

MATERIALS & METHODS IN BUILDING CONSTRUCTION-III

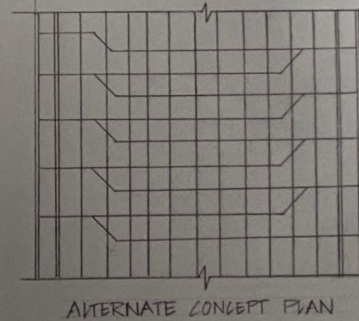
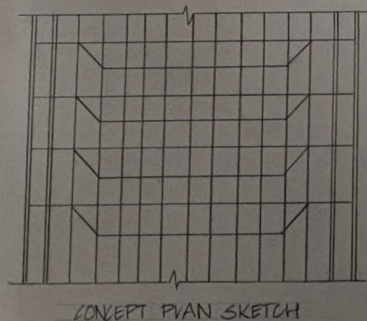
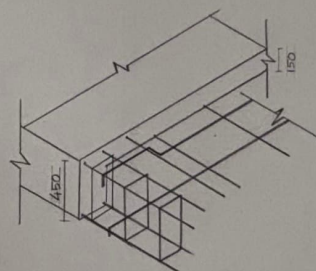
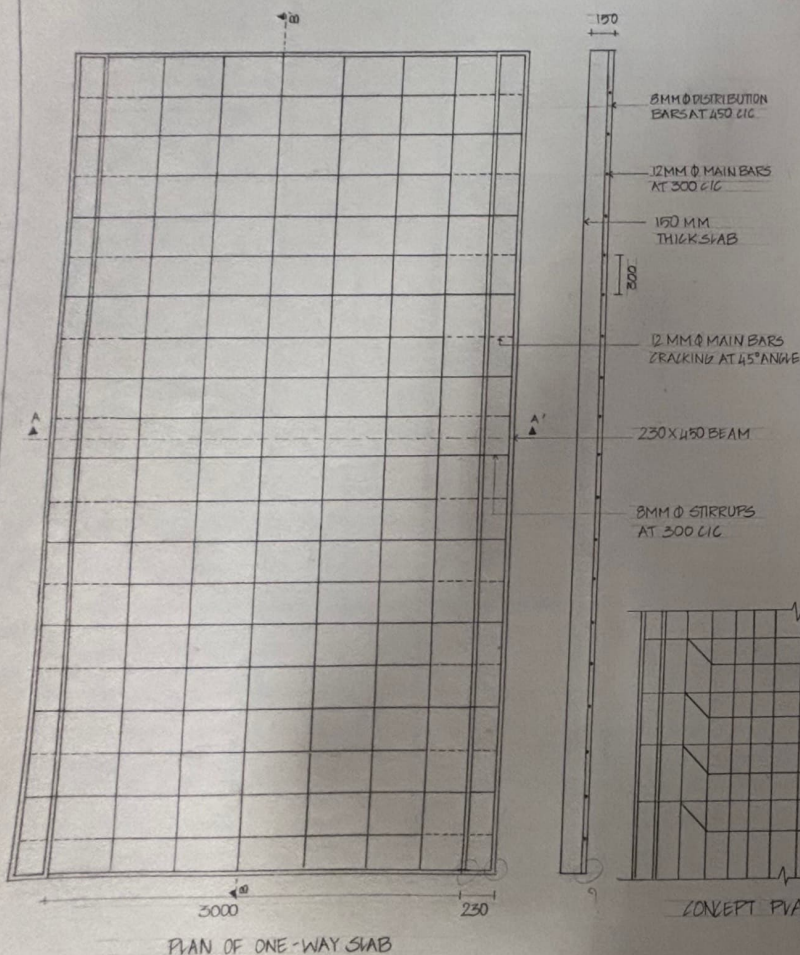
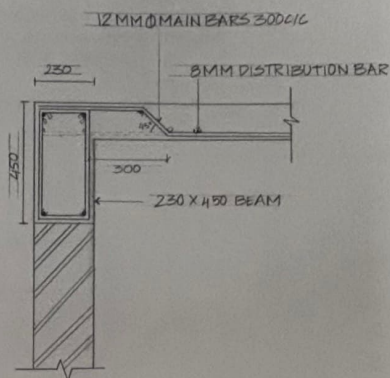
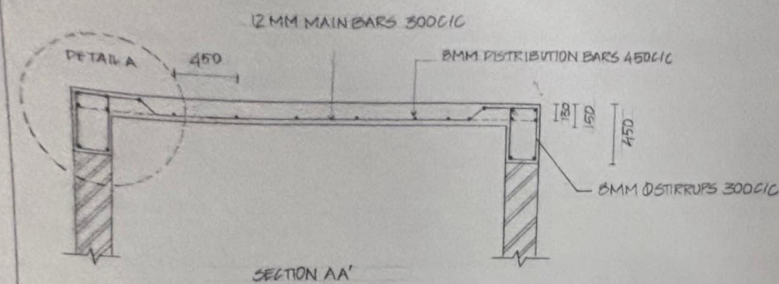
21ARC32

NAME : VANIESHA
VSN NO : 1AA23AT031
SEMESTER : THIRD
COLLEGE : ANRUSA

S.NO	CONTENT
1	ONE-WAY SLAB
2.	TWO-WAY SLAB
3	CONTINUOUS SLAB
4	CANTILEVER SLAB & SLOPE ROOF
5.	RCC VAULTS
6	RCC DOMES
7.	TYPES OF FLOORING -I
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10.	JACK ARCH ROOF
11.	MADRAS TILE ROOF
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13	GUNA ROOF
14	TYPES OF ROOFING

AL-HARYA S HRY SCHOOL OF ARCHITECTURE	
EXTERNAL EXAMINER:	INTERNAL EXAMINER:





ALL DIMENSIONS ARE IN MM

ONE WAY SLAB

ONE WAY SLAB IS A SLAB WHICH IS SUPPORTED BY BEAMS ON THE TWO OPPOSITE SIDES TO CARRY THE LOAD ALONG ONE DIRECTION. THE RATIO OF LONGER SPAN TO SHORTER SPAN IS EQUAL TO OR GREATER THAN 2.

$$\frac{\text{LONGER SPAN}}{\text{SHORTER SPAN}} = \frac{L_y}{L_x} \geq 2$$

DUE TO THE HUGE DIFFERENCE IN LENGTHS, THE LOAD IS NOT TRANSFERRED TO THE SHORTER BEAMS.

MAIN REINFORCEMENT IS PROVIDED IN SHORTER SPAN AND DISTRIBUTION REINFORCEMENT IN A LONGER SPAN.

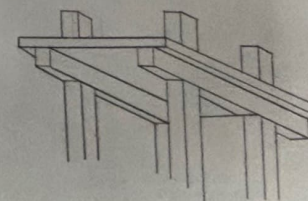
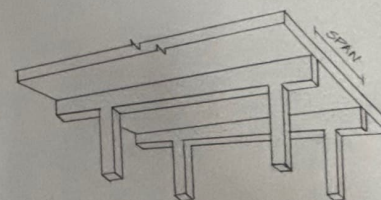
EXAMPLE: GENERALLY ALL THE CANTILEVER SLABS ARE ONE WAY SLAB. CHALLIES AND VERRANDAS ARE A PRACTICAL EXAMPLE OF ONE-WAY SLAB.

MAIN STEEL: TO CARRY THE BENDING MOMENTS GENERATED ALONG THAT DIRECTION.

DISTRIBUTION STEEL: IT DISTRIBUTES THE EFFECTS OF POINT LOAD ON THE SLAB MORE EVENLY AND UNIFORMLY.

IT DISTRIBUTES THE SHRINKAGE AND TEMPERATURE CRACKS MORE EVENLY. IT KEEPS MAIN REINFORCEMENT IN POSITION.

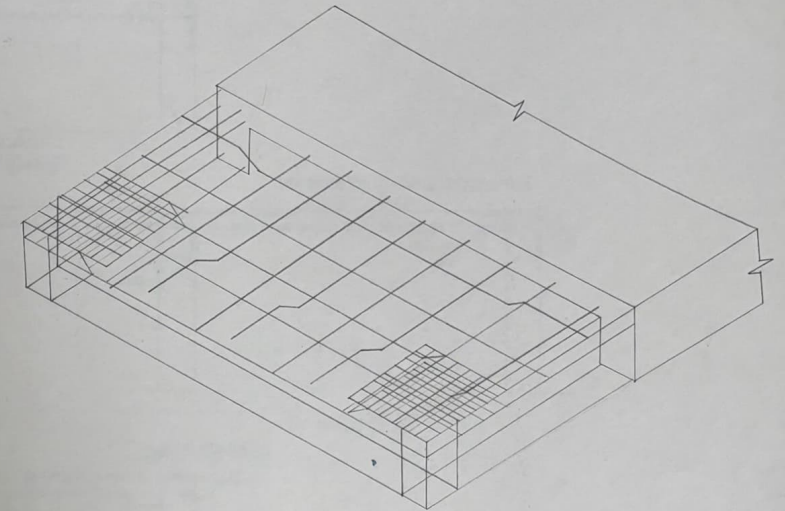
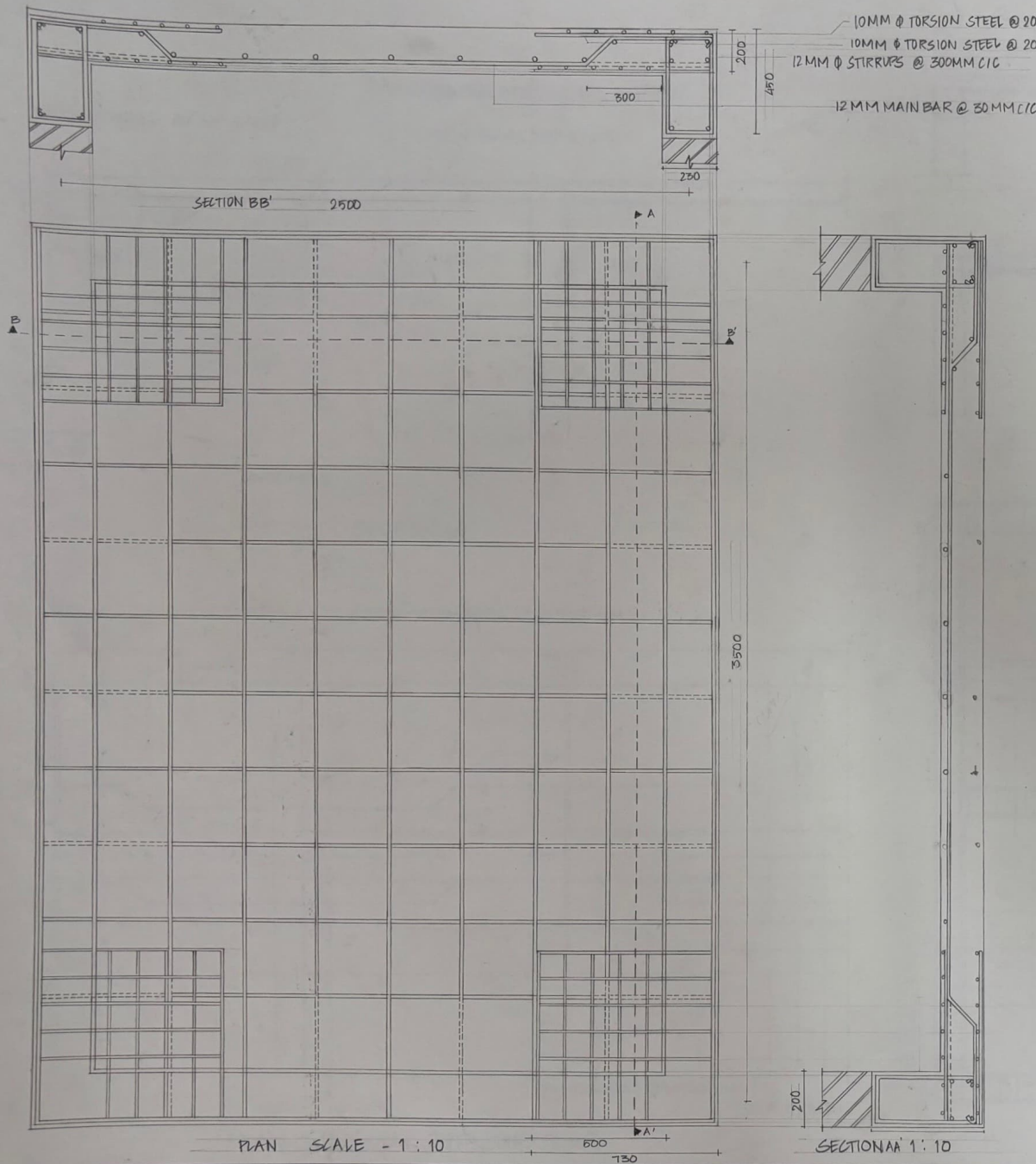
SLABS: SLABS ARE CONSTRUCTED TO PROVIDE FLAT SURFACES, USUALLY HORIZONTAL IN BUILDING FLOORS, ROOFS, BRIDGES, AND OTHER TYPES.



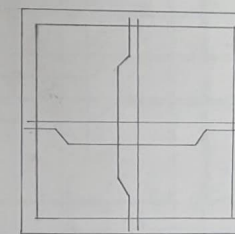
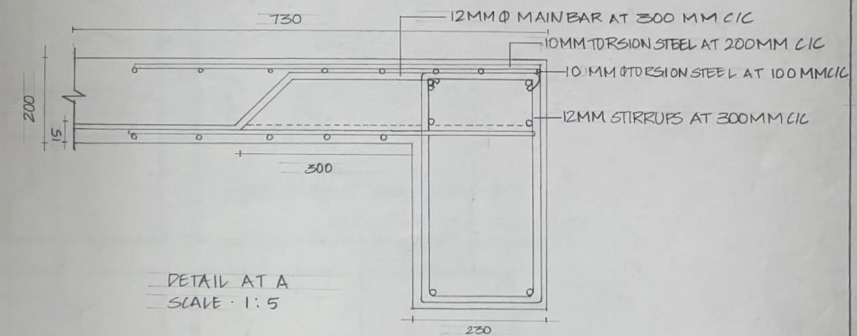
ONE-WAY SLAB WITH BEAMS

ONE - WAY SLAB

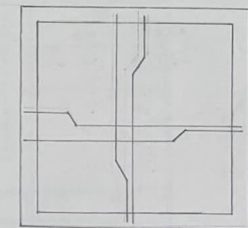
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USN NO	18A23AT031	1
SEMESTER	THIRD	
SUBJECT	MMBC-III	
COLLEGE	ANRUSA	



ISOMETRIC VIEW SCALE - 1:20



CRANKING ON BOTH SIDE

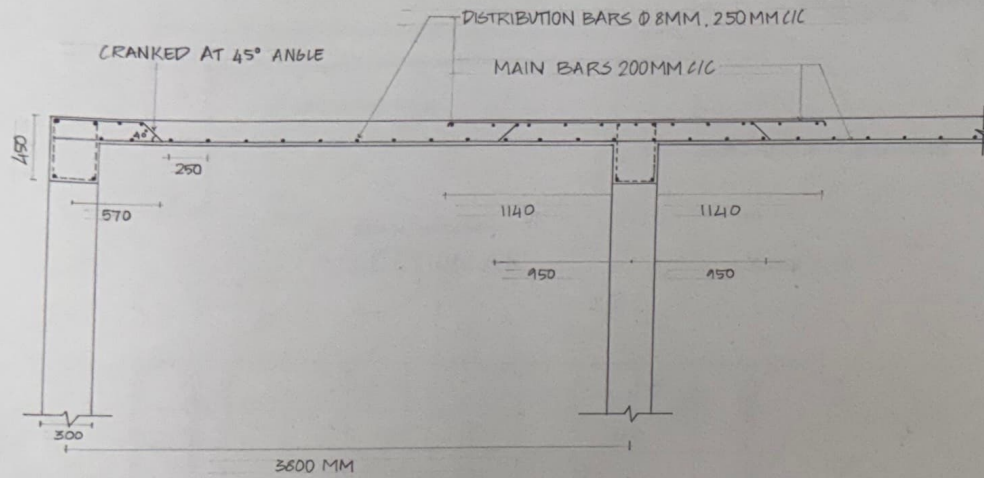


CRANKING ON ALTERNATIVE SIDES

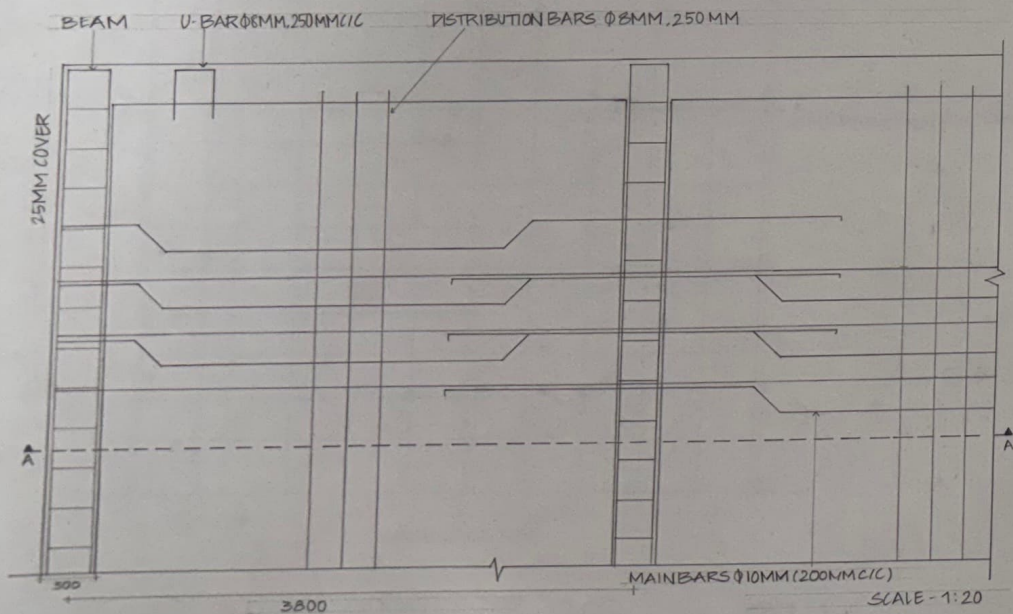
ALL DIMENSIONS IN MM

TWO-WAY SLAB

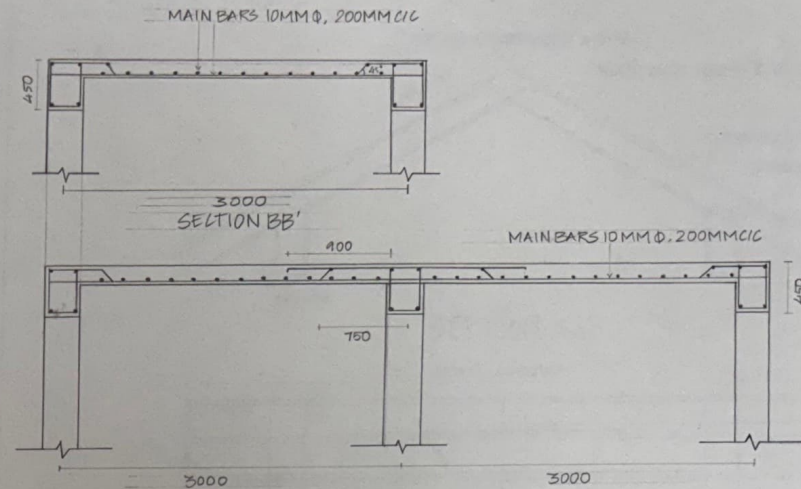
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SEMESTER	THIRD	
SUBJECT	MMBEC - III	
COLLEGE	ANRUSA	



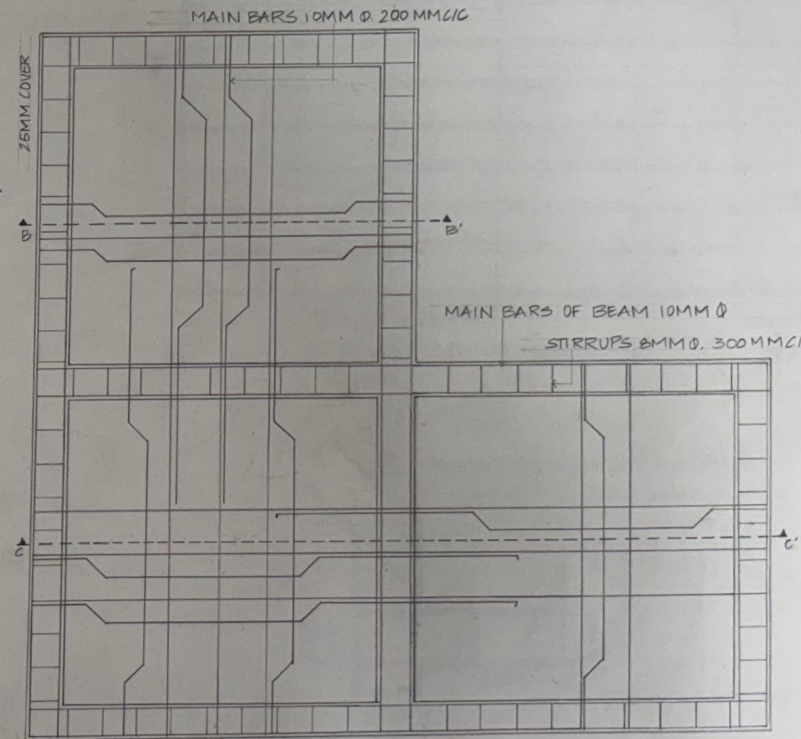
SECTION AA'



PLAN OF ONE-WAY CONTINUOUS SLAB



SECTION CC'



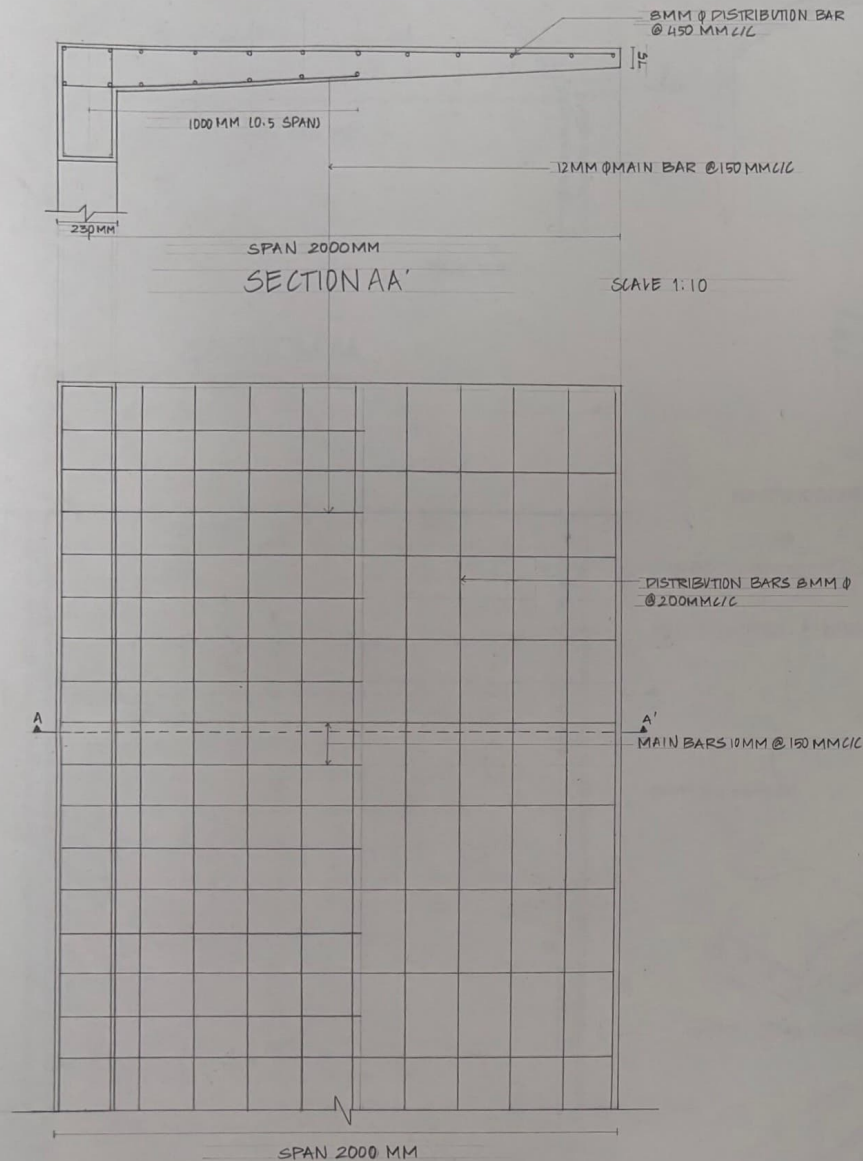
PLAN OF TWO-WAY CONTINUOUS SLAB

ALL DIMENSIONS IN MM

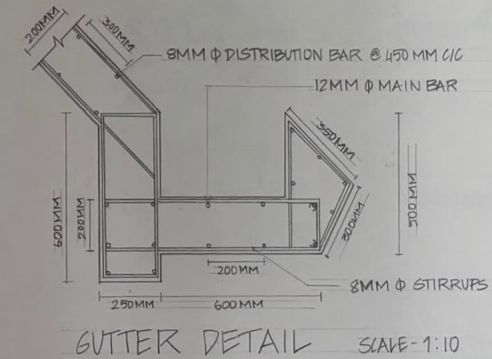
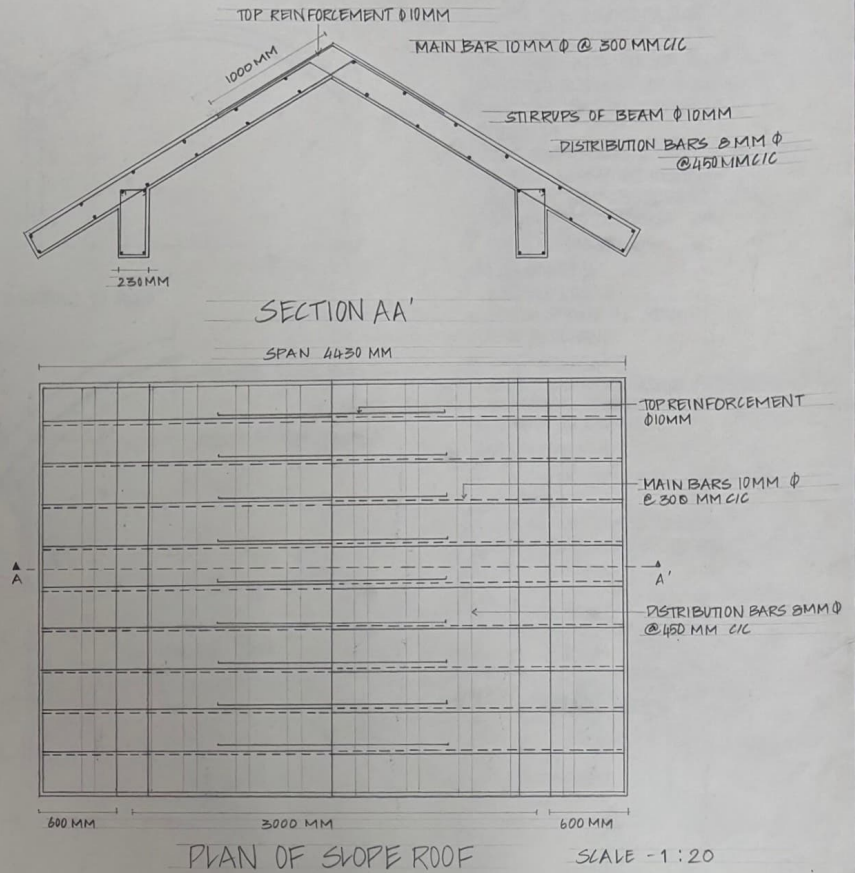
CONTINUOUS SLAB

SIGNATURE	NAME	VANIESHA	SHEET NO
	USN NO	1AA23AT031	3
	SEMESTER	THIRD	
	SUBJECT	MMBC-III	
	COLLEGE	ANRUSA	

RCC CANTILEVER SLAB

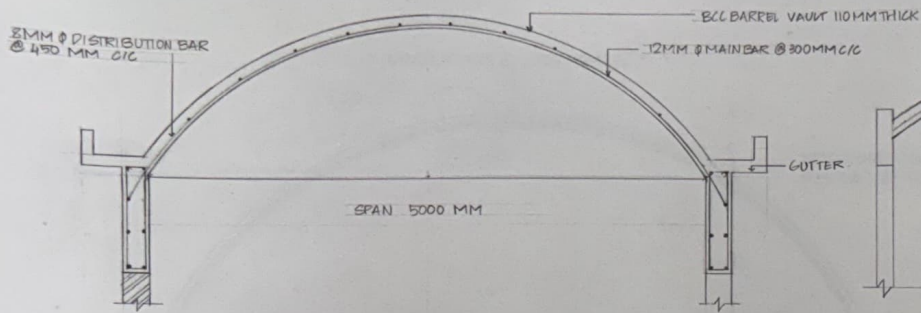


RCC SLOPE ROOF



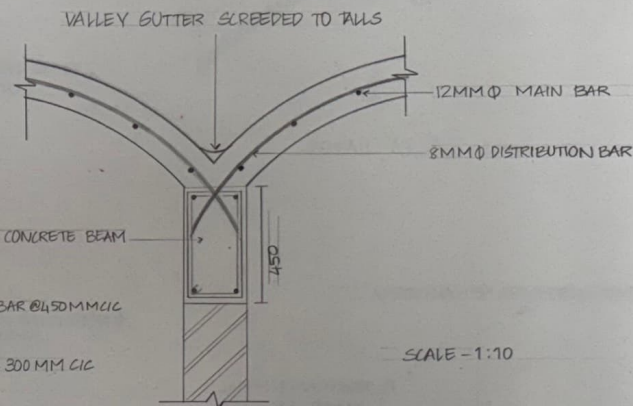
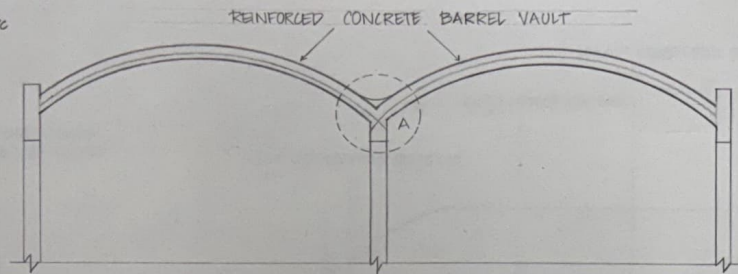
CANTILEVER SLAB & SLOPE ROOF

SIGNATURE	NAME : VANIESHA	SHEET NO
VEN NO : 1AA23AT031		
SEMESTER : THIRD		
SUBJECT : MMBCE-III		
COLLEGE : ANRVSA		



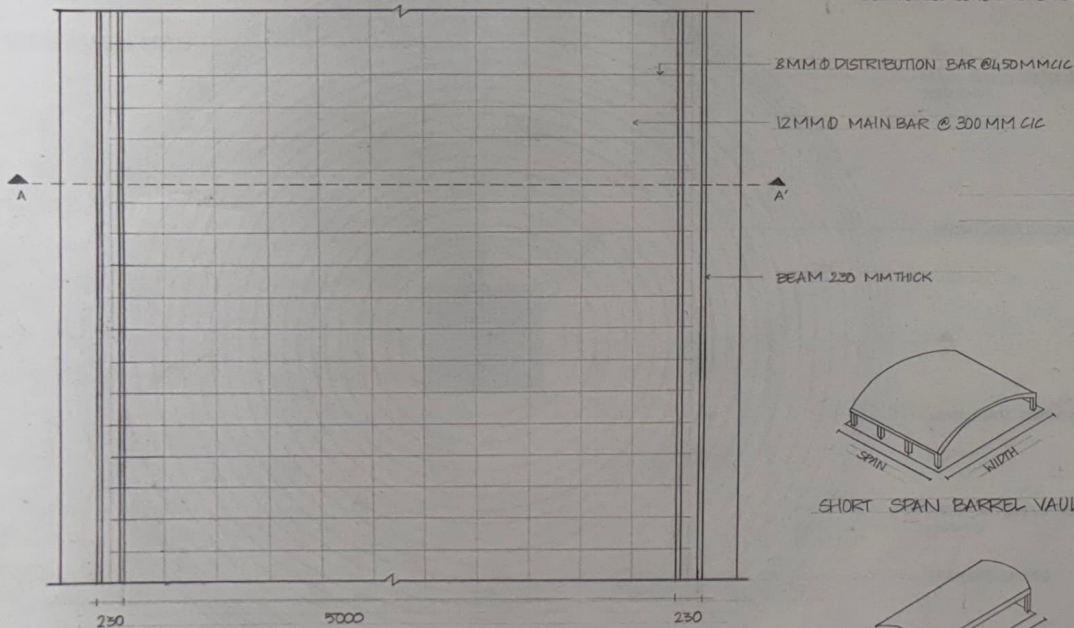
SCALE - 1:25

SECTION AA'

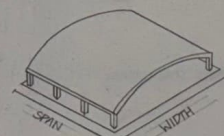


SCALE - 1:10

DETAILING AT A



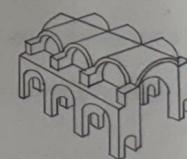
PLAN SCALE - 1:25



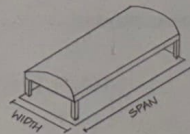
SHORT SPAN BARREL VAULT



SINGLE VAULT



MULTIPLE VAULTS



LONG SPAN BARREL VAULT



DOUBLE VAULT

RCC VAULTS:

- VAULT: A THREE-DIMENSION ARCHED CEILING CONSTRUCTION TO SUPPORT A FLOOR OR ROOF. OFTEN OF MASONRY
- RCC VAULTS ARE CURVED REINFORCED CONCRETE STRUCTURES DESIGNED FOR STRENGTH, DURABILITY, & EFFICIENT LOAD DISTRIBUTION.

PROPERTIES:

- HIGH COMPRESSIVE & TENSILE STRENGTH
- DURABLE & WEATHER RESISTANT
- EFFICIENT LOAD DISTRIBUTION OVER SPANS
- RESISTANT TO CRACKING WITH PROPER REINFORCEMENT

ADVANTAGES:

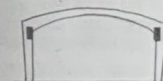
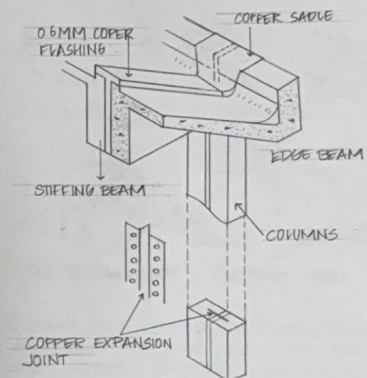
- FLEXIBLE DESIGN
- STRONG STRUCTURAL STABILITY
- FIRE RESISTANT

DISADVANTAGES:

- HEAVY WEIGHT INCREASE FOUNDATION COST
- REQUIRES SKILLED LABOR
- PRONE TO CRACKS

APPLICATIONS:

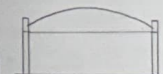
- ROOFS FOR COMMERCIAL & INDUSTRIAL BUILDINGS
- STORAGE STRUCTURES LIKE TANKS
- BRIDGES, CULVERTS & UNDERGROUND PASSAGES



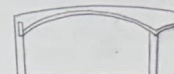
UPSTAND ARCH RIB



DOWNSTAND ARCH RIB



DOWNSTAND STIFFENING BEAM

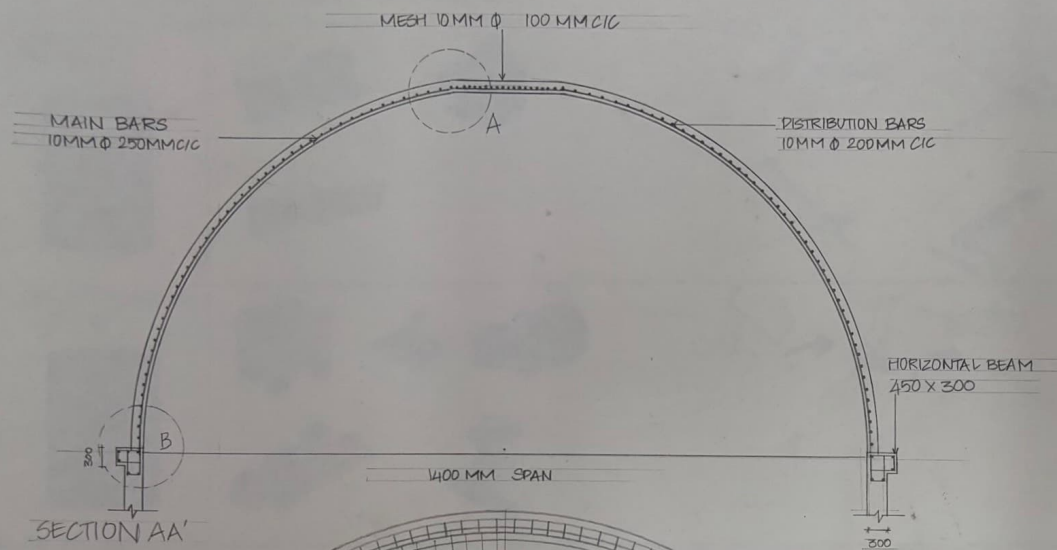


UPSTAND STIFFENING BEAM

RCC VAULTS

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5



BOTTOM VIEW PLAN

SECTION AA'

A

A'

MAIN BARS 10MM ϕ 250 C-C

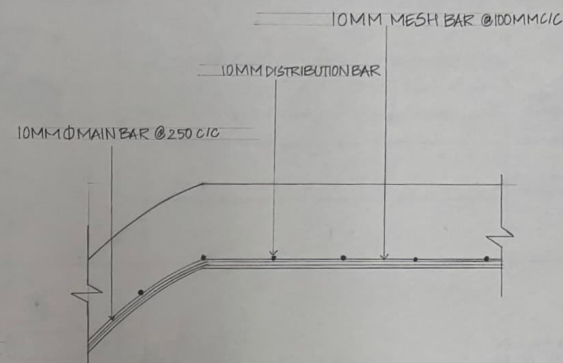
MESH 2000 X 2000MM

MAIN BAR 10MM ϕ

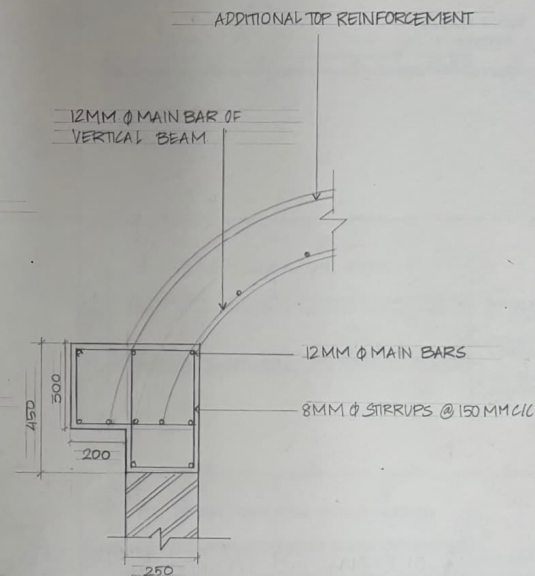
DISTRIBUTION BARS 10MM ϕ

STIRRUPS 8MM ϕ

TOP VIEW PLAN



DETAIL AT A' SCALE - 1:30



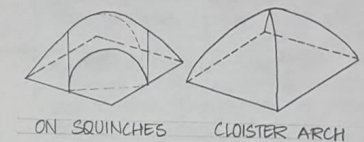
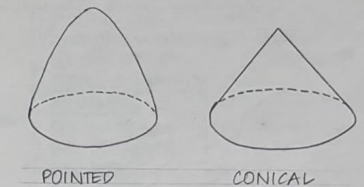
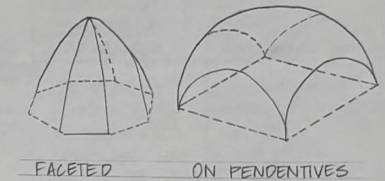
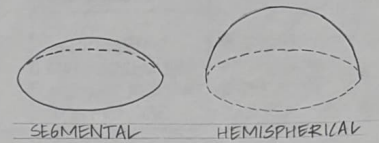
DETAIL AT B SCALE - 1:10

ALL DIMENSIONS IN MM

DOMES :

DOMES IS A ROUNDED VAULT FORMING THE ROOF OF A BUILDING OR STRUCTURE, TYPICALLY WITH A CIRCULAR.

TYPES OF DOMES :



RCC DOMES ARE CURVED STRUCTURES MADE OF REINFORCED CONCRETE, KNOWN FOR THEIR STRENGTH, MATERIAL EFFICIENCY AND AESTHETIC APPEAL. THEY DISTRIBUTE LOADS EVENLY & USE STEEL REINFORCED FOR DURABILITY. COMMON IN TEMPLES, AUDITORIUMS, AND SPORT COMPLEXES.

MERIDIONAL BARS: USED TO RESIST COMPRESSIVE FORCE, ACTING ALONG THE LONGITUDINAL LINES OF THE DOME

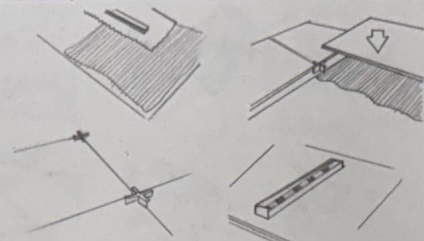
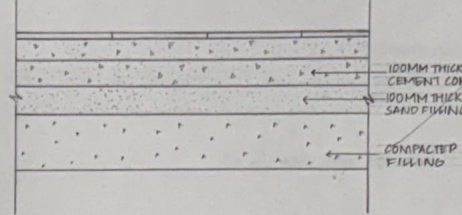
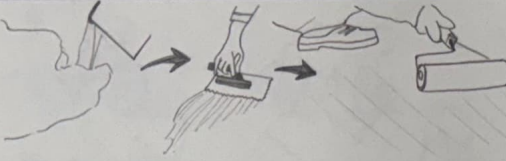
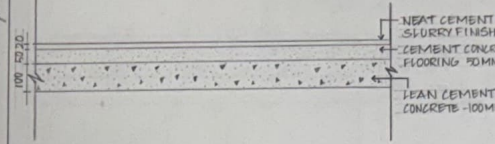
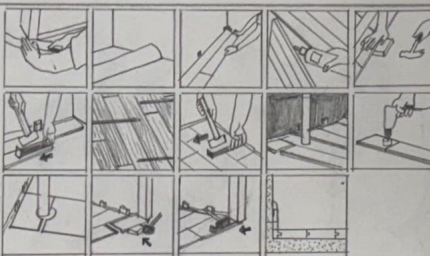
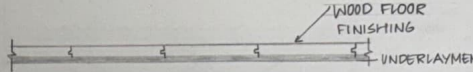
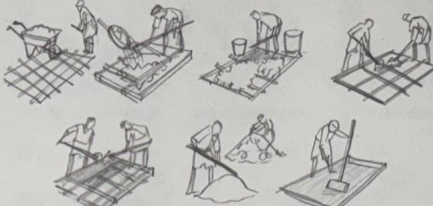
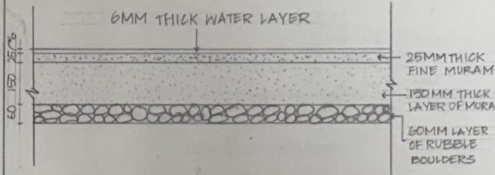
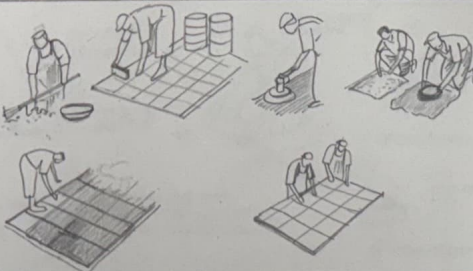
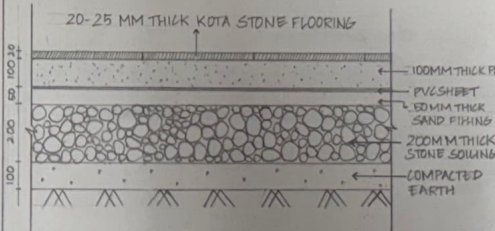
HOOP BARS: RESIST THE CIRCUMFERENTIAL TENSION FORCES ACTING AROUND THE DOME'S CIRCUMFERENCE, ESSENTIALLY PROVIDING STABILITY AGAINST OUTWARD PRESSURE BY ACTING LIKE RINGS AROUND THE STRUCTURE

BOTH ARE CRUCIAL FOR MAINTAINING THE STRUCTURAL INTEGRITY OF A DOME UNDER LOAD

RCC DOMES

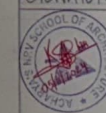
SIGNATURE	NAME	VANIESHA	SHEET NO
UN NO	1AA23AT031		
SEMESTER	THIRD		
SUBJECT	MMBC-III		
COLLEGE	ANRUSA		

6

FLOORING TYPES	EQUIPMENTS	PROCESS	SECTION	PROPERTIES				
1. CERAMIC TILE FLOORING 				• DURABLE AND HARD • WATER AND STAIN-RESISTANT • AVAILABLE IN VARIOUS COLORS AND STYLES • EASY TO CLEAN • HEAT AND SCRATCH-RESISTANT <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> • LONG-LASTING • LOW MAINTENANCE • MOISTURE RESISTANT • EEO-FRIENDLY </td><td> • COLD & HARD UNDERFOOT • CAN BE SLIPPERY • DIFFICULT TO INSTALL • CAN CRACK IN PRESSURE </td></tr></table>	ADVANTAGES	DISADVANTAGES	• LONG-LASTING • LOW MAINTENANCE • MOISTURE RESISTANT • EEO-FRIENDLY	• COLD & HARD UNDERFOOT • CAN BE SLIPPERY • DIFFICULT TO INSTALL • CAN CRACK IN PRESSURE
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2. CEMENT CONCRETE FLOORING 				• DURABLE & STRONG • LOW MAINTENANCE • FIRE-RESISTANT • VERSATIVE & EEO-FRIENDLY <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> • COST-EFFECTIVE • RESISTANT TO MOISTURE • SUSTAINABLE FOR HIGH TRAFFIC AREAS • REFLECTS LIGHT </td><td> • CAN BE SLIPPERY • DIFFICULT TO REPAIR CRACKS • HEAVY MATERIAL, REQUIRES STRONG SUBFLOOR SUPPORT </td></tr></table>	ADVANTAGES	DISADVANTAGES	• COST-EFFECTIVE • RESISTANT TO MOISTURE • SUSTAINABLE FOR HIGH TRAFFIC AREAS • REFLECTS LIGHT	• CAN BE SLIPPERY • DIFFICULT TO REPAIR CRACKS • HEAVY MATERIAL, REQUIRES STRONG SUBFLOOR SUPPORT
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3. WOODEN FLOORING 				• DURABLE, WARM & NATURAL AESTHETIC • AVAILABLE IN HARDWOOD & ENGINEERED TYPES • THERMAL COMFORT • OFFERS A RANGE OF FINISHES & COLORS <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> • ENHANCE BEAUTY • EASY TO MAINTAIN • COMFORTABLE & PROVIDES GOOD INSULATION • CAN BE REFINISHED MULTIPLE TIMES </td><td> • SUSCEPTIBLE TO MOISTURE, HUMIDITY & TEMPERATURE CHANGES • PRONE TO SCRATCHES, DENTS, & WEAR • HIGH INITIAL COST </td></tr></table>	ADVANTAGES	DISADVANTAGES	• ENHANCE BEAUTY • EASY TO MAINTAIN • COMFORTABLE & PROVIDES GOOD INSULATION • CAN BE REFINISHED MULTIPLE TIMES	• SUSCEPTIBLE TO MOISTURE, HUMIDITY & TEMPERATURE CHANGES • PRONE TO SCRATCHES, DENTS, & WEAR • HIGH INITIAL COST
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4. MURAM FLOORING 				• NATURAL SOIL MIX (CLAY, SAND, SILT) • MODERATE STRENGTH, WITHSTANDS FOOT TRAFFIC • GOOD DRAINAGE, PREVENTS WATER ACCUMULATION • EARTHY COLOR, VISUALLY APPEALING <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> • EEO-FRIENDLY & BIODEGRADABLE • LOW MAINTENANCE, EASY TO REPAIR • PROVIDES THERMAL COMFORT </td><td> • LIMITED DURABILITY (COMPARED TO HARD SURFACES) • SUSCEPTIBLE TO EROSION • CAN PROMOTE WEED GROWTH </td></tr></table>	ADVANTAGES	DISADVANTAGES	• EEO-FRIENDLY & BIODEGRADABLE • LOW MAINTENANCE, EASY TO REPAIR • PROVIDES THERMAL COMFORT	• LIMITED DURABILITY (COMPARED TO HARD SURFACES) • SUSCEPTIBLE TO EROSION • CAN PROMOTE WEED GROWTH
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5. KOTA STONE FLOORING 				• MATERIAL: NATURAL SEDIMENTARY STONE • HIGHLY DURABLE, WEAR-RESISTANT • ROUGH TEXTURE PROVIDES SLIP-RESISTANT • STAYS COOL IN HOT CLIMATES • AVAILABLE IN DIFFERENT SIZES & FINISHES <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> • LONG-LASTING, LOW MAINTENANCE • COST-EFFECTIVE • ENHANCES AESTHETICS • SUITABLE FOR INDOOR & OUTDOOR USE </td><td> • PRONE TO STAINING IF UNSEALED • HEAVY, REQUIRES STRONG SUPPORTS • LIMITED COLOUR OPTIONS </td></tr></table>	ADVANTAGES	DISADVANTAGES	• LONG-LASTING, LOW MAINTENANCE • COST-EFFECTIVE • ENHANCES AESTHETICS • SUITABLE FOR INDOOR & OUTDOOR USE	• PRONE TO STAINING IF UNSEALED • HEAVY, REQUIRES STRONG SUPPORTS • LIMITED COLOUR OPTIONS
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TYPES OF FLOORINGS-I

SIGNATURE	NAME : VANIESHA	SHEET NO
USN NO : 1AA23ATD31		
SEMESTER : THIRD		
SUBJECT : MMBC-III		
COLLEGE : ANRYSA		



FLOORING TYPES

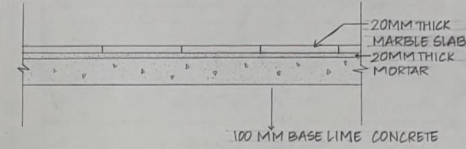
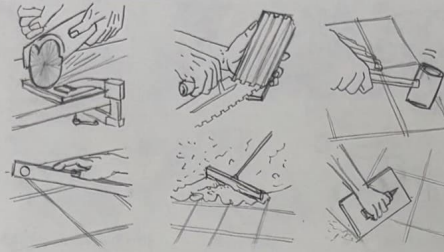
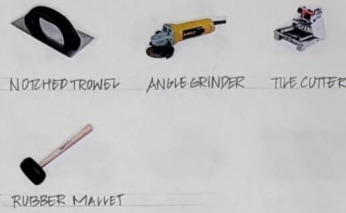
EQUIPMENTS

PROCESS

SECTION

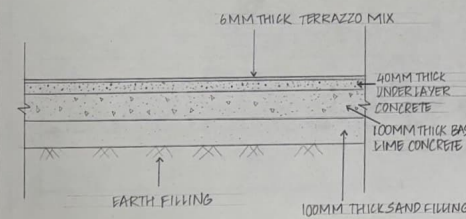
PROPERTIES

6. MARBLE STONE FLOORING



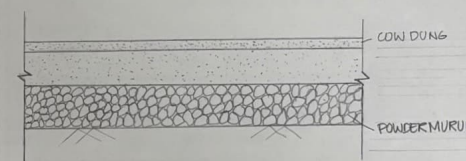
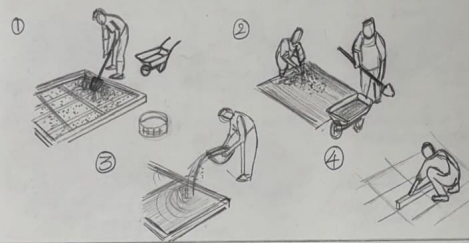
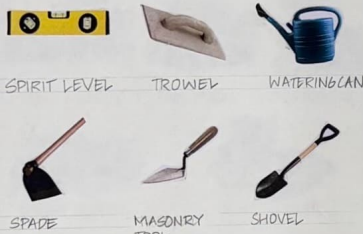
- NATURAL STONE WITH UNIQUE VEINING
 - SMOOTH & GLOSSY SURFACE
 - HIGH DENSITY, MAKING IT DURABLE
 - WIDE RANGE OF COLORS & PATTERNS
- | ADVANTAGES | DISADVANTAGES |
|--|-------------------------------------|
| ELEGANT, LUXURIOUS APPEARANCE | PRONE TO SCRATCHES & STRAINS |
| LONG LASTING | REQUIRES REGULAR MAINTENANCE |
| SUITABLE FOR BOTH COOL & WARM CLIMATES | SLIPPERY WHEN WET |
| REFLECTS LIGHT | COLD TO TOUCH, UNCOMFORTABLE WINTER |

7. TERRAZZO FLOORING



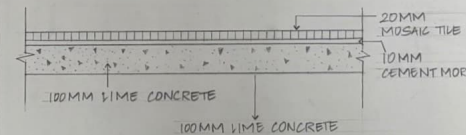
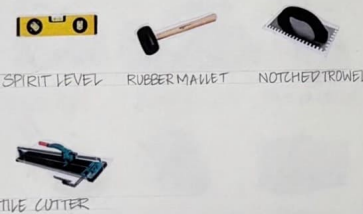
- DURABLE, MADE FROM MARBLE OR GLASS CHIPS IN CEMENT OR EPOXY
 - HIGHLY POLISHED FINISH WITH A SMOOTH SURFACE
 - AVAILABLE IN WIDE RANGE OF COLORS
- | ADVANTAGES | DISADVANTAGES |
|-------------------|--------------------------------|
| EXTREMELY DURABLE | EXPENSIVE TO INSTALL |
| LOW MAINTENANCE | COLD UNDERFOOT |
| ECO-FRIENDLY | SLIPPERY WHEN WET |
| SCRATCH-RESISTANT | CAN CRACK ON UNSTABLE SURFACES |
| CUSTOMIZABLE | |

8. MUD FLOORING



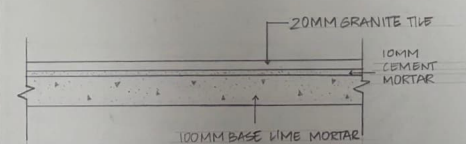
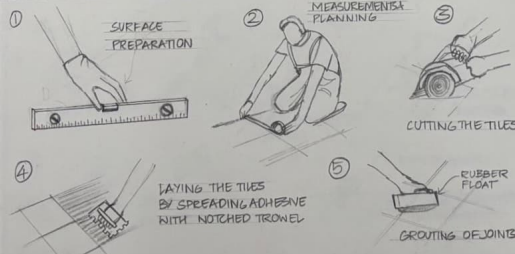
- NATURAL MATERIAL
 - GOOD THERMAL INSULATION
 - BREATHABLE
 - SOFT SURFACE
 - REQUIRES WATER TO MAINTAIN
- | ADVANTAGES | DISADVANTAGES |
|----------------------------|-------------------------------|
| ECO-FRIENDLY & SUSTAINABLE | PRONE TO EROSION |
| LOW COST | REQUIRES FREQUENT MAINTENANCE |
| COMFORTABLE IN HOT CLIMATE | SUSCEPTIBLE TO WATER DAMAGE |

9. MOSAIC FLOORING



- MADE OF SMALL TILE PIECES
 - VARIETY OF COLORS & DESIGNS
 - SMOOTH SURFACE
 - RESISTANT TO WATER
 - VERSATIVE IN DESIGN
- | ADVANTAGES | DISADVANTAGES |
|------------------------|---------------------------|
| HIGHLY DECORATIVE | TIME CONSUMING TO INSTALL |
| LONG-LASTING | EXPENSIVE |
| EASY TO CLEAN | REQUIRES SKILLED LABOUR |
| SUITABLE FOR WET AREAS | CAN CHIP OR CRACK |
| RESISTANT TO STAINS | |

10. GRANITE FLOORING

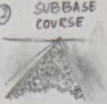
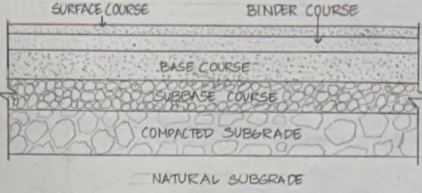
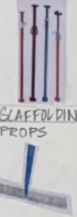
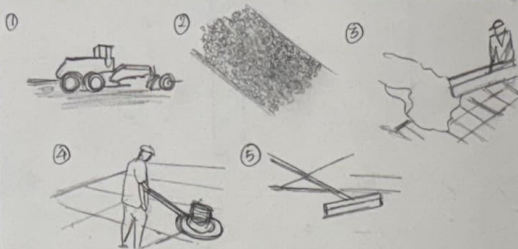
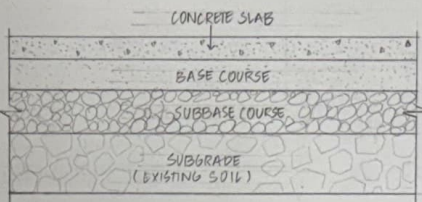
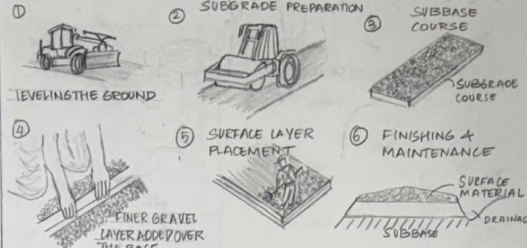
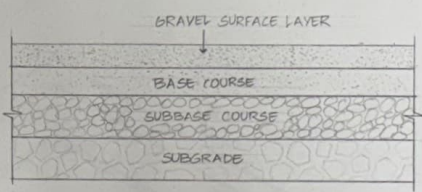
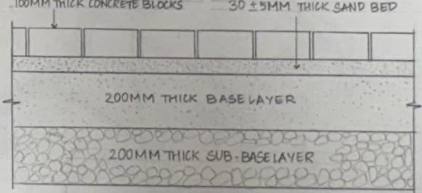
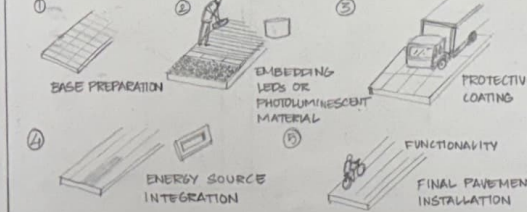
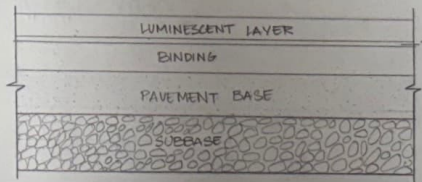


- NATURAL STONE
 - HARD AND DENSE
 - POLISHED SURFACE
 - AVAILABLE IN VARIOUS COLORS
 - SCRATCH-RESISTANT
- | ADVANTAGES | DISADVANTAGES |
|--------------------------|--------------------------------------|
| EXTREMELY DURABLE | EXPENSIVE |
| HEAT & SCRATCH RESISTANT | COLD UNDERFOOT |
| ADDS VALUE TO PROPERTY | REQUIRES SEALING TO PREVENT STAINING |
| LOW MAINTENANCE | SLIPPERY WHEN WET |

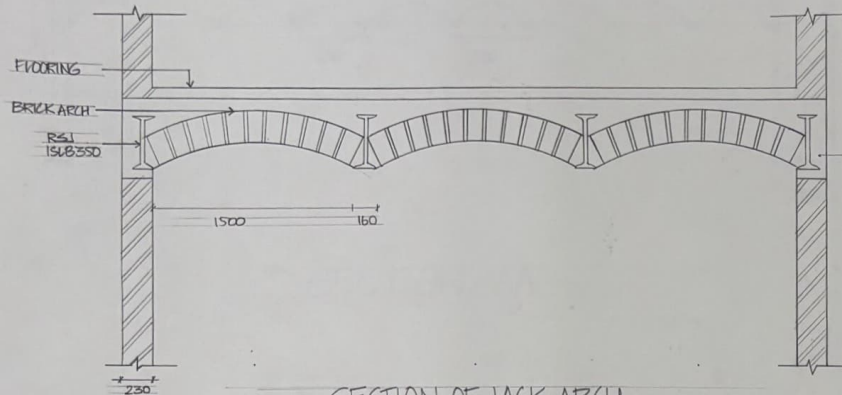
TYPES OF FLOORINGS - II

SIGNATURE	NAME : VANIESHA	SHEET NO
USNNO : 1AA23AT031		
SEMESTER : THIRD		
SUBJECT : MMBC-III		
COLLEGE : ANRVSA		

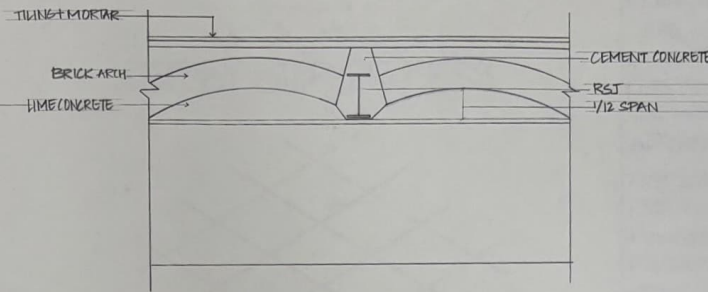
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PAVEMENT TYPES	EQUIPMENTS	PROCESS	SECTION	PROPERTIES				
1. FLEXIBLE PAVEMENT 	 EXCAVATOR  MOTOR GRADER  BULLDOZER  ASPHALT MIX PLANT  ROAD ROLLER  WATER TANK	 ① SUBGRADE PREPARATION  ② SUBBASE COURSE  ③ BASE COURSE  ④ BITUMINOUS COAT  ⑤ PAVING ASPHALT MIX  ⑥ ROLLING  ⑦ SEAL COAT		- MADE OF ASPHALT LAYERS - ADAPTS TO MIRROR GROUND MOVEMENTS - OFFERS A SMOOTH, ELASTIC SURFACE - BUILT IN MULTIPLE LAYERS FOR FLEXIBILITY <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> - QUICK & EASY TO REPAIR - LOW INITIAL COST - LESS NOISE DURING TRAVEL - SKID-RESISTANCE </td><td> - SHORT LIFESPAN THAN RIGID - PRONE TO RUTTING IN HEAVY TRAFFIC - VULNERABLE TO WEATHER CHANGES </td></tr></table>	ADVANTAGES	DISADVANTAGES	- QUICK & EASY TO REPAIR - LOW INITIAL COST - LESS NOISE DURING TRAVEL - SKID-RESISTANCE	- SHORT LIFESPAN THAN RIGID - PRONE TO RUTTING IN HEAVY TRAFFIC - VULNERABLE TO WEATHER CHANGES
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2. RIGID PAVEMENT 	 CONCRETE MIXER  PAVER MACHINE  SCAFFOLDING PROPS  BULLDOZER  CONCRETE FLOOR SAW			- MADE OF CONCRETE SLABS - HIGH STRENGTH & DURABILITY - LESS FLEXIBLE & MORE RIGID - WITHSTANDS HEAVY LOADS EFFECTIVELY <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> - LONG LIFESPAN - LOW MAINTENANCE NEEDS - RESISTANT TO DEFORMATION - WITHSTANDS EXTREME TEMPERATURE </td><td> - HIGH INITIAL COST - DIFFICULT & COSTLY TO REPAIR - LONGER CURING TIME - SUSCEPTIBLE TO CRACKING WITHOUT JOINTS </td></tr></table>	ADVANTAGES	DISADVANTAGES	- LONG LIFESPAN - LOW MAINTENANCE NEEDS - RESISTANT TO DEFORMATION - WITHSTANDS EXTREME TEMPERATURE	- HIGH INITIAL COST - DIFFICULT & COSTLY TO REPAIR - LONGER CURING TIME - SUSCEPTIBLE TO CRACKING WITHOUT JOINTS
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3. GRAVEL PAVEMENT 	 MOTOR GRADER  LOAD TRUCK  EXCAVATOR  WATER TANKER  ROAD ROLLER			- MADE OF COMPACTED CRUSHED STONE OR GRAVEL - PERMEABLE TO WATER - SIMPLE AND INEXPENSIVE STRUCTURE <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> - LOW CONSTRUCTION COST - GOOD DRAINAGE PROPERTIES - SUITABLE FOR TEMPORARY ROADS - ECO-FRIENDLY </td><td> - PERIODIC MAINTENANCE - DUSTY & PRONE TO EROSION - NOT DURABLE FOR HEAVY LOADS - UNEVEN SURFACE OVERTIME </td></tr></table>	ADVANTAGES	DISADVANTAGES	- LOW CONSTRUCTION COST - GOOD DRAINAGE PROPERTIES - SUITABLE FOR TEMPORARY ROADS - ECO-FRIENDLY	- PERIODIC MAINTENANCE - DUSTY & PRONE TO EROSION - NOT DURABLE FOR HEAVY LOADS - UNEVEN SURFACE OVERTIME
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4. INTERLOCKING CONCRETE PAVEMENTS 	 EXCAVATOR  MOTOR GRADER  PLATE COMPACTOR  PLATE COMPACTOR  CONCRETE CUTTING MACHINE  LOAD TRUCK			- MADE OF INTERLOCKING CONCRETE BLOCKS - FLEXIBLE YET DURABLE - DISTRIBUTES LOAD EVENLY - AESTHETIC & CUSTOMIZABLE DESIGNS <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> - EASY TO INSTALL - RESISTANT TO WEATHER & HEAVY LOADS - REDUCES WATER RUNOFF </td><td> - HIGH INITIAL MATERIAL COST - BLOCKS MAY LOOSEN OVERTIME - NOT IDEAL FOR HEAVY TRAFFIC </td></tr></table>	ADVANTAGES	DISADVANTAGES	- EASY TO INSTALL - RESISTANT TO WEATHER & HEAVY LOADS - REDUCES WATER RUNOFF	- HIGH INITIAL MATERIAL COST - BLOCKS MAY LOOSEN OVERTIME - NOT IDEAL FOR HEAVY TRAFFIC
ADVANTAGES	DISADVANTAGES							
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5. LIGHT EMITTING PAVEMENT 	 EXCAVATOR  ROAD ROLLER  UV CURING MACHINE  MORTAR MIXER  TROWEL  MEASURING LIGHTS			- PHOTOLUMINESCENT MATERIALS - ABSORB SUNLIGHT - GLOWS IN THE DARK FOR 8-12 HOURS AFTER CHARGING - DURABLE & RESISTANT TO WEATHER CONDITIONS <table><tr><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr><tr><td> - IMPROVES VISIBILITY - ENERGY-EFFICIENT - AESTHETIC - LOW MAINTENANCE - SUSTAINABLE </td><td> - HIGH COST - LIMITED BRIGHTNESS - SUNLIGHT-DEPENDENT - WEARS OUT - NEEDS SKILLED LABOURS </td></tr></table>	ADVANTAGES	DISADVANTAGES	- IMPROVES VISIBILITY - ENERGY-EFFICIENT - AESTHETIC - LOW MAINTENANCE - SUSTAINABLE	- HIGH COST - LIMITED BRIGHTNESS - SUNLIGHT-DEPENDENT - WEARS OUT - NEEDS SKILLED LABOURS
ADVANTAGES	DISADVANTAGES							
- IMPROVES VISIBILITY - ENERGY-EFFICIENT - AESTHETIC - LOW MAINTENANCE - SUSTAINABLE	- HIGH COST - LIMITED BRIGHTNESS - SUNLIGHT-DEPENDENT - WEARS OUT - NEEDS SKILLED LABOURS							

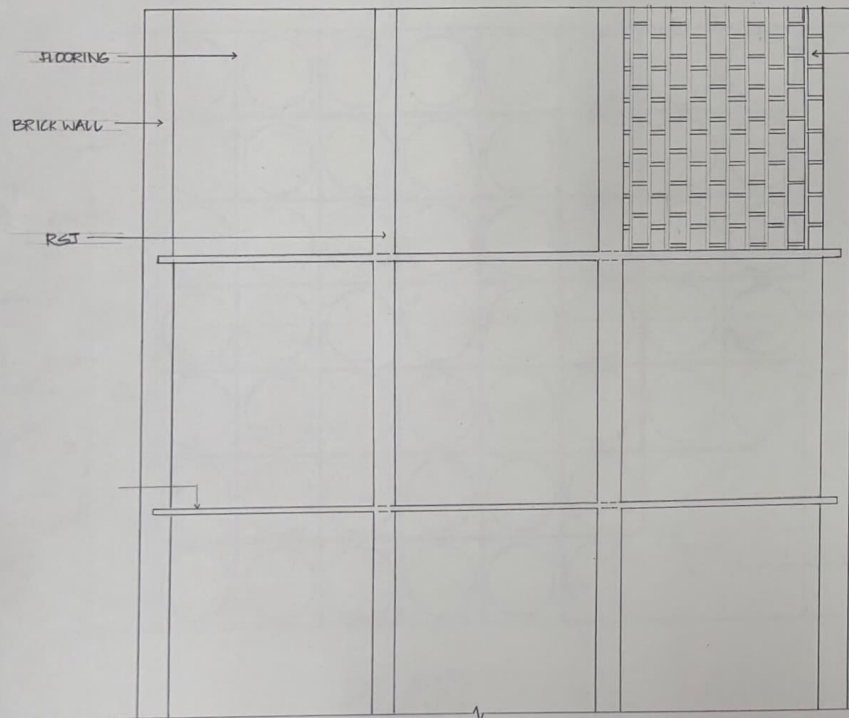
TYPES OF PAVEMENTS



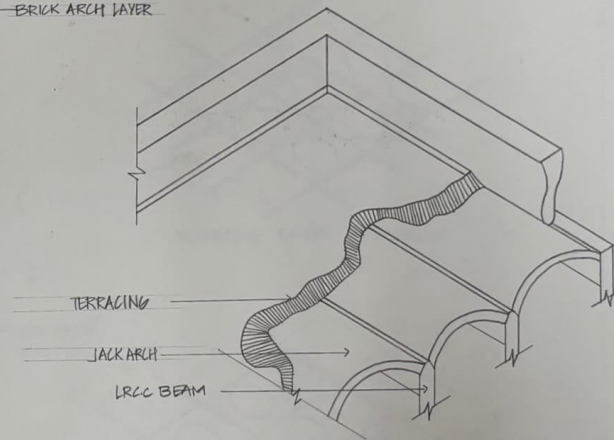
SECTION OF JACK ARCH



ALTERNATIVE TYPE



PLAN



ISOMETRIC VIEW

ALL DIMENSIONS IN MM
SCALE - 1:20

JACK ARCH ROOF :

PROPERTIES:

- CONSTRUCTION : CONSISTS OF BRICK OR CONCRETE ARCHES SPANNING BETWEEN STEEL I BEAMS OR RCC BEAMS
- SPAN : SUITABLE FOR SMALL TO MEDIUM SPAN (3-4 METERS)
- ARCHES DISTRIBUTE LOAD EFFICIENTLY TO THE SUPPORTING BEAMS
- TYPICALLY MADE OF BRICKS, STEEL, OR CONCRETE
- REQUIRE A HIGHER FLOOR-TO-FLOOR HEIGHT DUE TO ITS ARCHED PROFILE

ADVANTAGES:

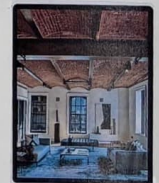
- USES LOCALLY AVAILABLE MATERIALS LIKE BRICKS
- OFFER GOOD FIRE PROOFING
- DURABLE - STRONG & LONG LASTING WHEN MAINTAINED WELL
- LOAD BEARING - EFFICIENTLY HANDLES HEAVY LOADS.

DISADVANTAGES:

- LIMITED SPAN - UNSUITABLE FOR LARGE SPANS
- HEAVY WEIGHT - ADDS SIGNIFICANT DEAD LOAD TO THE STRUCTURE
- LABOR INTENSIVE - REQUIRES SKILLED LABOR FOR CONSTRUCTION
- THERMAL INSULATION - POOR UNLESS INSULATED, LEADING TO HEAT TRANSFER.

APPLICATIONS:

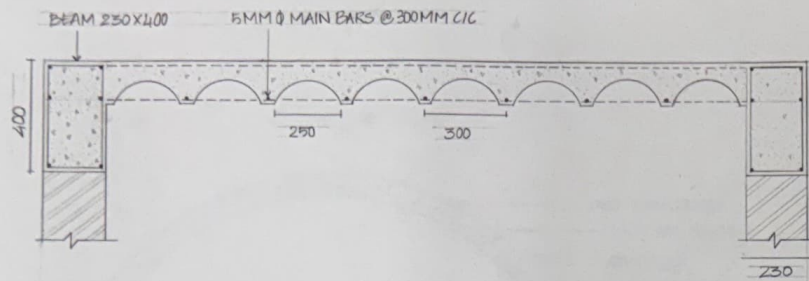
- RESIDENTIAL & RURAL HOUSING
- INDUSTRIAL SHEDS
- SMALL COMMERCIAL BUILDINGS
- AFFORDABLE TEMPORARY SHELTERS.



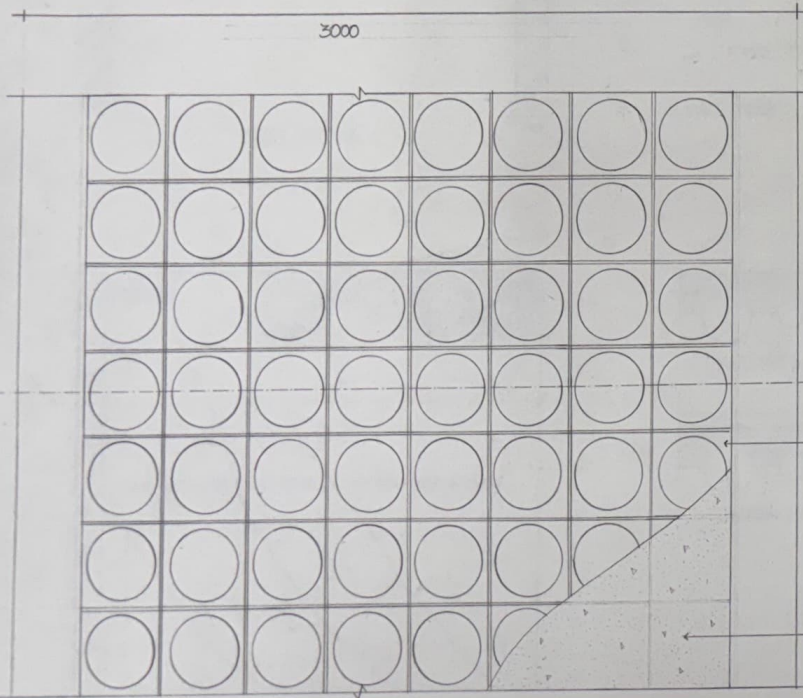
JACK ARCH ROOF

SIGNATURE	NAME : VANIESHA	SHEET NO
USN NO : 1AA23AT031		
SEMESTER : THIRD		
SUBJECT : MMBC-III		
COLLEGE : ANRUSA		

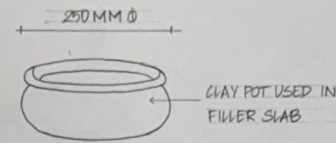
10



SECTION-AA'

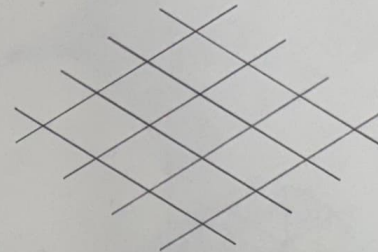


PLAN

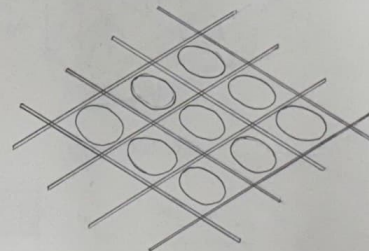


CLAY POT USED IN FILLER SLAB

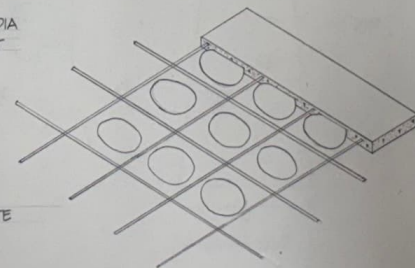
STEP BY STEP PROCESS



PLACING REINFORCEMENT BARS



INSERTING FIBER MATERIALS



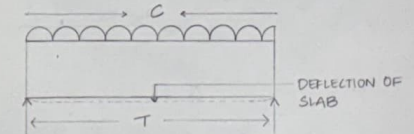
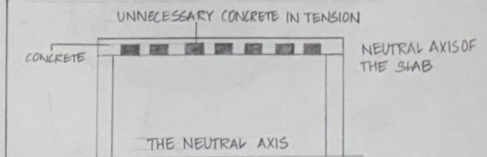
POURING CONCRETE OVER IT

NOTES:

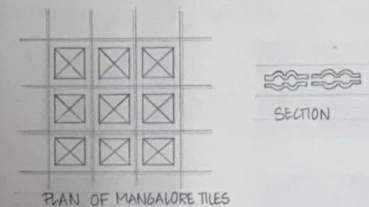
- FILLER SLAB TECHNOLOGY IS INNOVATIVE & COST-EFFECTIVE TECHNOLOGY
- DEAD LOAD OF THE SLAB IS REDUCED BY REPLACING THE CONCRETE WITH THE FILLER MATERIAL
- ROOFS ARE SIMPLY SUPPORTED, THE LOWER PART OF THE SLAB IS SUBJECTED TO TENSIVE FORCES WHILE THE UPPER PART IS SUBJECTED TO COMPRESSIVE FORCES
- POTS, TERRACOTTA TILES, COCONUT SHELLS AND SOME OF THE MATERIALS USED IN FILLER SLAB

ADVANTAGES:

- COST-EFFECTIVE, REDUCES CONCRETE & STEEL
 - ECO-FRIENDLY, USES WASTE MATERIALS
 - LIGHTWEIGHT, LOWERS STRUCTURAL LOAD
- ## DISADVANTAGES:
- NEEDS SKILLED LABOUR
 - NOT FOR LARGE SPANS
 - TIME-CONSUMING CONSTRUCTION



- A CONVENTIONAL RCC SLAB LOT OF CONCRETE IS WASTED AND IT NEEDS EXTRA REINFORCEMENT DUE TO ADDED LOAD OF CONCRETE
- FEWER LOADS GETTING TRANSFERRED TO THE LOAD-BEARING WALLS AND THE FOUNDATIONS



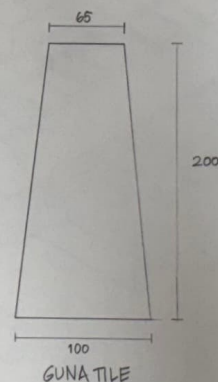
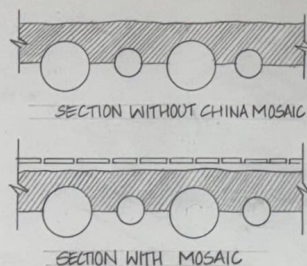
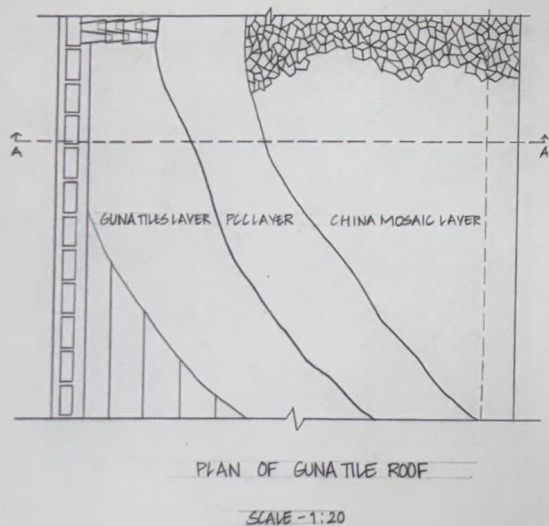
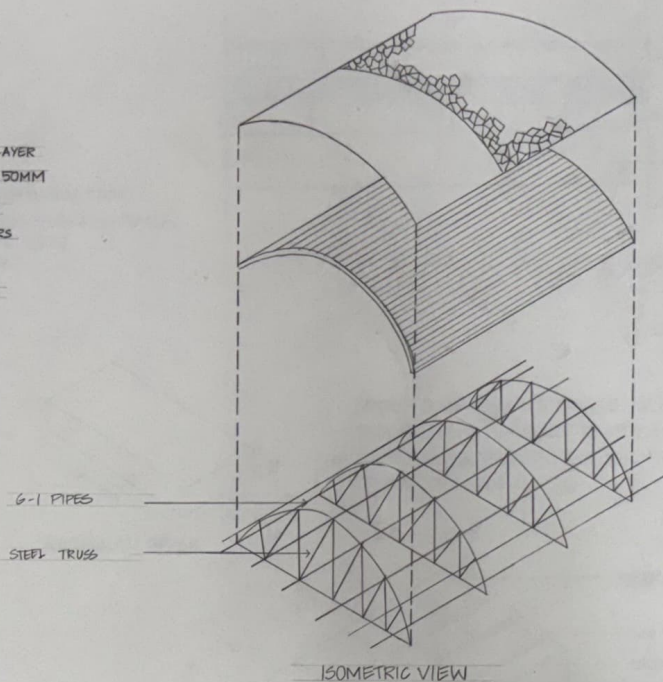
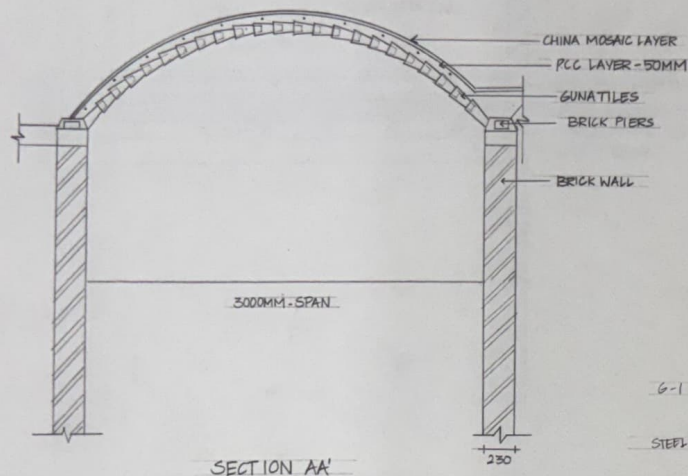
SCALE - 1:10

ALL DIMENSIONS IN MM

FILLER SLAB

SIGNATURE	NAME	SHEET NO
	VANIESHA	
	USNNO : 1AA23AT031	
	SEMESTER : THIRD	
	SUBJECT : MMECL - III	
	COLLEGE : ANRYSA	

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ALL DIMENSIONS ARE IN MM
SCALE - 1:10

ADVANTAGES	DISADVANTAGES
• LONG LASTING & CAN WITHSTAND HARSH WEATHER CONDITIONS • TRADITIONAL & RUSTIC LOOK • KEEPS INTERIORS COOLER IN SUMMERS & WARMER IN WINTERS • ECO-FRIENDLY	• CAN BREAK UNDER HEAVY PRESSURE • HEAVIER COMPARED TO OTHER MATERIALS • SKILLED LABOUR IS NEEDED • CLAY TILES ABSORB WATER, LEADING TO ALGAE GROWTH

PROCESS :



GUNA OR WARDHA ROOF

- GUNA TILE ROOFING METHOD IS UNIQUE SINCE AN ELEMENT CALLED GUNA TUBE
- CONSISTS OF TAPERING CONICAL, BURNT CLAY PIPES ADAPTING THEM TO COME TOGETHER
- SERIES OF SUCH ARCHES MAKES A BARREL VAULT CAPABLE OF WITHSTANDING CONSIDERABLE LOADS
- FABRICATED WITHIN 3 DAYS, LESS MAINTENANCE.

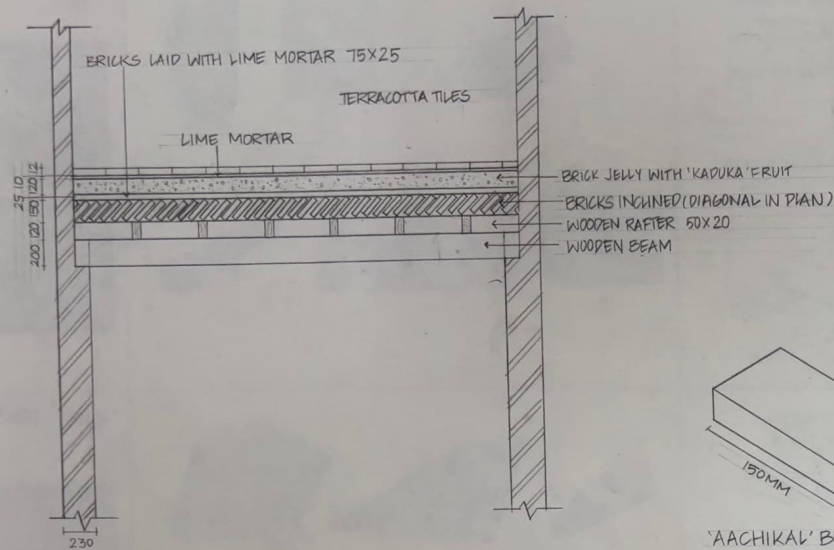
EXAMPLE: OTIA PAR GAMMAT, GUJARAT.
EDUCATIONAL INSTITUTION WITH GUNA ROOF, MORE SUSTAINABLE AND CHEAPER THAN RCC SLABS



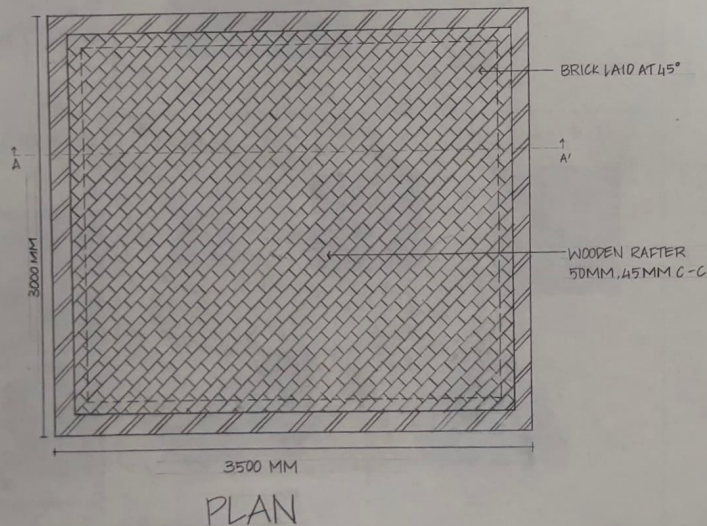
GUNA TILE ROOF

SIGNATURE	NAME : VANIESHA	SHEET NO
USN NO : 1AA23AT031		
SEMESTER : THIRD		
SUBJECT : MMBC -III		
COLLEGE : ANRVSA		

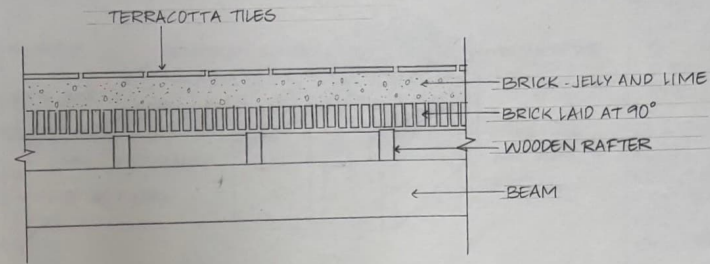
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SECTION AA'

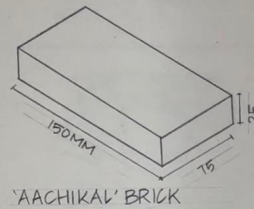


PLAN



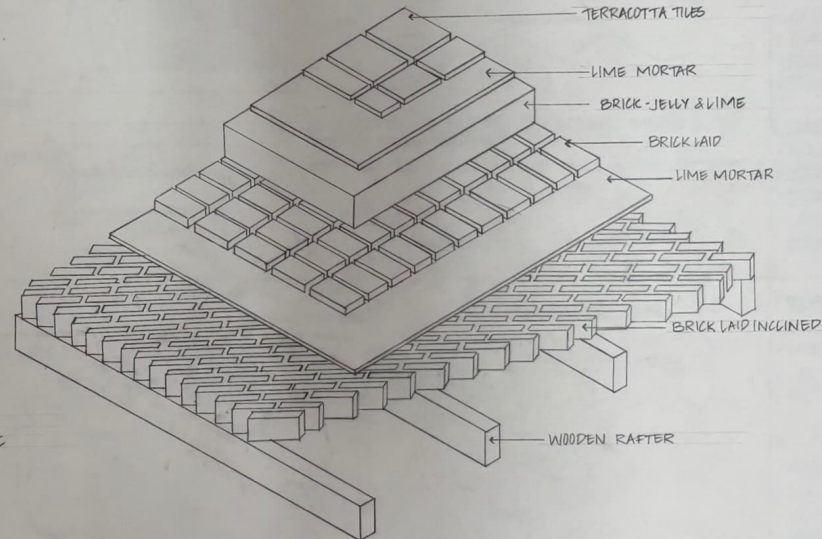
ALTERNATIVE METHOD

SCALE - 1:10



'AACHIKAL' BRICK

MADRAS TERRACE ROOFS PROVIDE EXCELLENT INSULATION, REDUCING HEAT GAIN AND ENERGY CONSUMPTION. THEIR FLAT SURFACE ALLOWS FOR ADDITIONAL LIVING SPACE OR ROOFTOP GARDENS.



ISOMETRIC VIEW

ALL DIMENSIONS ARE IN MM

MADRAS TERRACE ROOF

A MADRAS TERRACE ROOF IS A TRADITIONAL ROOFING SYSTEM USED IN SOUTH INDIA, PARTICULARLY IN TAMIL NADU, KNOWN FOR ITS DURABILITY & CLIMATE RESPONSIVENESS.

MATERIALS:

- WOODEN BEAMS (USUALLY TEAK OR SEAL WOOD)
- LIME MORTAR MIXED WITH BRICK JELLY

- WOODEN JOIST PLACED OVER STEEL GIRDERS

- FURRING PIECE IS USED TO GIVE NECESSARY SLOPE

- A COURSE OF WELL BURNT BRICK (AACHIKAL) 25 X 75 X 150 MM IS LAID IN LIME MORTAR KEEPING THE BRICKS ON THEIR EDGES DIAGONALLY ACROSS THE JOIST

- 75MM TO 100MM THICK BRICK BAT CONCRETE IS LAID OVER IT AND THOROUGHLY COMPACTED BY FREQUENT WETTING WITH WATER

- 3 COATS OF PLASTERS ARE APPLIED FOR FINISHING THE SURFACE

ADVANTAGES:

1. PROVIDES EXCELLENT INSULATION AGAINST HEAT
2. DURABLE & LONG-LASTING
3. RESISTANT TO TERMITES & PESTS DUE TO LIME USAGE

DISADVANTAGES

1. LABOR-INTENSIVE & REQUIRES SKILLED CRAFTSMANSHIP
2. NOT SUITABLE FOR HEAVY LOADS OR MULTI-STORY BUILDINGS
3. REGULAR MAINTENANCE IS NECESSARY TO PREVENT LEAKAGE

APPLICATIONS:

1. RESIDENTIAL HOMES: TRADITIONAL SOUTH INDIAN HOUSES



2. HERITAGE BUILDINGS: TEMPLES, PALACES, COLONIAL-ERA STRUCTURES



3. EDUCATIONAL SPACES: OLD SCHOOLS & COLLEGES

MADRAS TERRACE ROOF

SIGNATURE	NAME : VANIESHA	SHEET NO
USN NO : 1AA23AT031		
SEMESTER: THIRD		
SUBJECT : MMBC-III		
COLLEGE : ANRVSA		

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TYPE OF ROOF

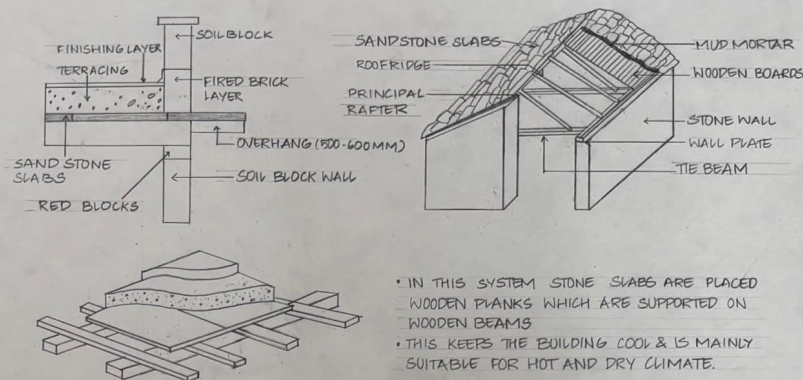
STONE SLAB ROOF



MATERIALS



CONSTRUCTION & DETAILS



PROPERTIES

PROPERTIES:

- MADE OF NATURAL STONE SLABS LIKE GRANITE OR LIMESTONE
- DURABLE, WEATHER - RESISTANT & HEAVY
- REQUIRES STRONG STRUCTURAL SUPPORT

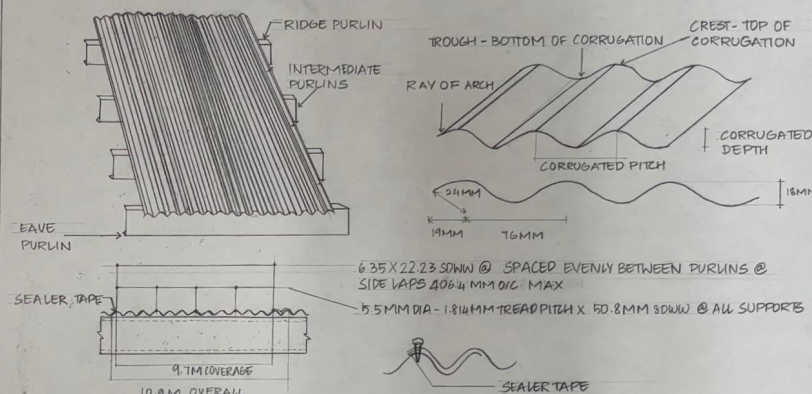
ADVANTAGES:

- LONG - LASTING & HIGHLY DURABLE
- EXCELLENT THERMAL INSULATION
- NATURAL & AESTHETIC APPEARANCE
- LOW MAINTENANCE ONCE INSTALLED
- RESISTANT TO PESTS & DECAY

DISADVANTAGES:

- EXPENSIVE & LABOR INTENSIVE INSTALLATION
- HEAVYWEIGHT REQUIRES REINFORCED STRUCTURES
- PRONE TO LEAKAGE IF NOT PROPERLY SEALED
- DIFFICULT TO REPAIR OR REPLACE INDIVIDUAL SLAB
- LIMITED AVAILABILITY IN SOME REGIONS

GI TIN SHEET ROOF



PROPERTIES:

- MADE FROM GALVANIZED IRON (GI) SHEETS WITH ZINC
- LIGHTWEIGHT & CORROSION - RESISTANT
- AVAILABLE IN VARIOUS SIZES & THICKNESS

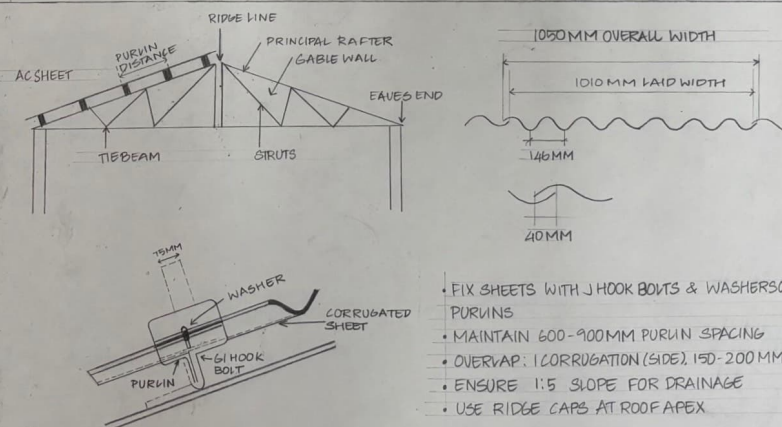
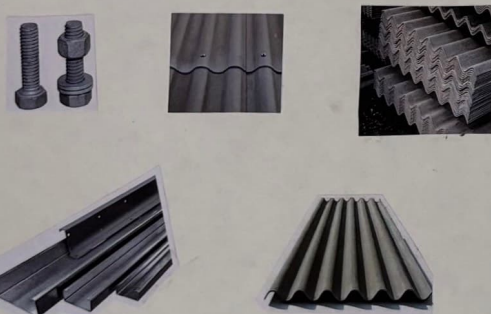
ADVANTAGES:

- AFFORDABLE & EASY TO INSTALL
- DURABLE & LOW MAINTENANCE
- REFLECTS HEAT, REDUCING INDOOR TEMPERATURE
- SUITABLE FOR TEMPORARY & PERMANENT STRUCTURE

DISADVANTAGES:

- NOISY DURING RAIN OR HAIL
- CAN GET VERY HOT UNDER DIRECT SUNLIGHT
- PRONE TO DENTING UNDER HEAVY IMPACT
- LIMITED AESTHETIC APPEAL COMPARED TO OTHER ROOFING OPTIONS

CEMENT CORRUGATED ROOF SHEETS



PROPERTIES:

- MADE OF CEMENT & FIBER REINFORCEMENT
- LIGHTWEIGHT & DURABLE
- WAVY CORRUGATED PROFILE ENHANCES STRENGTH
- WEATHER & FIRE RESISTANT

ADVANTAGES:

- AFFORDABLE & EASY TO INSTALL
- LOW MAINTENANCE
- GOOD THERMAL & SOUND INSULATION
- RESISTANT TO RUST, ROT & PESTS

DISADVANTAGES:

- BRITTLE & CAN CRACK UNDER HEAVY IMPACT
- LIMITED AESTHETIC APPEAL
- NON - BIODEGRADABLE, POSING ENVIRONMENTAL CONCERNS
- NOT IDEAL FOR EXTREME WINDS OR SEISMIC ZONES.

TYPES OF ROOFING

SIGNATURE	NAME : VANIESHA	SHEET NO
USN NO : 1AA23AT031		
SEMESTER : THIRD		
SUBJECT : MMBC - III		
COLLEGE : ANRVSA		

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