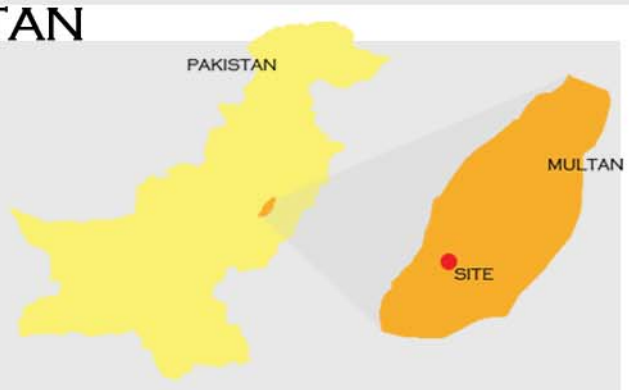
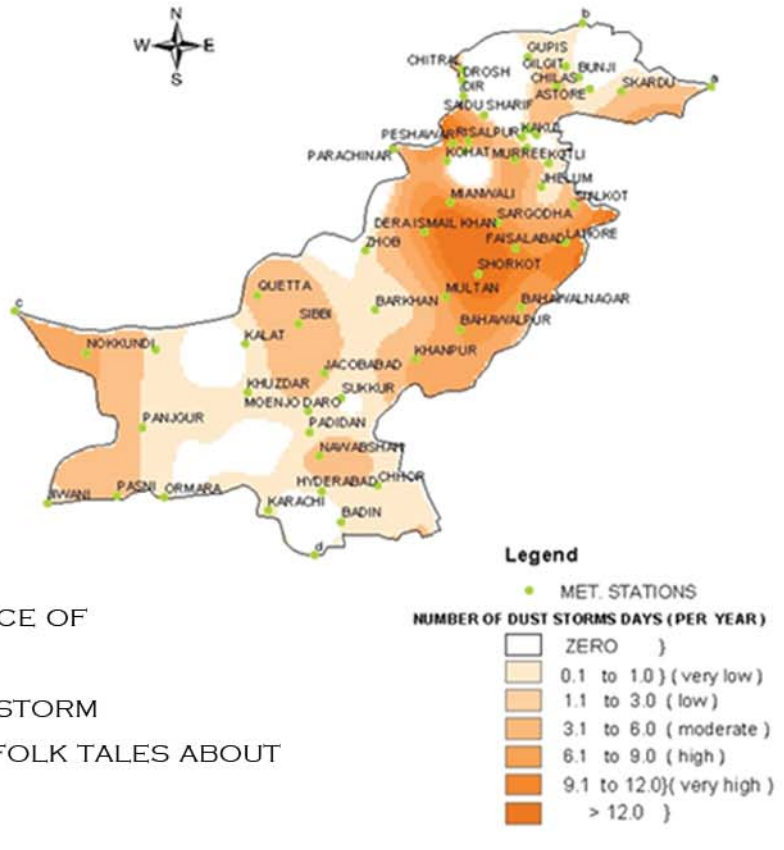
SELECTED CITY - MULTAN

POPULATION - 6 MILLION
TERRAIN - FLAT PLANE
SOIL - AGRICULTURAL
CLIMATE - HOT ARID
AV. HIGH TEMPERATURE - 32 °C
AV. LOW TEMPERATURE - 17 °C
ANNUAL RAINFALL - 186 MM (7.3 IN)
WIND SPEED - 5 KM/H
POPULAR CULTIVATION - MANGOES, SUGARCANE, WHEAT, COTTON, GUAVAS, POMEGRENATE.





COMMON NATURAL OCCURRENCE: SANDSTORM

THE SOUTHERN EAST REGION OF PUNJAB IN PAKISTAN WITNESSES THE MOST OCCURRENCE OF SANDSTORMS PER YEAR. MULTAN, BEING A HOT DRY REGION HAVE HIGH OCCURENCE OF SANDSTORMS MAKING IT VERY COMMON. MULTAN SHARES A TOTAL OF 65.5% OF DUSTSTORM FREQUENCY IN THE COUNTRY. PEOPLE HAVE MANY MYTHS REGARDING THE STORM, AND FOLK TALES ABOUT RED DEMONS ATTACKING THE CITY WHICH MOTHERS TELL TO THEIR CHILDREN.

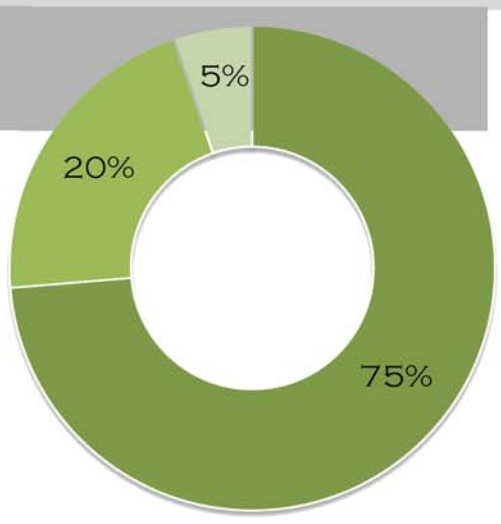
CULTURE OF MULTAN

CITY OF SAINTS. ISLAMIC ARCHITECTURE, MULTANI SHOES (KHUSSA), SOHAN HALWA (DESSERT), WOOD CARVING.

CRITERIA OF SELECTION

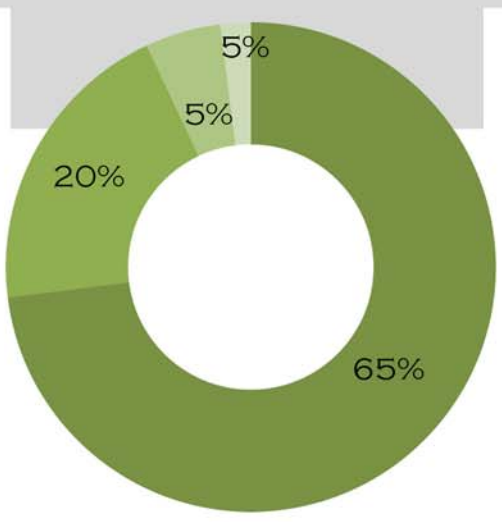
THE CITY OF SAINTS, PLANNED OF RADIAL GRID, HAS TWO RINGS WHICH FORMS THE OLD AND NEW PART OF THE CITY. THE INNER RING CONSISTS OF A DENSE AREA WITH VERY LESS BREATHING SPACES, WHILE ON THE OUTSKIRTS, CULTIVATION OF CROPS HAPPEN. THE SITE SELECTED FALLS IN THIS SUB-URBAN AREA WHERE THE LOW-COST SETTLEMENT OUTREACHES THIS PART OF THE CITY.

INGRDIENTS OF A BRICK



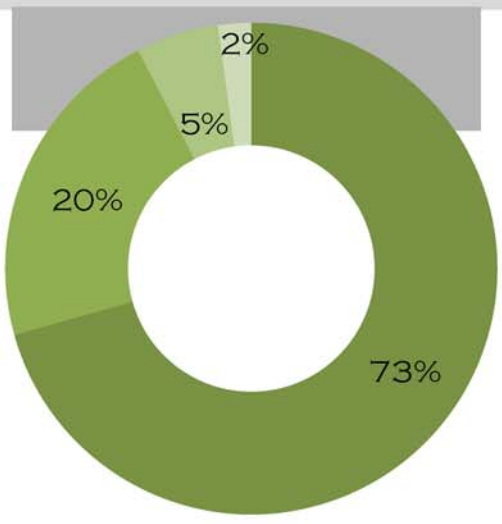
CLAY SAND WATER

- BASIC MUD BLOCK
- CRACKS EASILY



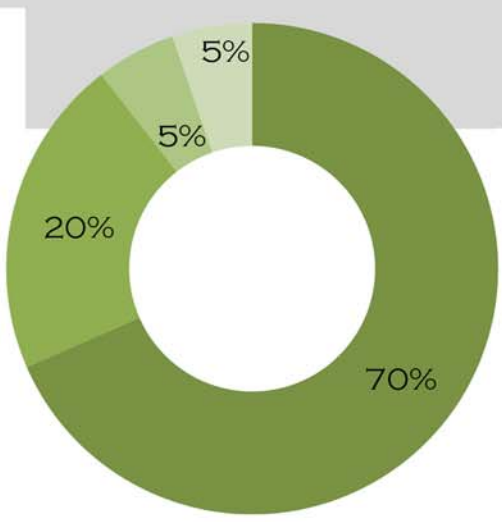
CLAY SAND FIBRE WATER

- FIBRE AS STRAW
- NOT A GOOD LOAD BERING STRUCTURE



CLAY SAND CEMENT WATER

- MORE STRENGTH
- DURABLE

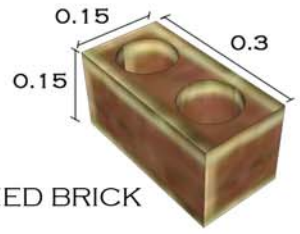


CLAY SAND MOLASES WATER

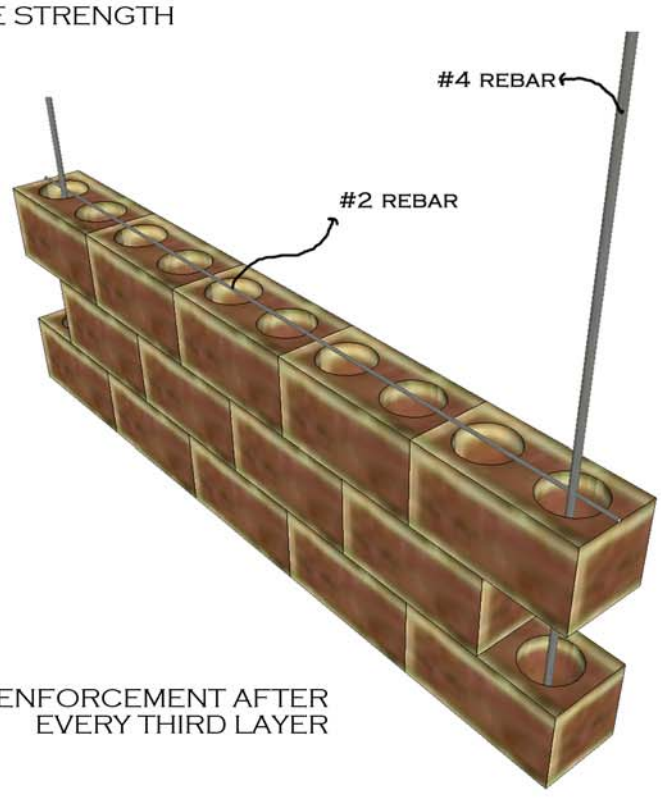
- MOLASES, EXCESSIVE NUTRIENTS OF SUGAR CANE
- STREGTHENS THE MICTURE
- RECYCLES THE WASTE

FORMATION OF A BRICK

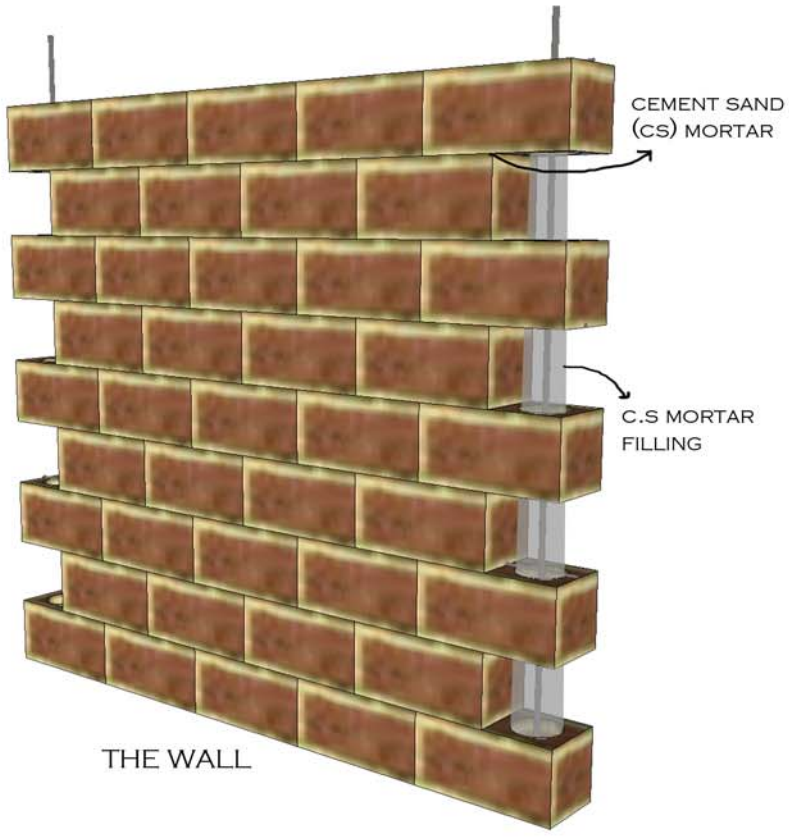
- THE CIRCULAR HOLES PROVIDE MORE STRENGTH TO THE STRUCTURE.
- DURABILITY
- INSULATION, HEAT IS TRAPPED IN THE HOLES.
- COST-EFFECTIVE
- WEIGHS LESS, EARTHQUAKE RESISTANCE INCREASES
- SUN DRYING SUBSTRACTS THE CARBON FOOTPRINT OF BURNING



SUN DRIED BRICK

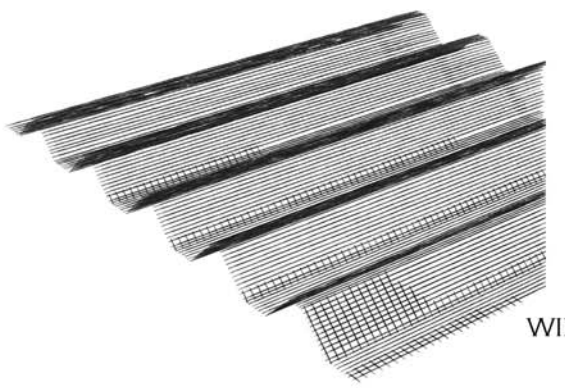


REENFORCEMENT AFTER EVERY THIRD LAYER

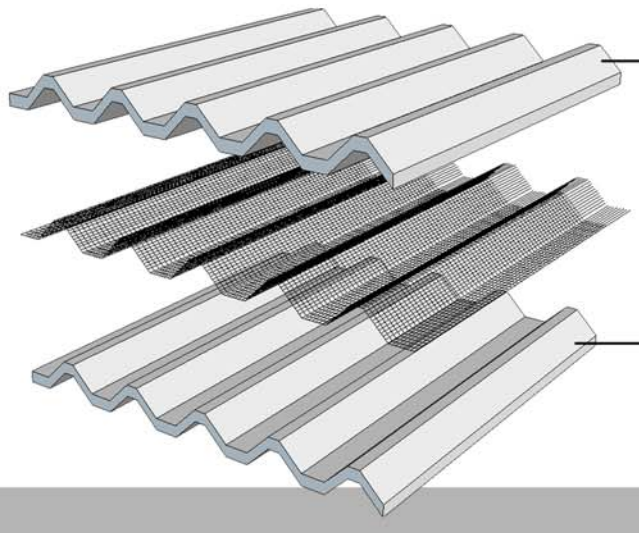


THE WALL

FERRO CEMENT CORRUGATED SLAB



WIRE MESH 28 SGW



FERRO CEMENT IS A TECHNIQUE OF LAYERING CEMENT OR CONCRETE MORTAR ON A WIRE GAUZE OF THICKNESS. THE PROCESS BEGINS WITH THE MOL DING OF WIRE MESH INTO THE DESIRED SHAPE. THIS CAN BE DONE EASILY BY TRAINING THE LABOUR. AFTER THAT LAYER OF CEMENT OR CONCRETE IS PASTED WITH THE GAUZE, AND THEN LETTING IT TO DRY. THE STRUCTURE BECOMES SO STRONG THAT IT CAN RETAIN HEAVY LOADS EASILY TOO. THIS IS DUE TO THE ADDITIONAL STRENGTH OF WIRE MESH.

THIS PARTICULAR SHAPE OF THE SLAB IS DESIGNED FOR A STRUCTURE WITHOUT BEAM AND COLUMN. THIS IS ACHIEVED THROUGH INSERTING A 8MM REINFORCED BAR IN THE BOTTOM LAYER OF CS MORTAR TO AVOID ANY BEND IN THE STRUCTURE . THE SCREED LAYER AT THE TOP FINISHES THE STRUCTURE

THE COST DEPENDS ON THE AVAILABILE COST OF CEMENT OR CONCRETE, BUT NEVERTHELESS, IT IS COST-EFFECTIVE,DURABLE, EARTH QUAKE RESILENT, SELF MAINTAINED AND STRONG.

LAND AN DINFRASTRUCTURE DEVELOPMENT OF SCHEME

SCOPE OF WORKS

1. SURVEYING AND DEMARCATION
2. LEVELLING AND GRADIN OF SCHEME
3. LANDSCAPING
4. WATER SUPPLY PIPE WORK
5. SEWERAGE PIPE WORK
6. ROAD WORKS

ESTIMATED COST OF WORK:

COST PER ACRE = APPROX 14,745 $
FOR 5.1 ACRE = APPROX 75,203 $

COST OF INDIVIDUAL HOUSE

1) **COST OF MATERIAL** *(CURRENCY CONVERSION RATE ; 1 US $ = PAK RS. 102/-)*

A-	STONE FOR FOUNDATION & PLINTH	600 CFT @ RS 25/- PER CFT	= RS.	15,000	$	147.1
B-	ADOBE HOLLOW BRICKS	4,000 NO @ RS 12/-		48,000	$	470.6
C-	EARTH FILL MATERIAL & CLAY/MUD/SAND	5 DUMPER TRIPS @ 2,000/- PER TRIP		10,000	$	98.0
D-	CEMENT	50 BAGS @ RS 550/- PER BAG		27,500	$	269.6
E-	REBAR STEEL	250 KG @ RS 75/- PER KG		18,750	$	183.8
F-	WIRE MESH 20 MM X 20 MM - SWG 28	300 SFT @ 30/- PER SFT		9,000	$	88.2
G-	STRAW /	50 KG @ RS 20/- PER KG		1,000	$	9.8
H-	DOOR SHUTTERS - WITH HARD WARE	140 SFT @ RS 120/- PER SFT		16,800	$	164.7
I-	WINDOW SHUTTER WITH GLAZING	60 SFT @ RS 150/- SFT		9,000	$	88.2
J-	WASH ROOM & KITCHEN PLUMBING	1 JOB @ RS 20,000/-		30,000	$	294.1
K-	PAINT WORK-					
	- ENAMEL PAINT ON DOORS & WINDOWS	200 SFT @ 20/- PER SFT		6,000	$	58.8
	- WHITE WASH ON WALLS & CEILINGS	1500 SFT @ RS 4/- PER SFT		6,000	$	58.8
L-	FLOOR CLAY TILES	600 SFT @ RS 20/- PER SFT		12,000	$	117.6

TOTAL COST MATERIAL = RS 209,050/- = $ 2049.5

2) COST OF LABOUR = RS 55,000/- = $ 539.0

3) COST OF MISC. ITEMS AND ARRANGEMENTS = RS 35,000/- = $ 343

TOTAL COST OF EACH UNIT

TYPE A (1 - STOREY HOUSE, 48 SQM) = RS 299,050/- = $ 2932.0
TYPE B (2 - STOREY HOUSE, 78 SQM) = RS 425,000/- = $ 4167.0

FINANCIAL PROGRAMME:

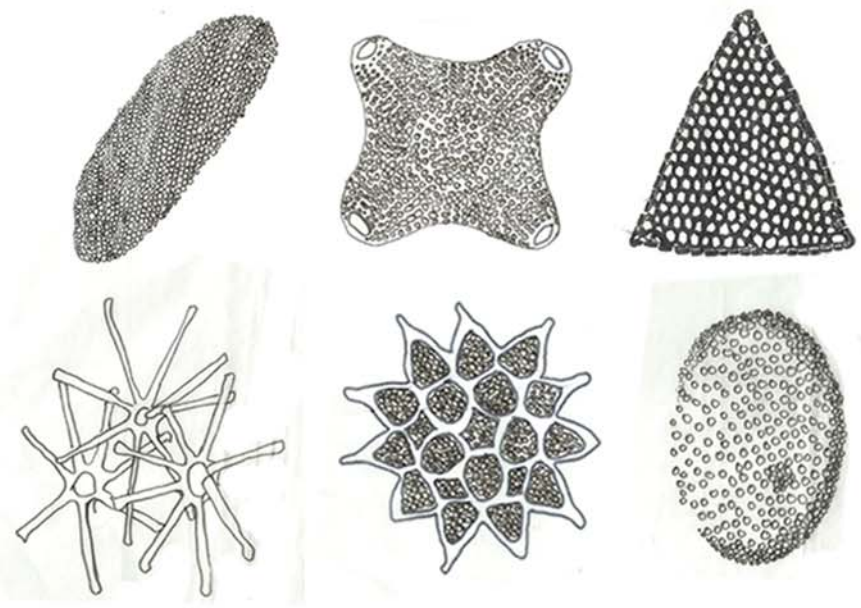
FURTHER REDUCTION MAY INCLUDE COST OF LABOUR. THIS CAN BE ACHIEVED IF THE USER HIMSELF PARTICIPATES IN CONSTRUCTING HIS HOUSE. MOREOVER, THE USER MAY CONSTRUCT ACCORDING TO HIS FINANCIAL GROWTH AS THE DESIGN STARTS WITH A ONE ROOM HOUSE TO 3 OR MORE.

CONCEPT

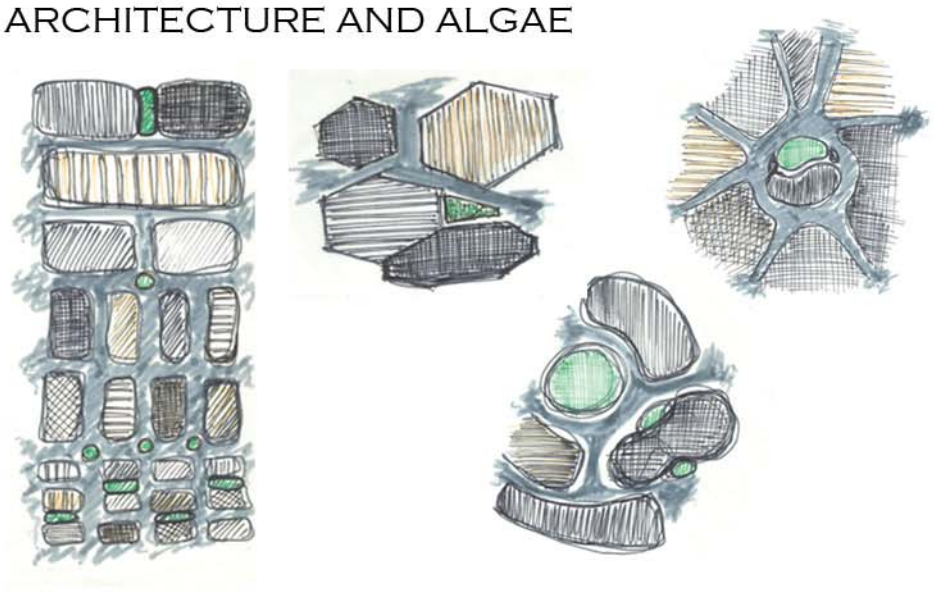
LOW-COST URBAN SETTLEMENTS OR SLUMS ARE BEAUTIFUL EXAMPLES OF HOW EVERY HUMAN IS A DESIGNER HIMSELF. THIS ART OF ASSEMBLING SPACES CAN BE COMPARED WITH THE GROWTH OF ALGAE, WHICH NEEDS BASIC INGREDIENTS LIKE WATER, SUNLIGHT AND OTHER NUTRIENTS TO GROW. SIMILARLY, FOR A HOUSE, THE BASIC INGREDIENTS ARE THE EARTH AND THE STRUCTURE, WHILE THE FAMILY MAKES THE HOUSE A HOME.

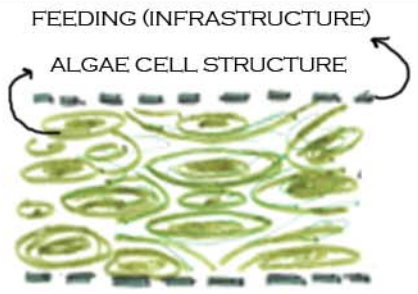
TAKING THE SAME PATTERN, THE CONCEPT REVOLVES AROUND SUCH SPACES WHICH CAN BE EXPANDED AND MOULDED ACCORDING THE USER'S NEEDS. THE IDEA IS TO CREATE A COMMUNITY WHICH NOT ONLY PARTICIPATES IN BUILDING THEIR OWN HOUSES BUT ALSO DESIGN. IN THIS WAY, PEOPLE WILL FEEL MORE OBLIGED TO LOOK AFTER THEIR SPACE, CREATING A SENSE OF OWNERSHIP, AND THEREFORE PRODUCING A COMMUNITY WHICH LOOKS AFTER ONE ANOTHER.

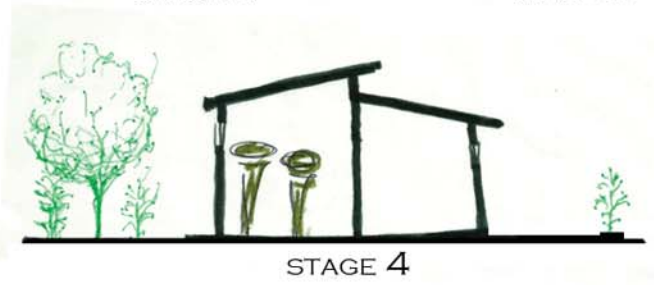
ALGAE SKELETAL STRUCTURE

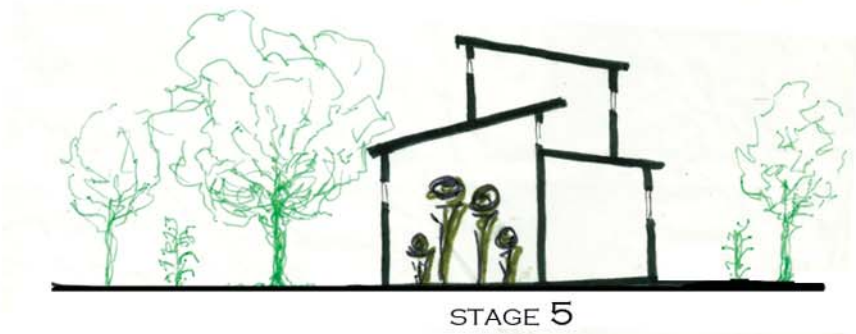


ARCHITECTURE AND ALGAE







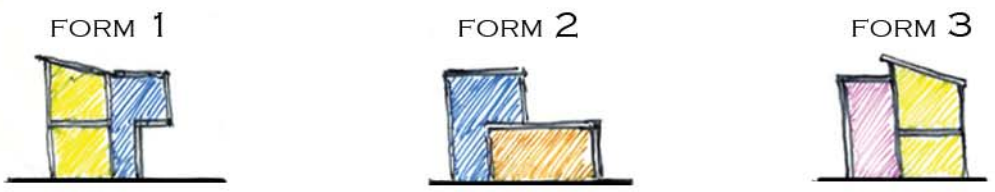


DESIGN PHILOSOPHY

I CHOSE ALGAE AS MY CONCEPT BECAUSE OF ITS SKELETAL STRUCTURE WHICH RESEMBLES THE MANY PATTERNS WITH WHICH ARCHITECTURE CAN GROW. I BELIEVE THIS IS HOW ARCHITECTURE SHOULD WORK, SINCE IT'S ONE OF THE MAN-MADE TRANSLATIONS OF NATURE AND THE ONLY WAY TO MAKE IT SUSTAINABLE IS BY MITIGATING THE PATTERN OF NATURE ITSELF. THEREFORE, IT SHOULD BE ABLE TO GROW IN A SUSTAINABLE WAY BECAUSE IN THE END OF THE DAY IT IS IN THE HANDS OF THE USER, THE ALGA, WHO MAKES THE SPACE ALIVE AND PURPOSEFUL.

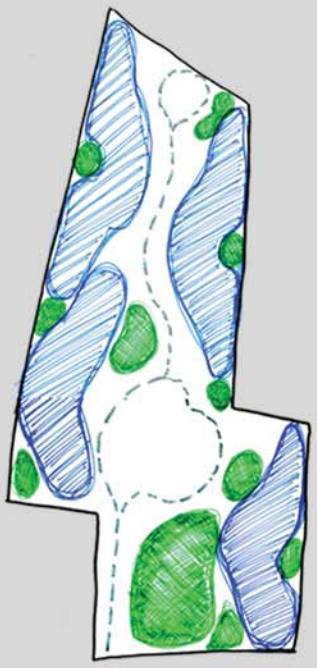
I STARTED WITH STUDYING SKELETAL STRUCTURE OF DIFFERENT TYPES OF ALGAE. EACH CELLULAR COMPOSITION HAD A DIFFERENT GEOMETRICAL AND PROPORTIONAL APPROACH. HEXAGONAL, RADIAL, LINEAR AND TRIANGULAR FORMATION WAS OBSERVED. I, THEN, TRANSLATED THESE PATTERNS INTO ARCHITECTURAL NODES AND ELEMENTS, THEREBY PRESENTING DIFFERENT OPTIONS FOR A MASTER PLAN.

CONCEPT STUDY

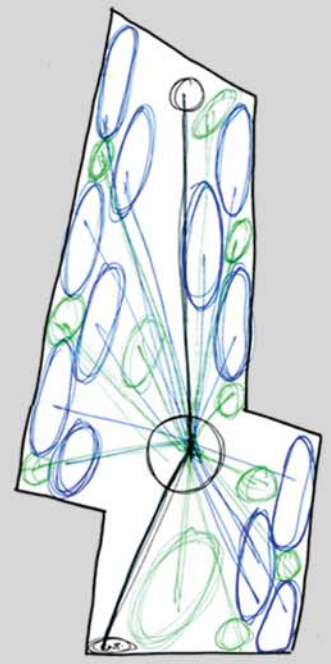


PARKING ZONE
6M WIDE ROAD
PARKING ZONE
6M WIDE ROAD
PARKING ZONE
6M WIDE ROAD
PARKING ZONE
6M WIDE ROAD
PARKING ZONE
COMMERCIAL ZONE / MARKET
PUBLIC SQUARE
PARKING ZONE
6M WIDE ROAD
6M WIDE ROAD
PLAYGROUND
ENT.
EXIT
6M WIDE ROAD

MASTERPLAN
SCALE = 1: 768

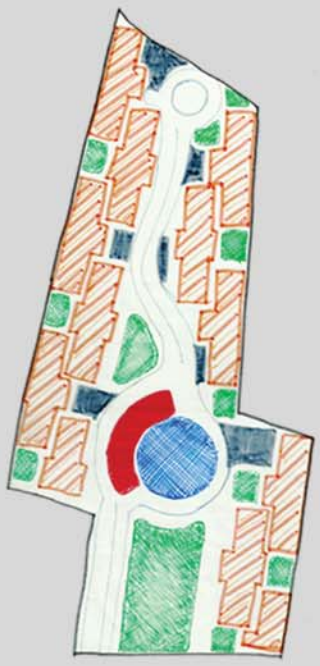


ORGANIC MASTERPALN



PUBLIC SQUARE ACTING AS NUCLEUS

CIRCULATION -
MAJOR PEDESTRIAN ZONES



LAND USE -
COMMERCIAL HUB
CENTRE

CLUSTER DEFINITION

TOTAL NUMBER OF HOUSES = 62

TYPE A - 1 STOREY

TYPE B - 2 STOREY

CLUSTER A SCALE = 1:192

PLAN

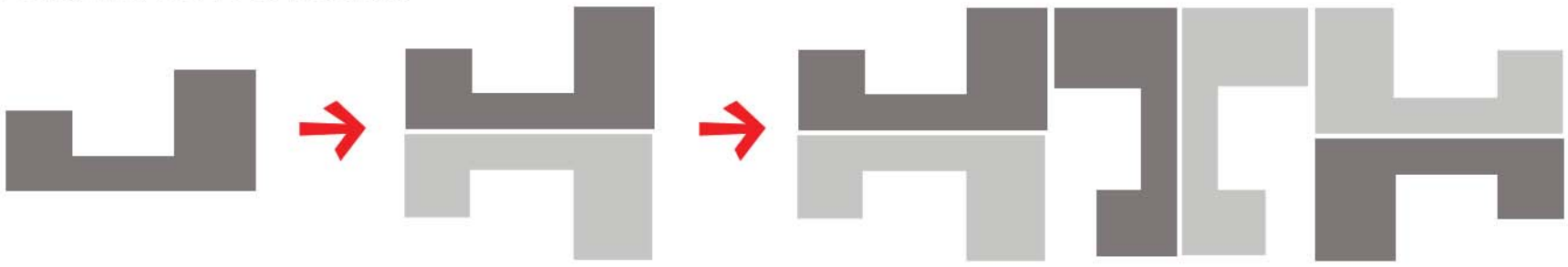
ELEVATION

CLUSTER B SCALE = 1:192

PLAN

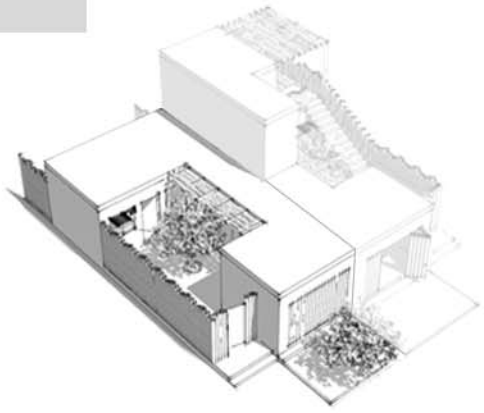
ELEVATION

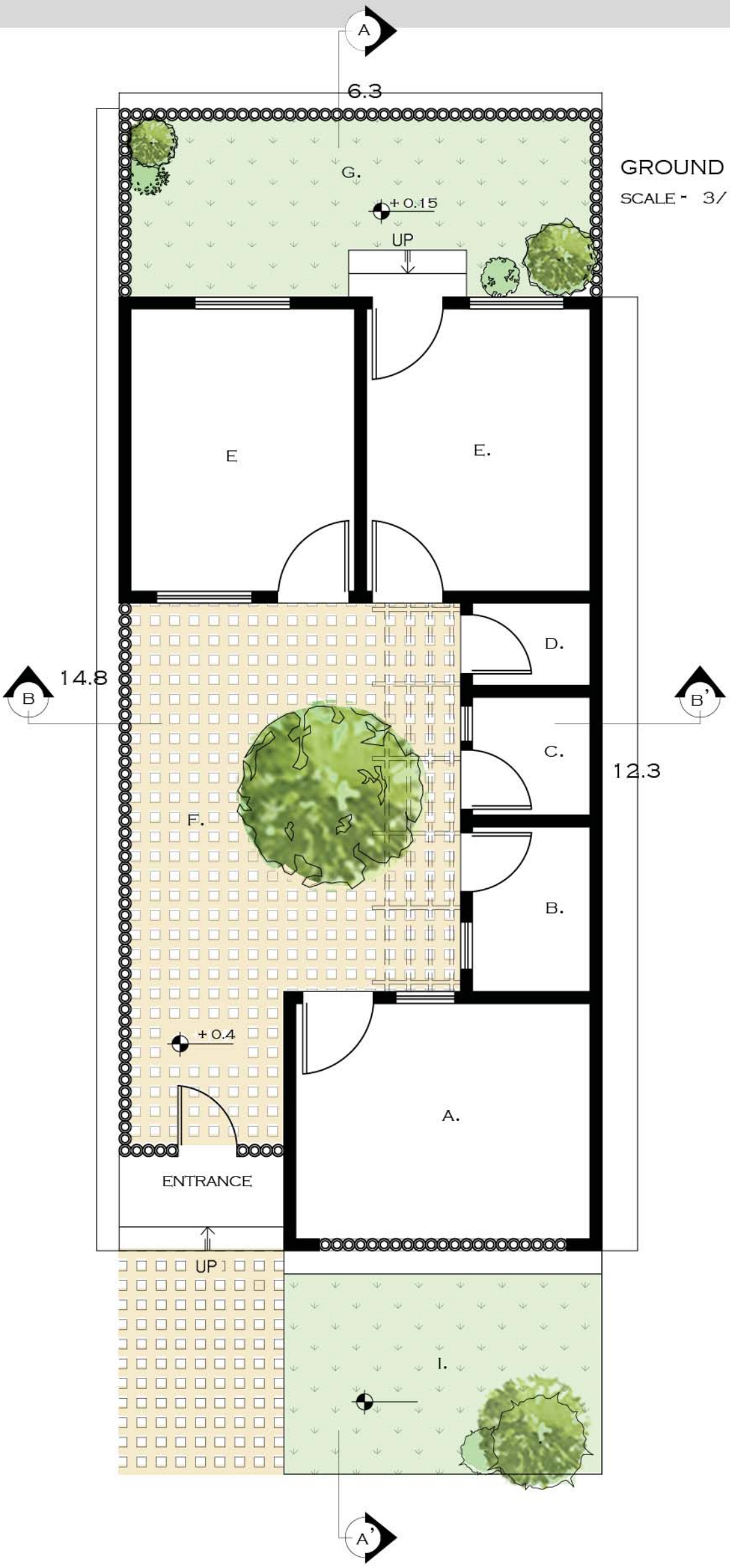
CLUSTER FORMATION DIAGRAM



TYPE A - 1 STOREY HOUSE

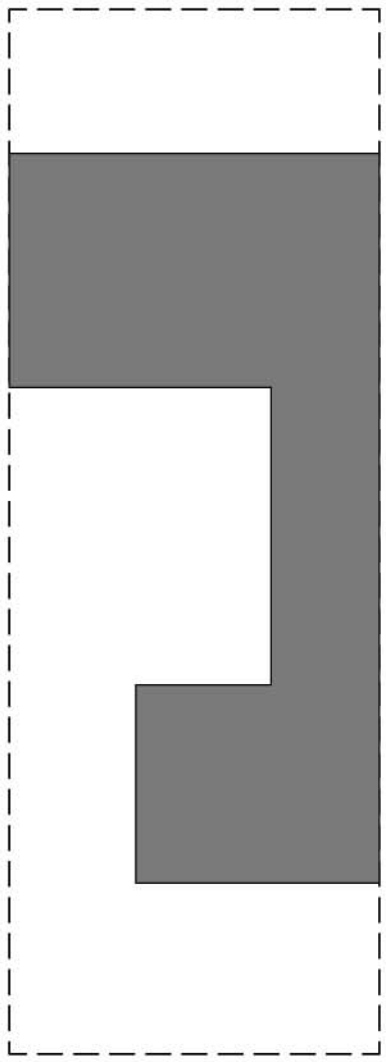
TOTAL NUMBER OF TYPE A HOUSES = 31

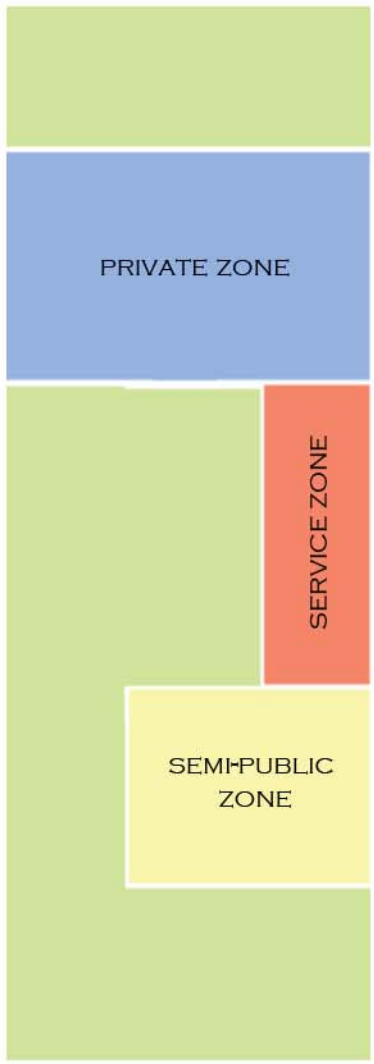




GROUND FLOOR PLAN

SCALE - 3/16" = 1'-0"



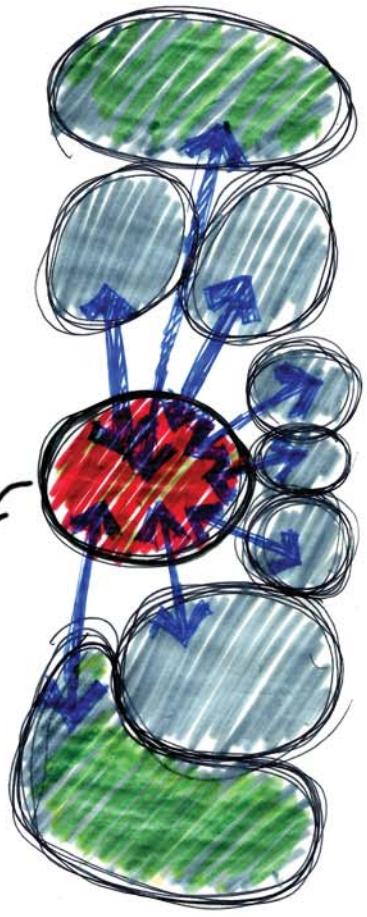


PLOT AREA - 110.5 SQM

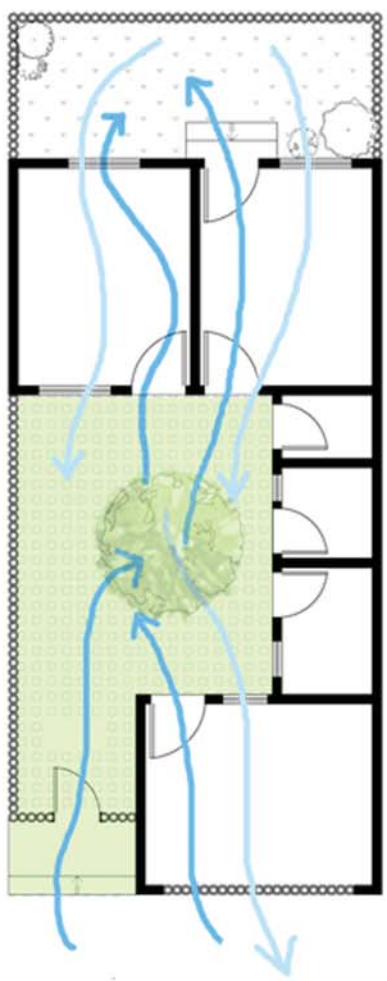
BUILT AREA - 48 SQM

GROUND FLOOR:

A. LIVING ROOM 11.6 SQM
B. KITCHEN 3.3 SQM
C. WASHROOM 2.3 SQM
D. TOILET 1.6 SQM
E. BEDROOM 10.5 SQM
F. COURTYARD 21.4 SQM
G. BACKYARD 13.6 SQM
H. FRONTYARD 9.7 SQM

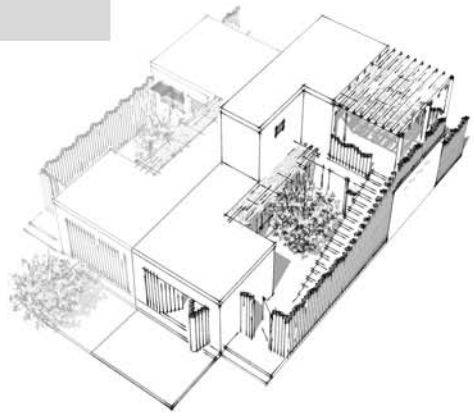


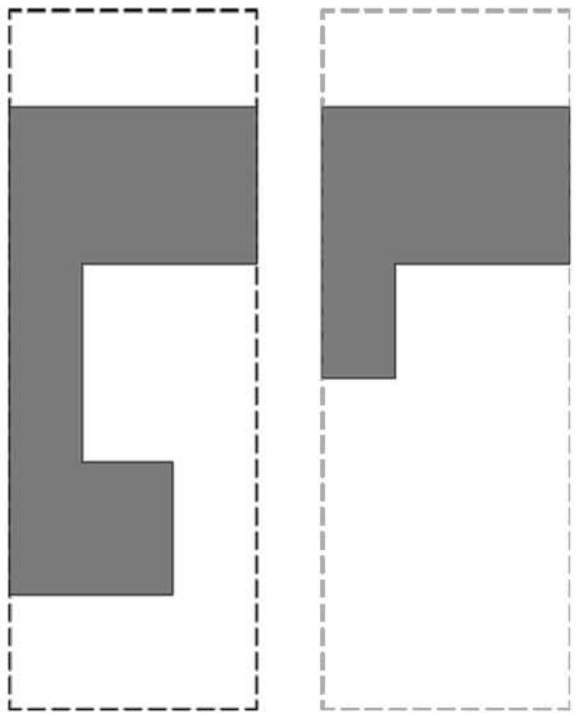
CENTRAL COURTYARD ACTING AS NUCLEUS



TYPE B - 2 STOREY HOUSE

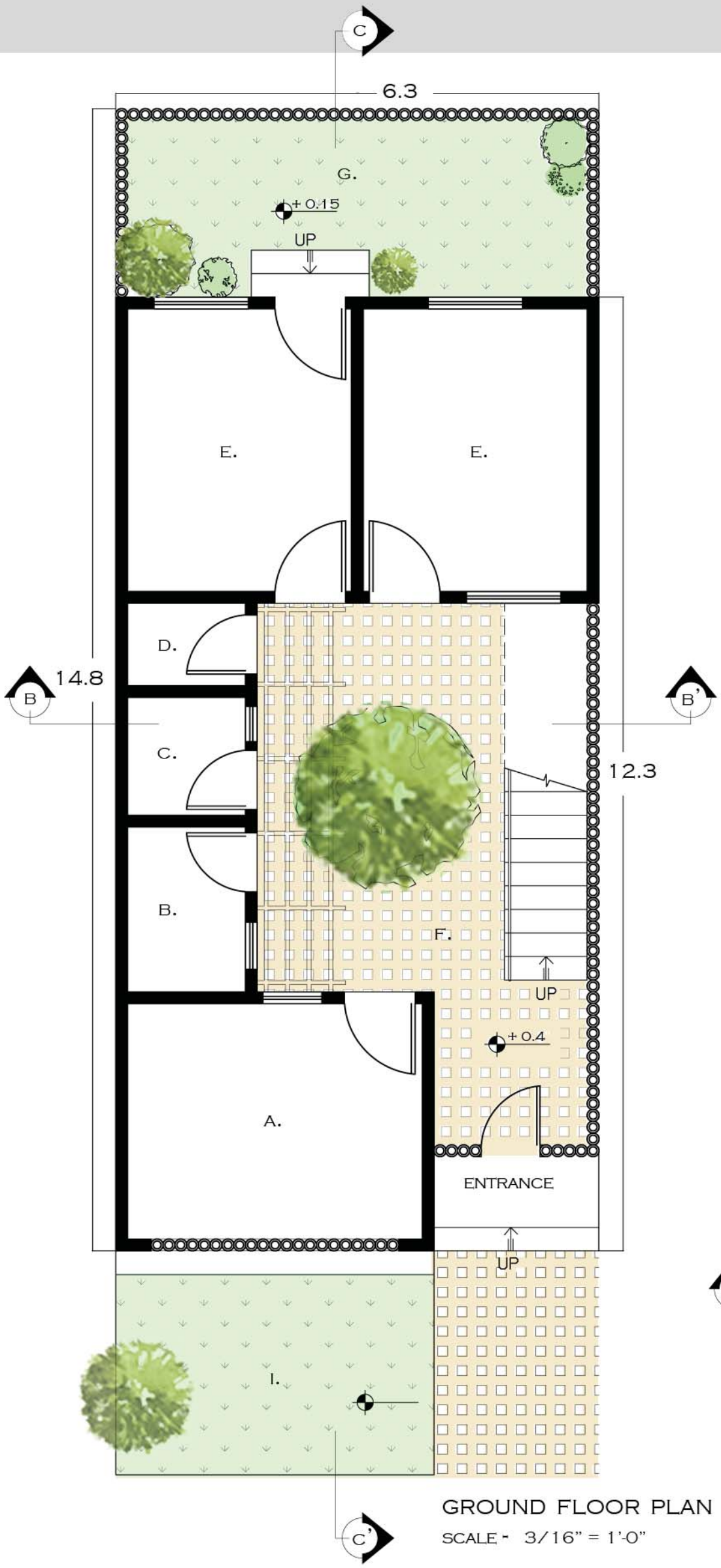
TOAL NUMBER OF TYPE B HOUSES = 31





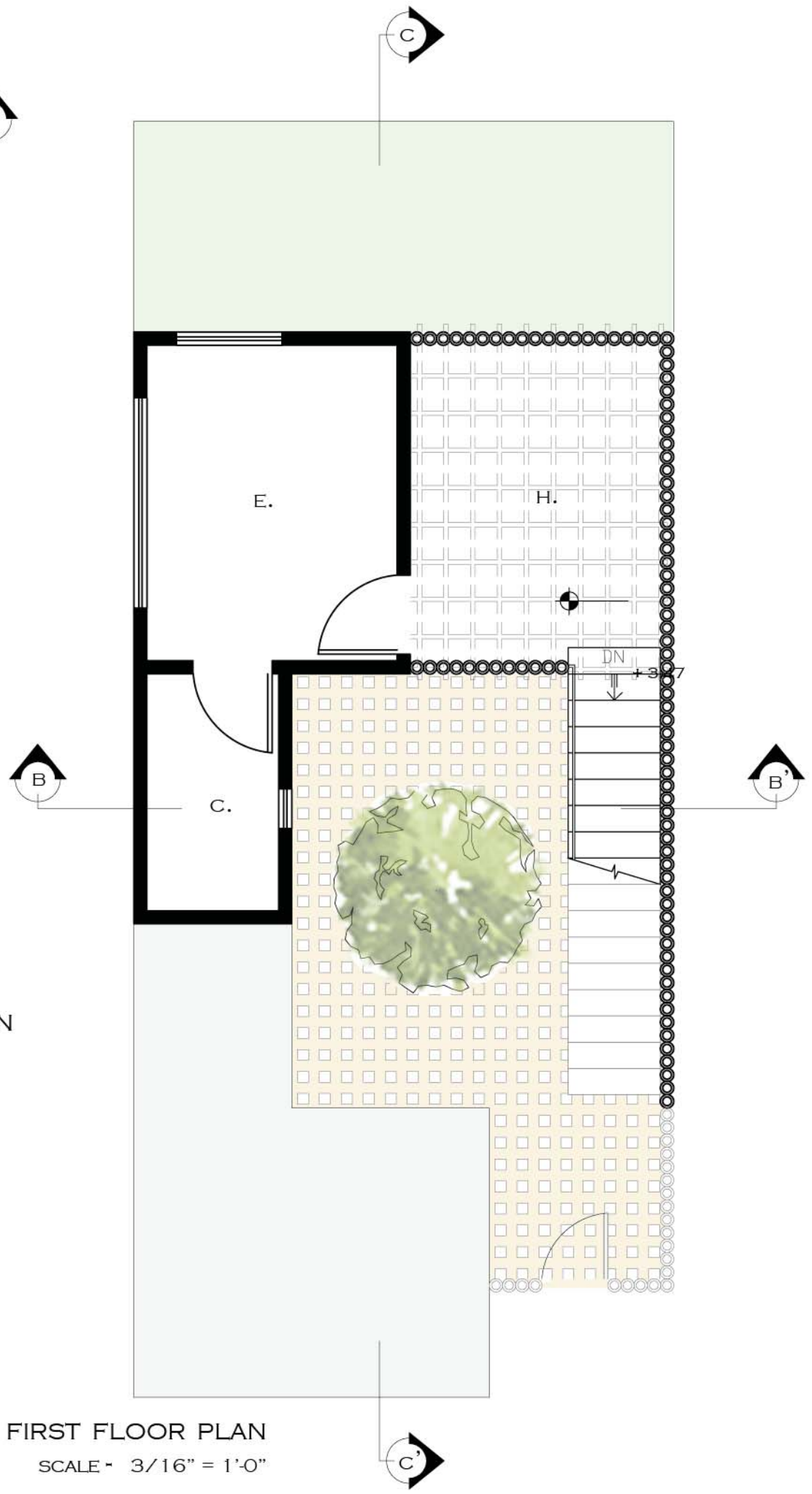
PLOT AREA - 110.5 SQM

BUILT AREA -
48 SQM + 30 SQM
= 78 SQM



GROUND FLOOR PLAN

SCALE - 3/16" = 1'-0"



FIRST FLOOR PLAN

SCALE - 3/16" = 1'-0"

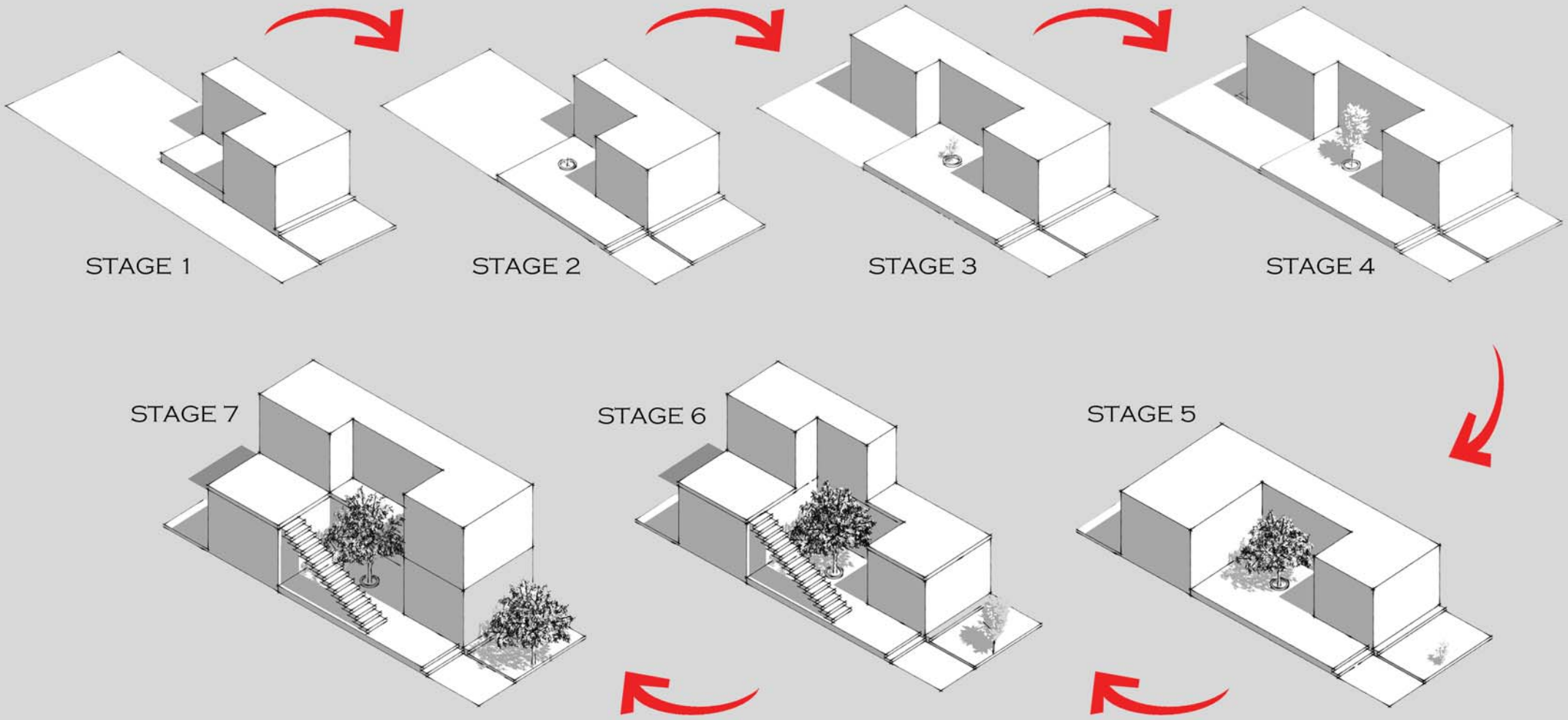
GROUND FLOOR:

- A. LIVING ROOM 11.6 SQM
- B. KITCHEN 3.3 SQM
- C. WASHROOM 2.3 SQM
- D. TOILET 1.6 SQM
- E. BEDROOM 10.5 SQM
- F. COURTYARD 21.4 SQM
- G. BACKYARD 13.6 SQM
- H. FRONTYARD 9.7 SQM

UPPER FLOOR:

- I. ROOF TERRACE 10.6 SQM
- C. WASHROOM 4.2 SQM

STAGES OF GROWTH



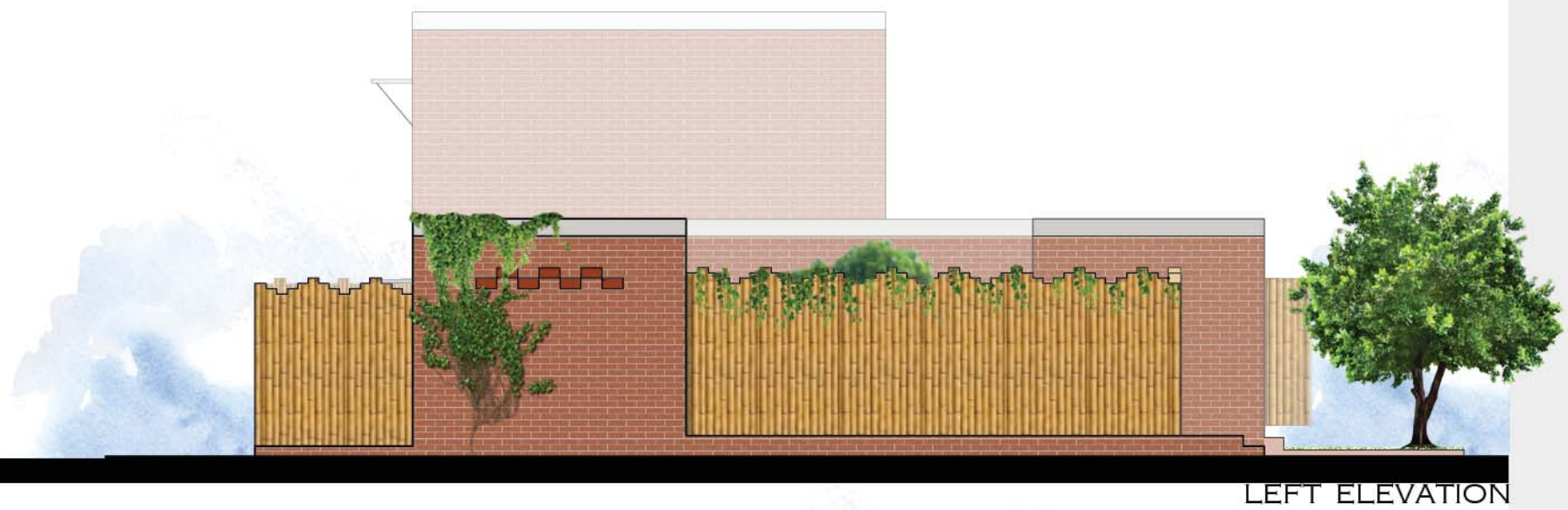
TAKING THE EXAMPLE OF ALGAE, THE GROWTH OF ARCHITECTURE IS I SIMILAR PATTERN. ALGAE IS A UNICELLULAR ORGANISM WHICH DIVIDES ITSELF INTO ONE OR MORE CELL, CREATING A SKIN. THE FIRST STAGE WHICH IS THE BEGINNING; THE USER DWELLS IN A ROOM HOUSE WHICH CAN BE ACCESSED THROUGH THE FRONT YARD AND SO THE INNER COURTYARD FORMS ITS IMPORTANCE AS THE NUCLEUS OF THE HOUSE. IN THE SECOND STAGE THE COURTYARD EVOLVES WITH PLANTATION, WHILE IN THE THIRD STAGE A ROOM IN ADDED,AGAIN AROUND THE COURTYARD. THE FOURTH STAGE MARKS THE DEVELOPMENT OF THE BACKYARD WHERE FARMING OF DOMESTIC CROPS MAY TAKE PLACE, OR IT MAY ACT AS A PRIVATE OPEN SPACE FOR THE WOMEN IN THE FAMILY. IN THE FIFTH STAGE ANOTHER ROOM IS ADDED WHICH ACTS AS THE SECOND BEDROOM. THIS MODULE OF THE HOUSE IS THE TYPICAL STAGE FOR A COMPLETE GROUND FLOOR HOUSE. NEXT, THE GROWTH DIRECTS ITSELF IN A VERTICAL MANNER BUT WITH THE COURTYARD AS THE CENTRE AND SO ANOTHER ROOM IS ADDED. THIS BECOMES THE TYPICAL MODULE FOR A 2 STOREY HOUSE. MOREOVER, THE GROWTH CONTINUES AROUND THE COURTYARD TILL IT CAN

DESIGN FOR SANDSTORMS

DEFLECTION OF SANDSTORM DUE TO TREES AND NO OPENING FROM OUTSIDE

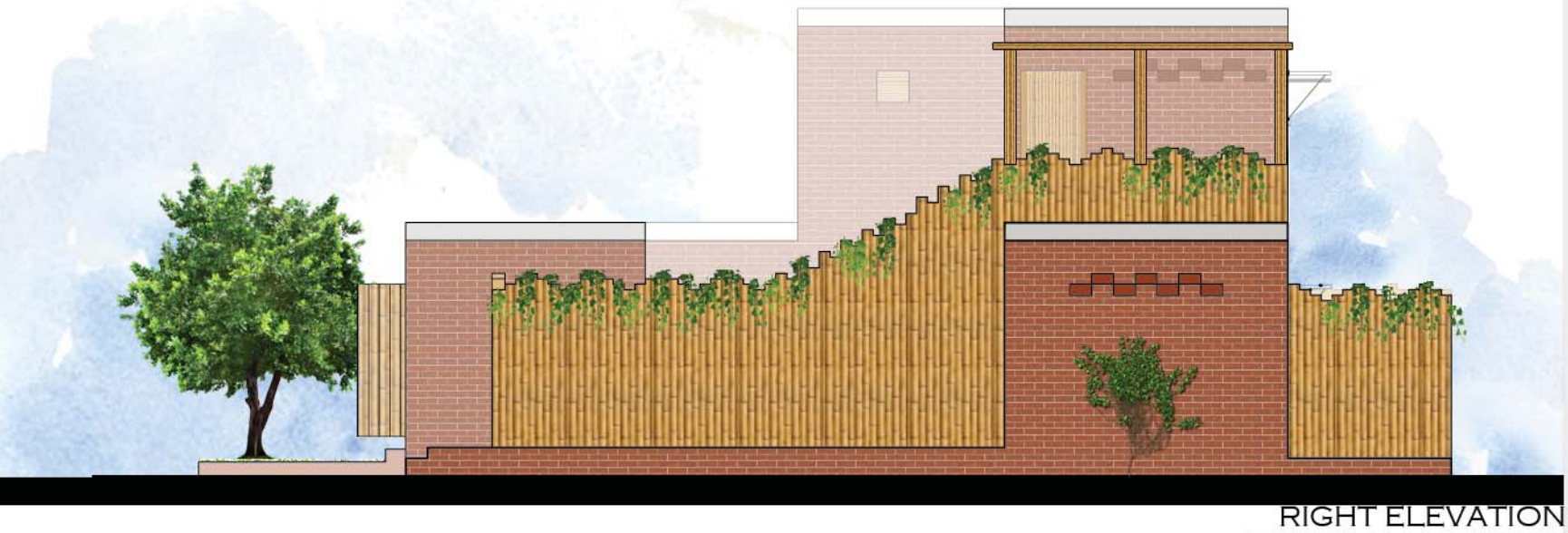
INSPIRED BY THE NAJDI ARCHITECTURE OF ARAB, WHERE SANDSTORMS OCCUR IN MORE FREQUENCY THAN MULTAN, THE ARCHITECTURE IS PURELY DESIGNED FOR THE DESERT. THE KEY ELEMENTS OF THIS TYPE OF ARCHITECTURE INCLUDES NO OPENINGS FROM THE OUTSIDE. THIS SIMILAR DESIGN ELEMENT CAN BE SEEN, WHERE THE COURTYARD OF THE HOUSE BECOMES A BUFFER FOR BOTH THE STORM AND SPACES. AND WITH THE HELP OF TRESS LIKE DATE PALMS OUTSIDE THE HOUSE, TEH DAMAGE CAN BE DECREASED.

FRONT ELEVATION



LEFT ELEVATION

REAR ELEVATION

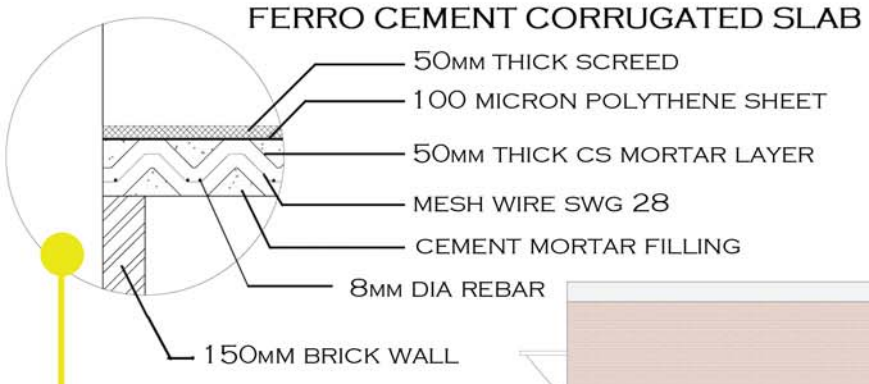


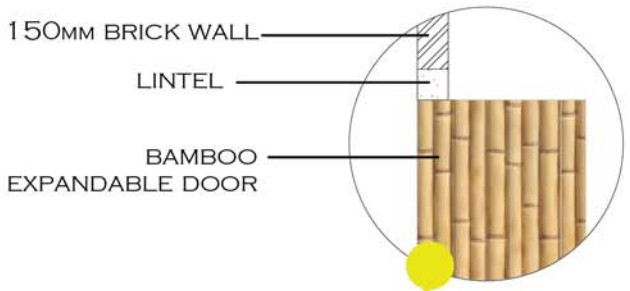
RIGHT ELEVATION

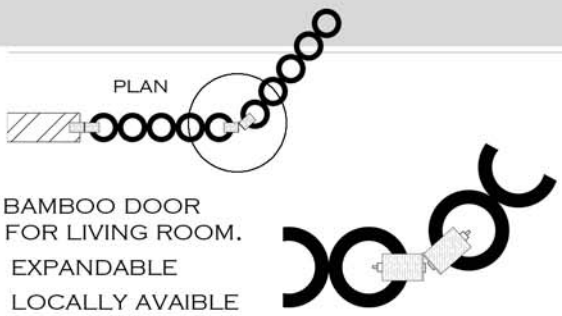
SECTIONS

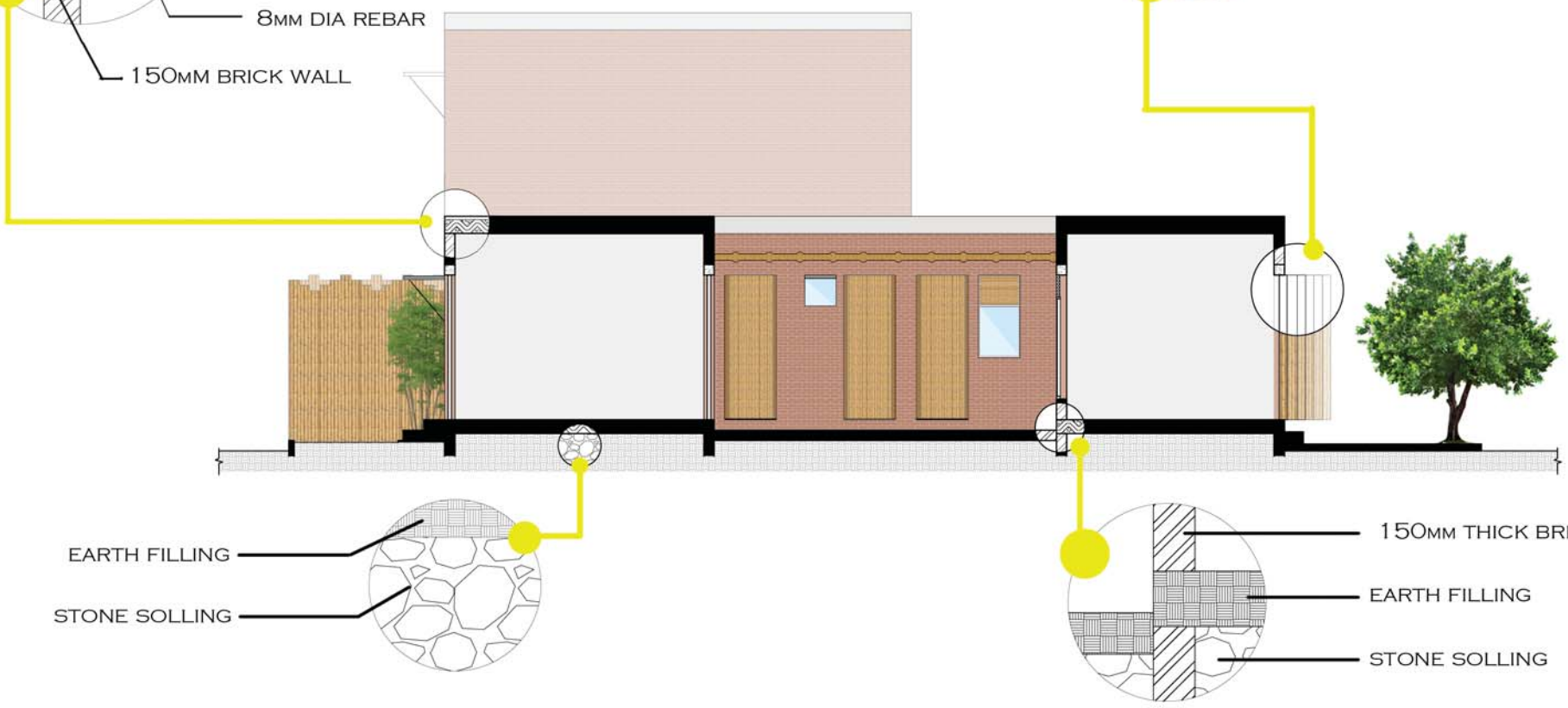
SCALE = 96

SECTION A-A'

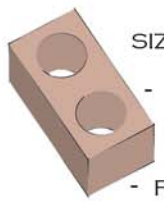




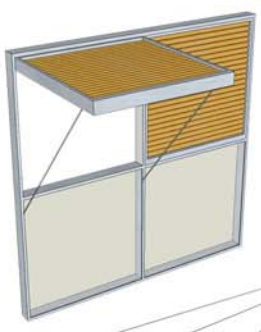




SECTION B-B'



- BAMBOO PARTITION WALL
- SIMILARLY TIED AS THE RAILING



BAMBOO DOOR

- MADE FROM BAMBOO AND ITS STRAW
- MADE FROM BAMBOO ONLY

SECTION C-C'