

M/s Vista Homes
SURVEY NOS. 193, 194 & 195, KAPRA,
KEESARA MANDAL, RANGA REDDY DISTRICT

APPLICATION FOR OBTAINING CONSENT FOR
ESTABLISHMENT OF RESIDENTIAL CONSTRUCTION PROJECT

SUBMITTED TO
ANDHRA PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE

FORM – 1 PART C 5
APPLICATION FOR CONSENT FOR ESTABLISHMENT

**(Information to be furnished for the purpose of issue of consent for
Establishment by A. P. Pollution Control Board, wide G.O. Ms. No.43, EFS&T
Dept, Dt.25/4/1984/ of Govt. of A.P.)**

- 1.0 Name of the Industrial undertaking : M/s Vista homes
5-4-187/3&4, second floor,
Soham mansion,
MG road, Secunderabad 500003
Ph.no: +91 040-66335551
Fax No. +91 040- 27544058

2.0 PROCESS DETAILS

2.1 Production Schedule

- 2.1.1 List of main products proposed to be : Residential Construction Project
(Annexure-I)

Land Allocation for various purposes

Land Use	No of Floors	Total No of Units	Total Site Area in m ²	Total Built up area (m ²)
Block A	B+G+4	29	503.7	2887.06
Block B	B+G+4	45	859.9	4299.5
Block C	B+G+4	4+35	700.25	3756.21
Block D	B+G+4	25	518.03	2590.15
Block E	B+G+4	22+18+45	1013.54	5691.5
Block F	B+G+4	45	859.9	4299.5
Block G	B+G+4	45	859.9	4299.5
Block H	B+G+4	45	859.9	4299.5
Block I	B+G+4	45	859.9	4299.5
Amenities Area	G+4		334.10	896.6
Green Area			2507.38	
Road Area			6000.0	
Open Area			6847.4	
Buffer strip			39.1	
Parking				
Basement				14345.71
Total		22+22+359	22763.0	51664.73
Total no. of Units=404 (22 LIG + 22 EWS + 359)				

- 2.1.2 Name of By-products: NA NA
2.1.3 Period of implementation in months 36 Months

2.1.4 Approximate time by which factory will go into trial production July 2015

2.2 RAW MATERIALS CONSUMPTION

2.3 MANUFACTURING PROCESS

2.3.1 Sources of process know - how:(In house/National laboratory/ Foreign/ Other) Residential Construction project

2.3.2 Please enclose supplementary sheet giving brief description of process technology utilized along with a flow chart. Enclosed in Annexure – II

2.3.3 Have you any foreign collaboration? No
(Please tick YES/NO)

If yes enclose supplementary sheet giving details of knowhow and equipment for pollution control available under the terms of foreign collaboration

2.4 ENERGY CONSUMPTION

2.4.1 Source of energy

a) In plant generation

b) Public supply

Public Supply, power will be generated with DG Sets during public power shut down period only.

The electricity will be drawn from APTRANSCO. Transformers will be provided to reduce voltage fluctuation and to provide quality energy. The power requirement during operation phase is presented in table

Energy Consumption Statement

Type of Housing	Total Units	Connected Load (Each unit) (KVA)	Max Demand (Each unit) (KVA)	Total connected Load (KVA)	Total Max Demand (KVA)	Avg consumption /hour KWH	Average Period of Consumption in hours	Total units per day KWH
Block A to I	359	10	8	3590	2872	5	7	12565
LIG & EWS	44	6	4	264	176	3	4	528
Street Lights	120	0.2	0.16	24	19.2	0.15	10	180
Amenities	1		327		3918			4898
STP	1	50	18	25	18	15	12	180
TOTAL								18351

Total Consumption per Month = **550530** (kWH) units.

2 x 500 kVA will be provided for power generation during public shutdown

- 2.4. If energy generated in plant, fuel used with
 2 consumption for eg. Coal/Fuel oil/Diesel/Natural Gas/Wood/Others (Please Specify)

Name of Fuel	Daily Consumption	Unit
HSD	100	Lit/year

Note: * During period Non availability of public supply only.

3.0 LOCATION

- 3.1 Please attach a map indicating the site with approach roads including adjacent areas on all four sides for easy identification of site of the proposed plant, for inspection. Location map enclosed
- 3.2 Area of land proposed to be acquired (in m²) **22763.0 m²**
- 3.2.1 Area proposed to be developed (in m²) Please note that four times the area of the plant is required for green belt.

Land Allocation for various purposes

Land Use	No of Floors	Total No of Units	Total Site Area in m ²	Total Built up area (m ²)
Block A	B+G+4	29	503.7	2887.06
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Buffer strip			39.1	
Parking				
Basement				14345.71
Total		22+22+359	22763.0	51664.73
Total no. of Units=404				

- 3.3 Present use of Land (Please Tick) (Agricultural/ Forest/Grazing/Industrial/ Settlement/Fallow/Population/Mining) Fallow
- 3.4 Specify Location (Please Tick) Landlocked
Coastal estuary
Rivers/Lakes, Reservoirs
Landlocked Hilly Terrain
- 3.5 Is the Land situated within any Municipality: or Yes
Municipal Corporation/ Cantonment Jurisdiction?
(Please Tick) YES/NO
If yes, name of Municipality/Municipal Corporation? Greater Hyderabad Municipal Corporation
- 3.6 Is the land situated in an approved (Please Tick) YES/NO No, The land area is classified as residential zone by GHMC
If yes, name of zone /estate
Which of the following features exists?
Within 20 Kms, radius of the site in respect of L& MI and 5 kms. in respect of SSI.
(Please tick the box applicable)
- 3.7 Which of the following features exists?
- | | | | |
|--|---------------------|---------------|-----|
| 1. Crops (Pl. mention name of Major Crops) | Paddy, Maize, Jowar | 12. Fisheries | Nil |
| 2. Grazing Land | Nil | 13. Sanctuary | Nil |

3. Forest	Chengicharla RF	14. Nallah	Nil
4. Natural Park	Nil	15. River	Nil
5. Stream	Nil	16. Lake	Kapra chervu
6. Pond	Nil	17. Estuary	Nil
7. Dam	Nil	18. Hills	Nil
8. Sea	Nil	19. Monuments	Nil
9. Mountains	Nil		
10. Settlements	The urban area consists of Kapra, Kushaiguda and Nagavaram		
11. Population	Nil	20. Biosphere Reserves	Nil

No. Industries existing in the area
Large & Medium
Small Scale

Also please enclose list of industries existing within 20 kms. If there is any IE/IDA With in 20 kms radius, give the name of the IE/IDA. There is no need to list all the Industries in the IE/IDA

- 3.9 Please enclose a topographical plan covering an area of 20 km radius of the proposed industry in respect of L & MI and 5 km radius of the proposed industry in respect of SSI showing the following details.
Clear demarcation of nearest water source and agricultural lands
Source of water supply to the villages near by
Residential areas and villages near by
Information on broad uses of land
Monuments/Summer Resorts/Sanctuary/Zoo Parks/Others
Clear demarcation of nearest water source and agricultural lands

Topo plan is enclosed

4.0 TOWN PLANNING

- 4.1 Do you propose to build a township/
(Please Tick) YES/NO
- 4.2 If Yes
- 4.2.1 Area Allocation for the above in Sq.mts. **22763.0m²**
- 4.2.2 Population to be accommodated (Number)
(Including Employees & Families) **403 units (22 LIG + 22 EWS + 359)**
- 4.2.3 Distance from town ship to plant site in kms
- 4.2.4 Services provided in township
- a) Water supply, daily consumption (KL)
- b) Sewer system
- c) Sewage treatment
- d) Disposal Point
- Yes (The project is residential construction project)
- NA
- NA
- Annexure -III
- STP design (Annexure -IV)
Artificial pond until the outlet connected Sewer lines of Municipality.

5.0 WATER REQUIREMENTS

- 5.1 Source of water (Please Tick) Public Supply /Irrigation Channel /Ground / River/ Lake /Bay/Estuary Public supply
- 5.2 Is any pretreatment necessary for use? (Please Tick) YES/NO No
- 5.3 If yes, please enclose a sheet specifying the Pretreatment in terms of machinery, process and chemicals used.
- 5.4 Average daily quantities consumption of water for

Water Requirement of the Project

Land Use	No. of Units	No. of Persons/ unit	Water requirement per person in l	Total Daily Water Requirement in kl
Block A to I	403	5	135	272.0
Amenities	1	150	45	6.8
Swimming pool	1			10.0
Visitors		2	15	12.1
TOTAL				300.9

- 5.5 Whether adequate quantity is available: (Please Tick) YES/NO
 (a) At present Yes
 (b) For future expansion
- 6.0 WASTEWATER DISCHARGES**
- 6.1 Wastewater discharges per day from 240.72 Kl/day
- 6.2 How do you propose to discharge Wastewater? (Please Tick) : Underground Sewerage connected to Separate Streams/Combined Underground Sewerage connected to STP
- 6.3 Type of treatment proposed to be adopted Please enclose supplementary sheet Giving details along with flow chart and Design details Enclosed in Annexure.-IV
 It is proposed to provide a sewage treatment plant with a capacity of 0.28 MLD. Sewage treatment plant flow chart is enclosed in Annexure-IV.
- 6.4 What standards for quality of treated effluent have you proposed to adopt to it? control Board, Local Authority or other) ISI/CPCB/APPCB
 Conformity with S/C

- 6.5 Mode of final discharge open
Channel/Pipeline/Covered drains/other
6.6 Point of final discharge Land/Agricultural:
/Sewer/River/Lake/Bay/Estuary/Sea
6.7 What methods you proposed to adopt for:
handling and disposal of sludge from
treatment plant? Please enclose
supplementary sheet giving details
6.7.1 Indicate available information on

Pipelines, greenbelt within the
plant premises
On land for greenbelt
development, flushing and
excess water Artificial pond
until the outlet connected
Sewer lines of Municipality.

Sludge generated from the
effluent treatment plants will
be dried at the sludge drying
beds and will be reused for
green belt & horticulture

Characteristics of Waste water

Parameter	Quantity in mg/l
PH	6 – 7
Total Suspended Solids	400 – 600
BOD	200 – 300
COD	450 – 500

Others

Item	Quantity	Units

- 6.8 What other specific toxic substance No
discharged? Please give name of pollutant
and quantity in mg/lit.

	Name	Quantity
Inorganic		
Organic Including Pesticides		
Organic Chlorine Compounds		
Phenol		
Lignin		
Mercaptans		
Heavy Metals		

7.0 SOLID WASTE

- 7.1 Total quantity of solid wastes in
tonnes per day 1.294 tonnes/day

Solid Waste Generation

Land Use	No. of Units	No. of Persons/unit	Total No. of Persons	Total Solid waste in Kgs @ 0.5 kg/head
Block A to I	403	5	2015	1008
Amenities	1	150	150	45
Visitors		2	806	242
Total				1294

Solid Waste Generated during Occupation Phase

S.No.	Type of Waste	Quantity	Collection/storage	Disposal
1	Garbage	1294 kg/day	Stored at each house in green and blue bins for non-recyclable and recyclable wastes respectively. Stored in green for biodegradable waste. The Biodegradable waste is composted & Non Biodegradable waste to MSW. Collected and transported to the segregation bin by NGO's.	Municipal solid waste disposal
2	Sewage Treatment Plant Sludge	14 kg/day	Stored in HDPE bags.	Used as manure and or given to farmers.
3	Used Batteries	5 nos. year		Sent to Authorized recyclers or returned to seller
4	Used Lubricant	60 l/year	Stored in HDPE Carbouy	Sold to authorized recyclers
5	Transformer Oil	90 l/year	Stored in HDPE Drum	Sold to APTRANSCO authorized contractors

7.2 Nature of Waste - Lumps/ Granules/Dust / Slurry.

Garbage containing biodegradable and recyclable wastes

- 7.3 Approximate composition (e.g.: Organics/Granuel/Metal/others) 300 gms bio degradable, 200 gm recyclable

Item	Quantity in mg/lit

- 7.4 Method proposed for disposal including treatment plant sludge (Please Tick) Land Fill/Dumping/Composting/ by auto rickshaws. The responsibility Incineration/Deep Burning The garbage will be collected by NGOs and sent to segregation point of garbage collection and disposal lies with GHMC
- 7.5 Have you considered the possibility of recovery and reutilization of any portion of the solid wastes? If yes, give details No
- 7.6 Have you any problems regarding collection, handling and transfer of solid wastes? (If Yes, specify on supplementary sheet to be enclosed) No
- 7.7 Are there any problems of subsequent pollution of air, water or soil likely at the place of disposal of sold wastes? (If yes, please enclose supplementary sheet indicating method proposed for prevention) No

8.0 ATMOSPHERIC EMISSIONS

- 8.1 Emission from fuel burning 2 x 500 kVA
- 8.1.1 Expected quantity of stack emission in Cubic m/sec:
- 8.1.2 Composition of emission: (Qty. should be in units mentioned in brackets)

Details of DG Set emissions

Stack connected to DG set capacity	Stack Height (m)	Dia. of stack at top (m)	Temp. of exhaust gases (°C)	Exit Velocity (m/sec)	Pollutant Emission Rate (g/sec)		
					SPM	SO ₂	NO _x
500 kVA (2 nos.)	4.5	0.2	225	13.28	0.003	0.08	0.125

- 8.2 Emission from process NA
- 8.2.1 Expected emissions quantity
- 8.2.2 Temperature (Degree C)
- 8.2.3 Composition of emission:
- a) Particulates Nature and Quantity (mg/Cubic. NM):
- b) Gases:
1. Sulfur dioxide (mg/Cubic. NM)

2. Nitrogen oxide (mg/Cubic. NM)
 3. Hydro Carbons (mg/Cubic. NM)
 4. Carbon monoxide (mg/Cubic. NM)
 5. Moisture (%)
 6. Ammonia (mg/Cubic. NM)
 7. Acid Mists (mg/Cubic. NM)
 8. Halogens (mg/Cubic. NM)
 9. Mercaptants (mg/Cubic. NM)
 10. Others, specify
- 8.2.4 Height of stack (s) 4.5m
- 8.2.5 Proposed air pollution control system (e.g. collectors, precipitators, scrubbers) Give detailed specification. NA
- 8.2.6 Proposed method of handling and disposal of waste trapped by pollution arresting equipment. NA
- 8.2.7 Are any standards of emission prescribed
If yes, please enclosed separate sheet giving Details APPCB
- 9.0 OTHER SOURCES OF POLLUTION:**
- 9.1 Is your industry likely to cause noise pollution? If yes, what noise abatement program have you planned? Yes, Noise will be generated from equipments during construction and DG sets and traffic within the project area during occupation stage.
- 9.2 Is there any odour problem likely to occur from your industry? If yes, what measures are proposed to be taken? Acoustic enclosures will be provided to DG sets.
No
- 9.3 Is there any thermal pollution of surface water likely to occur from the industrial discharge? No
- 10.0 POLLUTION CONTROL MANAGEMENT**
- 10.1 Give details of the organizational set up for pollution control your propose to have? 1 environmental scientist and 2 fitter
- 10.2 What is the level of experience of the person incharge of pollution control : 2 Years
- 10.3 Do you propose to monitor the pollution from your Industry? If yes, give details : Third party will be appointed
- 10.4 Give details of laboratory facilities propose to have for the above

- 10.5 Give details of operation and maintenance of facilities you propose to have pollutionl equipment and effluent treatment

The environmental control equipment like noise enclosures, STP will be constantly checked for it performance, proactive maintenance is adopted. Equipment and laboratory facilities for the measurement of pH, Total suspended solids, Total dissolved solids, cod, BOD and Oil & Grease will be provided. The environmental monitoring results will be evaluated to identify problems /under the performance of the equipment. Necessary steps will be taken to rectify the identified problems/defects

11 COST OF POLLUTION CONTROL:

- | | | |
|------|--|---------------|
| 11.1 | Total Capital Investment proposed for Pollution monitoring and control | Rs 18 lakhs |
| 11.2 | Percentage of Capital investment on Pollution control to total fixed capital of the unit | 0.48 % |
| 11.3 | Recurring cost per annum | Rs. 6.5 lakhs |

We here by declare that we will install and operate pollution control equipment required to meet the standards prescribed by the Board and we will not commence production until such pollution control equipment is installed and ready for operation. We will obtain a second no objection certificate from the Board before going into production.

Place:

Signature



Date:

Name:

Mr. Soham Modi

Address:

M/s Vista homes
5-4-187/3&4, second floor,
Soham mansion,
MG road, Secunderabad 500003
Ph.no: +91 040-66335551

- Encl.: 1) Site Plan
2) Location plan
3) Annexure

* * *

ANNEXURE - I

Location: The project will be spread over an area of 2.2763 hectares of land for residential purpose with necessary amenities in survey nos. 193, 194 & 195 situated at Kapra, Keesara Mandal, Ranga Reddy District. The area of village has educational institutions and number of residential developments. The village area has developed into residential area over the last 5 years. The project site is surrounded by open lands in all the directions. A 40m wide road in north direction connecting Nagaram & Dammaiguda Road. The nearest railway station is Cherlapally railway station at a distance of 3.5 km.

The project : It is proposed to provide residential units of 403 nos. (22 LIG + 22 EWS + 359) along with amenities block. The land allocation will be optimized to ensure compliance with the regulations of GHMC. The water requirement of the project during operation will be drawn from HMWSSB. Sewage treatment plant will be provided to treat the sewage/wastewater. Water conservation measures will be incorporated in the plumbing designs. Water recycling/reuse will be adopted by way of using treated sewage for green belt development and for flushing. The rainwater will be let-out into the storm water drain and discharged into side drains of road. The required power will be drawn from the APTRANSCO and providing open space between each house to allow sunlight will optimize the energy requirement. The designs of the houses will also incorporate Indian Architectural principles of "Vastu", as the market demands the same. Construction material will be drawn from local sources. The parking provision follows the guidelines prescribed by GHMC and Building policy of Andhra Pradesh. The layout of the project site and typical floor plans are presented in annexure V.

The land allocation and the number of units proposed are presented in table:

Land Allocation for various purposes

Land Use	No of Floors	Total No of Units	Total Site Area in m ²	Total Built up area (m ²)
Block A	B+G+4	29	503.7	2887.06
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Buffer strip			39.1	
Parking				
Basement				14345.71
Total		22+22+359	22763.0	51664.73
Total no. of Units=404 (22 LIG + 22 EWS + 359)				

The project of this magnitude would have various positive and negative impacts and the same are to be addressed during design stage of the project to arrive at mitigation/management measures. Environmental Impact Statement is a tool that can be used for identifying, evaluating and for drawing the management plan.

The cut and fill operation for the entire area is presented in following table.

Earth Work Quantities

S.No.	Area	Qty. of fill (m ³)	Qty. of cut (m ³)	Surplus fill (m ³)	Surplus cut (m ³)
1	Site area	34145	56908	-----	22763

There is excess cut material, which shall be used for road construction.

The construction of this magnitude would require huge quantities of construction materials. The material requirement for the project is presented in following table

Material Consumption for Total Units

Description	BUA per unit in (m ²)	Total Ready Mix Concrete (m ³)	Total Cement (bags)	Total Sand (m ³)	Total Aggregate (m ³)	Total Water (m ³)	Total Bricks (Nos) x 1000	Total Reinforcement Steel (MT)
Total BUA	51665	21183	48048	20149	2222	12503	5993	1188
Total	51665	21183	48048	20149	2222	12503	5993	1188

Thus aggregate requirement will be met from within the plant site. The lead distance for various construction materials is presented in table

Lead Distance for Construction Materials

S.No	Material	Source	Lead Distance (Km)
1	Sand	ROBOSAND and or Krishna or Godavari river bed areas permitted by Govt. of AP	5-150
2	Aggregate	Crushers near to the site	10-30
3	Cement	Company Dealers	50-100
4	Reinforcement Steel	TATA / SAIL godowns	10-50
5	Bricks	Local brick kiln	10-30
6	Plumbing Material	Local Suppliers	2-7
7	Electrical Material	Local Suppliers	2-7
8	Sanitary Material	Local suppliers	2-7
8	Paints	Local Suppliers	10-25
9	Ready Mix Concrete	Local Batching Plants	10-50

ANNEXURE –II

The sequence of construction operations and the approximate time requirement is presented in the following table. The construction sequence is for premium and standard housing independent units, while the flats construction would also follow the same sequence for more number of floors. The time schedule of the entire project is approximately 36 months.

Construction Sequence

S.NO	Description of work	
1	Clearing and Grubbing	
2	Leveling by way of cut and fill	
3	Foundation Excavation.	
4	Foundation PCC & Concrete & Plinth Beam.	
5	Column lifting up to GF Roof.	
6	1 st floor slab reinforcement & shuttering & Concreting.	
7	Stair case slab	
8	1 st floor column lifting up to 1 st floor roof.	
9	1 st floor roof shuttering, reinforcement & concreting.	
10	Deshuttering of GF Roof & cleaning.	
11	Deshuttering of 1 st Roof & cleaning.	
12	Brick work in GF floor.	
13	Brick work in 1 st floor.	
14	Staircase up to terrace.	
15	Staircase headroom slab.	
16	Plumbing works (concealed works).	
	Electrical conduit junction boxes & board fixing.	Internal (GF & FF)
	Plastering works.	External (GF & FF)
17	Fixing of door & window frames.	
18	Plinth filling & floor PCC.	
19	Floor Tiling Works, Bath Room, kitchen & platform works.	
20	Staircase stone works.	
21	Terrace waterproofing works.	
22	Parapet wall in terrace & miscellaneous works.	
23	Fixing of door & window shutters.	
24	Fixing of sanitary fittings.	
25	Electrical wiring & fixtures.	
26	Painting works.	
27	External development & compound wall.	

ANNEXURE –III

Water Requirement of the Project

Land Use	No. of Units	No. of Persons/ unit	Water requirement per person in l	Total Daily Water Requirement in kl
Block A to I	403	5	135	272.0
Amenities	1	150	45	6.8
Swimming pool	1			10.0
Visitors		2	15	12.1
TOTAL				300.9

Water Savings of the Project

Land Use	No. of Units	No. of Persons/ unit	Water Requirement/ KLD	Treated water reuse/day Klpcd	Effective Water Requirement in KLD
Block A to I	403	5	272.0	80.6	191.4
Amenities	1	150	6.8	3.0	3.8
Swimming pool			10.0		10.0
Visitors		2	12.1	6.0	6.0
TOTAL			300.9	89.6	211.2

Note: Treated water reuse assumed @ 40 l/head for Housing, and @ 20 l/head in amenities.

Approximately 89.6 Kl/day water will be saved by adopting recycling of treated water in the toilet flush. The effective water consumption is reduced by 89.6 Kl/day and the requirement will be in the order of 211.2 Kl/day due to treated water recycling.

Water Balance during occupation stage

Input	KLD	Output	KL/Day
Domestic water from HMWSSB	211.2	Excess treated water will sent Artificial pond/ sewer line	121.0
Recycled water	89.6	Recycled water	89.6
		Water requirement for green belt during non monsoon	30.0
		Losses approx 20%	60.2
Total	300.9	Total	300.9

The water used in the order of 300.9 KL/day would generate 240.7 KL/day of wastewater, which has to be treated for reuse and or disposal.

ANNEXURE –IV

SEWAGE TREATMENT PLANT

It is proposed to provide a sewage treatment plant with a capacity of 280 KLD. The unit operations of the treatment system are presented below: *Sewage treatment plant based on Fluidized Aerobic Bio Reactor (FAB) technology*

PROCESS DESCRIPTION:

The raw sewage will be collected in a collection sump and pumped to mechanical bar screen chamber for removal of large floating matter followed by grit removal in Grit Chamber. The raw sewage will then be collected in an equalization tank for homogenization of hydraulic load. The tank contents will be kept in suspension by means of coarse bubble aeration through pipe grid. The equalization tank, with air flow indicator for continuous monitoring of air supply to the tank in order to avoid septic conditions, will be covered from top (RCC or FRP) to avoid nuisance. The equalized effluent will then be pumped to two Fluidized Aerobic Bio Reactors (FAB) in series where BOD/COD reduction can be achieved by virtue of aerobic microbial activities. The oxygen required will be supplied through coarse air bubble diffusers. The bio-solids formed in the biological process will be separated in the downstream Tube Settler. The clear supernatant will gravitate to the chlorine contact tank where sodium hypochlorite will be dosed for disinfection of treated water prior to disposal.

Fluidized Aerobic Bio Reactor (FAB)

Conventional effluent treatment plants are large sized, power intensive and require a lot of monitoring. Scarcity of open space and rising land and power costs have forced the industries to look out for space saving, compact and efficient treatment options. This has led to the development of attached growth processes where the bio mass is retained within the aeration tank obviating the need for recycle. These plants are not only compact but also user friendly. The endeavor to have a continuously operating, no-clogging biofilm reactor with no need for back washing, low head-loss and high specific biofilm surface area culminated in the most advanced technology of aerobic biological fluidized bed treatment where the biofilm (biomass) grows on small carrier elements that move along with the water in the reactor. The movement is normally caused by aeration in the aerobic version of the reactor.

The reactor combines all the advantages and best features of Trickling filters, Rotating biological contractors, activated sludge process and submerged fixed film reactors while eliminating the drawbacks of these systems. The plants are more compact and more energy efficient.

The Fluidized Aerobic Bio Reactor (FAB) consists of a tank in any shape filled up with small carrier elements. The elements are made up of special grade PVC or polypropylene of controlled density (shown in plate). For media of specific gravity 0.92-0.96 the overall density could be expected to increase up to 9.5% when full of biomass such that they can

fluidize using an aeration device. A biofilm develops on the elements, which move along the effluent in the reactor. The movement within the reactor is generated by providing aeration with the help of diffusers placed at the bottom of the reactor. Then thin biofilm on the elements enables the bacteria to act upon the biodegradable matter in the effluent and reduce the BOD/COD content in the presence of oxygen available from the air that is used for fluidization.

Characteristics of Waste water

Parameter	Quantity in mg/l
PH	6 – 7
Total Suspended Solids	400 – 600
BOD	200 – 300
COD	450 – 500

Design of the unit

Basic data

Flow	: 240	KLD
Capacity	: 280	m ³ (0. 24 MLD)
Peak factor	: 3.5	
Peak flow Q peak	: 980	m ³ /day
Influent BOD	: 200	mg/lit
Influent Suspended Solids	: 200	mg/lit
Influent COD	: 350	mg/lit
Effluent BOD	: 30	mg/lit
Effluent COD	: 200	mg/lit
Effluent Suspended Solids	: 100	mg/lit

1. Bar Screen Chamber

Average flow	: 0.0032	m ³ /sec
Peak factor	: 3.5	
Peak flow	: 0.0112	m ³ /sec
Velocity at peak flow	: 0.75	m/Sec
<i>Effective area of screen Required</i>		
At average flow	: 0.007	m ²
At Peak flow	: 0.0095	m ²
<i>Provide Effective area of screen</i>	: 0.0095	m ²
Considering the bar of dia. 10 mm(w) and clear spacing of 20 mm (b)		
Overall area required	: 0.015	m ²
Considering screen depth as	: 0.028	m
Number of clear spacing	: 0.4	
Number of bars	: 2	Consider 4 Nos.

Hence Provide 5 bars

Provide a screen of 0.5 m X 0.5 m at an inclination of $\sin 60^\circ$. In a screen channel of one meter (1 m) length.

2. Grit Chamber :

The flow from the bar screen chamber is let into the Grit Chamber of minimum 2 hours capacity. This tank is provided to even out the flow variation, and to provide a continuous feed into the secondary biological treatment units.

Peak flow Q : 0.0112 m³/sec

Providing a flow through velocity of 0.30 m/sec

Cross sectional area of Channel : 0.037 m²

Surface area of channel : 0.86 m²

Assuming depth d : 0.2 m

Width of channel : 0.185 m (say 0.3m)

Length of channel : 4.3 m (say 4.5 m)

Provide two channels each of 0.3 m wide and 4.5 m long with depth of waste water 0.2 m.

3. Equalization tank:

The flow from the bar screen chamber is let into the equalization tank of minimum 2 hours capacity. This tank is provided to even out the flow variation, and to provide a continuous feed into the secondary biological treatment units.

Average flow : 11.66 m³/hr

Peak factor : 3.5

Peak flow : 40.83 m³/hr

Hydraulic retention tank = 2 hrs at Peak flow

Hence required volume of the tank : 81.66 m³

Provide tank of : 81.66 m³ Capacity

Assuming depth : 3 m

Area : 27.22 m²

Assuming length to width ratio (1:1) ; l=b

length of the tank : 5.21 m

width of the tank : 5.21 m

Air required for agitation : 0.01 m³/m² min

Total air required : 48.99 m³/hr

Air blower required : 80 m³/hr @ 3.8 mwc

Effluent transfer pump : 11.66 m³/hr @ 8 mwc

4. Fluidized Aerobic Bio Reactor (FAB):

The polypropylene media have been provided with a specific surface area of 350 – 520 m²/m³. This allows micro-organisms to get attached and biomass concentration can

be increased to four folds as compared to Activated Sludge Process. This enables to consider higher Organic loading rates.

The micro-organisms attached to media are kept in a fluid state thereby maintaining the CSTR (continuous Stirrer tank reactor) regime as well as two tanks are provided in series making the plug – flow system. This will enhance the efficiencies and have the merits of both CSTR and plug-flow regimes.

Organic loading rate	:	3.2	kg BOD/ m ³ d
Organic load	:	56	kg/day
Volume of the tank	:	17.5	m ³
Assume the depth	:	3	m
No. of tanks in series	:	1	
Size of the tank	:	2.8 m dia. x 3.0 SWD	
Specific gravity of media	:	0.92 to 0.96	
Specific surface area of media	:	350 – 520 m ² /m ³	
Media filling	:	30 – 50 % of tank volume	
Oxygen required	:	2	kg / kg BOD
Oxygen in air	:	23%	
Specific gravity of air @ 30 deg.	:	1.65	
Aeration	:	Coarse bubble	
Oxygen transfer efficiency	:	12%	
Air required	:	77.7	m ³ /hr
Air blower required	:	80	m ³ /hr @ 6.5 m wc

5. Tube settler

Surface loading rate	:	48	m ² /m ³ d
Surface area required	:	5.88	m ²
Tank size	:	3.0 m x 6.0 m x 2.7 m SWD With	
	:	55 deg. hopper bottom	
Tube Modules	:	3.0m x 6.0 m x 0.6 m ht.	
Tube inclination	:	60	deg.
Settling area for 60 deg slope	:	11	m ² /m ³
Cross sectional area of tubes	:	120 mm x 44 mm Hexagonal	
Hydraulic radius	:	1/61 cm (1.5 cm)	
Shape factor	:	0.6 – 0.7 for media settleable solids	

6. Pre Filtration tank

The flow from the each individual settling tank i.e., the supernatant liquid is let into the respective Pre-Filtration Tank, which has a minimum 1.5 hours holding capacity. This tank is provided to hold the treated effluent and give an even flow to the pressure sand filter.

Average flow	:	11.66	m ³ /hr
Peak factor	:	2	m ³ /hr
Peak flow	:	23.3	m ³ /hr
Provide min 1.5 hours holding capacity.			
Hence required volume of the tank	:	35	m ³

7. Pressure Sand Filter:

Vertical down flow type with graded/sand bed under drain plate with polysterene strains.

Flow	:	280	m ³ /day
Rate of filtration assumed as	:	10	m ³ /m ² /hr
Requirement of treated water for usage in 20 hrs	:	14	m ³ /hr
Dia. of filter of 1 nos.	:	1335	mm

Provide pressure sand filter of 1400 mm dia. and 1600 mm HOS with sand as media layer, under drain pipe, laterals face piping etc for each stream.

8. Activated Carbon Filter:

Vertical down flow type with graded/sand bed under drain plate with polysterene strains.

Flow	:	280	m ³ /day
Rate of filtration assumed as	:	10	m ³ /m ² /hr
Requirement of treated water for usage in 20 hrs	:	14	m ³ /hr
Dia of filter of 1 nos.	:	1335	mm

Provide Activated Carbon filter of 1400 mm dia with granular Activated carbon as media and 1600 mm HOS with sand as media layer, under drain pipe, laterals face piping etc for each stream.

9. Final Treated Water Holding Tank

It is always preferred to provide one final holding tank of minimum one day holding capacity, so that the treated effluents can be stored and used back for gardening or other tertiary purposes.

Capacity: 280 m³

10. Sludge Filter Press:

The biomass in the aeration tank stabilizes BOD in wastewater by consuming the organic matter in the wastewater. The metabolic activity results in growth of the biomass population in the Fluidized Aerobic Bio Reactor (FAB). Sludge holding tank has been provided with filter press for dewatering sludge. The filtrate drains off

through the media, which is again let into equalization tank. The dewatered sludge is collected in trays, which can be used as manure in the garden.

No. of plates	: 24
Size of plates	: 600 mm X 600 mm
Plate moc (material of construction)	: PP (poly propline)
Type of operation	: Hydraulic
Power pack capacity	: 2 HP

The biomass in the aeration tank stabilizes BOD in wastewater by consuming the organic matter in the wastewater. The metabolic activity results in growth of the biomass population in the Fluidized Aerobic Bio Reactor (FAB).

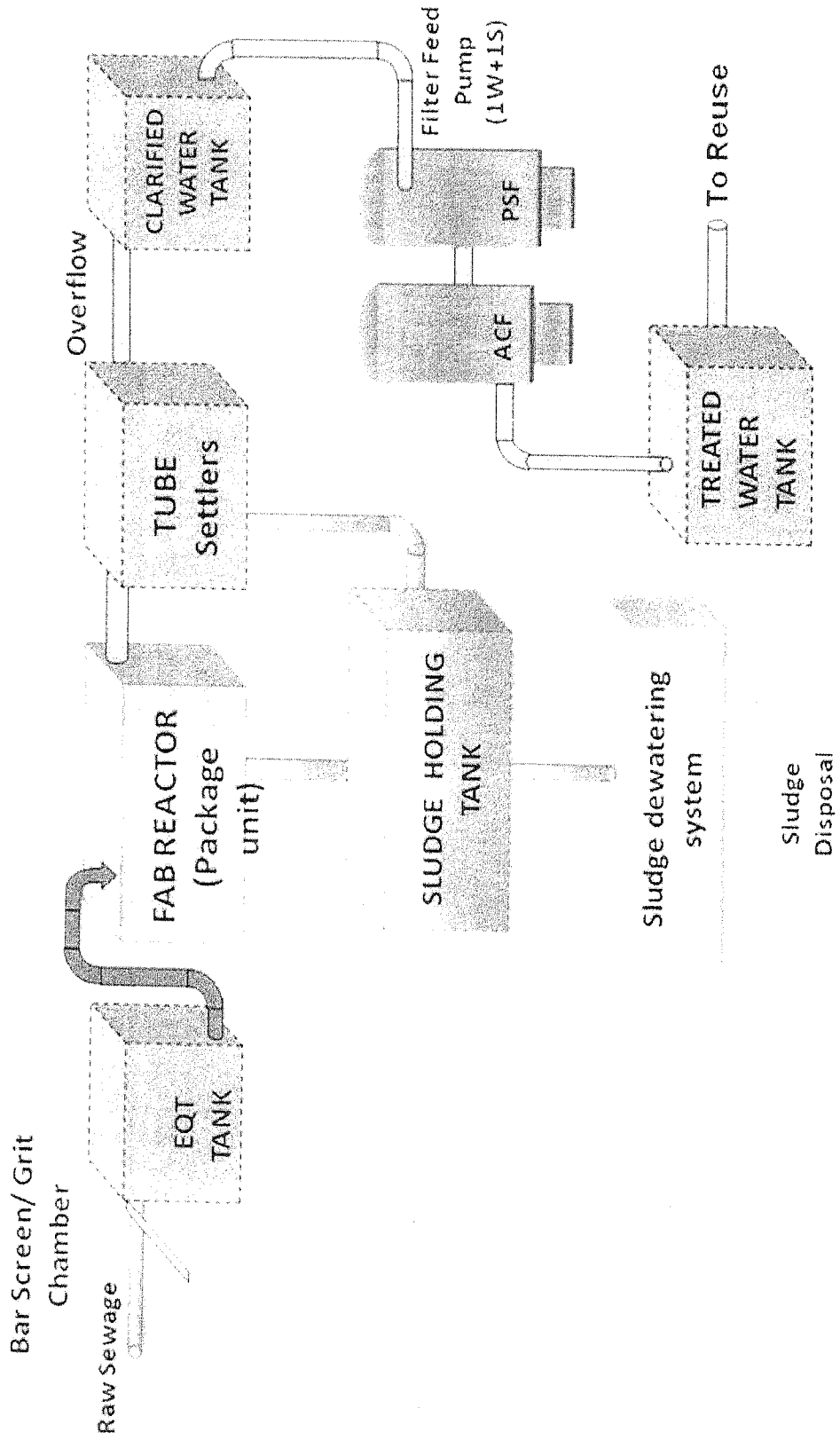
Sludge holding tank has been provided with filter press for dewatering sludge. The filtrate drains off through the media, which is again let into equalization tank. The dewatered sludge is collected in trays, which can be used as manure in the garden.

Characteristics of Treated Waste water

Parameter	Quantity in mg/l
pH	7 – 8
Total Suspended Solids	100
BOD	30
COD	100

Disposal of Treated Waste Water: It is proposed to reuse the treated wastewater for green belt development and for toilet flushing. Artificial pond until the outlet connected Sewer lines of Municipality. It is proposed to release/dispose the storm water in the storm water drains.

SEWAGE TREATMENT PLANT FLUIDIZED AEROBIC BIO REACTOR TECHNOLOGY (FAB)

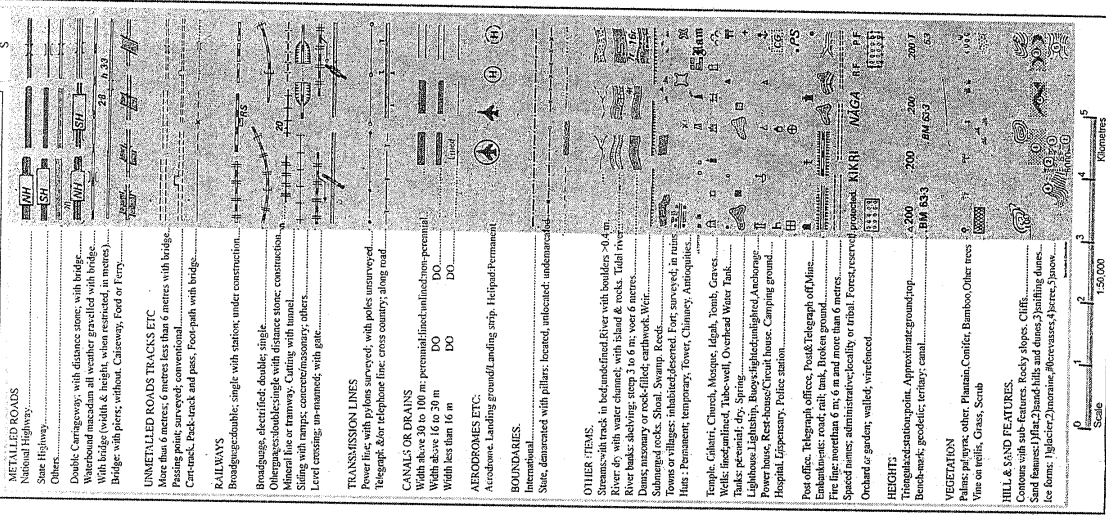


ANNEXURE V

LAYOUT DRAWINGS

Vista Homes

Source: Extracted from SOI Topomaps
56K/6, 56K/7, 56K/10 and 56K/11
AOI: 10 Km radius from the Sitel



METALLED ROADS
National Highway
State Highway
District Road
Other

Double Carriageway, with distance stone; with bridge
With footpath and macadam all weather gravelled with bridge
With footpath, but not all weather gravelled, with macadam
Bridge with parapet, without, Causeway, Foot or Ferry

UNMETALLED ROADS TRACKS ETC
More than 6 metres; 6 metres less than 6 metres; with bridge
Passing point; surveyed; conventional
Cart-track, Pack-track and pass, Foot-path with bridge.

RAILWAYS
Broad gauge double; single; with station; under construction
Broad gauge, electric, double; single
Other gauge, electric, double; single
Mineral line or tramway, Cutting with tunnel
Siding with ramps; concrete/masonry; others
Level crossing; un-manned; with gate.

TRANSMISSION LINES
Power line, with poles surveyed; with poles un-surveyed
Telegraph & telephone line; cross country; along road

CANALS OR DRAINS
Width above 30 m
Width below 30 m
Wealth less than 16 m

AERODROMES ETC.
Airbase, Landing ground/Landing strip, Helipad/Permanent
International

BOUNDARIES
State, demarcated with pillars; located, indicated; undemarcated

OTHER ITEMS
Stream with track in bed-undefined; River with boulders >0.4 m
River <0.4 m with water channel; with island & rocks, Tidal river
River banks sloping steep 3 to 6 m; more 6 metres
Sloping rocky river bed
Submerged rocks in river; cut-work; Weir
Towns or villages: inhabited/deserted. Etc. surveyed in situ
Huts: Permanent, temporary, Tower, Chanquay, Antipoliques,
Temple, Galilee, Church, Mosque, Idpah, Tomb, Graves
Well; Unshaded; Tubo-well; Overhead Water Tank
Light house, Lighthouse, Signal tower, Beacon, Navigational
Power house, Rest-house/Camp house, Camping ground
Hospital, Dispensary, Police station

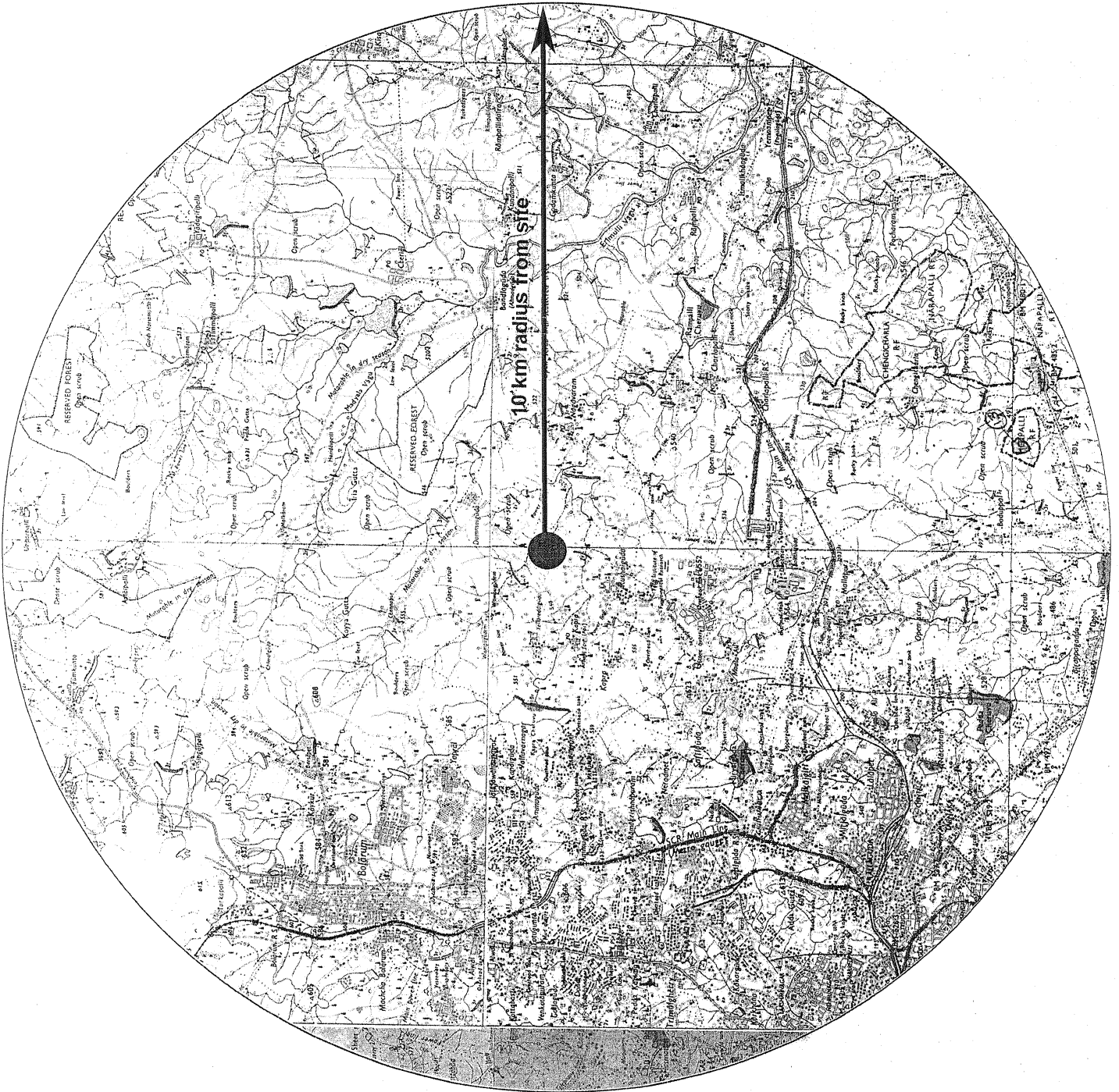
HEIGHTS
Post office, Telegraph office, Post, Telegraph of Mine
Benchmark; reef; rail; tank, Broken ground
The high mountain 6 m, 6 m and more than 6 metres
Special name; administrative locality or final, Forest, reserved
Orchard or garden, veiled, wirefenced

HEIGHTS
Triangulation point, Approximate ground
Benchmark; spot height, tertiary; canal
BM 633
200
200
200
2007
63

VEGETATION
Palms; papaya; other, Plantain, Cofitir, Bamboo, Other trees
Vine on hill, Grass, Scrub

HILL & SAND FEATURES
Contours with safe features, Rocky slopes, Cliff
Sand (Banned) (Hill) Sand hills and dunes, Sandstone Areas
Ice form: 1) Glacier, 2) moraine, 3) morasses, 4) terrace, 5) barrow.

Scale 1:150,000
1 2 3 4 Kilometres



PROPOSED GROUP HOUSING SCHEME IN SURVEY NOS. 193,194 & 195 SITUATED AT KAPRA VILLAGE, GHMC KAPRA CIRCLE, KEESARA, MANDAL, HYDERABAD, R.R.D. DISTRICT.

Belonging to: M/s. VISTA HOMIES REPRESENTED BY MR. SOHAM MODI

Specification table with columns for item, description, and quantity. Includes items like Foundation, Columns, Slab, Walls, etc.

Area Statement table with columns for area type, area, and remarks. Includes sections for NRI Land Area, Building Area, and Total Area.

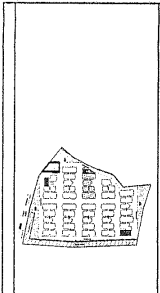
Structural Engg Sign table with columns for sign type, sign number, and sign description. Includes items like Owners Sign, Builders Sign, etc.

Office Use section containing a small site plan and a table with columns for file no., date, and remarks.



SHEET NO :5

Office Use



PROPOSED GROUP HOUSING SCHEME IN SURVEY NOS. 103, 104 & 105 SITUATED AT KAPRA VILLAGE, CHIK KAPRA GIRCLE, KEESARA MANDAL, HYDERABAD, R.R.DISTRICT.
 BELONGING TO:-
 M/s. VISTA HOMES REPRESENTED BY MR. SOHAM MODI

SPECIFICATION :-
 1. FOUNDATION: C.R.S. IN CM
 2. BASEMENT: C.R.S. IN CM
 3. FOOTING: COIL SLAB BEARING CAPLANS
 4. EXTERIOR CASE LINTELS: RCC 1:2:4
 5. INTERIOR CASE LINTELS: RCC
 6. C.T. WOOD: BRICK IN CM
 7. FLOORING: MARBLE
 8. DOOR & WINDOWS: C.T. WOOD
 9. VENTILATORS: C.T. WOOD

OPENINGS :-
 MD - 1:1000 (RM)
 W - 1:500 (RM)
 KW - 1:200 (RM)
 DO - 1:200 (RM)
 FD - 1:100 (RM)
 J - JUNCTION

REFERENCE :-
 EXISTING DISMANTLED
 NORTH ->

SCALE STATEMENT FOR GROUND & TYPICAL FLOORS :-
 SCALE: 1:100
 1. 100
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OWNERS SIGN :-

NO.	DATE	SIGNATURE	DESIGNATION

BUILDERS SIGN (REGD.NO) :-

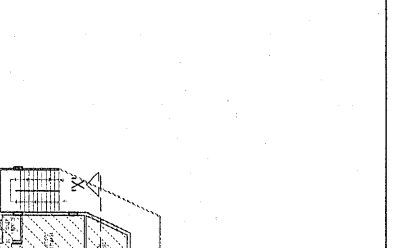
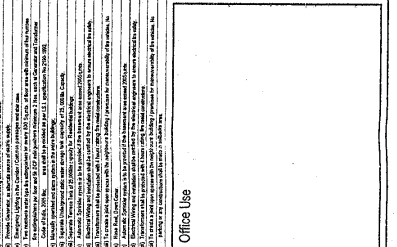
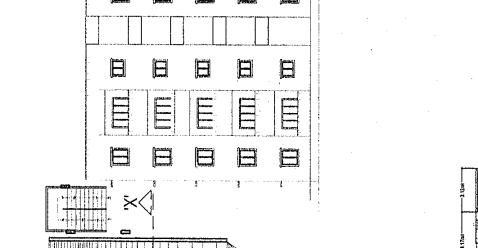
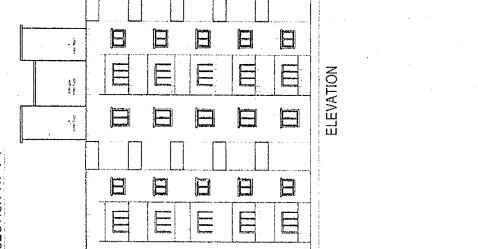
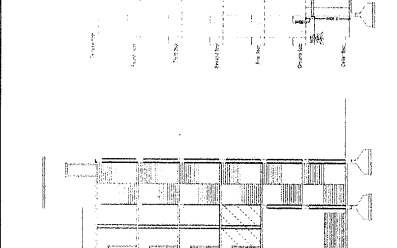
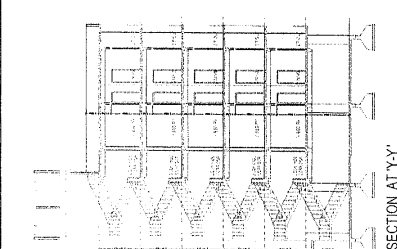
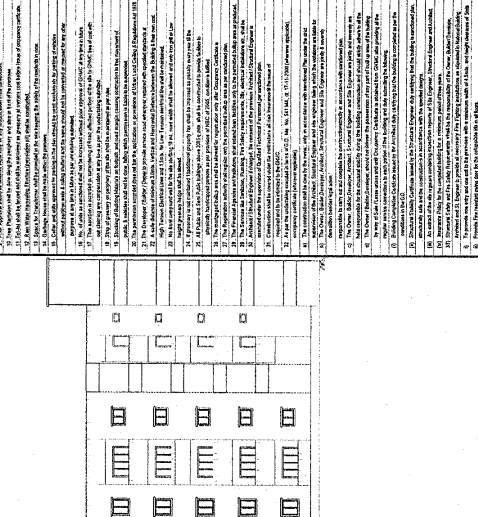
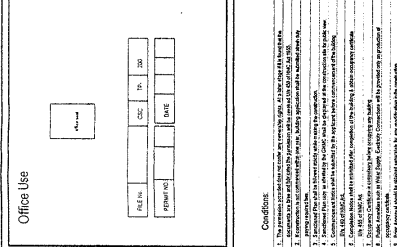
NO.	DATE	SIGNATURE	DESIGNATION

ARCHITECT'S SIGN (REGD.NO) :-

NO.	DATE	SIGNATURE	DESIGNATION

STRUCTURAL ENGG SIGN (REGD.NO) :-

NO.	DATE	SIGNATURE	DESIGNATION



BLOCK - C

SHEET NO : 7
B/B

Office Use

FILE NO. DATE TP. WK.

REP'D BY DATE

SET PLAN

PROPOSED GROUP HOUSING SCHEME IN SURVEY NOS. 103, 104 & 105 SITTIA EDAT KAPPA VILLAGE, SHM KAPPA GRAMMALE, REESARA MANJAL, HYDERABAD, R.R. DISTRICT.

BELONGING TO :-
M/s. VISTA HOMES, REPRESENTED BY MR. SOHAM MODE

SPECIFICATION :-

1. FOUNDATION	C.R.S. IN CM
2. WALLING	C.R.S. IN CM
3. FLOORING	R.C.C. 124
4. STAIR CASE	R.C.C.
5. ROOFING	C.T. WOOD
6. DOOR	BRICK IN CM
7. WINDOW	IN CM
8. FINISH	MARBLE
9. PAINT	C.T. WOOD

OPENINGS :-

NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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REFERENCE :-

EXISTING :-
DISMANTLED :-
MORTGAGE AREA :-

NOTE :-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

2. ALL WALLS ARE TO BE CONCRETE UNLESS OTHERWISE SPECIFIED.

3. ALL FLOORS ARE TO BE R.C.C. UNLESS OTHERWISE SPECIFIED.

4. ALL ROOFS ARE TO BE C.T. WOOD UNLESS OTHERWISE SPECIFIED.

5. ALL DOORS AND WINDOWS ARE TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED.

6. ALL FINISHES ARE TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED.

7. ALL PAINTS ARE TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED.

8. ALL STAIRS ARE TO BE R.C.C. UNLESS OTHERWISE SPECIFIED.

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55. ALL PAINTS ARE TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED.

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62. ALL FINISHES ARE TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED.

63. ALL PAINTS ARE TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED.

64. ALL STAIRS ARE TO BE R.C.C. UNLESS OTHERWISE SPECIFIED.

65. ALL FOUNDATIONS ARE TO BE CONCRETE UNLESS OTHERWISE SPECIFIED.

66. ALL WALLINGS ARE TO BE CONCRETE UNLESS OTHERWISE SPECIFIED.

67. ALL FLOORINGS ARE TO BE R.C.C. UNLESS OTHERWISE SPECIFIED.

68. ALL ROOFINGS ARE TO BE C.T. WOOD UNLESS OTHERWISE SPECIFIED.

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OWNER'S SIGN :-

BUILDERS SIGN (REGD.NO) :-

ARCHITECT'S SIGN (REGD.NO) :-

STRUCTURAL ENGG SIGN (REGD.NO) :-

SCALE :-

DATE :-

BY :-

FOR :-

PROJECT :-

SHEET NO :-

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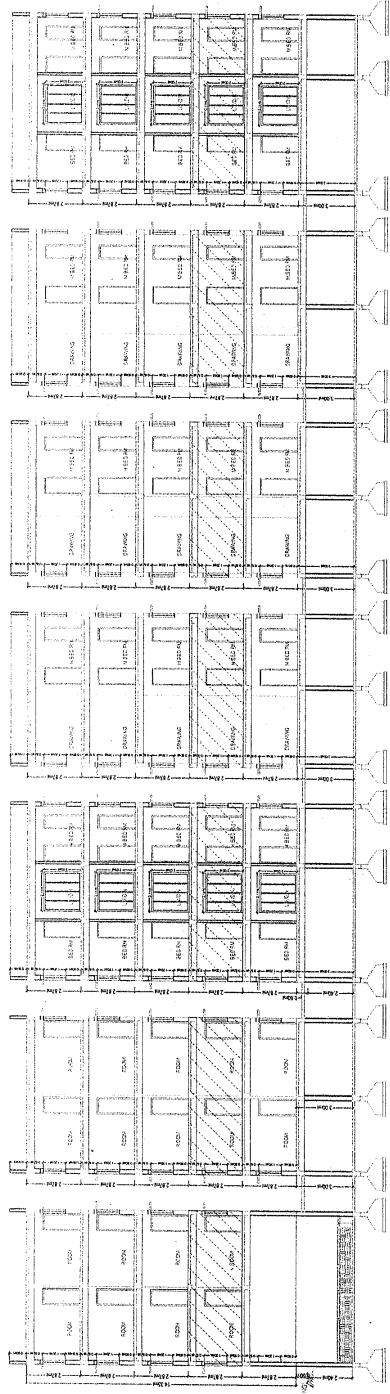
SHEET NO :-

OF :-

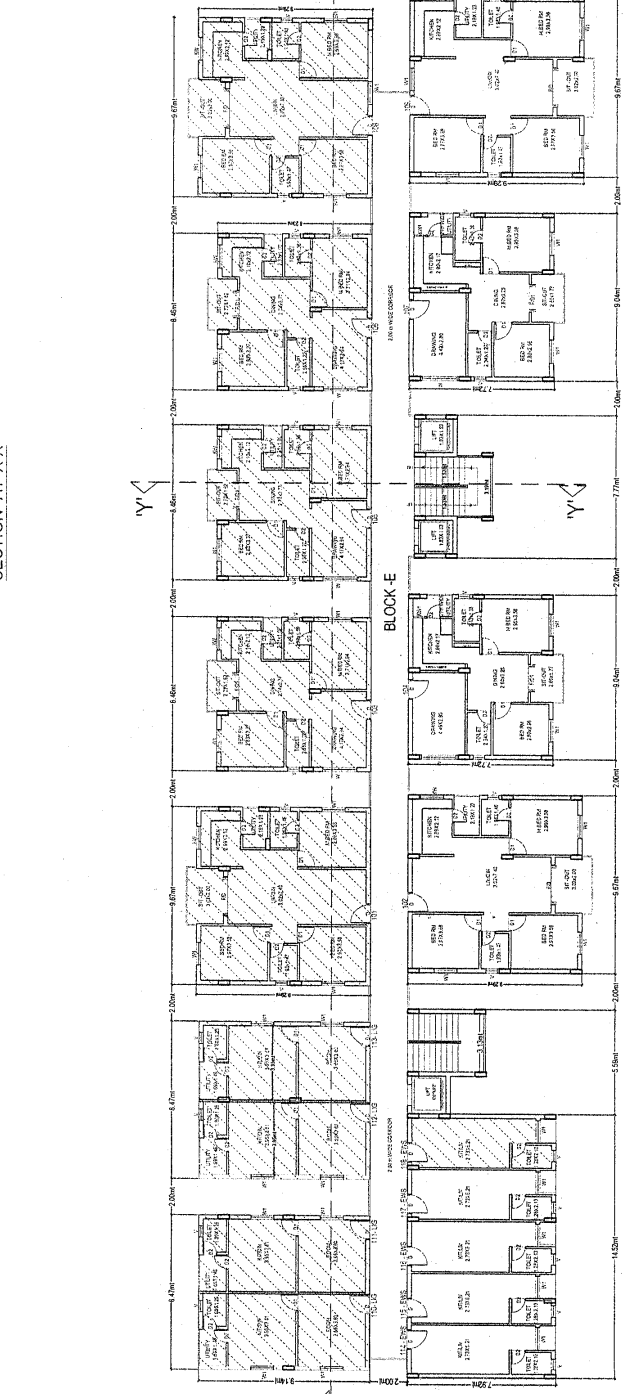
DATE :-

BY :-

FOR :-



SECTION AT X-X



TYPICAL FLOOR PLAN (1ST, 2ND, 3RD & 4TH FLOORS)

BLOCK - E



PROPOSED GROUP HOUSING SCHEME IN SURVEY NOS. 193, 194 & 195 SITUATED AT KAPRA VILLAGE, GHMC KAPRA CIRCLE, KEESARA WANDAL, HYDERABAD, R.R.DISTRICT.

BELONGING TO :-

M/s. VISTA HOMES REPRESENTED BY MR. SOHAM MODI.

SPECIFICATION :-

1. FOUNDATION	C.R.S. IN CM
2. BASEMENT	C.R.S. IN CM
3. FOOTING COL. SLAB	RCC IN CM
4. BEAMS CHAJJAS	RCC T22
5. STAR CASE LINTELS	RCC
6. JOINERY	C.T. WOOD
7. SUPER STUR.	BRICK IN CM
8. PLASTERING	IN CM
9. FLOORING	MARBLE
10. DOOR & WINDOWS, VENTILATORS	C.T. WOOD

OPENINGS :-

DOORS :-		WINDOWS :-	
MS	1.830 X 0.915	W	1.230 X 0.915
DL	1.030 X 0.915	DL	1.230 X 0.915
D2	0.730 X 0.915	D2	0.915 X 0.915
FD	1.030 X 0.915	V	0.915 X 0.915

REFERENCE :-

PROPOSED	---
EXISTING	---
DISMANTELED	---

AREA STATEMENT :-

- I. LAND AREA :**
- TOTAL LAND AREA :- 22,763.09 Sq.mts OR 27,225.00 Sq. Yds
 - AREA AFFECTED UNDER BUFFER STRIP :- 39.10 Sq. Mts OR 46.76 Sq. Yds
 - NET LAND AREA :- 22,723.99 Sq. mts OR 27,178.24 Sq. yds
- II. PARKING AREA :**
- BASEMENT FLOOR AREA FOR PARKING :- 13,211.85sqmts
 NO. OF CAR PARKINGS PROVIDED :- 367 Nos
- REQUIRED BASEMENT VENTILATION DUCTS (2.5 %) :- 358.44sqmts
 PROVIDED BASEMENT VENTILATION DUCTS (2.66 %) :- 379.70sqmts

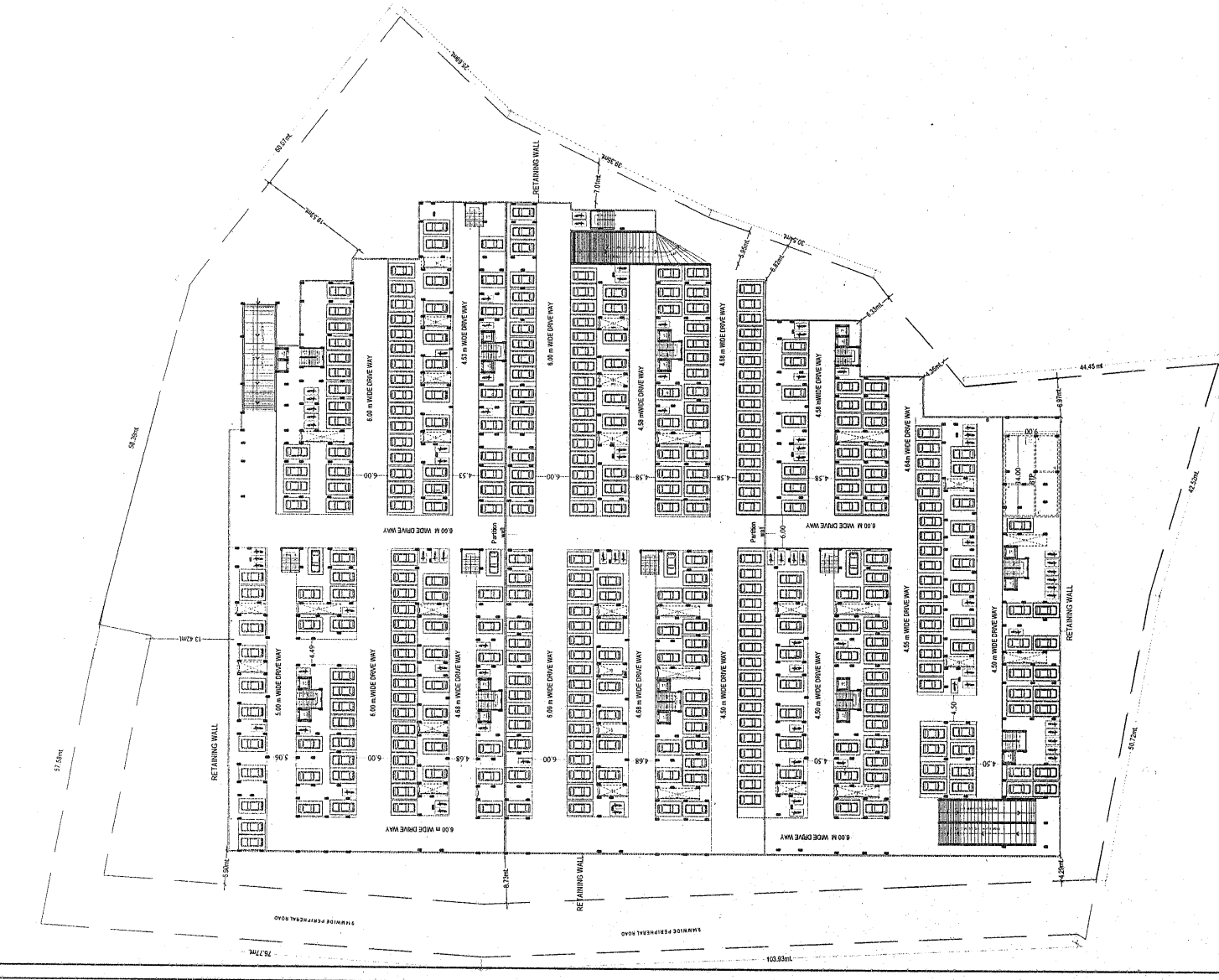
OWNERS SIGN :-

BUILDERS SIGN (REGD.NO) :-

ARCHITECTS SIGN (REGD.NO) :-

STRUCTURAL ENGS SIGN (REGD.NO) :-

Handwritten notes: 10.5, 10.5, 10.5



M/s Vista Homes
SURVEY NOS. 193, 194 & 195, KAPRA,
KEESARA MANDAL, RANGA REDDY DISTRICT

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