SECTION V (1)

ARCHITECTURAL TECHNICAL SPECIFICATIONS

1.0 PLASTERING AND POINTING

1.1 General

1.1.1 External finish shall be taken 15cm below the ground level except where plinth protection / ramp and the like is provided, in which case it shall be taken up to the bottom of the plinth protection / ramp etc.

1.1.2 Plaster / pointing, skirting / dado shall be returned to in jambs, reveals and soffits of lintels / window sills etc.

1.1.3 All plastered / rendered surfaces shall be trowelled to smooth and even surface with steel trowel (without using extra cement).

1.1.4 To avoid cracks at junction of RCC and brick walls, 150 mm wide GI chicken wire mesh of 20 or 22 guage or Arpitha mesh as approved by Project manager shall be used fixed with GI wire nails on the joints before plastering

1.1.5 Thickness of plaster does not include thickness of dubbing out.

1.1.6 Grooves of size 12x10 mm or as specified shall be provided as directed by the Project manager to form a design pattern on the external façade as shown in drawing. Tapered wooden battens to match the size and shape of the grooves shall be fixed over the under coat with nails before the application of the top coat. It shall be ensured that top panels are not damaged, but if damaged, the same shall be made good by the Contractor.

1.1.7 Suitable scaffolding to be used shall have sound and strong supporters tied together with horizontal pieces over which scaffolding planks shall rest to ensure that for horizontal supports no holes are made in the wall.

1.1.8 Extra work over plastering (externally) as shown on drawing shall be done in isolated width or in raised bands.

2. FLOORING

2.1 General

2.1.1 Floors of various types shall be provided as specified here

2.1.2 Floors shall be laid to levels as shown on drawings or as directed by the Project manager.

2.1.3 PCC floor topping shall be laid in square or rectangular panels with each side not exceeding 1.2 meters.

2.1.4 If any extra thickness of concrete is required to provide slope in the floor as directed by the Project manager, the same shall be provided by the contractor at no price adjustment.

2.1.5 If otherwise not shown in drawings / specified, the height of skirting & Dado shall be as Under: -

a) **Skirting -125 mm** (wherever the skirting has given in the drawings)
b) **Dado** (for corridors) **-1500 mm** (wherever the skirting has given in the drawings)
c) **Dado** (for toilets) - **2100 mm** (wherever the skirting has given in the drawings)

2.2 Granite stone slab

Granite shade be of approved colour and quality. The stone shall be hard, even sound and regular in shape and generally uniform in colour. It shall be without any soft veins, cracks of flaws. The thickness of the stone shall be 16-18 mm. AH exposed faces shall be double polished to tender, truly smooth and even reflecting surfaces.

Characteristic	Granite	
(1) Moisture absorp- tion after 24 hrs immersion in cold water	Max. 0.50% by weight	IS 1124
(2) Specific Gravity	Min. 2.6	IS 1122

2.5 VITRIFIED TILES

2.5.1 Specification of vitrified tiles in flooring/skirting/dado

The vitrified tiles wherever shown on schedule of finishes shall be polished / satin matt finished. The color / shade of the same shall be as approved by the Project manager nearly matching with color / shade if specified in drawings. Tiles shall be of first quality of Group B1a confirming to IS: 13006/EN 176 Group B1a. Tiles shall be of first quality.

No	Property	International Std. ISO 13006 / EN176 Group B1a	Method of Testing
1.	Deviation in length	+/- 0.6%	EN 98
2.	Deviation in thickness	+/- 5%	EN 98
3.	Mohs hardness	>6	EN 101
4.	Water absorption	< 0.50%	EN 99
5.	Flexural Strength	>27 N / mm2	EN 100
6.	Abrasion resistance	< 204 mm3	EN 102
7.	Stain resistance	Resistant	ISO 10545-14
8.	Chemical resistance	No Damage	EN 106
9.	Breaking strength	1113 N	ASTMC-648
10	Glossiness	Min 80% reflection	Gloss meter

2.5.2 **Specification for wall tiles in toilets**

Glazed vitrified wall tiles in size 600 x 300 x 7 mm as manufactured by approved vendors conforming to IS 15622: 2006 / ISO 13006 (Group B III).

2.5.3 **Specification for vitrified tiles (non skid)**

Vitrified Floor tiles 600x600 shall be provided of approved vendors specified in Appendix 'E' conforming to IS 15622: 2006 / ISO 13006 EN 177 (Group B III)

No.	Property	European std EN-177 BIIa / ISO 13006 and IS: 15622:2006	Method of Testing
1.	Deviation in length	+/- 0.5%	EN 98 / IS: 13630 (Part-I)
2.	Deviation in thickness	+/- 5%	- do -
3.	Wedging war page	+/- 0.5%	- do -
4.	Square ness	+/- 0.6%	- do -
5.	Water absorption	3 – 6 %	EN-99 / IS: 13630 (Part-II)
6.	Scratch Resistance (Moh's scale)	Min 5	EN-101 / IS: 13630 (Par-13)

7.	Abrasion resistance	As per the Abrasion class indicated by the manufacturer	EN-154/IS: 13630 (Part-11)
8.	Crazing Resistance	In conformity with the norms	EN-105 / IS: 13630 (Part-9)
9.	Chemical resistance	Resistant to all acids and alkalis (except hydraulic acid and its compounds).	EN-1221 / IS: 13630 (Part-8)
10.	Bending Strength	≥ 220 kgs / cm2	EN-100 / IS: 13630 (Part-6)
11.	Thermal shock	Resistant to 10 cycles	EN-104 / IS: 13630 (Part-5)

4. JOINERY

4.1 HARDWOOD FRAMED BEE WAX POLISHED WOODEN DOORS

wooden Core - Shall conform to ANSI A208.1 LD-2 32lb. density core. Stiles shall be l ” minimum laminated hardwood or structural composite lumber (SCL) veneered over with veneer matching face veneer. Rails will be l l/8” minimum mill option hardwood or structural composite lumber (SCL). Stiles and rails shall be securely bonded to the core then abrasively planned as an assembly before veneering. Mineral Core - Shall be asbestos free, noncombustible mineral composite with a minimum of 28 pounds per cubic foot density when testing in accordance with ASTM C303-82, with 10% maximum absorption by weight with core in equilibrium at 90% relative humidity and 70 degrees Fahrenheit.

Stiles and rails shall be manufacturers standard for specified label. Stile shall be reinforced to receive full mortise hinges. No salt treated components shall be used.

4.1.1 VENEER:

“A” Grade (industry standard) should be applied on the wooden doors

Book matched :(most common, provides uniform pattern)

4.1.2 **Glazing:**

Glass panels shall be as indicated. Unless otherwise indicated, fixing of glass panes shall be done with aluminum beading with CP brass or stainless steel screws spaced not more than 10 cm from each corner and intermediate not more than 20 cm apart. When glass panels are fixed with UPVC Frame having mitered joints, epoxy resin or silicon sealant shall be applied between glass panes and sash bars and also between glass panes and beading. Aluminum beading shall also be from the firm of sections used for fabrication of aluminum Door's, Windows, Ventilators, Composite units etc. Joints shall be filled with PVC/neoprene felt, cleats etc. as indicated.

4.1.**3 Paneling:**

Panels shall be of decorative plywood, prelaminated particle board, aluminum etc as indicated. The panels shall be cut to correct size with a minimum 12 mm portion being inserted in the frame and shall be fixed firmly with CP brass or stainless-steel screws. The joints between panels and members shall be sealed with epoxy resin or silicon sealant. Joints shall be filled, with PVC/neoprene felt, cleats etc as indicated.

PVC protected sheeting shall be used while fixing the frame of doors, windows, ventilators etc to avoid damages, scratches etc.

4.1.4 Class 1 solid wooden door frame:

Plain, solid, straight chowkhats and frames, wrought, framed rebated on the solid, rounded or chamfered

Laminated veneer lumber used shall conform to IS 14616

4.2 PVC PANELLED /FLUSH DOOR SHUTTER

4.2.1 PVC Door Frame

The PVC door frame (for toilets) shall be as per the drawing (Make of PVC door frame – CAPRIHANS/ FINOLEX/ RAJSHRI).

4.2.2 EPS Core Solid PVC Molded PVC Door Shutter

PVC door shutter shall be all as shown in drawing.

4.2.3 FLUSH DOOR SHUTTER

Flush door shutter shall be 35mm thick, solid core, non-decorative, factory made shutter with non flammable ,water & termite proof made as per IS: 2202 (Part I- 1999) and shall be ISI marked. Styles & rails shall be without any joint and be made of non coniferous timber hard wood (hollock / mirantee/BONSUM/ BEN TEAK) with moisture contents not more than 12% and dimension as given in IS code. The face panel comprising of plywood or crossband and face veneers shall be glued by hot pressed process. Over all finished thickness of face panel shall not be less than 3mm while the thickness of face veneer shall not be less than 0.6mm. Block board core shall fully confirm to the requirement specified in the IS code. All timber used shall be well seasoned and chemically treated. Adhesive shall be phenol formaldehyde synthetic resin BWP type specified in IS: 848- 2006. All dimensions shall be finished dimension & manufactures test certificate for test specified in IS: 2202 (PartI) shall be rendered

4.3 GI STEEL Fire Door

Supply, Fixing and Installation of GI steel fire door of thickness of 0.8mm and frame of 1.2mm thick made up of PCGI sheet with pure polyester powder coating. Leaf

thickness will be 46mm and 57mm infil will be honeycomb. With all the accessories S.S ball bearing butt hinges 100x75mm doorset, standard Arm Door closer - Dorset, View glass 200x3000mm single glazed, and SS D handles both side 250mm of approved make.

4.4 UPVC FRAMED DOUBLE GLAZING SLIDING WINDOW

4.4.1 Description:

This item shall govern the provision of fabrication, supply and installation of uPVC Window as per design and drawing approved by Project manager.

4.4.2 General Requirement:

The 2 TRACK uPVC Window shall be fabricated in accordance with design requirements and detailed as per drawing, in conformity with the requirements of this specification.

4.4.3 Feature:

Feature of molded uPVC Window are as follows:

a. 100% Waterproof
b. Dimensionally stable
c. Acid/Alkali Resistant
d. 100% Termite Proof
e. Maintenance Free
f. Flame Retardant.

4.4.4 Material Description:

The Windows shall be manufactured using Rigid uPVC profile sections, using GI reinforcement.

4.4.5 Fabrication Description:

The window frame, made of rigid uPVC sections meter cut at 4 corners & joint with plastic fusion welding with internal reinforcements required. The shutter section, made of extruded rigid uPVC with internal reinforced with provision of 5mm glaze/wire mesh as per requirement. The window shall be fixed to the wall using 65x100mm long M.S. fasteners at suitable places provided for each vertical and horizontal member etc. complete as per manufacturer's specification and direction of Project manager.

4.4.6 Finish:

All the surface of the window should be uniform smooth finish and free from crack and seam. Passing joints shall be finished ensuring that no gaps are visible. 8. Tolerance:

All Dimensions (except thickness of profile sections) shall be as per drawing 1.2mm thickness should be in ± 0.25mm.

4.4 UPVC FRAMED DOOR

4.4.1 Description:

This item shall govern the provision of fabrication, supply and installation of uPVC door as per design and drawing approved by the Architect.

4.4.2 General Requirement:

The UPVC door shall be fabricated in accordance with design requirements and detailed as per drawing, in conformity with the requirements of this specification.

4.4.4 Material Description:

The doors shall be manufactured using Rigid UPVC profile sections, using GI reinforcement.

4.4.5 Fabrication Description:

The door frame, made of rigid UPVC sections meter cut at 4 corners & joint with plastic fusion welding with internal reinforcements required. The shutter section, made of extruded rigid uPVC with internal reinforced as per requirement. The door shall be fixed to the wall using 65x100mm long M.S. fasteners at suitable places provided for each vertical and horizontal member etc. complete as per manufacturer's specification and direction of Project manager.

4.4.6 Finish:

All the surface of the door should be uniform smooth finish and free from crack and seam. Passing joints shall be finished ensuring that no gaps are visible. Tolerance: All Dimensions (except thickness of profile sections) shall be as per drawing 1.2mm thickness should be in ± 0.25mm.

4.5 UPVC FRAMED GLASS LOUVERS VENTILATORS

4.5.1 Description:

This item shall govern the provision of fabrication, supply and installation of uPVC ventilator as per design and drawing approved by Project manager.

4.5.2 General Requirement:

The UCPV frame shall be fabricated in accordance with design requirement and detailed as per drawing, in conformity with the requirements of this specification.

4.5.3: Glass type and thickness

The glass shall be a float glass which should have a thickness of 6mm

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5.0 BUILDERS HARDWARE FITTINGS

5.1.0 All hardware used shall conform to the relevant IS Specifications. Design, quality type, number and fixing of hardware shall be approved by the Project manager.

5.1.1 Aluminium hardware fittings shall conform to the samples or shall be of approved make and as specified hereinafter. All Aluminium hardware fittings except hinges and other than those required for aluminum windows / ventilators shall be of Aluminum alloy anodized. All fittings shall be ISI marked and as approved by Project manager. All screws shall be of cadmium plated steel, unless otherwise specified.

5.1.2 Extruded aluminum alloy handles, fabricated type Powder coated of size indicated in schedule 'A' shall be provided in all rooms. Handle shall be ISI marked conforming to IS: 208-1996.

5.3 STAINLESS STEEL RAILING

Mild Steel railing as indicated in respective of where shown in drawings shall be provided as per design and detail shown in drawings. Handrail shall be of 50 mm dia SS Pipe medium grade conforming to IS- 1239 and shall be fixed to SS baluster in such a manner that 2/3rd of the pipe remains free.

5.3 MILD STEEL RAILING

5.3.1 Stainless Steel railing as indicated in respective of where shown on drawings shall be provided as per design and detail shown on drawings. Hand rail shall be of 25 mm thick polished wood fixed with nuts and bolts.

6.1 TENSILE ROOFING:

SCOPE OF WORK:

1. Specialist vendor is responsible for the Design, Engineering, steel Fabrication, fabric making, Supply and Installation of the work specified herein. The intent of this specification is to have **single point responsibility** for the Turnkey Projects.

2. Erection of the complete Structure is the responsibility of vendor

3. The fabric structure shall be a cable and/or frame supported Tensioned membrane structure. The fabric shall have low elongation characteristics under tension and shall assume an anticlastic configuration.

4. Vendorj provides a structure as shown in the Drawings and Described in this specification. Foundations for the structure shall be the responsibility of General Contractor or the End Customer.

SPECIFICATIONS:-
DESIGN AND ENGINEERING

1. Qualified engineer in tensile structure engineering will arrive at feasible model of structure considering the site conditions and customer requirements.

2. The structural form is to be analyzed in specialized tensioned fabric structures Software Viz IXCUBE/FORTEN/EASY for membrane stresses for different load conditions to check the suitability of membrane and loads transferred to steel.

3. The steel structure to be analyzed as per above loads and IS code 800&875 to arrive at member sizes & connections.

4. Membrane- Steel connection systems are analyzed from above.

FABRIC:-

Supplying, Providing, fabricating, assembling and erection of PVC/ Cross Link PVDF composition of TX30 Type ll coated composite membrane with a top surface lacquered with a multi-layered Cross Link PVDF coating as per the specifications provided & as per conceptual drawing. The coated composite material should have minimum tensile strength of 4300 / 4300 N/50 mm and tear strength of 550 / 500 N with Polyvinyline Duroflouride coating and having weight of 1050 g/sqm This work should include raw material, patterning, forming, cutting, welding, fixing and installation with GI cables, flashing,hardware etc. including lifts up to all heights, tools and plants, and necessary scaffolding etc. required for all operations. **Warranty of the membrane should be minimum of 20 Years.**
Membrane warranty to be provided by membrane/fabric manufacturer to the end client or main contractor of the building.
Manufacturers:- Serge Ferrari or Verseidag.

Fabric Connection Systems:-

1. All structural wire rope shall be made from Steel Wire Rope conforming to **IS Steel Cable** Manual requirements with galvanized coating.

2. All cables and end fittings shall be tested in laboratory for their capacity to handle forces coming over them

3. All swaged end terminals for cables to be stainless steel [304 Grade] and cables to be swaged to achieve full breaking strength of cable. The nuts & washers used for terminals and fabric end plates to be stainless steel.

4. Fabric end plates - The fabric end plates are stainless steel 304 grade

STRUCTURAL STEEL FRAMING:

1. Steel structure designed as per conditions of IS 875 AND IS 800:

2. Structural frames shall be fabricated from structural steel using standard shapes. The steel shall be as per **IS 1161, YST 310.**

3. All steel fabrication to be done in a pre engineered method with knock down nut and bolt joints only. Steel fabrication at site is not allowed.

4. Fabricated steel to be painted with AIRLESS SPRAY SYSTEM only. or Exposed Surface to weather - Epoxy paint of approved shade (Zinc Rich Epoxy primer 30 micron thick, 2 coats of Epoxy paint of 40 micron.
Approved Makes: Tata / Jindal /Essar/ Apollo /Neuzone/Surya
5. Fasteners on the main structured membrane to be electro galvanized. Anchor fasteners used for fastening to concrete should conform to IS code and are electro galvanized.
Mode of measurement of area for payment: Plan area - The edge boundaries of structure are defined by straight line connectivity of the points of fabric anchoring and not by curved cable boundaries.
TEST CERTIFICATES:-
Test certificates for the following to be submitted.
1. Structural steel
2. Fabric
3. Steel wire cables
4. Connection systems viz. Cables end terminals , Fork terminals etc used to be laboratory tested.

7. PAINTING/ DISTEMPER/ WHITE WASHING/ COLOUR WASHING

7.1.1 The Contractor shall bring at site fresh and best quality paint. The Contractor's rates shall also be deemed to include for the preparation of surfaces and application of primer. The Contractor shall obtain the permission of the Project manager in writing well in advance for the makes/brands of paint that he will use in the work. The Contractor shall also submit samples thereof.

7.1.2 The Contractor shall, if so required by the Project manager, produce a certificate from the manufacturer or their representatives to establish that the brands of paints used by him are of the approved make. Paints shall be brought at the site in manufacturer's drums with seal intact.

7.1.3 Paints used in priming coat, undercoat and finishing coat shall be of the same manufacturer. The paints shall be applied first using vertical strokes until the surfaces are covered and then brushed Cross wise for complete coverage with light strokes so as to smooth out laps and brush marks and finally laid off with vertical strokes. This constitutes a single coating of paint.

7.2 PUTTY

Providing and applying two coats of white 3 mm thick cement putty over the plastered surface to prepare the surface even and smooth on the wall including necessary scaffolding as required.

7.3 WHITE WASHING / COLOUR WASHING

White wash / color wash/ cement wash shall be provided where shown on drawings. All white wash shall be provided as mentioned in respective item of Schedule 'A'. Lime wash shall be carried out all as specified in 15.2 & 15.11 & 15.12 on serial page No. 321 & 322 of SSR Part-I. To achieve better finish of white wash zinc oxide shall be mixed with lime wash at the rate of 2 percent of slaked lime. In the final coat of white wash 'Fevicol' DDL shall be mixed as per manufacturer's instructions. No ultramarine blue shall be mixed in any coat. However, sodium chloride, as specified in clause 15.12.3 on page 323 of SSR part I shall be mixed in first and second coats. Irrespective of what is shown on drawings, plastered surfaces inside the cupboards shall be given 2 coats of oil bound distemper white shade, after preparation of surfaces.

7.4 ACRYLIC BASE WASHABLE DISTEMPER

7.4.1 Acrylic base washable distemper where shown on drawings/schedule of finishes shall be provided as mentioned in respective item of Schedule 'A' and shall be applied as specified in SSR Part-I .

7.5 SYNTHETIC ENAMEL PAINT

7.5.1 The tint of the paint shall be as described in the schedule of finishes or as approved by the Project manager and shall be approved brand / make.

7.5.2 The contractor shall use fresh and first quality paint. The contractor shall obtain the permission of the Project manager in writing well in advance for the makes/brands

of paint that he will use in the work. He shall also submit samples thereof. The synthetic enamel paint shall be from any of the makes as per list of approved makes/ agencies.

7.5.3 The Contractor shall, if so, required by the Project manager, produce a certificate from the manufacturers or their representative to establish that the brands of paints used by him are of the approved make. Paints shall be brought at the site in manufacturer's drums with seal intact.

7.5.4 Paints used in priming coat, undercoat and finishing coat shall be of the same manufacturer. The paint shall be applied first using vertical strokes until the surfaces are covered and then brushed crosswise for complete coverage with light strokes to smooth out laps and brush marks and finally laid off with vertical strokes. The above shall constitute a single coat of paint.

7.5.5 Unless specified to be treated otherwise in these specifications hereinafter, all surfaces of iron and steel shall be given one priming coat of red oxide, one under coat and one finishing coat of synthetic enamel paint. Iron and steel work in reinforcement, galvanized iron or tinned ironwork shall, however, not be painted.

7.5.6 All exposed cast iron soil/waste/vents/anti siphonage pipes and fittings there shall also be painted with synthetic enamel paint (one under and one finished coat) externally matching in color with the adjoining surfaces.

7.5.7 All exposed surfaces for which no type of finish is specifically stipulated either in drawings or in these specifications shall be painted with synthetic acrylic emulsion paint of two coats over one coat of primer as specified herein before.

7.5.8 If the undercoat of the paint is not executed within six months after applying the priming coat of paint, the priming coat shall be done again by the contractor at no extra cost.

7.6 TEXTURED EXTERIOR PAINT:

The Exterior wall finish shall be as per the design (exposed wired-cut brick finish).
Finishing walls with textured exterior paint of required shade: New work (two or more coats applied @ 3.28 l/10 sqm) over and including priming coat of exterior primer applied @ 2.20 kg/ 10 sqm.

8. WATER PROOFING TREATMENT

8.1 WATER PROOFING TREATMENT

8.1.1 Water proofing treatment shall be provided as mentioned in respective item of Schedule ‘A’.

9. GLAZING

9.1 The glazing shall be done with selected quality toughened glass conforming to IS-2835 - 1982, unless otherwise specified in particular specifications hereinafter. All toughened glass shall be of good quality, free from specks, bubbles, smoke wanes, air holes and other defects all as specified.
9.2 Unless specified otherwise hereinafter, all glazing shall be as mentioned in respective item of Schedule ‘A’.

10. Interlocking paver blocks For Parking Space

Providing and laying 60mm thick factory made chamfered edge cement concrete paver block of M-35 grade with approved colour, design & pattern as in the Pedestrian path of required strength, thickness & size/ shape, made by table vibratory method using PU mould, laid in required colour & pattern over and including 50mm thick compacted bed of fine sand, compacting and proper embedding/ laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per design specified size and pattern, finishing and sweeping extra sand.

11. ARBORICULTURE AND LANDSCAPE

The landscape or Arboriculture design proposed to create a sustainable, aesthetically pleasing, and functional outdoor environment in The Army College Of Dental Sciences Campus, considering the Hyderabad region’s climatic conditions and ecological requirements. The design incorporates a combination of hardscape and softscape elements, ensuring environmental sustainability, effective water management, and ease of maintenance.

11.1 Site Preparation

Clearing and Grubbing: The site will be cleared of all unwanted vegetation, debris, and obstructions to prepare for further landscaping work.

Soil Testing and Analysis: Comprehensive soil testing will be conducted to determine pH levels, nutrient content, and texture. Based on these tests, and aesthetical perspectives the plants and trees were selected and proposed in the design.

Grading and Leveling: If there is any terrain or elevational differences in the site, then it is supposed to be leveled and graded to ensure proper water drainage and

prevent water stagnation.

Drainage System Installation: Drainage channels, stormwater drains, and infiltration zones will be established to prevent waterlogging and soil erosion.

11.2 Hardscape Element

Lighting: Energy-efficient LED outdoor lighting will be installed, with solar-powered options to enhance sustainability.

Irrigation System: Automated drip irrigation and sprinkler systems will be integrated for efficient water distribution, ensuring uniform plant growth and minimal water wastage.

11.3 Softscape Elements

Tree Planting:

Royal Palm (Roystonea regia): These trees will be placed along both sides of the pathways to create a grand visual impact and provide shade.

Terminalia Mantaly Trees: Positioned strategically within the garden areas to enhance aesthetics and provide additional shading.

Ground Cover and Shrubs:

Wedelia trilobata: This fast-growing ground cover plant will be used along the compound wall and dispersed throughout the garden areas to create a dense green layer.

Korean Grass: Selected for its ability to withstand foot traffic, Korean grass will be used extensively for the lawn and other open garden spaces.

Mulching: Organic mulch will be applied to the planting beds to retain soil moisture, regulate temperature, and reduce weed growth.

11.4 Water Management

Rainwater Harvesting: Collection and storage of rainwater will be implemented to support irrigation needs and reduce dependency on external water sources.

Permeable Surfaces: The use of porous pavements and percolation pits will aid in groundwater recharge.

11.5 Sustainable Practices

Use of Recycled and Locally Sourced Materials: Reducing environmental impact by prioritizing sustainable materials for construction.

Green Walls and Vertical Gardens: Enhancing air quality and biodiversity by integrating vegetation into vertical spaces.

Chemical-Free Plant Care: Limiting the use of synthetic fertilizers and pesticides, replacing them with organic compost and eco-friendly pest control methods.

11.6 Maintenance Plan

Irrigation Schedule: The automated system will be set to adjust water distribution according to seasonal variations.

Pruning and Trimming: Regular trimming of trees and shrubs will be conducted to maintain plant health and visual appeal.

Fertilization and Soil Health Management: Organic fertilizers and composting techniques will be used to enrich the soil.

Pest Control: Integrated pest management methods, including natural predators and organic treatments, will be employed to control pests without harming the environment.

11.7 Compliance and safety

Municipal Regulations: Adherence to local environmental and zoning laws to ensure compliance with legal standards.

Pathway and Lighting Safety: Ensuring adequate lighting and clear pathways for accessibility and security.

Periodic Inspection: Routine inspections will be conducted to assess the condition of both hardscape and softscape elements, with necessary maintenance carried out accordingly.