

Entree - BAMBOO

Main - MUSHROOM



CENTER FOR
ARTISINAL GASTRONOMY

LANDSCAPE REPORT

Dessert - COCONUT

Palate Cleanser - SALT

COCONUT

COCONUT SHELL PANELS

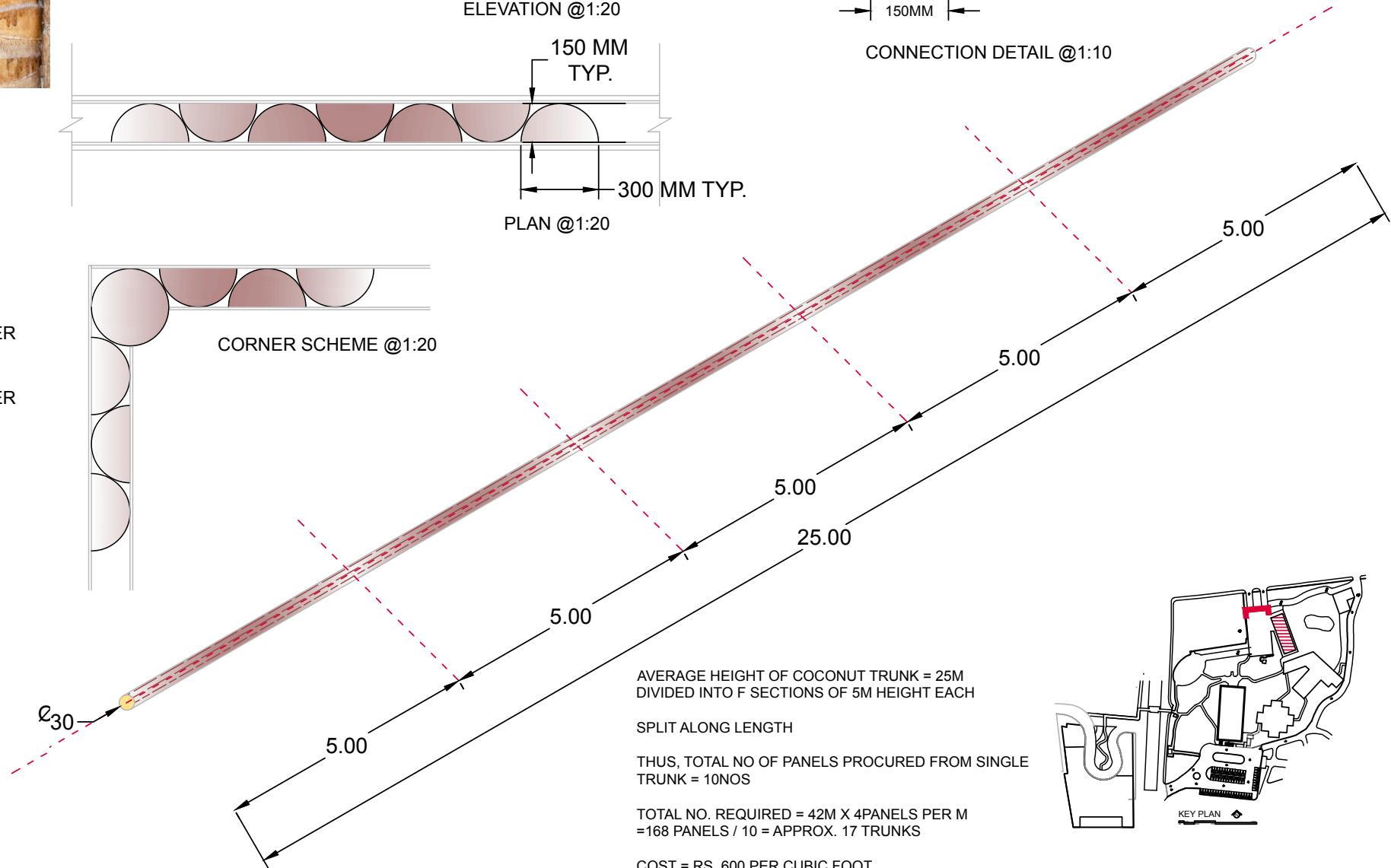
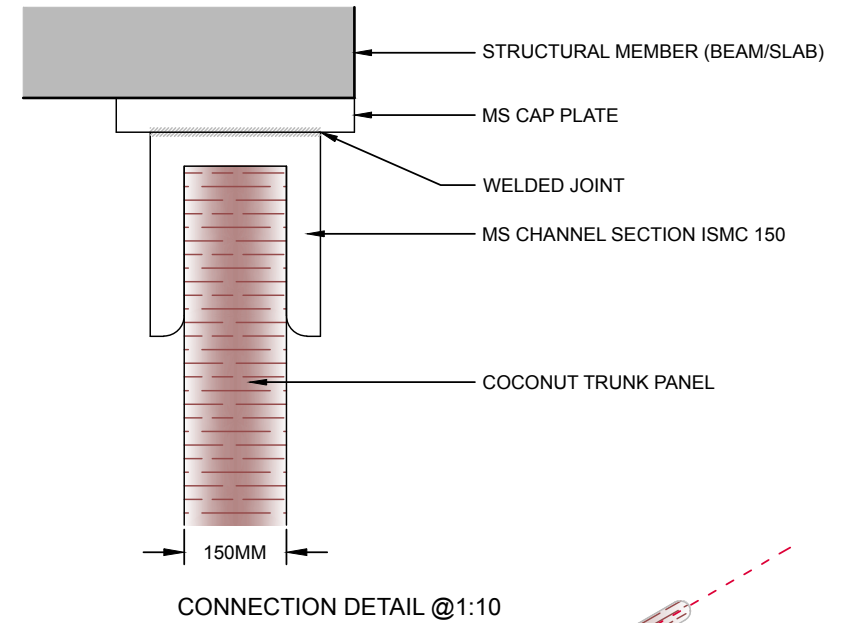
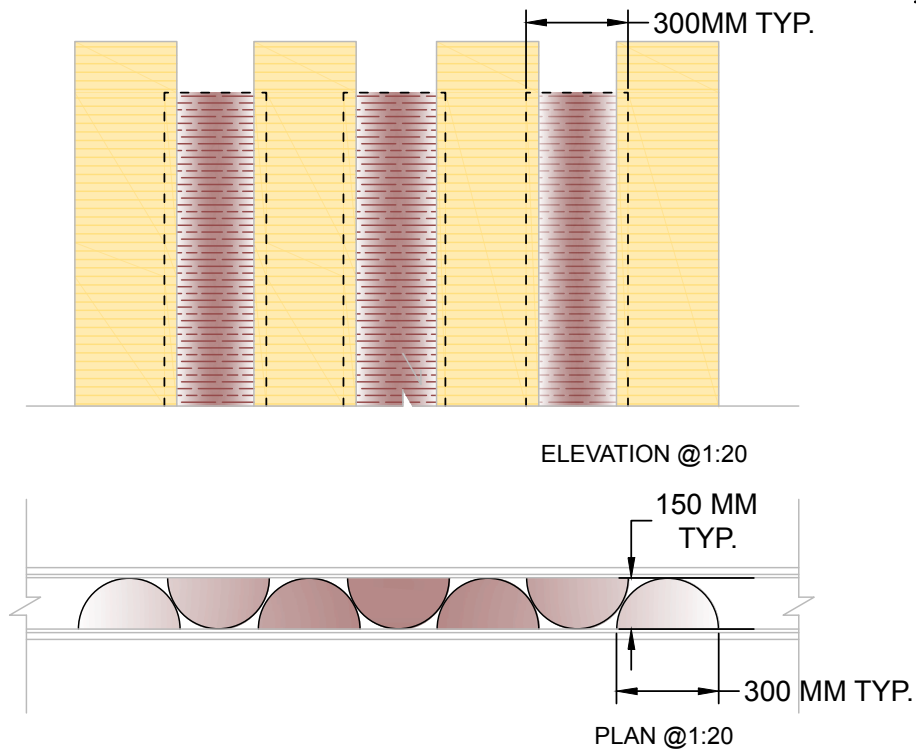
INTERNAL AND EXTERNAL APPLICATIONS BY KLASDESIGNERLEMENTS
 PRODUCT SPECIFICATION: CM-53
 PANEL SIZE: 4' X 2' COST: RS. 350/- PER SQ.FT.



MEDIUM DENSITY COCONUT TIMBER (400-600KG/CU. M.)
 NO ANNUAL GROWTH RINGS OR BRANCHES THUS LESS KNOTS AND DEFECTS
 5-6 YEARS TO GROW FULL HEIGHT (RAPIDLY RENEWABLE)
 ALL NATURAL, SUSTAINABLE PRODUCT

COCONUT TIMBER PANELS

TO BE USED FOR SPILL OUT DECK IN EDUCATIONAL BLOCK



AVERAGE HEIGHT OF COCONUT TRUNK = 25M
 DIVIDED INTO 5 SECTIONS OF 5M HEIGHT EACH

SPLIT ALONG LENGTH

THUS, TOTAL NO OF PANELS PROCURED FROM SINGLE TRUNK = 10NOS

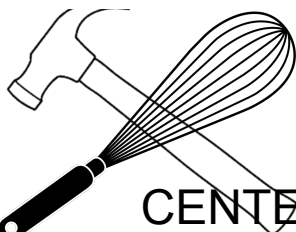
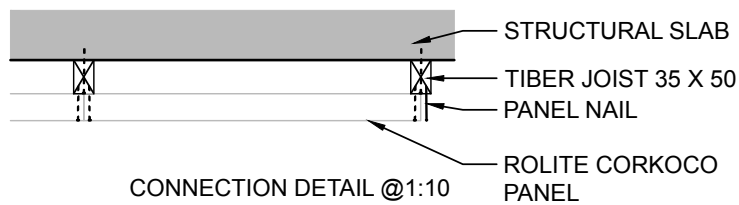
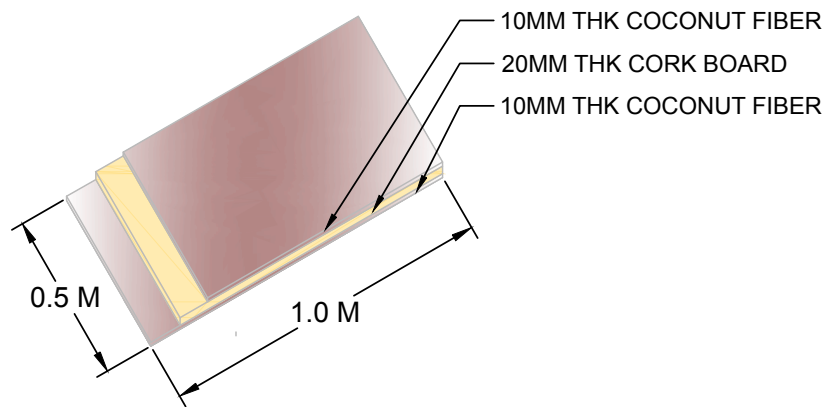
TOTAL NO. REQUIRED = 42M X 4PANELS PER M
 = 168 PANELS / 10 = APPROX. 17 TRUNKS

COST = RS. 600 PER CUBIC FOOT

THUS TOTAL COST = RS. 72,000 APPROX

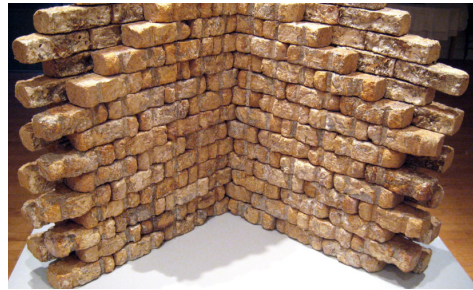
ROLITE CORKOCO INSULATION

TO BE USED OVER ANIMAL ENCLOSURE TO MUFFLE ANIMAL SOUNDS



MUSHROOM

1. COLLECT MUSHROOM SAMPLE
2. PREPARE THE AGAR BASE
3. PLACE MUSHROOM SAMPLE INTO AGAR AND ALLOW TO GROW
4. PREPARE THE SUBSTRATE: AGRICULTURAL WASTE + CAT FOOD + ENERGY DRINK
5. TRANSFER MYCELIUM TO SUBSTRATE AND ALLOW TO INCREASE IN VOLUME (3-7 DAYS)
6. PLACE MUSHROOM MASS INTO BRICK MOLD
7. ALLOW IT TO STRENGTHEN (1 WEEK)
8. PLACE IN OVEN TO KILL THE BRICK



MYCOLOGIST PHILIP ROSS SPECIALIZES IN MYCELIUM APPLICATIONS

CASE STUDY: 12M HIGH MUSHROOM BRICK BUILDING IN MOMA, NEW YORK 2014 DESIGNED BY DAVID BENJAMIN

- HIGH PERFORMANCE
- COST EFFECTIVE
- HOME COMPOSTABLE
- RAPIDLY RENEWABLE
- CUSTOM MOLDABLE
- FIRE RESISTANT
- MOLD RESISTANT
- VOC FREE
- BUOYANT AND WATER RESISTANT
- GROWN WITH NO CARBON EMISSIONS
- WASTE FREE



MYCOBRICKS- MANUFACTURING PROCESS



1 Receive agricultural waste purchased from regional farmers



2 Clean the agricultural waste and introduce it to mycelium



3 Bag this mixture and let the mycelium grow for a few days. The mycelium sees the agricultural waste as food and reaches out to digest it, forming a matrix of white fibers along the way



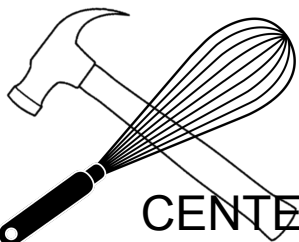
4 Each particle is now coated in mycelium and we break it up into loose particles again



5 Loose particles are put into a tool where the mycelium grows through and around the particles, forming a solid structure and filling any void space. We let this grow for a few days until it is solid, and then remove it from the tool.

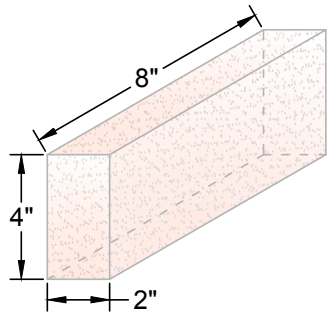


6 Materials are dried to stop growth and prevent it from producing mushrooms or spores.



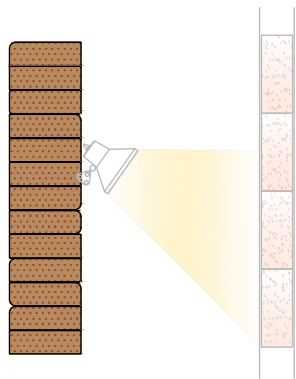
SALT

- VERSATILE-CAN WITHSTAND EXTREME HEATING OR COOLING
- SUPERIOR HEAT DISTRIBUTION
- GAINS STRENGTH OVER TIME
- ADDS A LIGHT FLAVOR AND HEALTHY MINERALS TO FOOD
- NATURALLY ANTI-MICROBIAL SURFACE



UNIT DETAIL @1:5

- NOTES:
- 7LBS APPROX 3KG
 - LIME GROUT FINISHING
 - TRADITIONAL BRICK LAYING METHOD



LIGHTING SCHEME @1:20

- GAP IN THE WALL ALLOWS
- AIR FLOW
 - SPACE FOR BACK LIGHTING
 - MAINTENANCE ACCESS

HIMALAYAN SALT BLOCKS ARE USED IN THE LECTURE HALLS/EXHIBITION SPACES

1. AS DECORATIVE ELEMENT
2. TO IONIZE THE AIR AND COUNTERACT THE POSITIVE IONS RELEASED FROM ELECTRICAL EQUIPMENT
3. AS INTERACTIVE ELEMENT FOR YOUNG AND CURIOUS VISITORS

SALT BLOCKS RELEASE NEGATIVE IONS WHEN LIT UP WITH HEAT EMITTING LIGHT SOURCES.

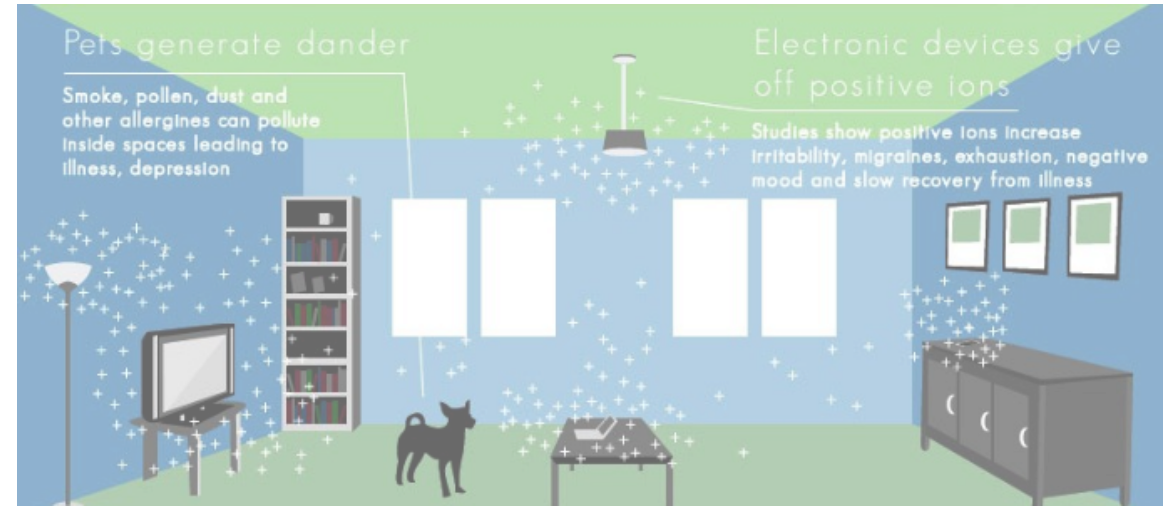
COMMONLY USED IN SPAS. INDOOR USE IN HUMID CLIMATES, SAFE FROM DIRECT RAINFALL.



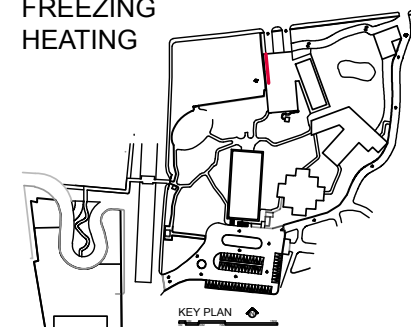
CASE STUDY: CHILDREN'S SALT MURAL AT THE ARIA SALT THERAPY CENTER, TEXAS. CHILDREN ARE ALLOWED TO TASTE THE WALLS



SALT BLOCKS- RELEASE NEGATIVE IONS



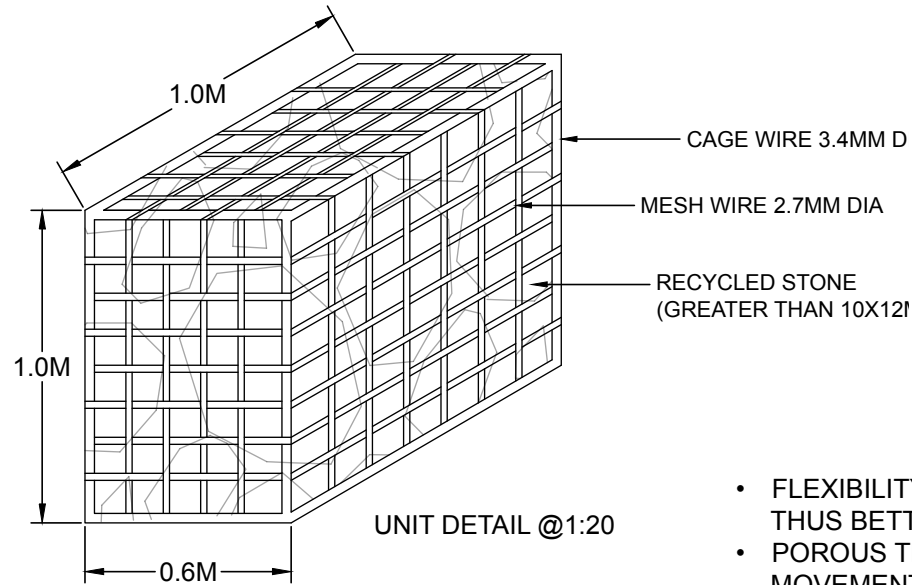
- SALT BLOCK COOKING
CURING
FREEZING
HEATING



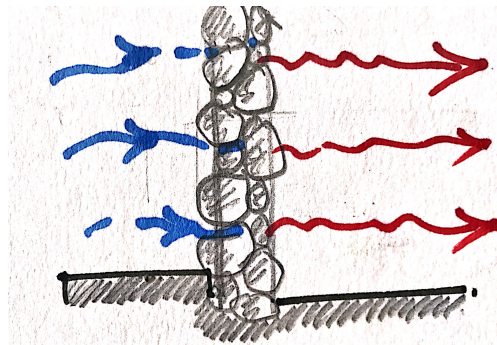
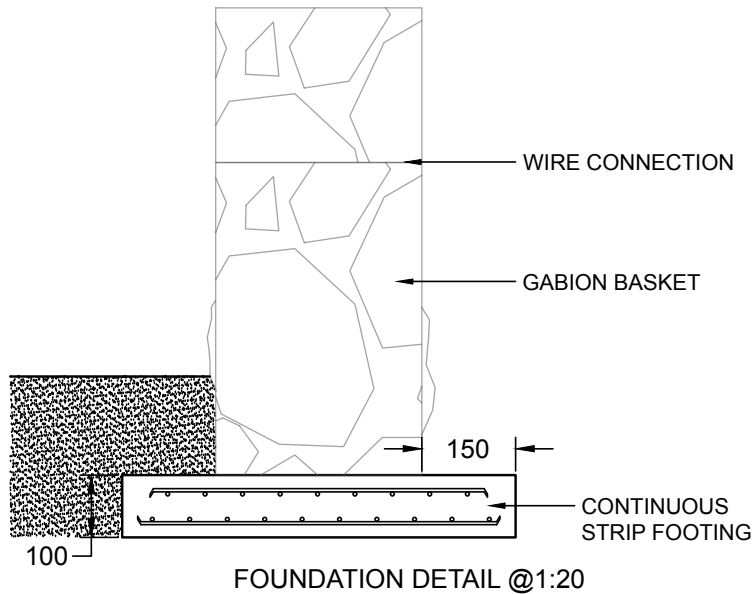
JASHAN SIPPY
FINAL YEAR B.ARCH.
AOA (UNAIDED)

GABION WALL

GABION BASKET



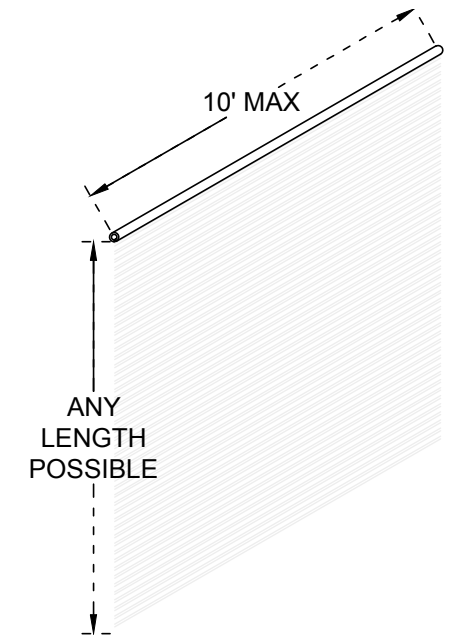
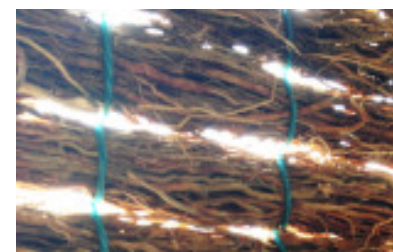
- FLEXIBILITY: ACCOMMODATES SETTLEMENT THUS BETTER IN EARTHQUAKES
- POROUS THUS ALLOWS FREE AIR MOVEMENT
- EASY CONSTRUCTION THUS NO SKILLED LABOR REQUIRED
- ECOFRIENDLY AND PERMITS VEGETATION GROWTH OVER TIME
- USES REPURPOSED STONE FROM SITE
- CHEAPER THAN RCC WALLS



WINDS FROM THE COURTYARD ARE SUCKED INTO THE PERMEABLE GABION WALLS OF THE ANIMAL ENCLOSURE, THUS DRIVING FOUL SMELLS AWAY FROM HABITABLE SPACE

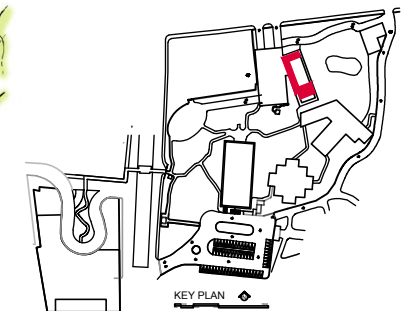
BAMBOO/KHUS

- CHECK HIGH TEMPERATURE AND ENABLE VENTILATION
- RELEASE AROMA OF KHUS GRASS
- PROMOTES LOCAL CRAFT
- OPENABLE AND ALLOWS FREE MOVEMENT OF ANIMALS INTO PETTING FARM DURING DAY TIME
- ORIENTED EAST AND ALLOWS MORNING SUNLIGHT TO FILTER THROUGH

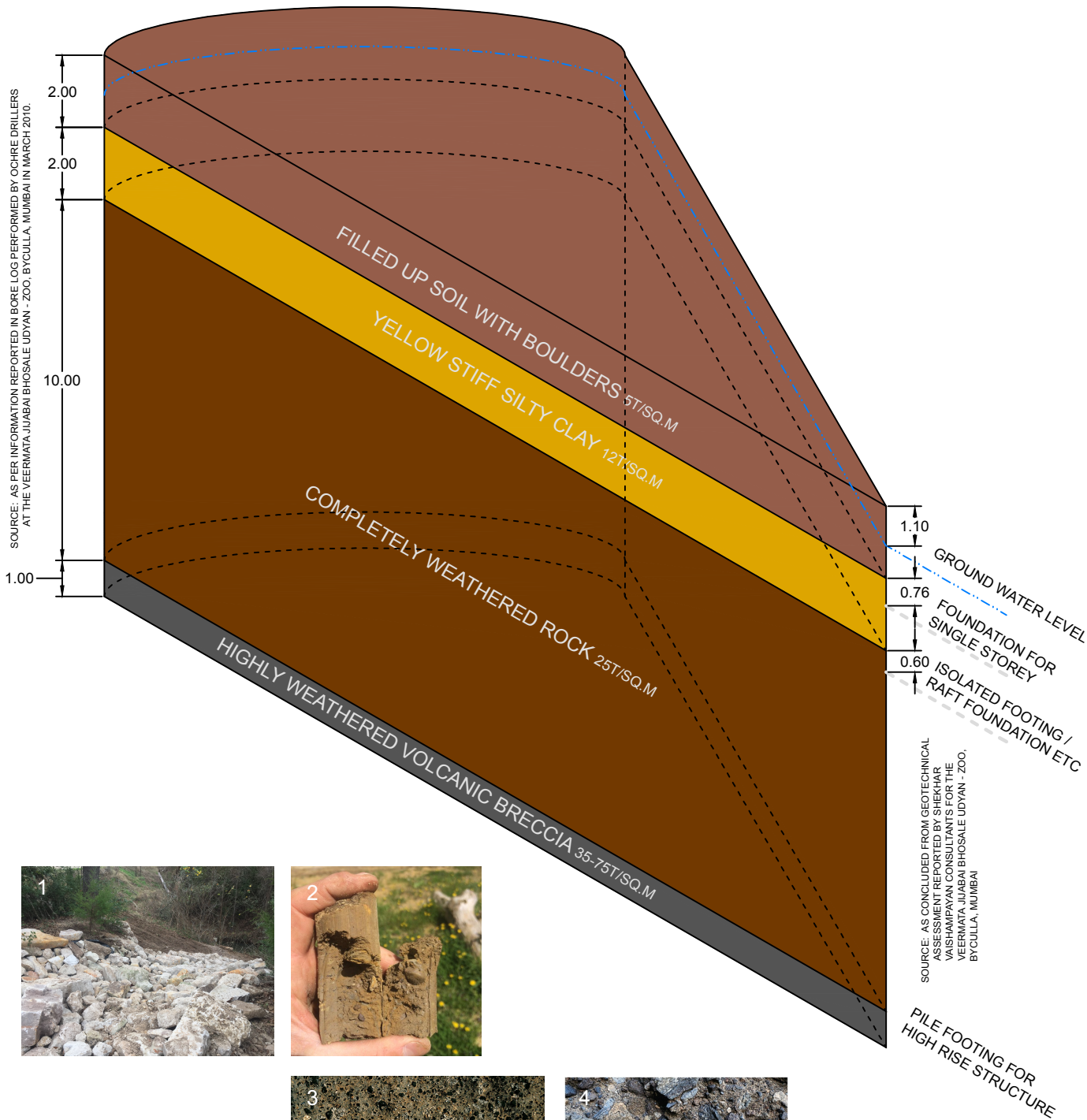


COST: RS.60 PER SQ.FT.
APPROX. AREA NEEDED= 6000 SQ. FT.

TOTAL COST = RS. 3.60.000/-



SOIL PROFILE DIAGRAM



BORE LOG

Ochre Drillers		BORE LOG										Job No. : 849				
(As per IS : 1892 - 1979, 4453 - 1980, & 4464 - 1967)												Date : 05/03/10				
Project : Renovation of Veermata Jijabai Bhosale Udyan - Zoo at Dr B Ambedkar Marg, Byculla, Mumbai												Page No. : 1 of 2				
Client : Municipal Corporation of Greater Mumbai												Bore Hole No. : BH 9				
Co-Ordinate : -												Depth of Bore Hole : 17.00 m				
R.L. : 100 m												Depth of Casing : 14.00 m				
Location :												Date of Commencement : 08/03/2010				
Dia. of Borehole : 100 / Nx												Date of Completion : 17/03/2010				
Depth of GWT : 1.10 m																
Scale	Depth	R.L.	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value				CR %	ROD %	P.R. m/hr.	Remarks/ Other Tests
							From	To	15	15	15	15				
1				Filled Up Soil With Boulders (GM-GC)												
	1.00				DR1		1.00	1.50								Boulders
	2.00	98.00		(2.00m)	DR2		1.50	2.00								Boulders
	2.40			Yellow Stiff to Very Stiff Silty Clay (CH)	1	SPT-1	2.40	3.00	5	6	8	9	14			
	2.00				DR3		2.00	4.50						8	Nil	
	3.40	96.00		(2.00m)	2	SPT-2	3.40	4.00	6	8	10	12	18			
	4.50			Completely Weathered Rock	DR4		4.50	5.00						12	Nil	
	5.00				DR5		5.00	5.50						10	Nil	
	5.50				DR6		5.50	6.00						14	Nil	
	6.00				DR7		6.00	6.50						20	Nil	
	6.50				DR8		6.50	7.00						10	Nil	
	7.00				DR9		7.00	7.50						10	Nil	
	7.50				DR10		7.50	8.00						Nil	Nil	Small Pieces
	8.00				DR11		8.00	8.50						Nil	Nil	Small Pieces
	8.50				DR12		8.50	9.00						Nil	Nil	Small Pieces
	9.00				DR13		9.00	9.50						Nil	Nil	Small Pieces
	9.50				DR14		9.50	10.00						12	Nil	
	10.00				DR15		10.00	10.50						10	Nil	
	10.50				DR16		10.50	11.00						12	Nil	
	11.00				DR17		11.00	11.50						4	Nil	
	11.50				DR18		11.50	12.00						12	Nil	
	12.00				DR19		12.00	12.50						20	Nil	
	12.50				DR20		12.50	13.00						22	Nil	
	13.00				DR21		13.00	13.50						4	Nil	
	13.50				DR22		13.50	14.00						6	Nil	
	14.00	86.00		(10.00m)	DR23		14.00	14.50						14	Nil	
	14.50			Highly Weathered Volcanic Breccia	DR24		14.50	15.00						28	24	
	15.00	85.00		(1.00m)	DR25		15.00	15.00						28	24	

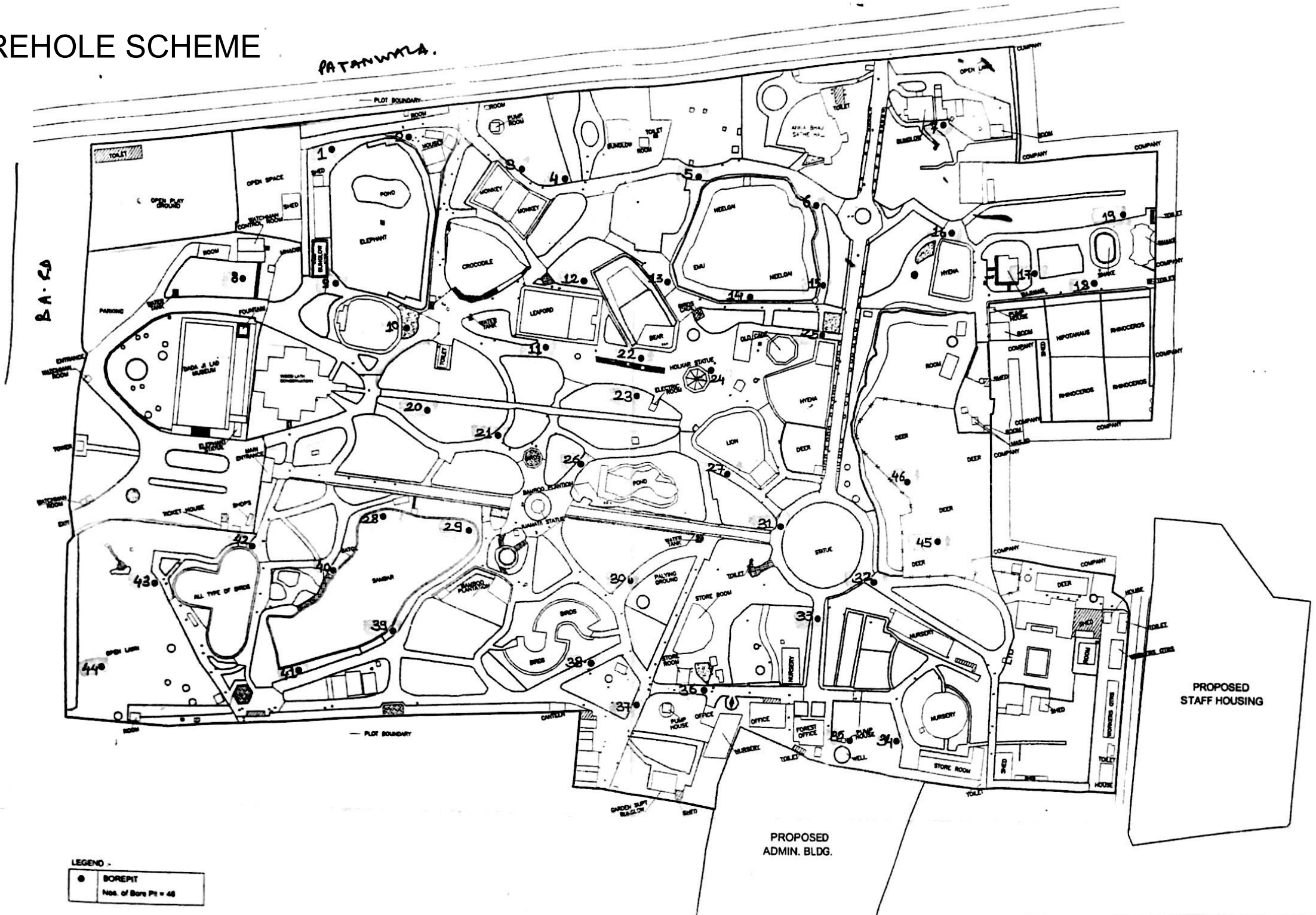


SOURCE: AS CONCLUDED FROM GEOTECHNICAL ASSESSMENT REPORTED BY SHEKHAR VAISHAMPYAN CONSULTANTS FOR THE VEERMATA JIJABAI BHOSALE UDYAN - ZOO, BYCULLA, MUMBAI

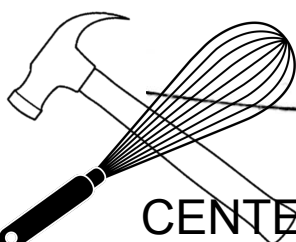


13

BOREHOLE SCHEME



Client	: Municipal Corporation of Greater Mumbai
Project	: Renovation of Veermata Jijabai Bhosale Udyan - Zoo at Dr B Ambedkar Marg, Byculla, Mumbai
Contractor	: Ochre Drillers India Pvt Ltd, Thane



GEOTECHNICAL ASSESSMENT

849-2009-129
Renovation of Veermata Jijabai Bhosale Udyan - Zoo
@ Dr B Ambedkar Marg, Byculla, Mumbai
Geotechnical Investigation Report

S H E K H A R
V A I S H A M P A Y A N
Geotechnical Consultants

5.0 GEOTECHNICAL ASSESSMENT

5.1 Municipal Corporation of Greater Mumbai have proposed renovation of Veermata Jijabai Bhosale Udyan - Zoo at Dr B Ambedkar Marg, Byculla, Mumbai. Proposed project consist of different type of buildings, which will be RCC framed structures.

FOUNDATION SYSTEM

5.2 Top layer of subsoil profile is filled up soil with boulders. Thickness of this stratum is from 0.50 m to 6.00 m in all boreholes. This stratum being backfilled by random dumping method, engineering properties of this stratum cannot be determined reliably. Therefore, foundations of important, settlement sensitive and heavily loaded buildings shall not be placed in this stratum.

5.3 However, foundation of very light structures (compound wall or security cabin) could be placed at 2.00 m to 3.00 m depth. Following precautions are required to be taken when footing foundation will place in filled up soil. On excavation to required depth, excavated stratum shall be inspected and organic content if any, shall be removed and replaced by selected and approved fill material such as stone dust or sand. Approved fill material shall be compacted by rammer thoroughly for required thickness. On compaction, lowering of level due to compaction shall be made good to required level by adding compacted fill material. Footing foundation then shall be placed on compacted load dispersion pad. Net safe bearing capacity of about 5 T/m² may be used for design purposes in this bouldery stratum.

5.4 This stratum is followed by yellow stiff to very stiff silty clay. This stratum is present in only nineteen boreholes. Thickness of this clay stratum is 0.60 m to 4.60 m. Considering design SPT 'N' value 17 for this stratum.

5.5 Net safe bearing capacity for this stratum is considered using worst profile for permissible settlement of 25 mm. Net safe bearing capacity value for this stratum is recommended as 12 T/m². Foundations of light structures (ground storied) can be placed on this stratum. Foundations shall be rested minimum 75 cm in this stratum.

5.6 This stratum is followed by completely weathered rock. Net safe bearing capacity for this stratum is recommended as 25 T/m². Foundations shall be rested minimum 60 cm in this stratum.

849-2009-129
Renovation of Veermata Jijabai Bhosale Udyan - Zoo
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Geotechnical Investigation Report

S H E K H A R
V A I S H A M P A Y A N
Geotechnical Consultants

5.7 This stratum is followed by weathered volcanic Breccia and weathered Basalt. This stratum is continuous up to depth of investigation. To evaluate safe bearing capacity of rock stratum, rock mass rating values were determined for average rock quality properties. RMR values as per IS 13365 (part I) work out to 10, 28, 12 and 30 for highly weathered volcanic Breccia, moderately weathered volcanic Breccia, highly weathered Basalt and moderately weathered Basalt respectively. Using these values and referring to table 8 of IS 12070-1987, net safe bearing capacity values are worked out. RMR computations are enclosed with this report.

5.8 Foundations shall be placed minimum 30 cm in each rock stratum. RMR values and net safe bearing capacities corresponding each rock stratum are tabulated as below.

Stratum	RMR Value	Net Safe Bearing Capacity (T/m ²)
H W Volcanic Breccia	10	35.63
M W Volcanic Breccia	28	62.18
H W Basalt	12	42.63
M W Basalt	30	76.13

5.9 Net safe bearing capacity and different founding depths corresponding to all boreholes is tabulated as below.

STRATUM Borehole No	C W Rock		H W V Breccia		M W V Breccia		H W Basalt		M W Basalt	
	FD (m)	NSBC (T/m ²)	FD (m)	NSBC (T/m ²)	FD (m)	NSBC (T/m ²)	FD (m)	NSBC (T/m ²)	FD (m)	NSBC (T/m ²)
BH 1	2.10	25	---	---	---	---	5.00	40	7.00	75
BH 2	2.60	25	---	---	---	---	5.50	40	10.50	75
BH 3	4.60	25	5.50	35	9.00	60				
BH 4	2.60	25	---	---	---	---	8.50	40		
BH 5	6.60	25	---	---	---	---	9.50	40	13.50	75
BH 6	3.20	25	---	---	---	---	7.00	40	12.50	75
BH 7	---	---	---	---	---	---	6.00	40		
BH 8	4.10	25	---	---	---	---	5.50	40		
BH 9	4.60	25	14.50	35						
BH 10	4.70	25	---	---	---	---	9.00	40	12.50	75
BH 11	4.60	25	---	---	---	---	6.50	40	7.50	75
BH 12	5.20	25	8.50	35						
BH 13	3.20	25	---	---	---	---	5.50	40		
BH 14	5.70	25	---	---	---	---	9.50	40		
BH 15	5.20	25	---	---	---	---	6.40	40	10.00	75



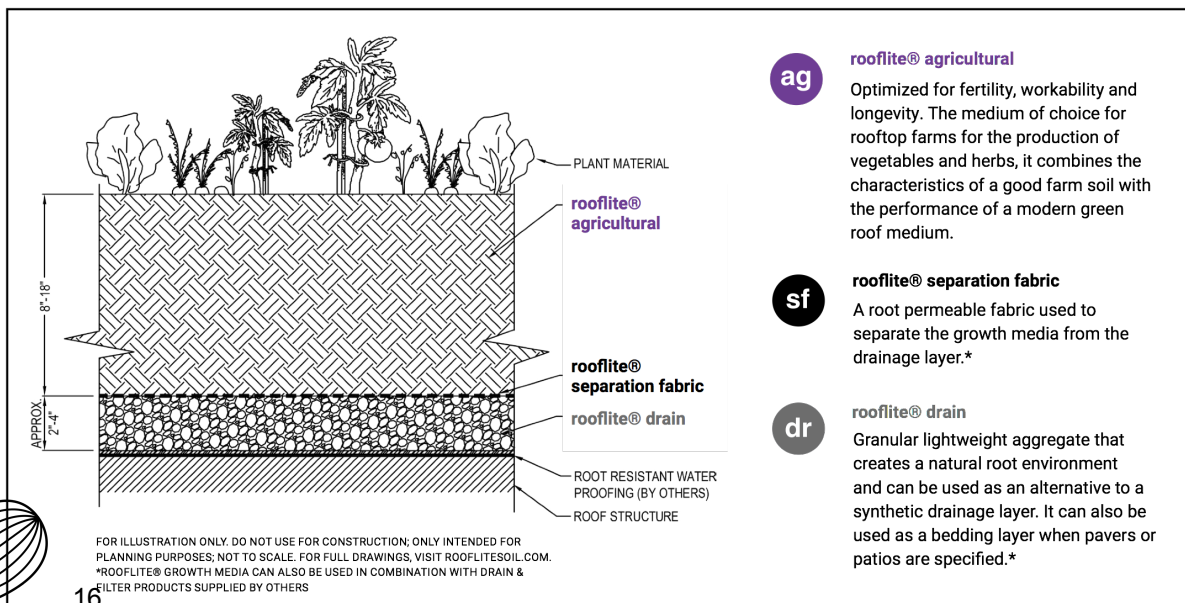
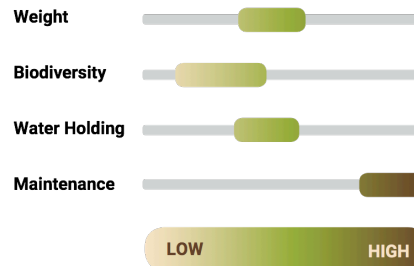
ROOFLITE -ROOFTOP FARMING



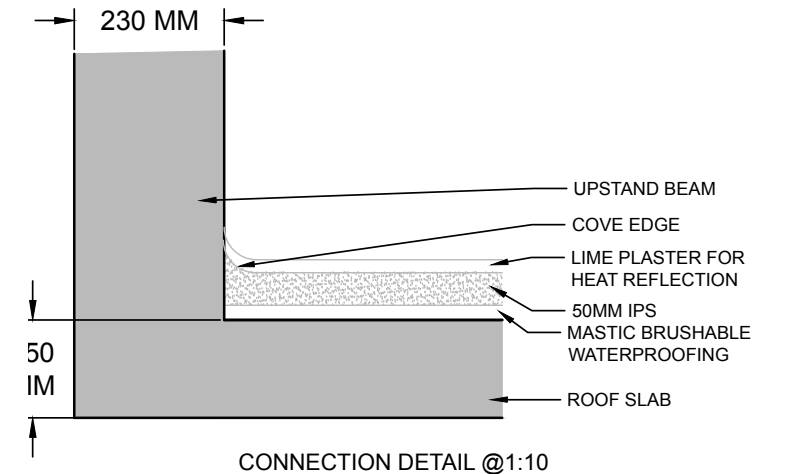
ROOFTOP FARMING

ROOFTOP FARMING

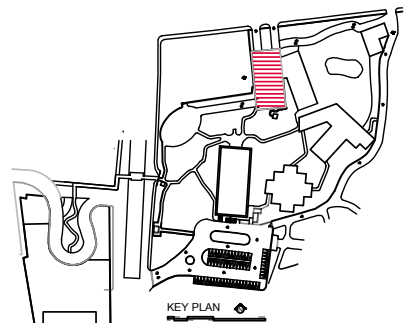
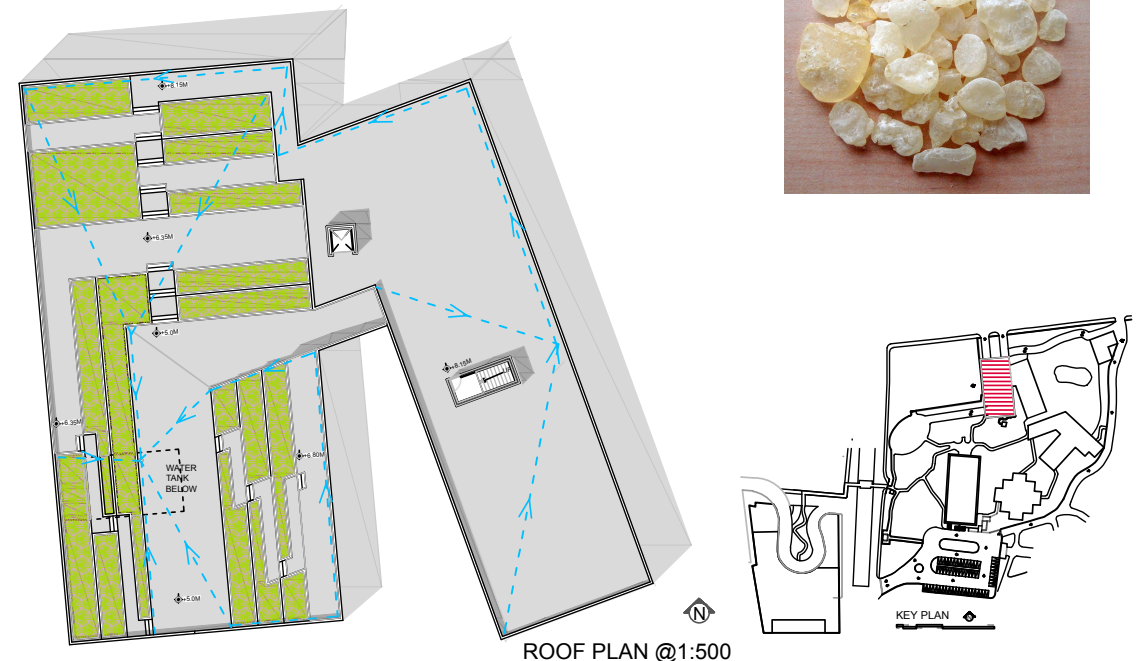
- Rooftop farms are intensive green roofs that have a soil media depth of 8 to more than 12 inches, depending on the crops grown.
- This system is optimized for agricultural production on rooftops.
- It has the characteristics of an ideal natural farm soil profile while balancing the properties required by the standards of modern green roof technology.

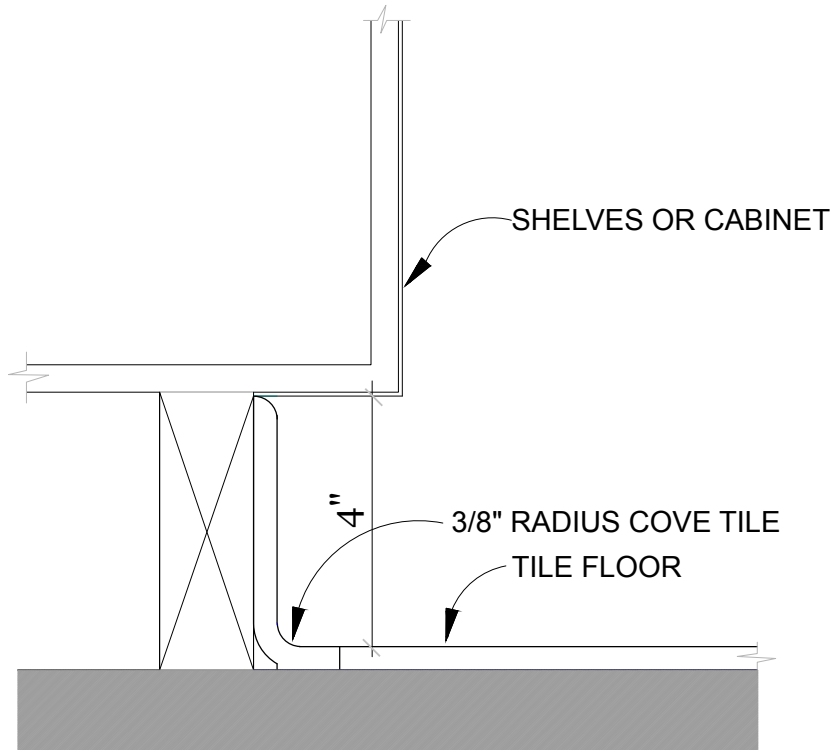


MASTIC BRUSHABLE WATERPROOFING



- PAINTABLE OR BRUSHABLE WATERPROOFING
- ENTIRE ROOF SURFACE IS COATED
- MASTIC – RESIN OBTAINED FROM MASTIC TREE
- WHEN CHEWED, BECOMES BRIGHT WHITE, OPAQUE
- INITIALLY BITTER, THEN RELEASES A REFRESHING WOODY FLAVOR



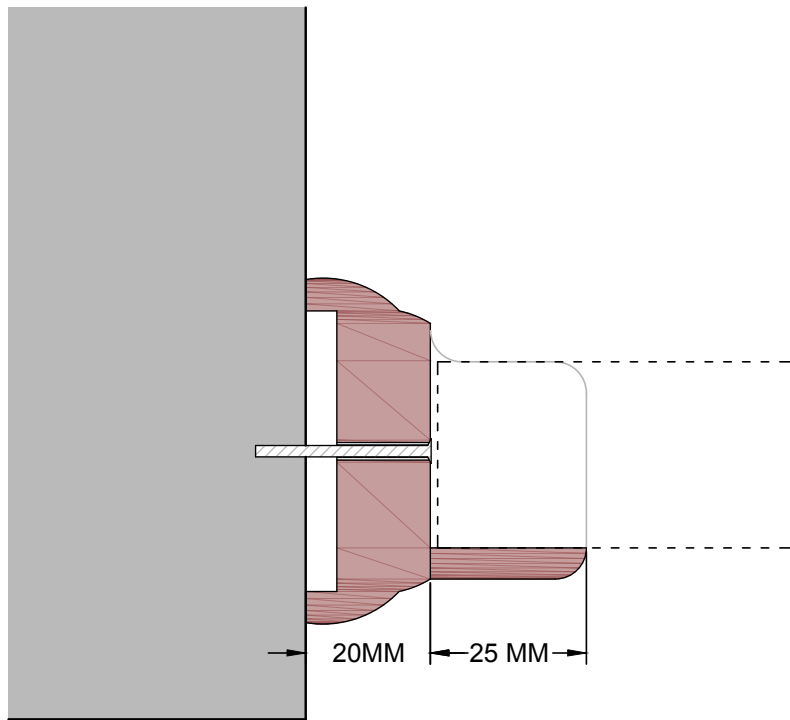


NOTES:
 IN DAIRY PROCESSING,
 VEGETABLE PROCESSING
 AND COMMUNAL KITCHEN –
 FOR EASY CLEANING AND
 SANITATION, PREVENTS
 ACCUMULATION OF DIRT
 AND DUST, THUS
 MAINTAINING CLEAN
 ENVIRONMENTS

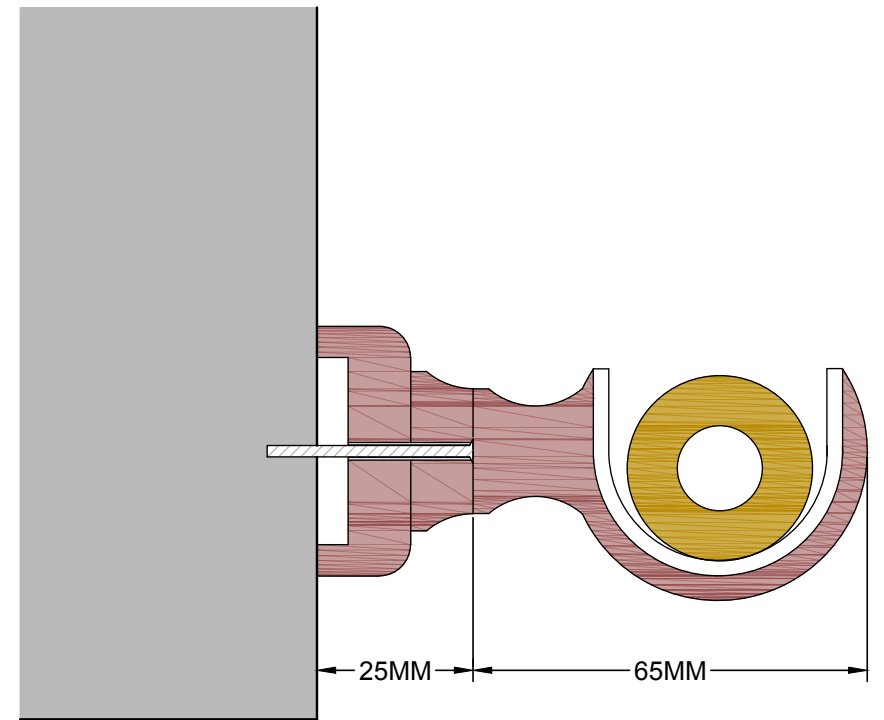
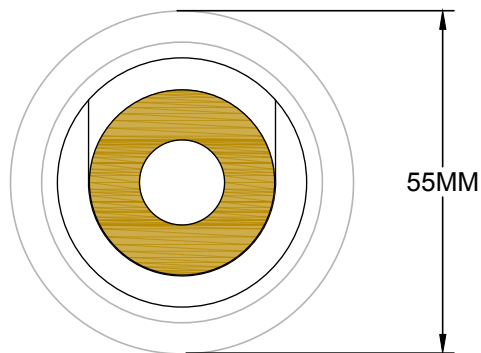
COVE TILE BASE @ DAIRY FLOOR

NOTES:
 USED FOR ATTACHING BAMBOO BLINDS IN ANIMAL
 ENCLOSURE AND FOR SUSPENDING TABLE
 CLOTHS FROM CEILING IN DINING ROOM

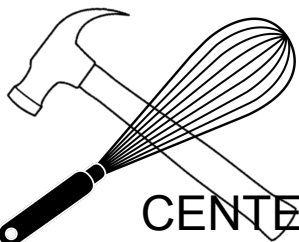
ROD SUPPORT DETAILS



END PIECE CONNECTION DETAIL @1:1



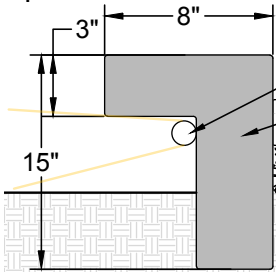
INTERMEDIATE SUPPORT DETAIL @1:1



LANDSCAPING

PERMEABLE PATHWAY

OPEN JOINTED PAVERS ALLOW RAINWATER TO SEEP THROUGH AND RECHARGE GROUND WATER TABLE

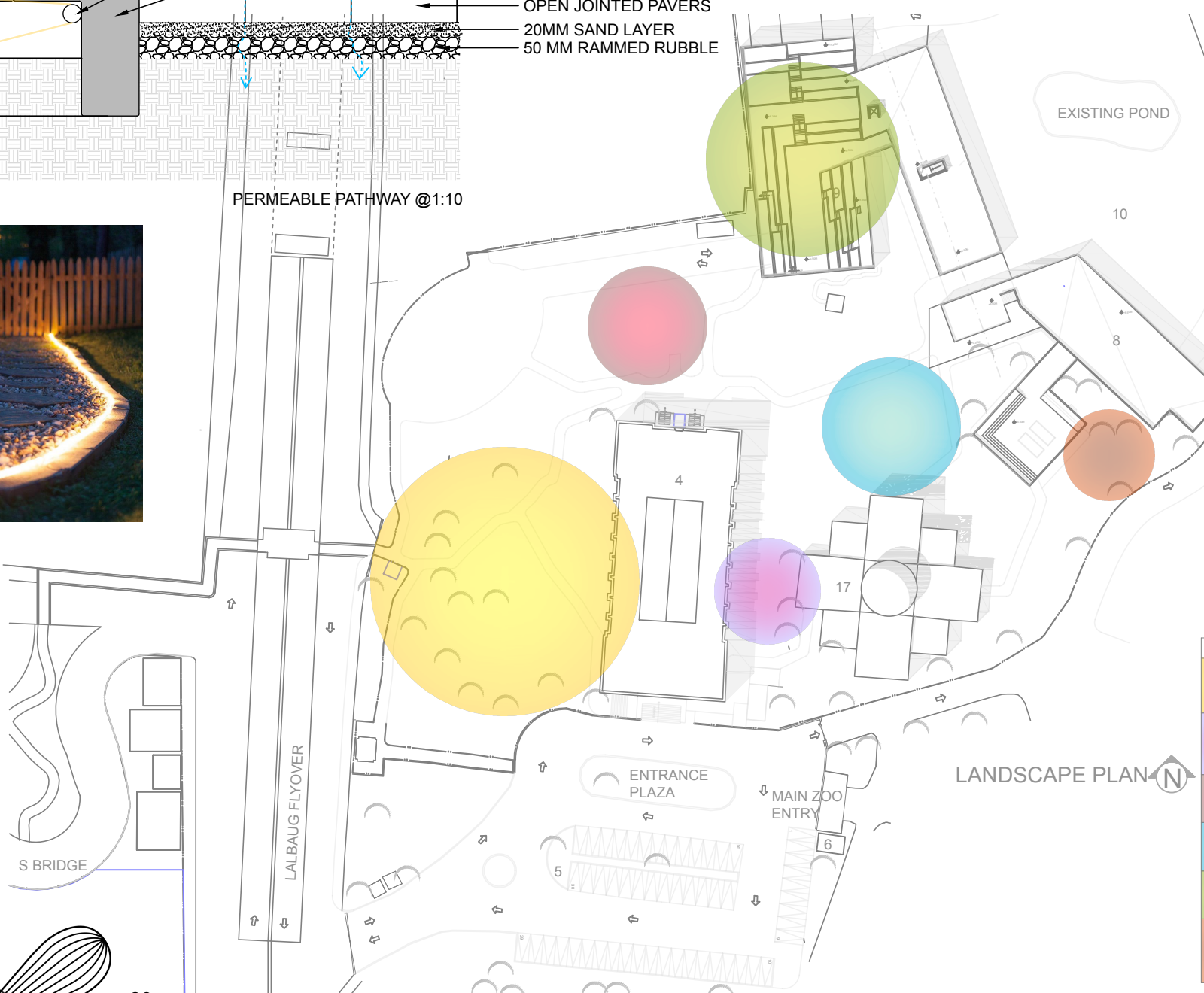


ROPE LIGHT HELD BY 4MM WIRE PROJECTION FROM KERB

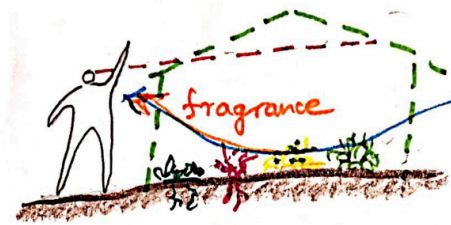
CUSTOMIZED KERB

OPEN JOINTED PAVERS
20MM SAND LAYER
50 MM RAMMED RUBBLE

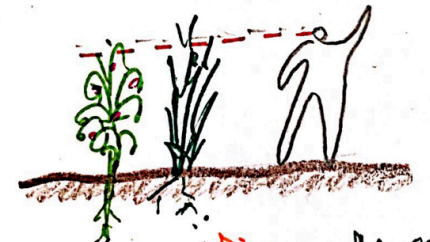
PERMEABLE PATHWAY @1:10



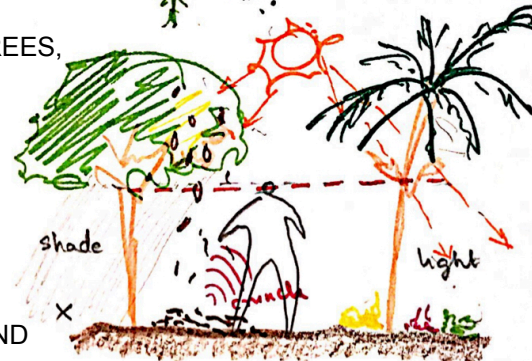
SHRUBS/HERB GARDENS
MICROCLIMATES CAN BE CONTROLLED
FRAGRANCES, COLORS, TEXTURES, GROUND COVER
EG. MINT, CHILLI, AMARANTHUS, LETTUCE, CABBAGE, ETC.



CROPS OF HUMAN HEIGHT
EG. SUGARCANE, MAIZE, ETC.
HUMAN BEINGS CAN GET 'LOST'

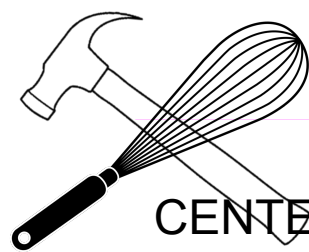


WALKING THROUGH TREES, ORCHARDS
EG. MANGO, CITRUS, COCONUT
STRONG COLUMN-LIKE AXIAL TRUNKS
TREE SHADING DETERMINES UNDERSTANDING AND POSSIBILITY OF GROUND COVER

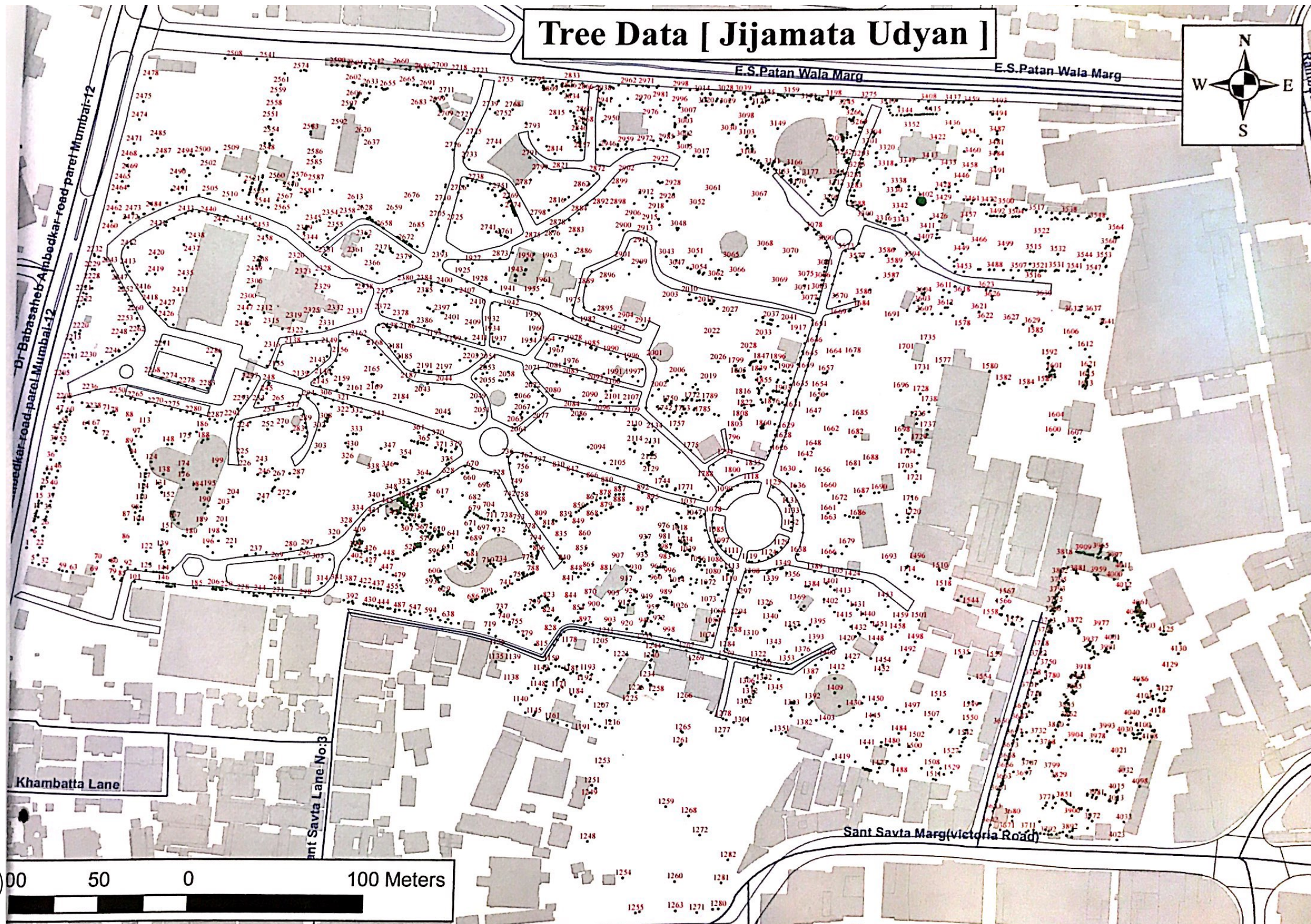


KEY	SPACE	NOTES
	SENSORY GARDENS	SENSORY PATHWAYS, WINDING ROUTES, LARGE GARDEN TO CUT OFF FROM CITY
	HERB GARDEN	GENTLE SCENTS, LOW HEIGHT PATCHES OF COLORS AND TEXTURES, NEXT TO COLONIAL HERITAGE BUILDING
	SPICE GARDEN	PUNCHY, AROMATIC PLANTS, LOCATED NEAR HIGH POPULATION OF COCONUT TREES
	CULINARY GARDEN	MATURE FRUITS AND VEGETABLE CROPS, EASY FOR FORAGE AND USE IN COMMUNAL COOKING
	TERRACE FARM	FOR PLANTING AND SOWING FRUITS AND VEGETABLE CROPS NEEDING MORE SUNLIGHT
	MUSHROOM GROVE	DENSE TREE COVER, HIGH HUMIDITY, MUSHROOMS GROW TO PROVIDE MYCELIUM FOR BUILDING MATERIAL

LANDSCAPE PLAN



EXISTING TREE SURVEY



PLANTING REQUIREMENTS

MUMBAI FARMER

SOURCE: [HTTPS://MUMBAIFARMER.COM/WHAT-TO-GROW/](https://mumbaifarmer.com/what-to-grow/)

MUMBAI'S CLIMATE IS **TROPICAL** – IT HAS MODERATE TO HIGH TEMPERATURES AND VERY HIGH HUMIDITY. IT HAS TWO SUMMERS, A HEAVY, PROLONGED MONSOON AND A BLINK-AND-YOU-MISS-IT WINTER SEASON.

KEY: ♣ *DIFFICULT TO GROW*

♣♣ *QUITE EASY TO GROW*

§ *WILL GROW IN 4-5 HOURS OF SUNSHINE*

§§ *NEEDS 8-10 HOURS OF SUNSHINE*

≈ *LIGHT TO MODERATE WATERING*

≈≈ *MODERATE TO HEAVY WATERING*

HERBS ETC

- ALOE VERA ♣♣ §§ ≈
- CAROM/AJWAIN ♣♣ §§ ≈
- CURRY LEAVES/KADI PATTA ♣♣ § ≈
- CORIANDER/DHANIA PATTA ♣ §§ ≈
- MINT/PUDINA ♣♣ § ≈
- DILL/SHEPU ♣♣ §§ ≈
- BLACK PEPPER/KAALIMIRI ♣♣ §§ ≈≈
- ITALIAN BASIL ♣♣ §§ ≈
- GREEK THYME ♣ §§ ≈
- LEMONGRASS ♣♣ §§ ≈

- CHILLIES/MIRCHI ♣♣ §§ ≈
- TOMATOES/TAMATAR ♣♣ §§ ≈≈
- OKRA OR LADY FINGER/BHINDI ♣♣ §§ ≈
- CAPSICUM OR PEPPERS/SIMLA MIRCH ♣♣ § ≈
- CUCUMBER/KAKDI ♣♣ §§ ≈≈
- BITTER GOURD/KARELA ♣ §§ ≈≈
- SNAKE GOURD/PADWAL OR CHICHINGA ♣♣ §§ ≈≈
- RIDGE GOURD/TORAI OR TURI ♣♣ §§ ≈≈
- SPONGE GOURD/GILKI TORAI ♣♣ §§ ≈≈
- IVY GOURD/TENDLI OR TINDORA ♣♣ §§ ≈≈
- PUMPKIN/KADDU ♣♣ §§ ≈≈
- CLUSTER BEANS/GUAR ♣ §§ ≈
- POLE BEANS ♣♣ §§ ≈
- BUSH BEANS ♣♣ §§ ≈
- FRENCH OR STRING BEANS ♣♣ §§ ≈



HOUSEHOLD FARM, JANUARY 2017

LEAF VEGGIES

- SPINACH/PALAK ♣♣ §§ ≈
- RED & GREEN AMARANTH/LAAL MAATH & CHOWLI ♣♣ §§ ≈≈
- MALABAR SPINACH/POI KA SAAG ♣♣ §§ ≈
- FENUGREEK/METHI ♣♣ §§ ≈
- MUSTARD GREENS/SARSON KA SAAG ♣ §§ ≈
- LETTUCE/SALAAD KE PATTE ♣ § ≈
- WHEATGRASS/GEHU (THOUGH A CEREAL, IT IS USED AS A LEAF VEGGIE IN SMOOTHIES) ♣♣ §§ ≈

ROOT VEGGIES

- BEETROOT/CHAKUNDAR ♣ §§ ≈
- RADISH/MOOLI ♣♣ §§ ≈
- SWEET POTATO/RATH ALOO ♣♣ §§ ≈≈
- POTATO/ALOO ♣♣ §§ ≈≈
- CARROT/GAJAR ♣ §§ ≈
- ONION/PYAAZ ♣ §§ ≈
- GARLIC/LASOON ♣♣ §§ ≈
- GINGER/ADRAK ♣♣ §§ ≈≈
- TURMERIC/HALDI ♣♣ §§ ≈≈

FRUITS

- LIME/NIMBU ♣♣ §§ ≈
- SAPODILLA/CHIKOO ♣♣ §§ ≈≈
- GUAVA/PERU ♣♣ §§ ≈
- CUSTARD APPLE/SITAPHAL ♣ §§ ≈
- PAPAYA/PAPITA ♣♣ §§ ≈≈
- BANANA/KELA ♣♣ §§ ≈≈
- MANGO/AAM ♣♣ §§ ≈≈
- LOVE APPLE/PYAAR KA SER ♣ §§ ≈≈
- BLACK SUGARCANE/KAALA GANNA ♣♣ §§ ≈≈
- WATERMELON/TARBOOZ ♣♣ §§ ≈≈
- INDIAN GOOSEBERRY/AMLA ♣♣ §§ ≈≈
- LONG GOOSEBERRY/BIMLI ♣♣ §§ ≈≈

* YOU MAY NOTICE THE ABSENCE OF SOME COMMON MARKET VEGGIES LIKE BRINJAL, CABBAGE AND CAULIFLOWER. THE REASON IS SIMPLE – IT WAS IMPOSSIBLE TO GROW THESE ORGANICALLY BECAUSE OF THE HIGH INCIDENCE OF WORM ATTACKS. SINCE I REFUSE TO SPRAY CHEMICAL PESTICIDES, I'D RATHER NOT GROW THESE VEGGIES. I WOULD ALSO BE VERY SUSPICIOUS OF PURCHASING THESE VEGGIES IN THE MARKET, AS I KNOW THE CHANCE OF CHEMICAL CONTAMINANTS IN THEM WOULD BE VERY HIGH.

** I ALSO EXPERIMENTED WITH OTHER NON-NATIVE VEGGIES LIKE BROCCOLI, SQUASH, ZUCCHINI, SNOW PEAS, CELERY, HEAD LETTUCE, SWISS CHARD, PARSLEY, CORN AND GRAPES – STUFF I HAD GROWN SUCCESSFULLY WHEN I LIVED IN A COOL AND TEMPERATE CLIMATIC ZONE. NONE OF THESE VEGGIES/FRUIT COULD TOLERATE OUR TROPICAL CLIMATE, AND SO I CANNOT RECOMMEND THEM FOR MUMBAI.

EXISTING TREE STUDY



ASOPALAV-FALSE ASHOKA

USED AS SOUND BUFFER

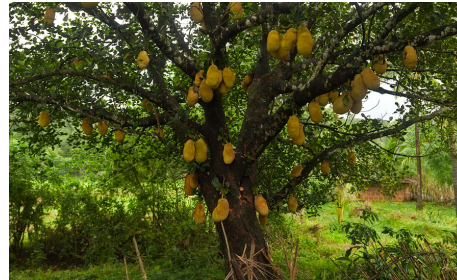
FIG

PERFECT TREAT FOR HUMAN BEINGS AND ANIMALS



JACKFRUIT

FLESHY FRUIT CAN BE EATEN, SEEDS CAN BE BOILED AND EATEN



WHISTLING PINE

SOFT SINGING OF AIR CREATES SOOTHING WHISTLING SOUND



MANGO

SEASONAL FAVORITE FRUIT PERFECT FOR SPRING HARVEST



BLACK JAMUN

BERRY PICKING, CAN BE USED TO MAKE JAMS, PICKLES IN FRUIT PROCESSING BLOCK



CHAMPA

SWEET FRAGRANT FLOWERS

SUBABUL

NITROGEN FIXING NODULES PODS AS ANIMAL FEED



2208	Casuarina equisetifolia Forst	Suru	Whistling Pine	Casuarinac	2099951.461	272026.0024	Garden
2209	Plumeria alba Linn.	Chapha (a)	Safed Chapha	Apocynace	2099947.119	272031.3572	Garden
2210	Casuarina equisetifolia Forst	Suru	Whistling Pine	Casuarinac	2099935.83	272022.3842	Garden
2211	Plumeria alba Linn.	Chapha (a)	Safed Chapha	Apocynace	2099939.304	272028.8969	Garden
2212	Plumeria alba Linn.	Chapha (a)	Safed Chapha	Apocynace	2099925.12	272025.7129	Garden
2213	Plumeria alba Linn.	Chapha (a)	Safed Chapha	Apocynace	2099915.279	272022.9631	Garden
2214	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099957.032	272058.1316	Garden
2215	Mitragyna parvifolia (Roxb.)	Kalamb	Kalam	Rubiaceae	2099869.473	271956.8955	Garden
2216	Roystonea regia (H.B.K) O.F	Royal Palm	Bottle palm	Bignoniace	2099866.723	271956.1719	Garden
2217	Plumeria obtusa Linn.	Chapha(O)	Chapha (O)	Apocynace	2099874.394	271958.0533	Garden
2218	Lannea coromandelica (Hou)	Shemat	Modal	Anacardi	2099876.565	271960.5861	Garden
2219	Ficus religiosa Linn.	Pimpal	Pipal	Moraceae	2099880.11	271961.8162	Garden
2220	Mangifera indica Linn.	Amba	Mango	Anacardi	2099884.163	271962.8293	Garden
2221	Cocos nucifera Linn.	Naral	Coconut	Arecaceae	2099887.564	271961.8886	Garden
2222	Livistonia rotundifolia	Chinese Fan Palm	Footstool pa	Arecaceae	2099954.066	272066.5981	Garden
2223	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099953.487	272068.2624	Garden
2224	Lannea coromandelica (Hou)	Shemat	Modal	Anacardi	2099950.013	272071.8082	Garden
2225	Syzygium cumini (Linn.)Skeel	Jamun	Jamun	Myrtaceae	2099945.527	272070.6504	Garden
2226	Drypetes roxburghii (Linn.)	Putranjiva	Lucky Bean T	Euphorbi	2099937.929	272068.5519	Garden
2227	Psidium gaujava	Peru	Guava	Myrtaceae	2099937.277	272069.2755	Garden
2228	Litsea involucrata var.fernand	Sugran (f)	Sugran (f)	Lauraceae	2099935.432	272068.1177	Garden
2229	Thrinax parviflora	Thrinax palm	Thrinax palm	Arecaceae	2099935.613	272067.2132	Garden
2230	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099933.912	272068.2986	Garden
2231	Artocarpus heterophyllus La	Phanas	Jackfruit	Moraceae	2099933.225	272068.3348	Garden
2232	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099932.357	272068.0815	Garden
2233	Thrinax parviflora	Thrinax palm	Thrinax palm	Arecaceae	2099932.465	272066.3086	Garden
2234	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099929.679	272067.3579	Garden
2235	Thrinax parviflora	Thrinax palm	Thrinax palm	Arecaceae	2099927.906	272065.2232	Garden
2236	Caryota mitis	Caryota mitis	Caryota mitis	Arecaceae	2099920.091	272064.2101	Garden
2237	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099920.67	272065.3679	Garden
2238	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099914.953	272064.1377	Garden
2239	Caryota mitis	Caryota mitis	Caryota mitis	Arecaceae	2099911.625	272062.1116	Garden
2240	Mangifera indica Linn.	Amba	Mango	Anacardi	2099909.671	272063.0523	Garden
2241	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099907.428	272062.5457	Garden
2242	Barringtonia acutangula (Lin	Dhatrhipal	Tivar	Lecythidac	2099904.786	272060.3387	Garden
2243	Artocarpus heterophyllus La	Phanas	Jackfruit	Moraceae	2099974.617	272036.7121	Garden
2244	Thrinax parviflora	Thrinax palm	Thrinax palm	Arecaceae	2099974.761	272037.8699	Garden
2245	Syzygium cumini (Linn.)Skeel	Jamun	Jamun	Myrtaceae	2099985.037	272035.5543	Garden
2246	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099986.557	272037.4357	Garden
2247	Gmelina arborea Roxb.	Shivan	Shivan	Verbenace	2099989.813	272036.2779	Garden
2248	Caryota urens Linn.	Fish Tail Palm	Fish tail palm	Arecaceae	2099971.867	272048.1455	Garden
2249	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099971.433	272049.5204	Garden
2250	Polyalthia longifolia var.penc	Asupalav	Asupalav	Annonace	2099985.616	272054.7305	Garden
2251	Drypetes roxburghii (Linn.)	Putranjiva	Lucky Bean T	Euphorbi	2099981.346	272058.0592	Garden
2252	Sabal serrulata	Sabal Palm (S)	Sabal Palm (S)	Arecaceae	2099976.571	272057.01	Garden
2253	Chrysophyllum cainito Linn.	Star Apple	Star apple	Sapotacea	2099961.374	272047.6389	Garden
2254	Drypetes roxburghii (Linn.)	Putranjiva	Lucky Bean T	Euphorbi	2099983.662	272062.9437	Garden

ENERGY SIMULATION RESULTS

Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	2.32	2.43	3.58	4.64	5.17	4.97	5.23	5.12	4.57	4.42	3.00	2.34	47.78
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	17.82	17.02	20.94	22.87	23.85	23.47	24.65	24.52	22.89	23.34	19.72	18.20	259.31
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	1.72	1.56	1.72	1.67	1.72	1.67	1.72	1.72	1.67	1.72	1.67	1.72	20.29
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	1.28	1.14	1.26	1.19	1.22	1.20	1.26	1.27	1.23	1.27	1.25	1.30	14.89
Total	23.15	22.15	27.50	30.37	31.97	31.31	32.87	32.64	30.35	30.75	25.64	23.57	342.27

eQUEST Schematic Design Wizard

Building Footprint

Footprint Shape: **Rectangle**

Zoning Pattern: **One Per Floor**

Building Orientation: Plan North: **North North West**

Footprint Dimensions: X1: **40.00** ft Y1: **135.00** ft

Zone Names and Characteristics

Area Per Floor, Based On

Building Area / Number of Floors: 2,700 ft²

Dimensions Specified Above: 5,400 ft²

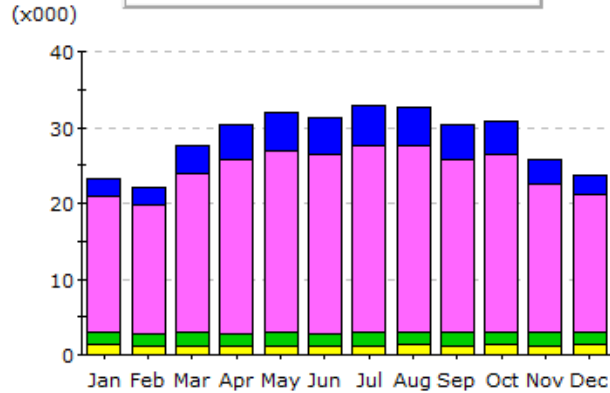
Floor Heights: Flr-To-Flr: **15.0** ft Flr-To-Ceil: **14.0** ft

Roof, Attic Properties: Pitched Roof

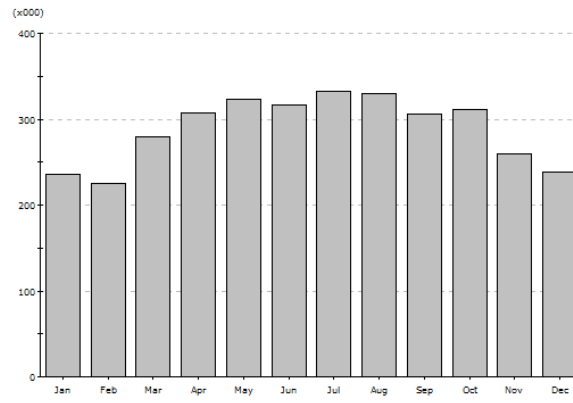
Wizard Screen 3 of 43

Help Previous Screen Next Screen Finish

Electric Consumption (kWh)



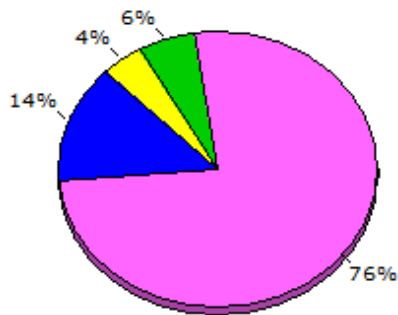
Monthly Utility Bills (\$)



Custom Elec Rate (annual bill: \$ 3,464,243)

Total Annual Bill Across All Rates: \$ 3,464,243

- Area Lighting
- Exterior Usage
- Water Heating
- Refrigeration
- Task Lighting
- Pumps & Aux.
- Ht Pump Supp.
- Heat Rejection
- Misc. Equipment
- Ventilation Fans
- Space Heating
- Space Cooling



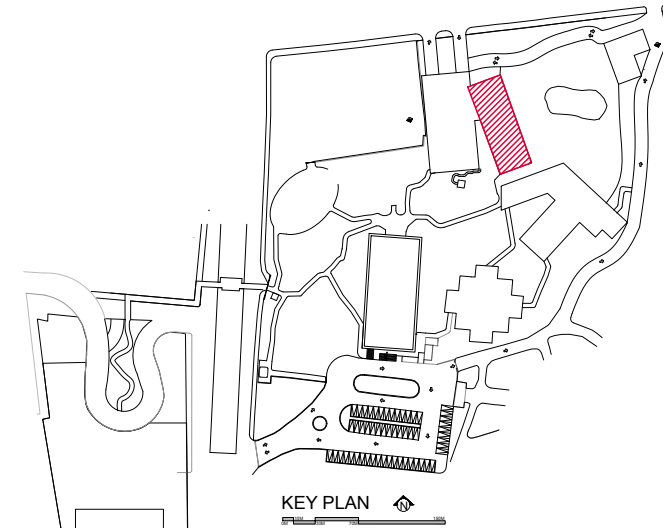
Electricity

CONCLUSIONS



LODGING BLOCK CONSISTING OF SHORT TERM STAY ROOMS AND ANIMAL ENCLOSURE IS ORIENTED NORTH-WEST, 5400 SQ.FT AREA

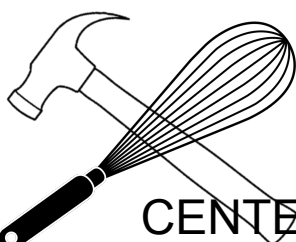
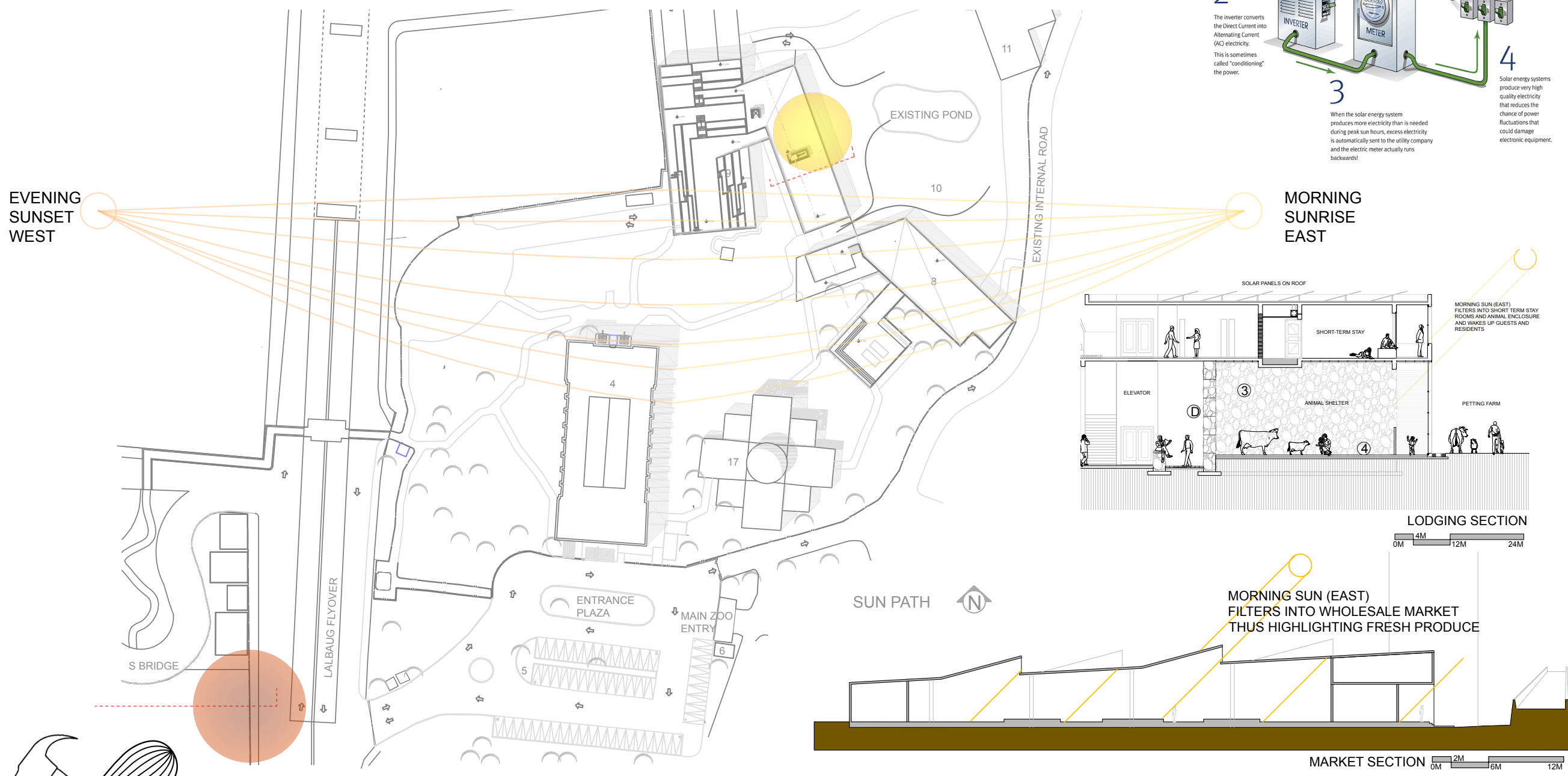
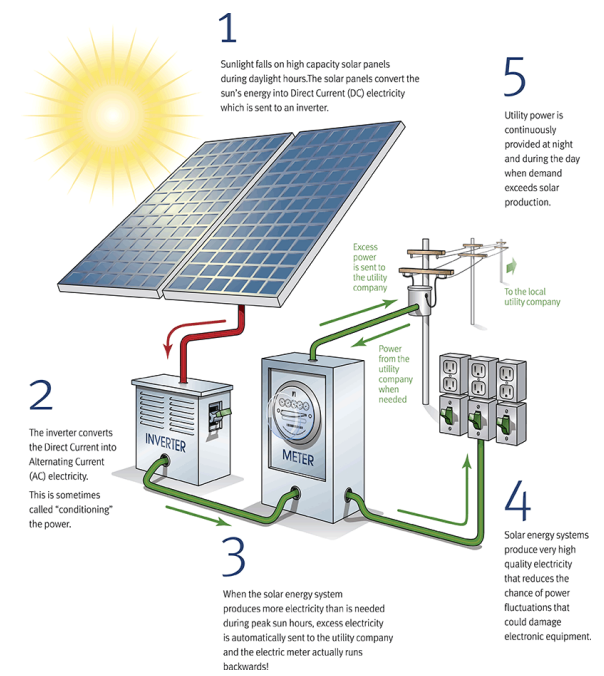
TOTAL ENERGY CONSUMED=3500KWh/year

MONTHLY BILL=Rs. 28,500/- approx.

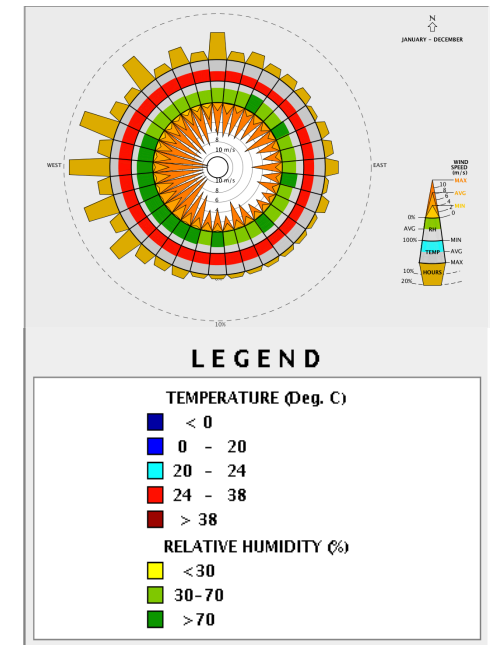
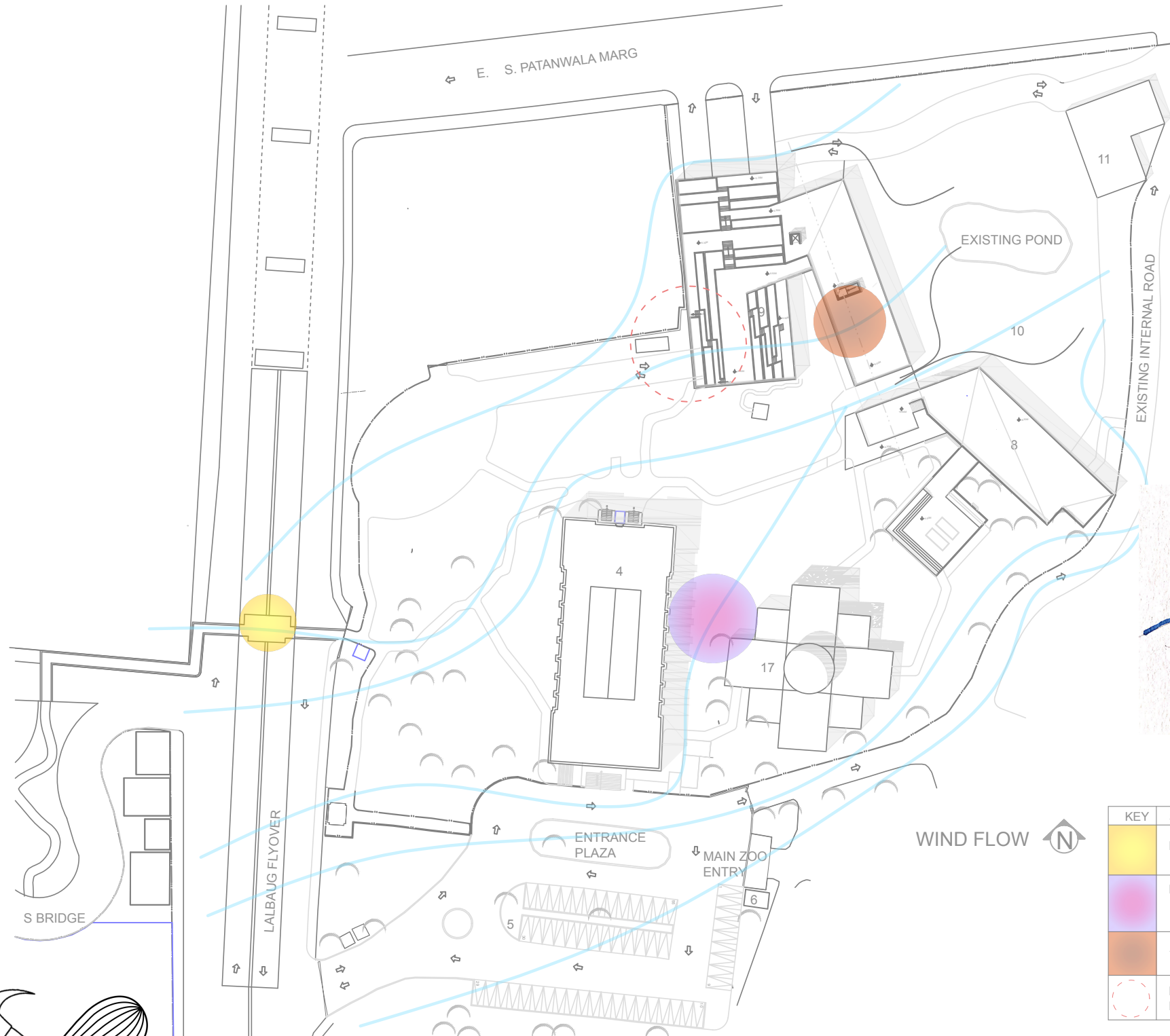


SUN PATH/SOLAR ENERGY

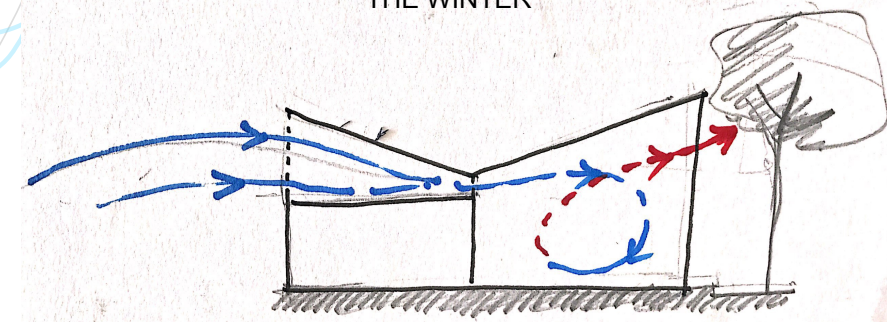
KEY	SPACE	NOTES
	LODGING BLOCK	ANIMALS AND GUESTS ARE WOKEN UP BY RAYS OF EARLY MORNING SUN; SOLAR PANELS ON ROOF
	WHOLESALE VEGETABLE MARKET	MORNING EAST LIGHT FILTERS THROUGH PROPOSED SKYLIGHTS AND HIGHLIGHTS NATURAL PRODUCE



AIR FLOW



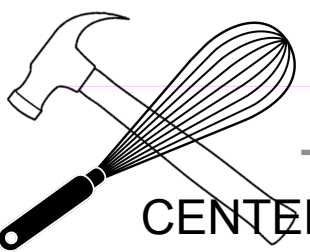
MUMBAI WIND ROSE DIAGRAM
SOUTH WEST WINDS FOR TEN MONTHS IN THE YEAR, NORTH EAST WINDS FOR TWO MONTHS IN THE WINTER



SCHEMATIC SECTION THROUGH EDUCATIONAL BLOCK

KEY	SPACE	NOTES
	FOOD UNDERPASS	WAFI OF STREET FOOD IS BLOWN TOWARDS SITE
	HERB GARDEN	GENTLE AROMAS FILL THE AIR
	ANIMAL ENCLOSURE	FOUL ODORS ARE DRIVEN AWAY FROM HABITABLE SPACE
	EDUCATIONAL BLOCK FOYER	CONSTRICTED AIR HAS HIGHER VELOCITY, THUS PRODUCES COOLING

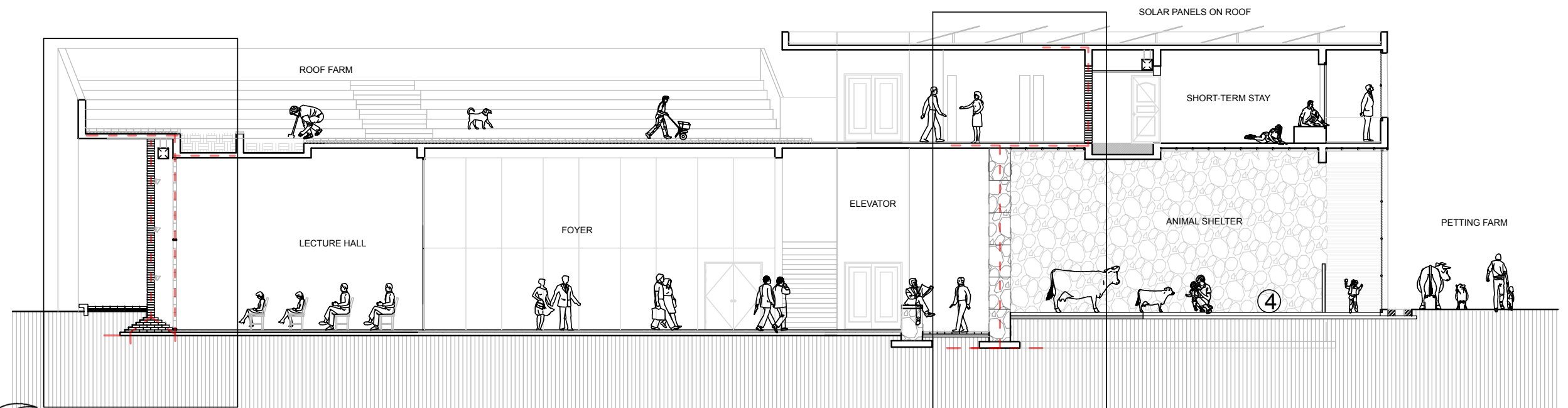
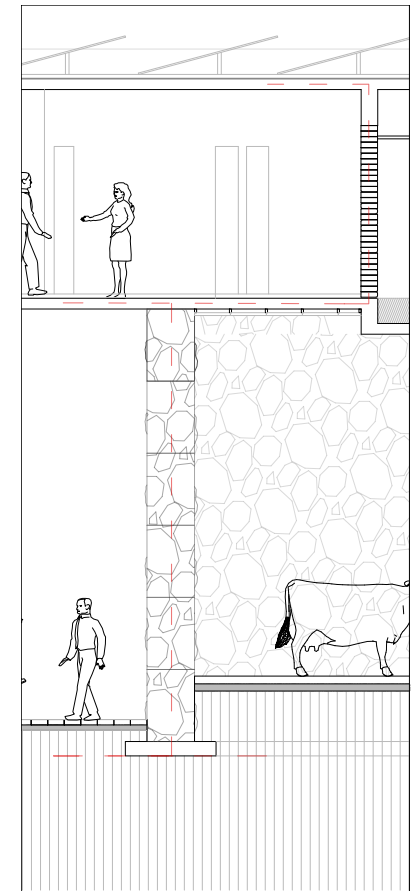
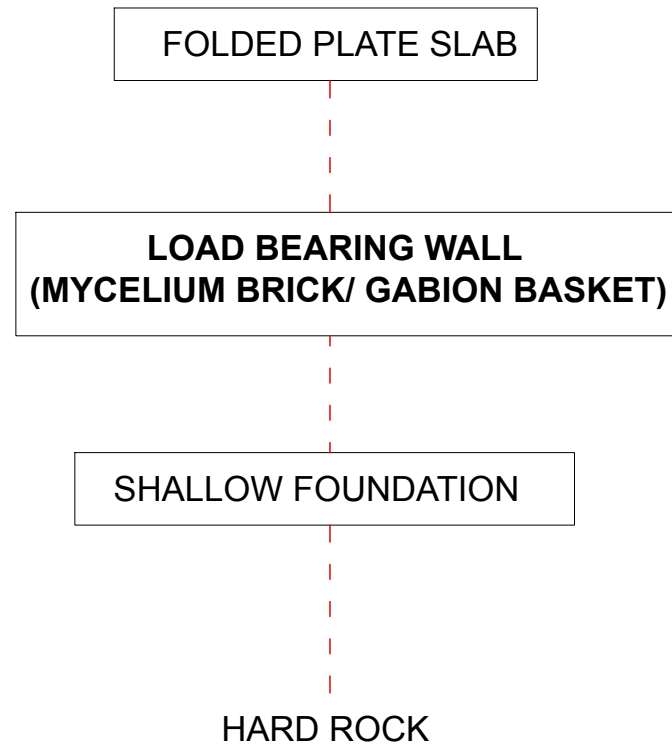
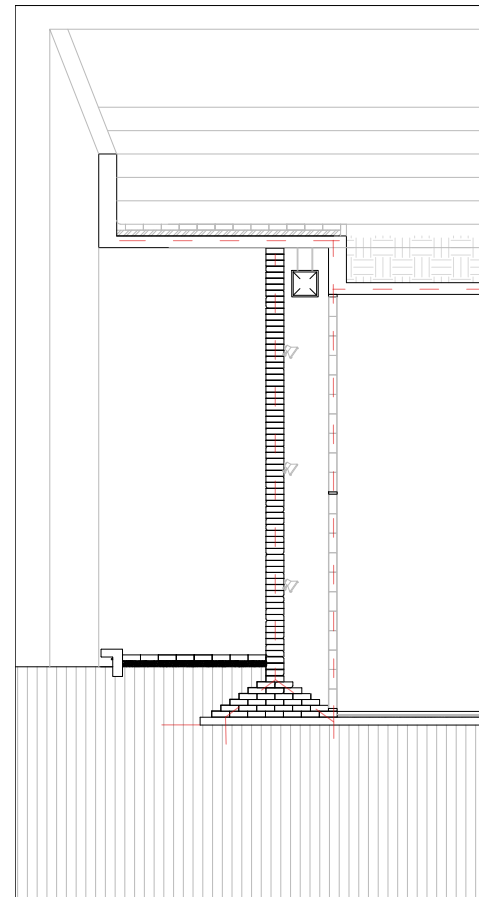
WIND FLOW



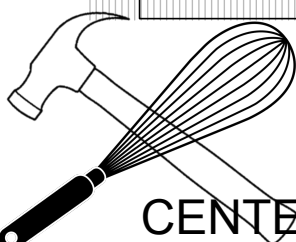
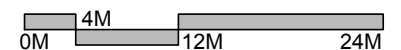
STRUCTURAL SCHEME

1. LOAD BEARING COMPRESSIVE SYSTEM
2. WALL SLAB STRUCTURAL SYSTEM
3. LOW RISE WITH LONG SPANS

RCC FOLDED PLATE SLAB TRANSFERS LOADS ONTO MYCELIUM BRICK WALLS OR GABION BASKET WALLS WHICH SIT ON SHALLOW FOUNDATIONS AS REQUIRED BY GEOTECHNICAL ASSESSMENT AND SOIL REPORT



LODGING SECTION



CONSTRUCTION SYSTEM



FIRE RESISTIVE MATERIALS
 SELECTED- MUSHROOM BRICKS, COCONUT WOOD, REPURPOSED STONE GABION WALLS, SALT BLOCKS, ETC.



BUILDING CRAFTS MODEL –
 WORKING WITH HANDS – TRADITIONAL BAMBOO BLINDS PROPOSED TO PROVIDE SMALL-SCALE ARTISINAL JOBS



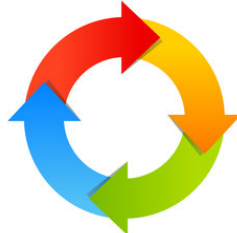
RECYCLING AND SUSTAINABILITY - COW DUNG FLOORING USES WASTE, GABION WALLS MADE FROM REPURPOSED STONES FROM SITE

GABION WALL CONSTRUCTION REQUIRES **UNSKILLED LABOR** AS OPPOSED TO CONCRETE CONSTRUCTION – THUS EASIER TO EMPLOY WORKERS



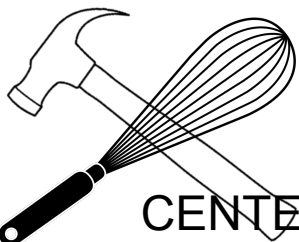
MINIMAL DISTANCES AND TRANSPORT OF MATERIALS TO SITE

REPURPOSED STONES FOR WALLS
 MUSHROOMS **GROWN ON SITE** FOR BRICKS
 CONCRETE SLABS CAST IN SITU

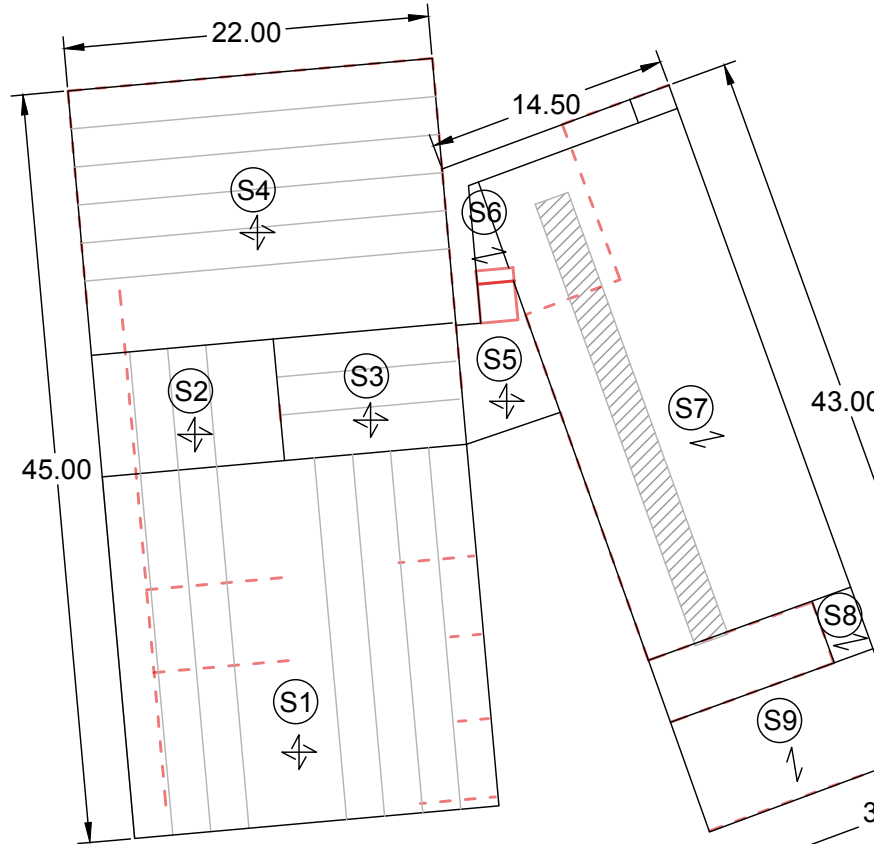


LIFE EXPECTANCY AND DURABILITY MODEL
 PROPOSED BUILDINGS ARE EXPECTED TO LAST 80 YEARS

CONCRETE FOUNDATION – 100 YEARS
 COCONUT WOOD – 100 YEARS
 MYCELIUM BRICKS – 80 YEARS
 BAMBOO ELEMENTS – 80 YEARS
 STONE GABION WALLS – 100 YEARS
 FINISHING PANELS – 30 YEARS
 ROOF WATERPROOFING – 15 YEARS
 EXTERIOR PAINTING – 5 YEARS

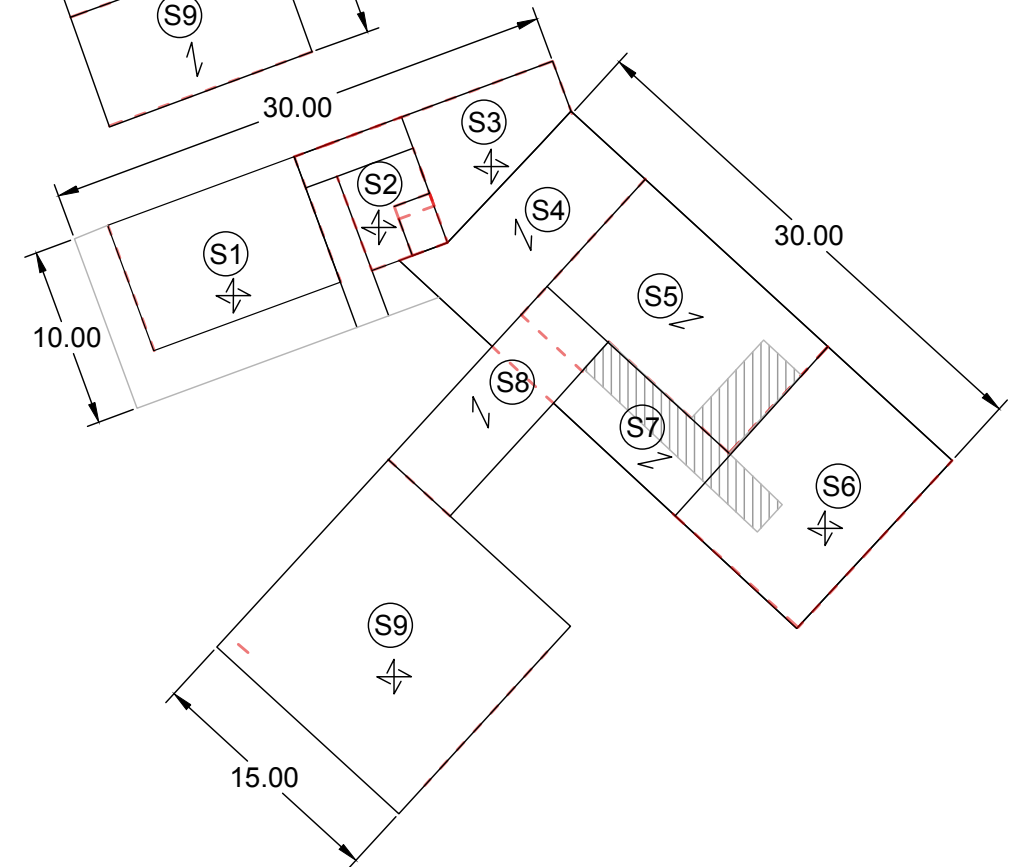


SPANS INVOLVED



STRUCTURAL PLANS
 0M 2M 6M 12M N

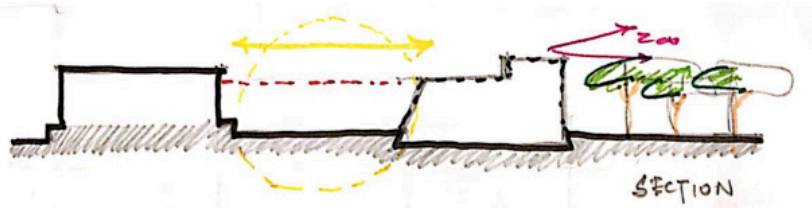
NO.	SIZE	KIND	NOTES
S1	22M X 21M	TWO WAY	FOLDED PLATE
S2	10.5M X 7.5M	TWO WAY	FOLDED PLATE
S3	10.5M X 7.5M	TWO WAY	FOLDED PLATE
S4	22M X 16M	TWO WAY	FOLDED PLATE
S5	5M X 6M	TWO WAY	--
S6	1M X 5M	ONE WAY	--
S7	13M X 32M	ONE WAY	RIBBED WITH 200MM SUNK
S8	2.5M X 4M	ONE WAY	--
S9	13M X 7M	ONE WAY	--



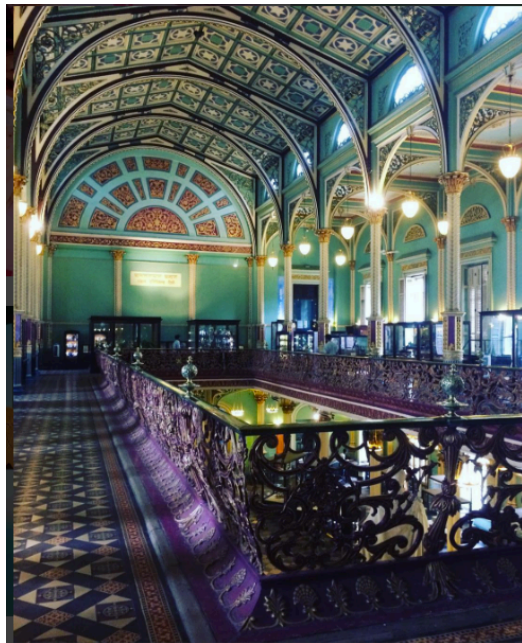
NO.	SIZE	KIND	NOTES
S1	15M X 10M	TWO WAY	--
S2	5M X 6M	TWO WAY	--
S3	10M X 6M	TWO WAY	--
S4	13M X 6M	ONE WAY	--
S5	9M X 15M	ONE WAY	WITH 1.5M SUNK
S6	13M X 10M	TWO WAY	WITH 1.5M SUNK
S7	10M X 5M	ONE WAY	WITH 1.5M SUNK
S8	5M X 14M	ONE WAY	--
S9	15M X 16M	TWO WAY	--

AESTHETIC MODEL: SCALE, COLOR +TEXTURE

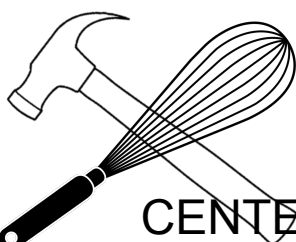
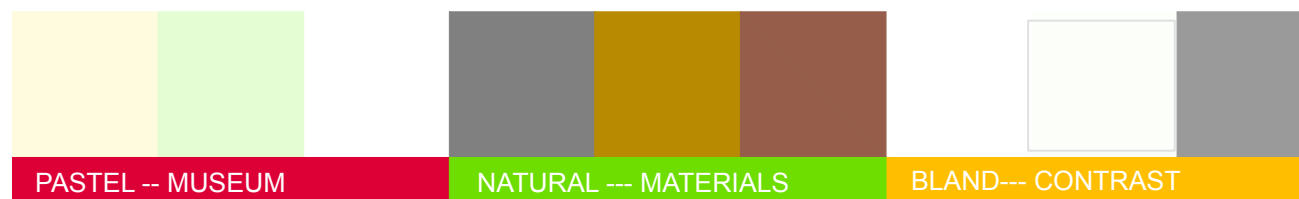
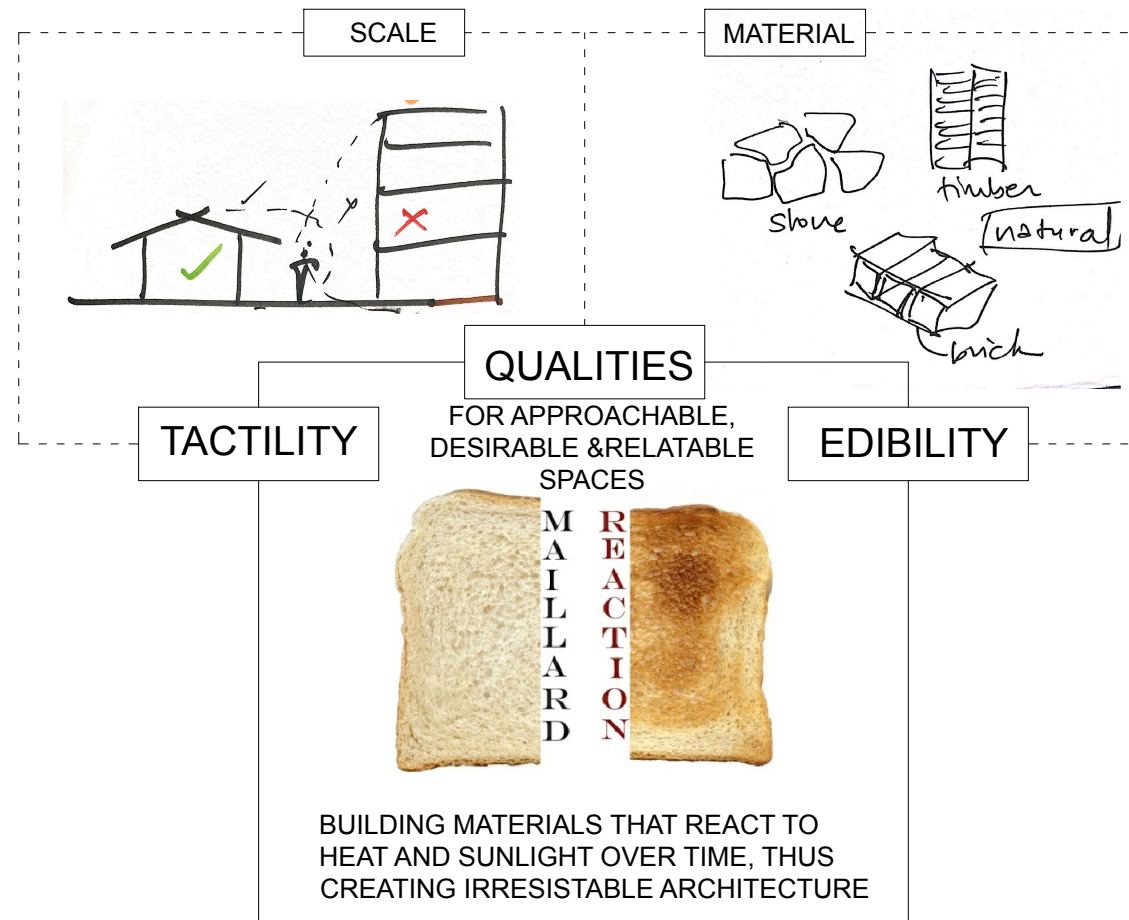
MUSEUM BUILDING HERITAGE GRADE II-B APPROX..
15M TALL, THIS DETERMINES HEIGHTS OF NEW
STRUCTURES BEING BUILT



PASTEL WHITE AND PISTACHIO GREEN EXTERIOR
AND VIBRANT, INTRICATE ORNATE INTERIOR MAKE
THE BUILDING EDIBLE IN NATURE, LIKE A PASTRY



SUBDUED, MUTED ARCHITECTURE,
NATURALLY LIT SPACES – HELPS
HIGHLIGHT FOOD AND BRING OUT
VIBRANCY, COLOR, TEXTURE AND MAKES
THE FOOD MORE ENTICING. FORMULA
FOR SPACES OF FOOD – ADOPTED IN TOP
RESTAURANTS (NOMA, COPENHAGEN
BELOW)



LAND USE

VIRMATA JIJABAI UDYAN
SITE MARKED AS GREEN
OPEN SPACE

CONSIDERED 'RECREATIONAL',
IMPORTANCE UNDERVALUED IN
DENSE URBAN ENVIRONMENTS

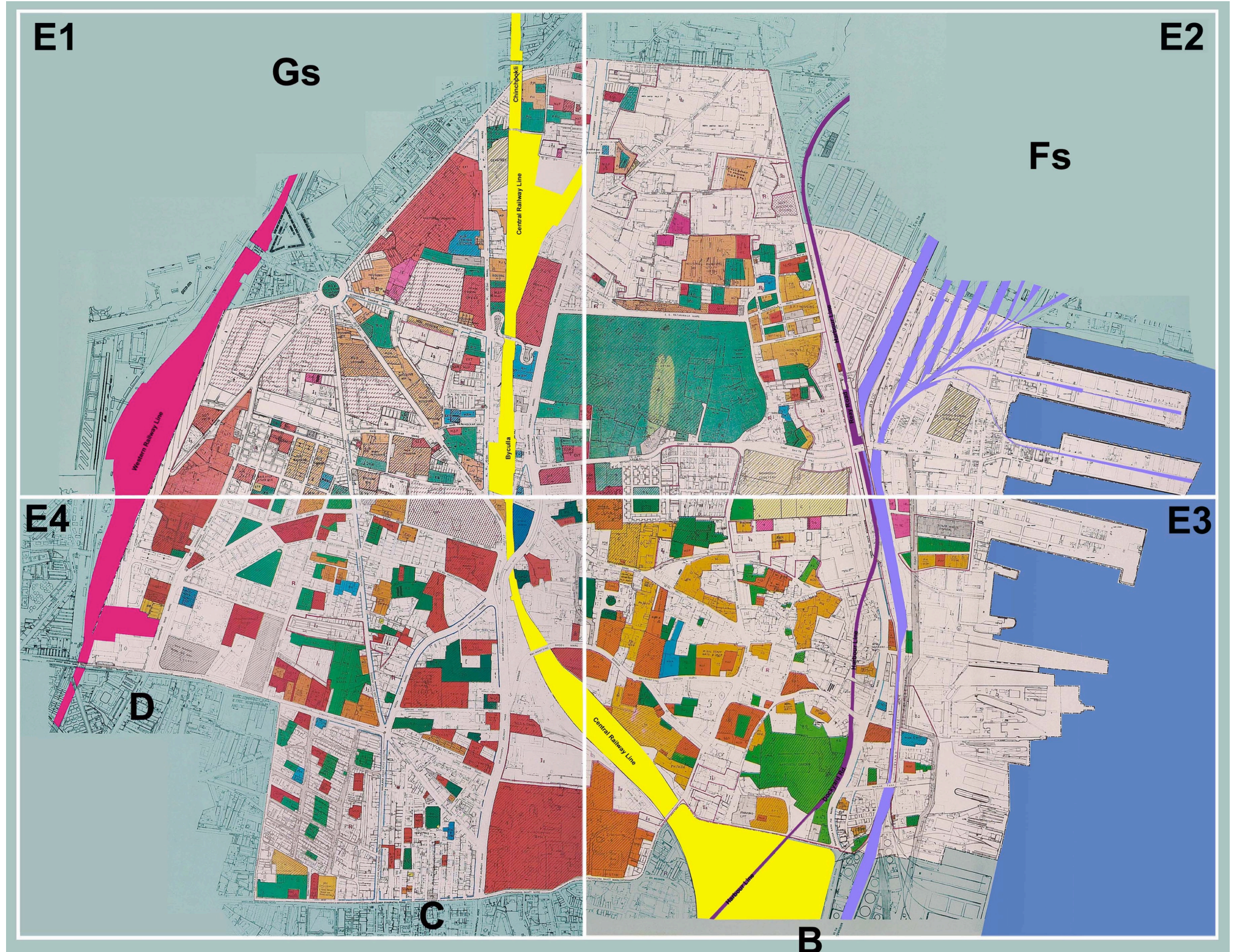
CONCEPT OF CPUL-
CONTINUOUS PRODUCTIVE
URBAN LANDSCAPES









BY MAKING SUSTAINABLE URBAN
FARMS AND FOOD PRODUCTION –
THUS ADDING TANGIBLE VALUE TO
'OPEN SPACE'

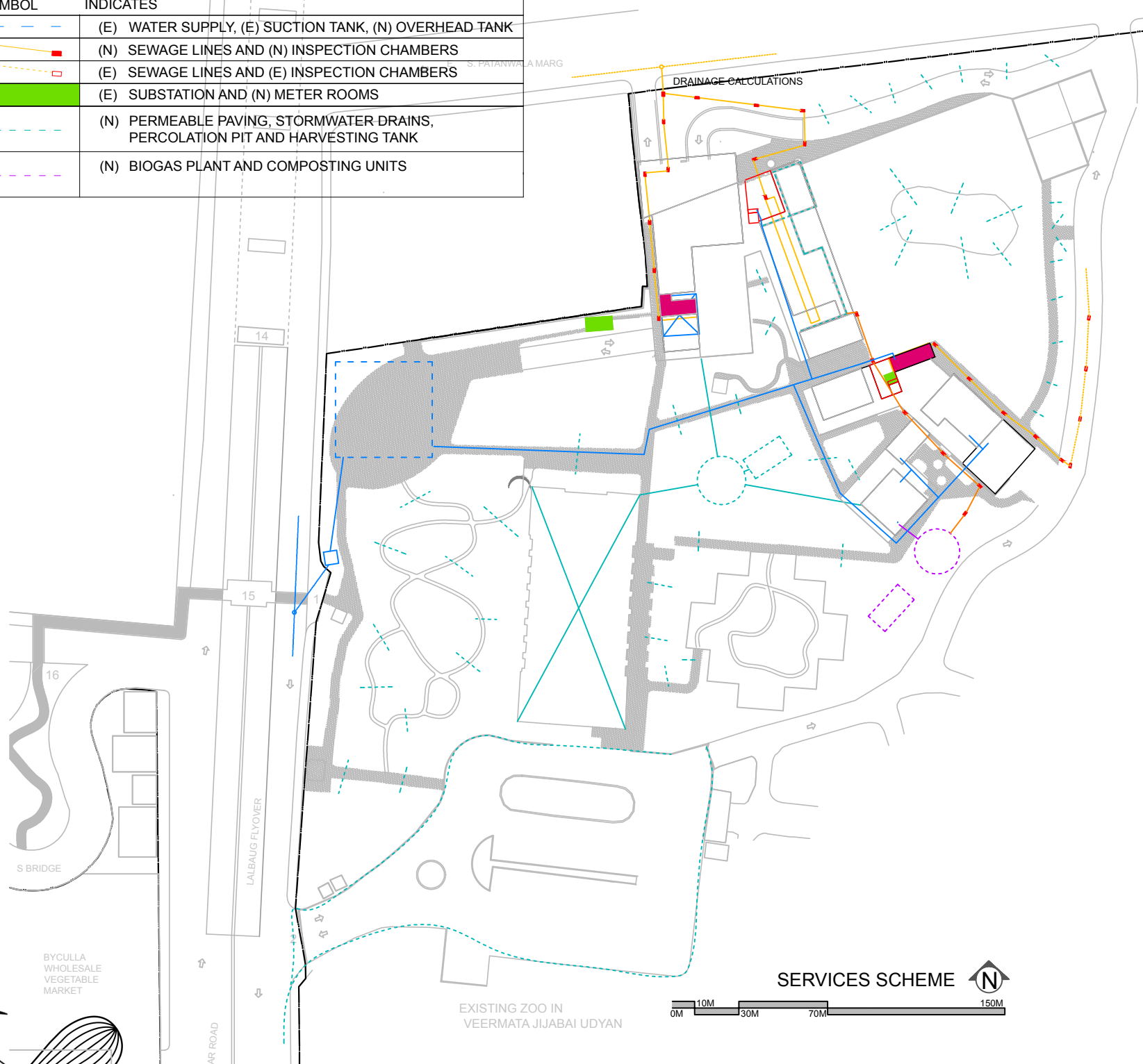
CHANGES THE WAY WE LOOK AT
GREEN ON THE LAND USE MAP.

PROPOSED FSI AS PER
DEVELOPMENT PLAN 2034 = 3.5



SERVICES SCHEME

SYMBOL	INDICATES
	(E) WATER SUPPLY, (E) SUCTION TANK, (N) OVERHEAD TANK
	(N) SEWAGE LINES AND (N) INSPECTION CHAMBERS
	(E) SEWAGE LINES AND (E) INSPECTION CHAMBERS
	(E) SUBSTATION AND (N) METER ROOMS
	(N) PERMEABLE PAVING, STORMWATER DRAINS, PERCOLATION PIT AND HARVESTING TANK
	(N) BIOGAS PLANT AND COMPOSTING UNITS



WATER SUPPLY:

- EXISTING SUCTION TANK WITH FERRULE CONNECTION FROM MUNICIPAL MAIN WATER SUPPLY
- **TANK SIZE CALCULATION:**
OCCUPANT LOAD = 260 VISITORS; 40 RESIDENTS
WATER REQUIREMENT = 260 X 45 + 40 X 135LDP
=17100L = 17 CUBIC M. THUS TANK SIZE = 3M X 4M X 1.5M
- BOILERS LOCATED IN SERVICE ROOMS OF EACH BLOCK FOR HOT WATER SUPPLY

DRAINAGE:

- INSPECTION CHAMBERS (0.45M X 0.9M) AT 10M C-C MAX.
- FOR EDUCATIONAL BLOCK, NEW IC'S PROVIDED, (START AT INVERT LEVEL 99.55M AND ENDING INTO NEW DISCONNECTING CHAMBER HAVING INVERT LEVEL 99.05M) BEFORE CONNECTING TO MUNICIPAL SEWER
- FOR PROCESSING BLOCK, NEW IC'S HAVE INVERT LEVEL CALCULATED SO AS TO JOIN EXISTING SEWER LINE ALONG INTERNAL ZOO ROAD.

ELECTRIC SUPPLY:

- EXISTING BEST SUBSTATION LOCATED EAST OF EDUCATIONAL BLOCK
- METER ROOMS PROVIDED IN BASEMENT IN EDUCATIONAL BLOCK, IN SERVICE ROOM BEHIND LIFE ON GROUND FLOOR IN PROCESSING BLOCK
- LANDSCAPE LIGHTING AND PUBLIC ADDRESSAL SYSTEM HAS SEPARATE CIRCUIT
- FACADE LIGHTING AND COMMON ENTRANCE PLAZA LIGHTING ARE METERED TOGETHER.

RAIN WATER HARVESTING:

- PERMEABLE PATHWAYS ALLOW RAIN WATER TO SEEP INTO SOFTSCAPE, THUS RECHARGING UNDERGROUND WATER TABLE
- WATER IN PETTING ZOO ENCLOSURE FILLS EXISTING SEASONAL POND
- RAINWATER FROM THE BUILDING ROOFS IS COLLECTED IN CENTRAL PERCOLATION PIT VIA 300MM WIDE STORM WATER DRAINS WITH SUMP PITS AT 15M C-C AND CLEAR WATER IS USED FOR LANDSCAPING NEEDS FROM HARVESTING TANK

SERVICES SCHEME



15

PETTING FARM

Advisory - Banning Elephants from Zoo collections

Advisory - Banning Elephants from Zoo collections

Time and again, it has been brought to the notice of this Authority that the housekeeping of elephants in zoos leaves a lot to be desired, causing trauma to the animal. Elephant is a large megaherbivore, which is free ranging, cruising over long distances. There are very few zoos in the country, which have adequate space to permit free movement of elephants, as a result of which they are kept chained for long hours, causing stress to the animal. Further, more often than not, such captive elephants in zoos hardly breed. There are instances of zoo elephants coming in 'Musth' causing serious threats to visitors. The zoo management also has tremendous financial liability for the day-to-day maintenance/ housekeeping of elephants. There is very little scope for ex-situ linkage in the context of zoo elephants in India.

Considering the above, the following directives are issued:

- (i) Elephants are banned from zoo collections throughout the country with immediate effect. All captive elephants in zoos should be rehabilitated in elephant camps/ rehabilitation camps/ facilities available with the forest department at National Parks/ Wildlife Sanctuaries/ Tiger Reserves for departmental use.
- (ii) The guidelines/ precautions issued by this Authority for transporting zoo animals, time and again, should be strictly followed. The programme for transporting elephants should be drawn up in consultation with the Chief Wildlife Warden of the State, under whose supervisory control the said process should be conducted.
- (iii) The Central Zoo Authority would bear the cost for transportation of elephants in this regard, based on a proposal received through the Chief Wildlife Warden of the State.

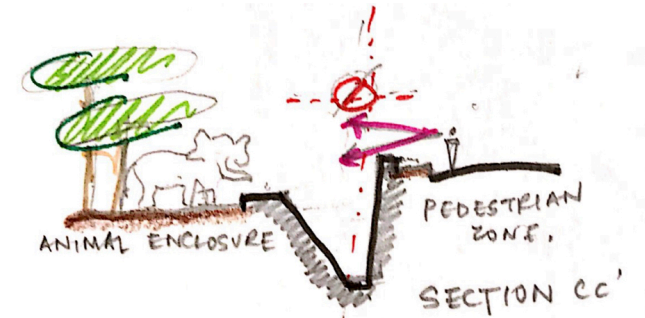
* Issued to the Chief Wild Life Wardens of all States/ UTs vide Central Zoo Authority Letter No. 7-5/2006-CZA (Vol.II) dated 7th November, 2009.

EXISTING ENCLOSURE TO THE NORTH OF BHAIU DAJI LAD MUSEUM IS UNOCCUPIED – ELEPHANTS HAVE BEEN BANNED AS PER CENTRAL ZOO AUTHORITY LETTER MAKING THE SPACE AVAILABLE FOR USE.

ALL THE ANIMALS IN THE ZOO ARE WILD IN NATURE, THUS THERE EXISTS A PHYSICAL SEPARATION BETWEEN VISITORS AND ANIMALS IN THE FORM OF A WIDE MOAT AS SEEN IN THE SECTION ALONGSIDE.

PROPOSED PETTING FARM HOUSES DOMESTICATED ANIMALS – VISITING CHILDREN AND FAMILIES CAN INTERACT WITH THE ANIMALS FOR A MEMORABLE EXPERIENCE.

THESE ANIMALS INCLUDING GOATS, HENS AND COWS PRODUCE FOOD THAT CAN BE USED TO COOK WITH IN THE COMMUNAL KITCHEN



Suggested Space and Housing Guidelines for Fully Mature Farm Animals

Animal	Horse	Beef Cow	Dairy Cow	Dairy Goat	Pig	Sheep	Hen	Broiler	Turkey
Unit	1 horse	1 cow	1 cow	1 goat	1 pig	1 sheep	1 hen	1 broiler	1 turkey
Enclosed Housing Area/Animal	-Tie stalls 45 sq. ft.; 5' x 9' - Box stall 12' x 8' or 10' by 10'	75-100 sq. ft.	75-100 sq. ft.	20-25 sq. ft.	48 sq. ft. with exercise yard; 100 sq. ft. without exercise yard	20-25 sq. ft.	3-4 sq. ft.	3-4 sq. ft.	6 sq. ft.
Exercise Yard Area /Animal	200 sq. ft.	100-125 sq. ft.	100-125 sq. ft.	50 sq. ft.	200 sq. ft.	50 sq. ft.	10 sq. ft.	-----	20 sq. ft.
Pasture Area /Animal	1-2 acres	1-2 acres	1-2 acres	0.2-0.3 acres	12-14 sows/ acre/ rotational pasture	0.2-0.3 acres	-----	-----	100 sq. ft.
Type of Housing and Boundary Setback	Enclosed ventilated barn or open 3-sided barn Setback 50 ft.	Open front 3-sided barn Setback 50 ft.	Open front 3-sided barn, free-stall or enclosed stanchion barn Setback 50 ft.	Enclosed barn with removable side panels or windows Setback 50 ft.	Enclosed barn, huts, shed, hutches or lean-to Setback 50 ft.	Open front 3-sided shed Setback 50 ft.	Enclosed barn Setback 50 ft.	Enclosed barn Setback 50 ft.	Enclosed barn Setback 50 ft.
Fencing	Electric Wooden rail Woven wire	Barbed wire Electric Woven wire	Barbed wire Electric Woven wire	Electric Woven wire	Electric Plank rail	Electric Woven wire	Chicken wire	-----	Chicken wire
Family Needs	1 horse per family member	½ - 1 beef animal/year; raise 2 animals/yr to provide cont. supply	1-2 cows	2-3 goats	2 pigs per yr.	6 sheep	6 hens	24 broilers	12 turkeys

6/09



LIGHTING SCHEME



FRESH FOOD LIGHTING RECIPES

	Fresh Food Rose	Fresh Food Meat	Fresh Food Authentic White	Fresh Food Champagne	Fresh Food Frost
Meat	Traditional warm setting Meat discoloration reduction	Natural cool setting			
Fish					Natural cool setting
Fruit & vegetables			Natural setting	Traditional warm setting	
Cheese			Natural setting	Traditional warm setting	
Bread & pastries			Natural setting	Traditional warm setting	
Wine			Natural setting	Traditional warm setting	

LED LUMINAIRES SHOW PRODUCE IN ITS BEST LIGHT, BRINGING OUT BRIGHT COLORS AND TEXTURES ONE CAN ALMOST TASTE. NOT ONLY DOES THE LIGHTING ENTICE CUSTOMERS TO BUY, BUT IT ENHANCES OVERALL STORE EXPERIENCE WITH CLEAR VISIBILITY.



TABLE CLOTH IN DINING AREA IS WHITE THIS REFLECTS MOST LIGHT AND HELPS HIGHLIGHT THE FOOD



NEED FOR INTERMEDIATE NATURAL OR DAYLIGHTING IN PEDESTRIAN UNDERPASS

PARANS SOLAR RECEIVER MOUNTED ON DIVIDER OF LALBAUG FLYOVER OVER PEDESTRIAN UNDERPASS



SOLAR ENERGY IS RECEIVED AND TRANSMITTED THROUGH OPTICAL FIBER CABLES TO UNDERPASS SPACE BELOW

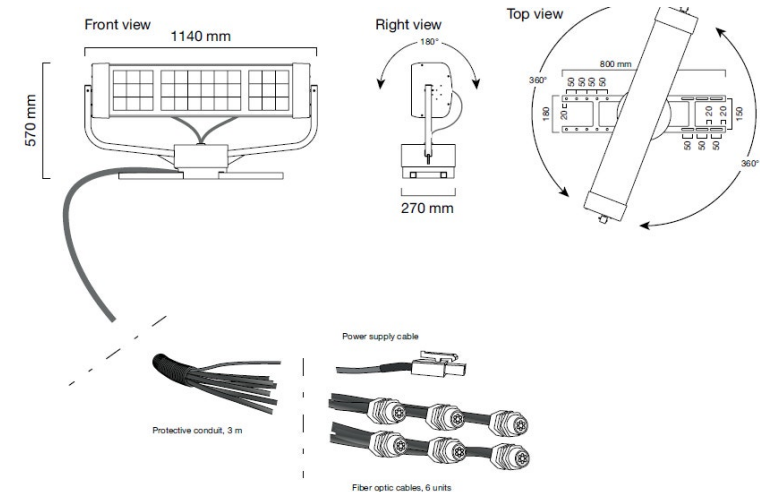
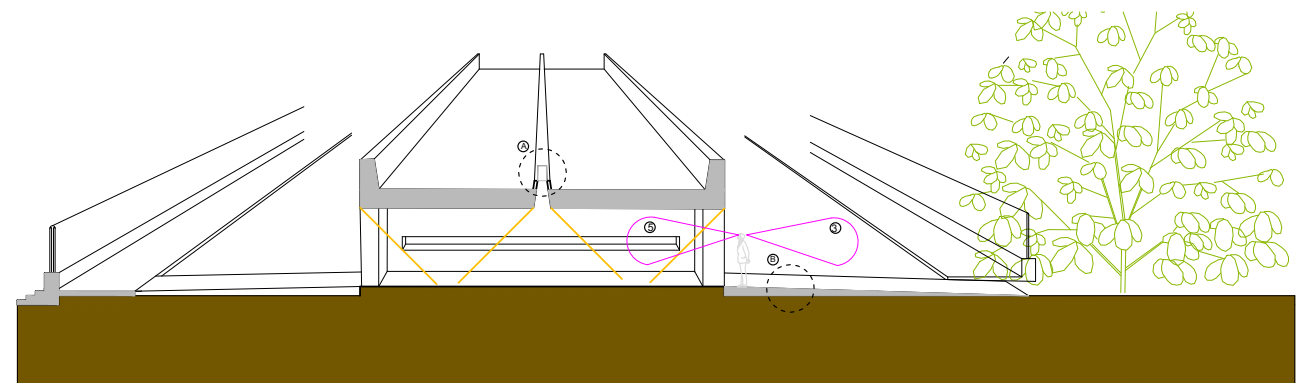
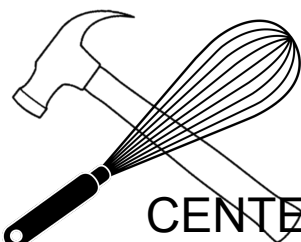


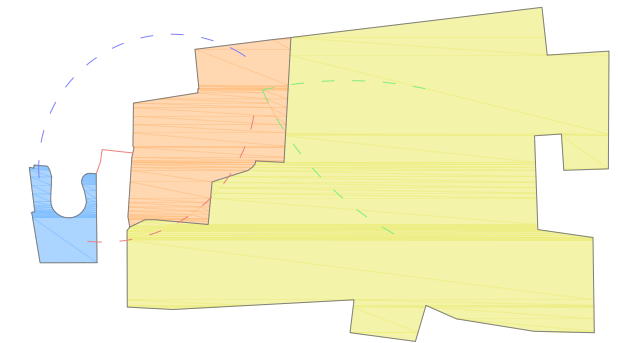
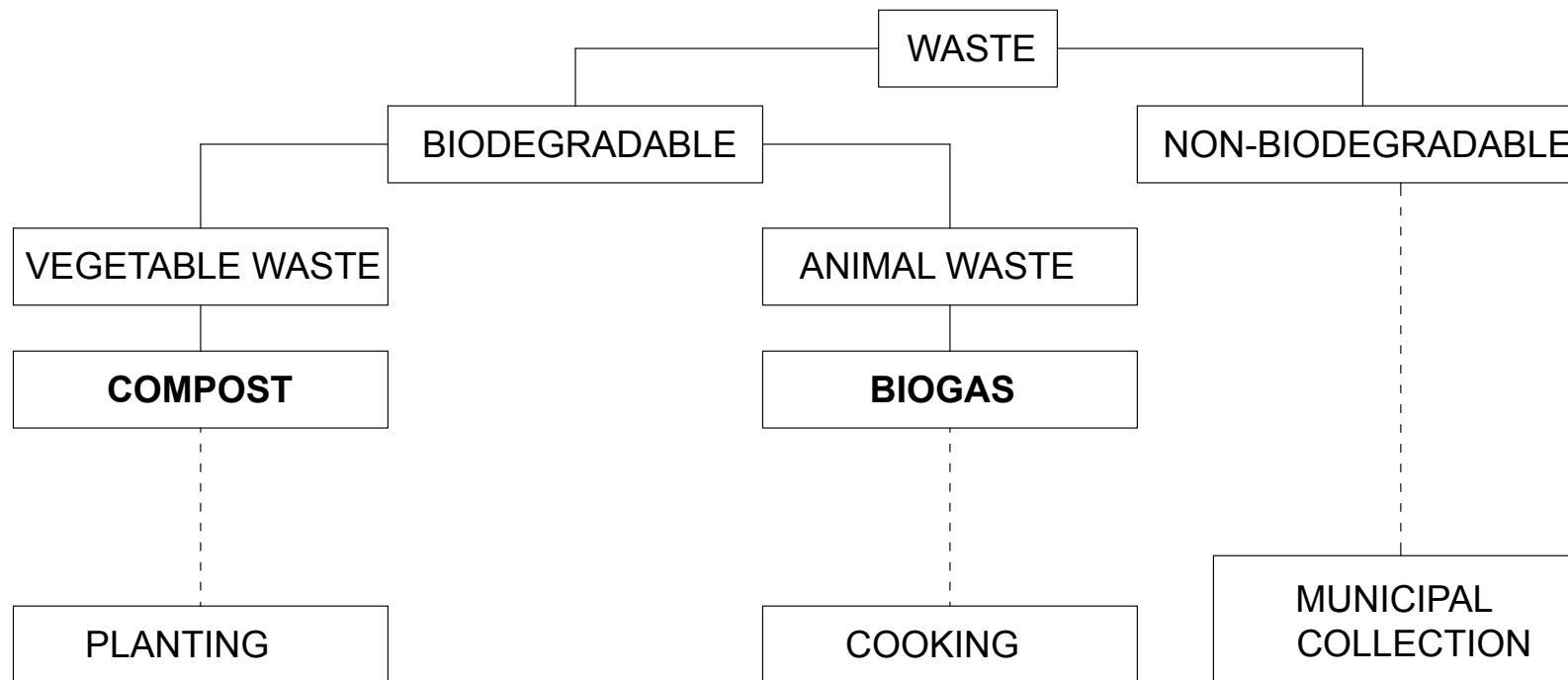
Fig. 3.2. Technical drawings of the SP3 system. Source: Parans.



UNDERPASS SECTION



WASTE MANAGEMENT



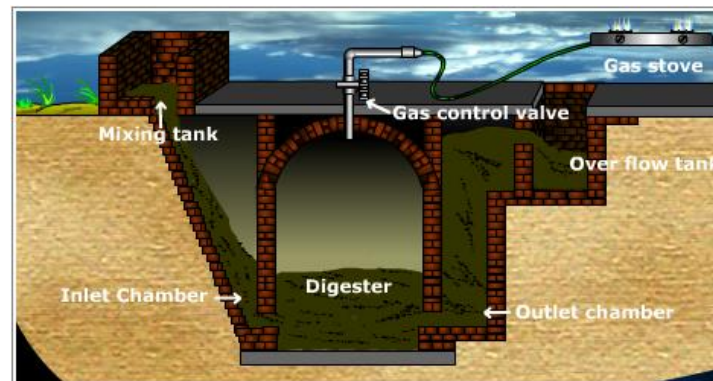
VEGETABLE SCRAP WASTE FROM WHOLESALE MARKET WILL BE COMPOSTED AND USED IN ZOO SITE

NEW TRASH ENCLOSURE ON SITE HELPS MANAGE WASTE AND MAINTAIN SANITATION STANDARDS – CURRENTLY TRASH BINS ARE STREWED ACROSS SIDEWALK ON E.S. PATANWALA MARG



SOIL INCORPORATION (TRENCH COMPOSTING)

- DIG TRENCH ABOUT 12-INCHES DEEP (30CM) THROW IN FOOD SCRAPS
- CHOP AND MIX WITH SOIL
- COVER WITH REMAINING SOIL
- IN A FEW MONTHS THE ROTTED MATERIAL WILL HAVE BEEN INCORPORATED INTO THE SOIL AND NEW PLANTING POSSIBLE.



BIOGAS PLANT SIZING

WASTE PRODUCED BY 1 COW/DAY = APPROX. 10KG
 THUS, WASTE PRODUCED BY ALL PETTING FARM ANIMALS = 75KG

11KG DUNG PRODUCES 40L BIOGAS
 THUS, 75KG DUNG PRODUCES = 3000L=3 CU.M. BIOGAS DAILY

THUS, BIOGAS PLANT SIZE = 1M X 2M X 1.5M

WASTE MANAGEMENT:

- GARBAGE COLLECTED = 525MT PER DAY BY FULL 'E' WARD
- TOTAL AREA OF 'E' WARD = 7.32 SQ. KM.

THUS, GARBAGE COLLECTED PER DAY PER SQ. M.= 70G/SQ.M.

NEW BUILDING AREAS:

EDUCATIONAL BLOCK = 2000 SQ. M. APPROX. (250 PERSONS)
 PROCESSING BLOCK = 1500 SQ. M. APPROX.(100 PERSONS)
 TOTAL AREA = 3500 SQ.M.

THUS,

WASTE GENERATED BY USERS = 3500 X 70 = APPROX. 200KG

70% RECYCLABLE = 140 KG

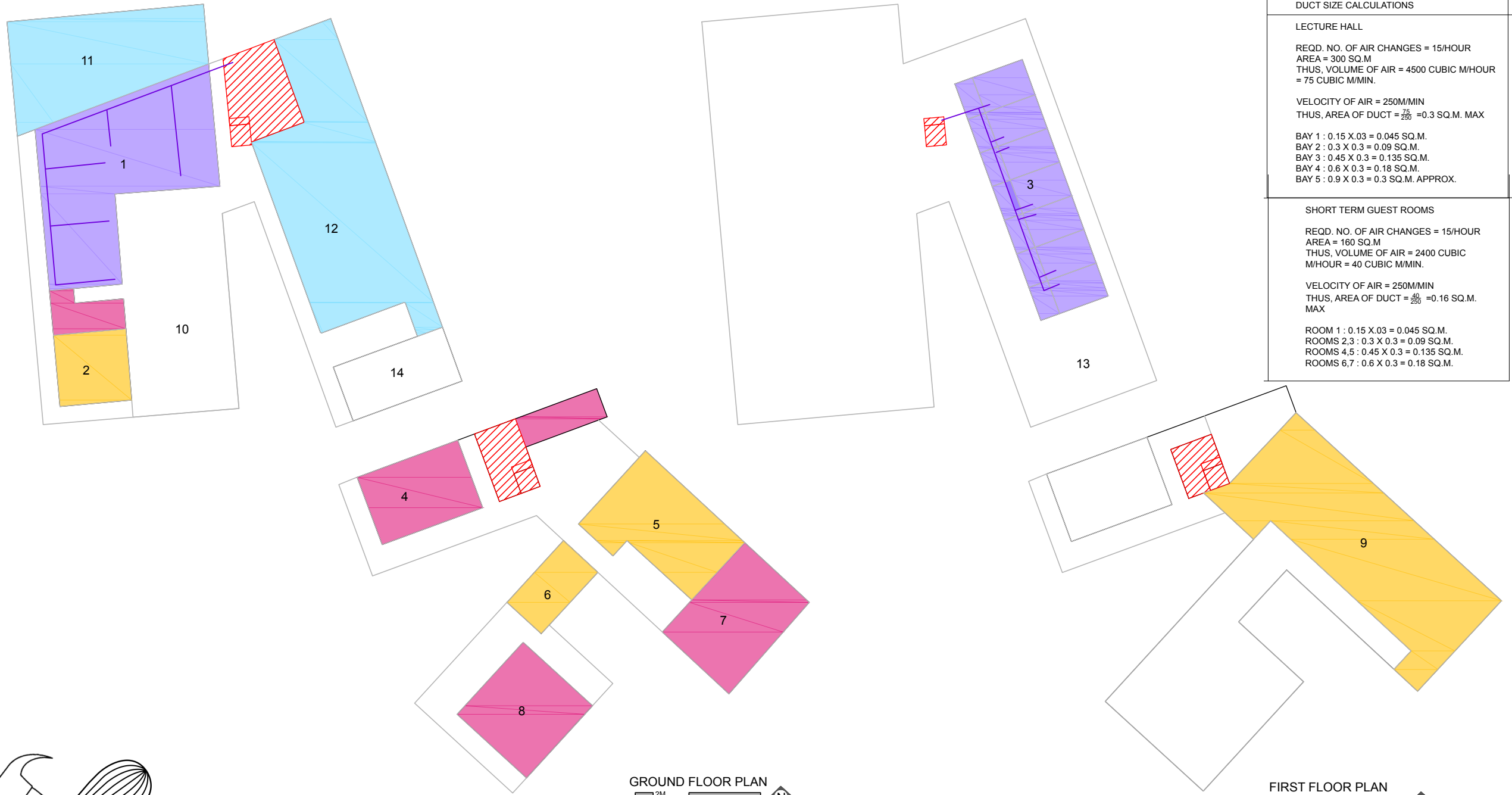
30% WASTE= 60KG

TO HOUSE 12 BINS OF 1.2X1X1M=1.2 CU.M,
 SIZE REQUIRED =60 SQ.M.



HVAC

NO.	SPACE	AREA (SQ. FT)	AV. HEIGHT (M)	FACTOR	TONNAGE	TYPE	LEGEND
1	LECTURE HALL	3000	4.5	1.5	--	CENTRAL	
2	MUSEUM SHOP	650	3	1	1 NO 2.5	PACKAGE	
3	SHORT TERM STAY ROOMS	1600	3	1	--	CENTRAL	
4	DINING AREA	950	3	1	2 NOS 1.5T	EXHAUST	
5	DAIRY PROCESSING	1450	3	1	2 NOS 2T	PACKAGE	
6	GASTRONOMY LAB	500	3	1	1 NO 2T	PACKAGE	
7	FRUIT/VEGETABLE PROCESSING	1200	3	1	2 NOS 1.5T	EXHAUST	
8	COMMUNAL KITCHEN	1200	4.5	1.5	2 NOS 1.5T	EXHAUST	
9	ACTIVITY DECK	3500	4.5	1.5	6 NOS 1.5T	PACKAGE	
10	FOYER	3000	4.5	1.5		NAT.V	
11	SPILL OUT DECK	2150	4.5	1.5		NAT.V	
12	ANIMAL ENCLOSURE	3750	4.5	1.5		NAT.V	
13	CARETAKER RESIDENCE	1200	3	1		PACKAGE	
14	MANAGER RESIDENCE	1200	3	1		PACKAGE	



DUCT SIZE CALCULATIONS

LECTURE HALL

REQD. NO. OF AIR CHANGES = 15/HOUR
 AREA = 300 SQ.M
 THUS, VOLUME OF AIR = 4500 CUBIC M/HOUR
 = 75 CUBIC M/MIN.

VELOCITY OF AIR = 250M/MIN
 THUS, AREA OF DUCT = $\frac{75}{250} = 0.3$ SQ.M. MAX

BAY 1 : 0.15 X 0.3 = 0.045 SQ.M.
 BAY 2 : 0.3 X 0.3 = 0.09 SQ.M.
 BAY 3 : 0.45 X 0.3 = 0.135 SQ.M.
 BAY 4 : 0.6 X 0.3 = 0.18 SQ.M.
 BAY 5 : 0.9 X 0.3 = 0.3 SQ.M. APPROX.

SHORT TERM GUEST ROOMS

REQD. NO. OF AIR CHANGES = 15/HOUR
 AREA = 160 SQ.M
 THUS, VOLUME OF AIR = 2400 CUBIC M/HOUR = 40 CUBIC M/MIN.

VELOCITY OF AIR = 250M/MIN
 THUS, AREA OF DUCT = $\frac{40}{250} = 0.16$ SQ.M. MAX

ROOM 1 : 0.15 X 0.3 = 0.045 SQ.M.
 ROOMS 2,3 : 0.3 X 0.3 = 0.09 SQ.M.
 ROOMS 4,5 : 0.45 X 0.3 = 0.135 SQ.M.
 ROOMS 6,7 : 0.6 X 0.3 = 0.18 SQ.M.

GROUND FLOOR PLAN

FIRST FLOOR PLAN



DESIGN NOTE

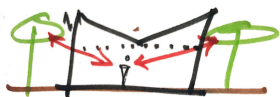
(A) MULTISENSORY EXPERIENCES



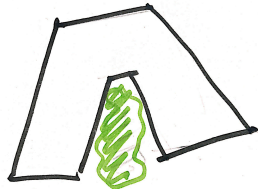
(B) FOOD RELATED ACTIVITIES



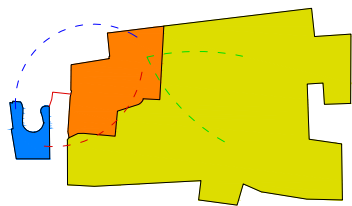
(C) ENGAGING LANDSCAPE



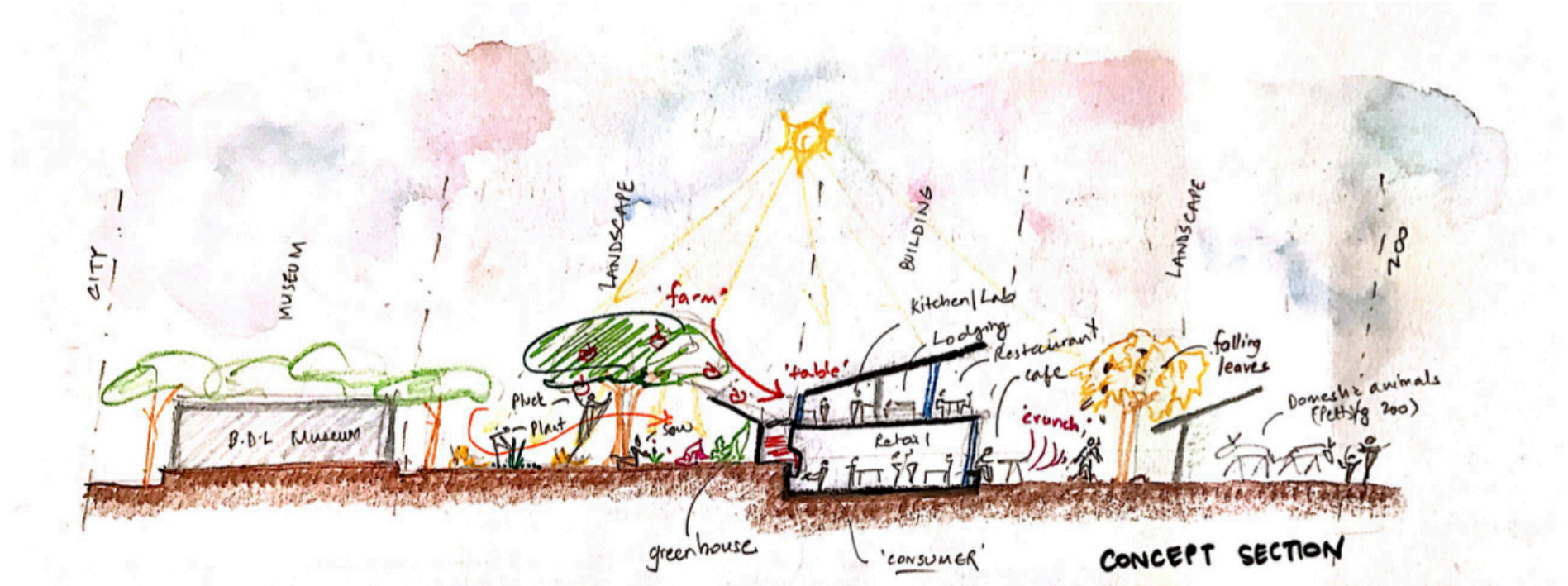
(D) CONNECTING WITH CONTEXT



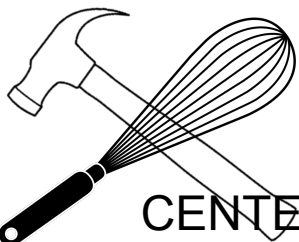
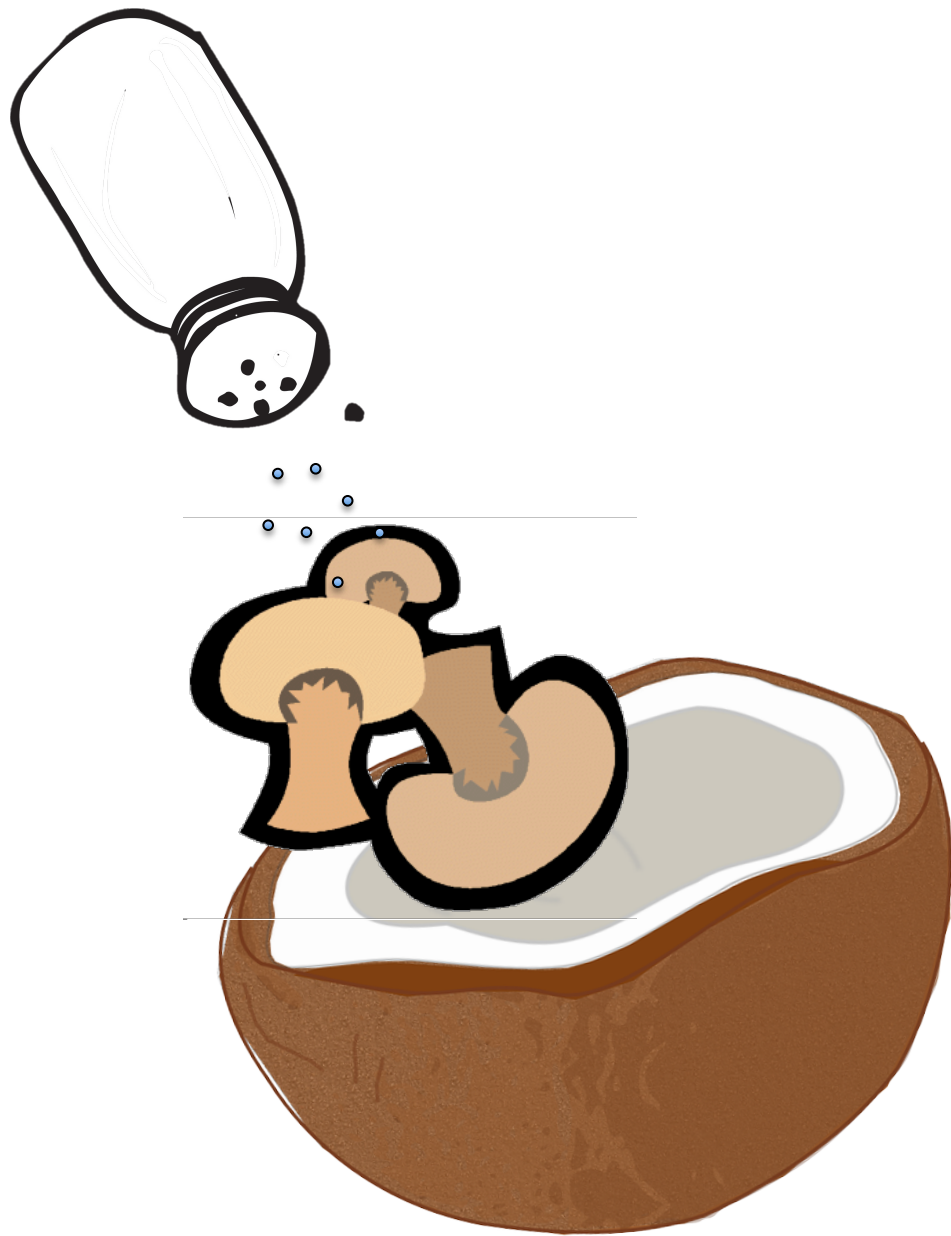
(E) REWORKING EXISTING EDGES



(F) PROMOTING VISION OF MUSEUM AND ZOO



ELEMENT	CRITERIA	STUDY NOTE
SHALLOW FOUNDATION	MINIMIZE EXCAVATION, MINIMIZE VIBRATIONS, MINIMIZE IMPACT ON ANIMALS AND EXISTING BIODIVERSITY OF ZOO ECOSYSTEM; LOW IMPACTS OF MATERIALS AND PROCESSES	APPROPRIATE FOR LOAD BEARING STRUCTURES
BUILDING HEIGHTS NOT EXCEEDING 12M	EXISTING HERITAGE GRADE II B BUILDING OF 15M HEIGHT, RELATABLE HUMAN SCALE	G+1 LOAD BEARING SLAB-WALL SYSTEMS POSSIBLE, SMALL SCALE - TACTILITY
USE OF NATURAL MATERIALS	ANIMALS INTERACT WITH STRUCTURE, NON-TOXIC; LOCALLY AVAILABLE AND BELONGING TO 'PLACE', HAVE LONGER LIFESPANS AS THEY PRE-EXIST IN NATURE	BRICK, STONE, WOOD, ETC POSSESSING TEXTURES - TACTILITY; SMALL SCALE INDUSTRIES AND EMPLOYMENT TO UNSKILLED LABOR POSSIBLE
BUILDING WITH FOOD	DESIGNING A SPACE FOR FOOD-RELATED ACTIVITIES	EVOKES DESIRABILITY IN BUILT SPACE, LIKE ONE FEELS TOWARDS GOOD FOOD
SIMPLISTIC, SOMBRE INTERIORS	BRINGS FOOD TO THE FOREFRONT - CONTRAST	HELPS INCREASE DESIRABILITY OF FOOD - HIGHLIGHTS TEXTURE, VIBRANCY OF FRESH PRODUCE AND THUS INCREASES SALES



INDEX

INTRODUCTION

1. DESIGN NOTE
2. AESTHETIC MODEL: SCALE, COLOR & TEXTURE
3. EXISTING LAND USE
4. DESIGNING FOR ANIMALS

CONSTRUCTION

5. MATERIAL STUDY-GABION WALL & BAMBOO
6. MATERIAL STUDY-MUSHROOM BRICKS
7. MATERIAL STUDY-SALT BLOCKS
8. MATERIAL STUDY-COCONUT
9. CONSTRUCTION DETAILS
10. CONSTRUCTION SYSTEM & SPANS

STRUCTURE

11. STRUCTURAL SCHEME & LOAD TRANSFER
12. BOREHOLE SCHEME
13. SOIL PROFILE & BORE LOG
14. GEOTECHNICAL ASSESSMENT

SERVICES

15. SITE SCHEME
16. ROOFTOP FARMING + WATERPROOFING
17. LIGHTING
18. HVAC CALCULATIONS
19. DESSICANT COOLING & THERMAL COMFORT

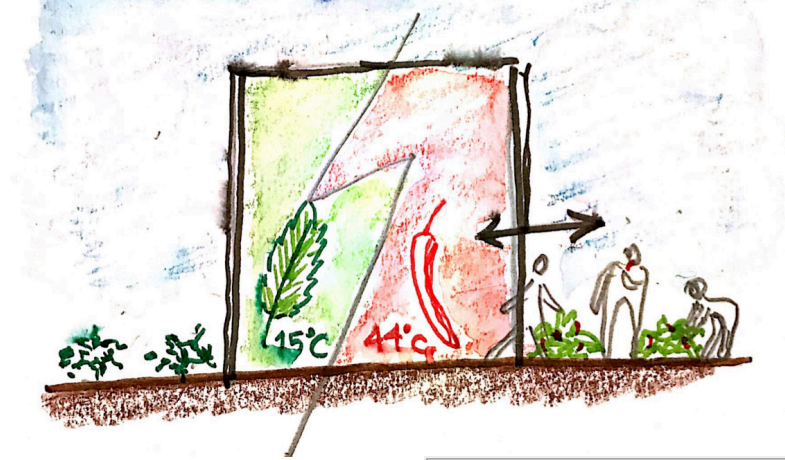
SUSTAINABILITY

20. SUN PATH AND SOLAR ENERGY
21. eQUEST ENERGY SIMULATION
22. VENTILATION & WIND FLOW
23. WASTE MANAGEMENT

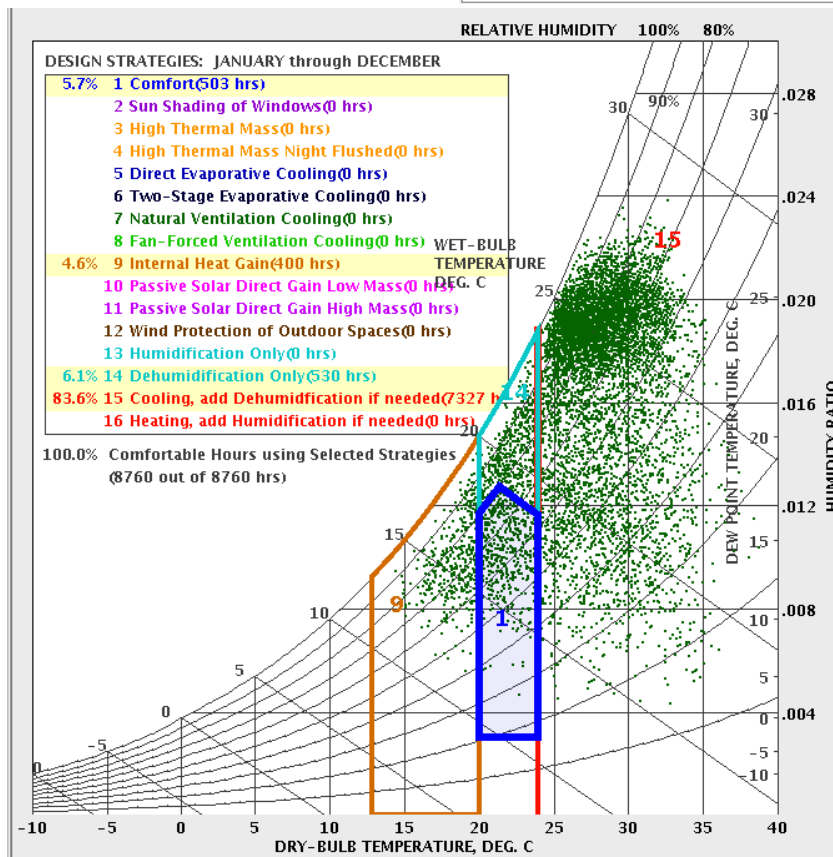
LANDSCAPING

24. TREE SURVEY
25. EXISTING LANDSCAPE STUDY
26. LANDSCAPE PROPOSAL
27. PLANTING REQUIREMENTS

Rethinking Thermal Comfort through FOOD.

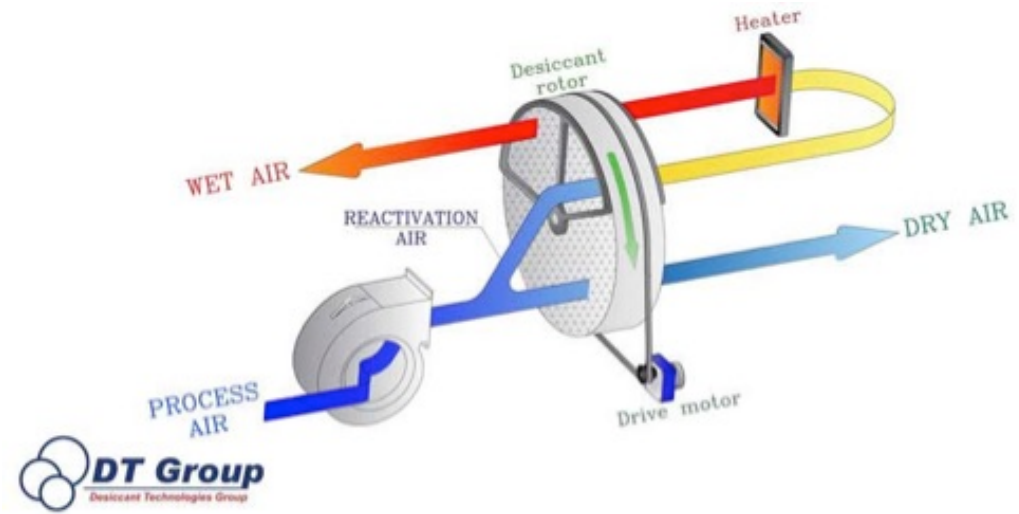


COMFORT INDOORS
 100% COMFORTABLE
 0% NOT COMFORTABLE



BIOCLIMATIC CHART FOR MUMBAI
 - FOR THERMAL COMFORT, COOLING AND DEHUMIDIFICATION NEEDED

DESSICANT COOLING



DESICCANT SALTS OR MECHANICAL DEHUMIDIFIERS ARE USED TO REDUCE HUMIDITY IN THE ATMOSPHERE. MATERIALS HAVING HIGH AFFINITY FOR WATER (SOLIDS LIKE SILICA GEL, ALUMINA GEL AND ACTIVATED ALUMINA, OR LIQUIDS LIKE TRIETHYLENE GLYCOL) ARE USED FOR DEHUMIDIFICATION. AIR FROM THE OUTSIDE ENTERS THE UNIT CONTAINING DESICCANTS AND IS DRIED ADIABATICALLY BEFORE ENTERING THE LIVING SPACE. THE DESICCANTS ARE REGENERATED BY SOLAR ENERGY.

THIS SYSTEM IS USED IN CONJUNCTION WITH HVAC



BENEFITS

- REDUCES THE ENERGY (ELECTRICITY) REQUIRED TO DEHUMIDIFY AND COOL VENTILATION AIR
- REDUCES CONDENSATION AND THE GROWTH OF MOLDS
- PERMITS ALTERNATIVE APPROACHES TO AIR CONDITIONING
- REDUCES THE SPACE REQUIRED FOR CENTRAL AIR-HANDLING EQUIPMENT AND DUCTS