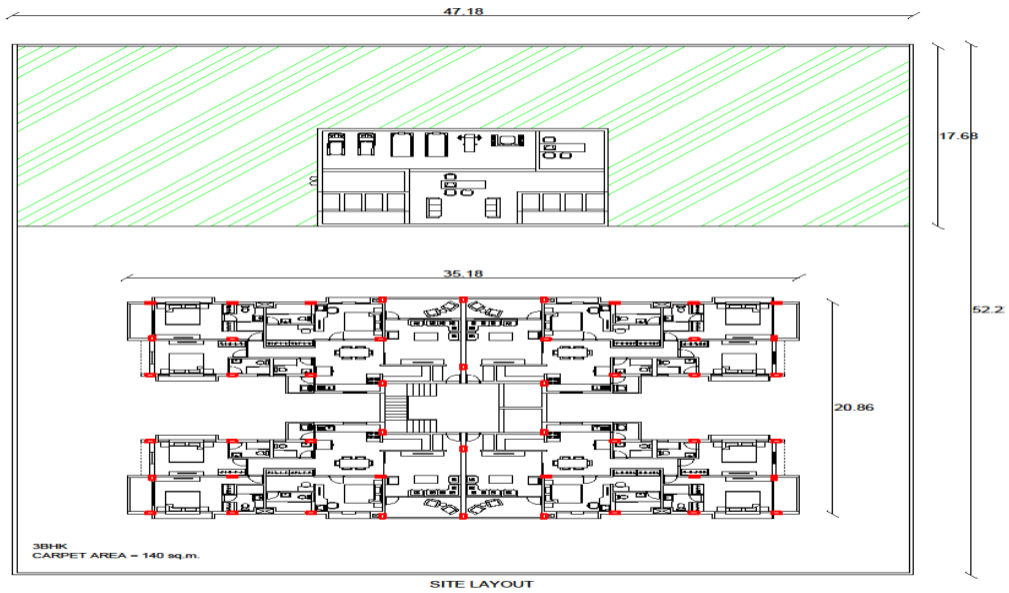
[9] Estimation & Costing In Civil Engineering Book Author: B.N Dutta Help us in calculating costing.

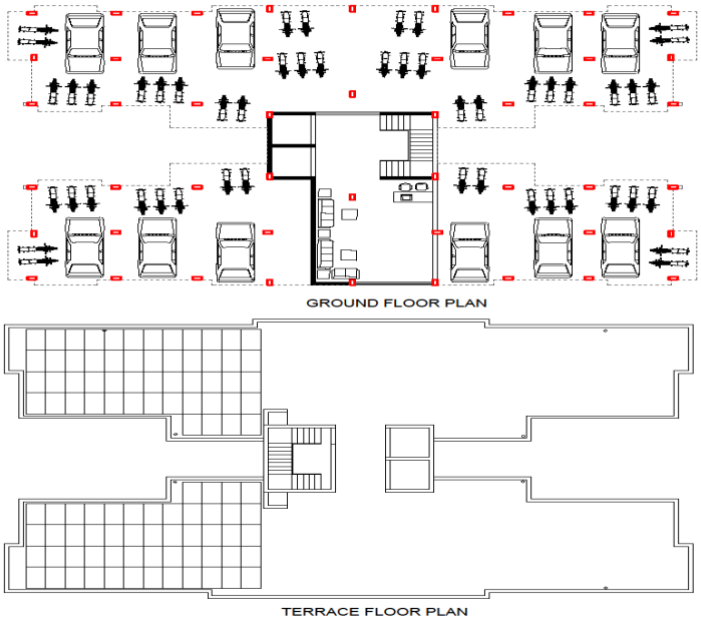
[10] Mr. Pankaj Desai: (Structural Engineer, Design Studio, Surat.) Help us to design U.G tank concept.

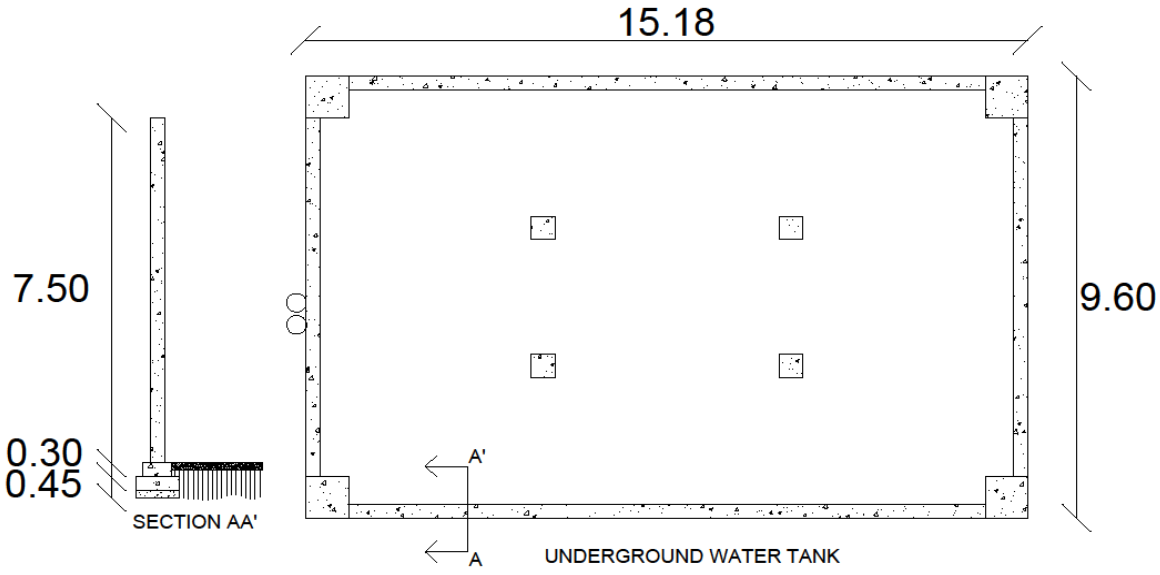
[11] www.mnre.gov.in (Ministry of New & Renewable Energy) Help us in solar panel research.

[12] www.suratmunicipal.gov.in (SMC WEB) Help us for rainfall details.

Sample plan for our project concept:




GROUND FLOOR PLAN
TERRACE FLOOR PLAN


15.18
9.60
7.50
0.30
0.45
SECTION AA'
A'
A
UNDERGROUND WATER TANK