

Comprehensive Construction Specifications: Premium Residential Building at ₹1,800 per sq.ft

A detailed construction specification document outlining premium material standards, installation requirements, and quality benchmarks for residential construction at ₹1,800 per square foot.



Project Overview and Material Standards

Project Scope

This document provides comprehensive specifications for residential construction at ₹1,800 per square foot. The specifications detail material quality, installation standards, and finishing requirements to ensure superior construction quality.

All measurements and calculations will be based on the actual slab area measured at the site. This ensures accurate pricing and material allocation throughout the construction process.

Material Quality Assurance

All materials specified in this document represent industry-standard quality benchmarks. Substitutions must be approved in writing and must meet or exceed the specified performance criteria.

Material certifications and test reports will be provided for structural components including cement, TMT bars, and waterproofing solutions to verify compliance with Indian Standards (IS) codes.

The following specifications outline the exact materials to be used in construction, ensuring durability, structural integrity, and aesthetic appeal for your residential property. Each component has been carefully selected to provide optimal performance while maintaining the targeted budget constraints.

Foundation and Structural Elements

Cement Specifications

For critical structural applications including concrete work and brickwork, UltraTech OPC (Ordinary Portland Cement) grade cement will be used exclusively. This premium cement provides:

- Superior compressive strength (43-53 MPa at 28 days)
- Excellent durability in structural applications
- Consistent quality with minimal variation between batches
- Optimal setting time for proper curing

For non-structural applications such as plastering and finishing works, UltraTech/Dalmia PPC (Portland Pozzolana Cement) grade cement will be utilized, offering:

- Enhanced workability for smoother application
- Improved resistance to environmental factors
- Better finishing characteristics



Reinforcement and Structural Steel

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TMT Bar Specifications

All reinforcement shall be Kamdhenu TMT or Jindal TMT bars with Fe500 grade quality. These thermomechanically treated bars provide superior strength and ductility for structural integrity.

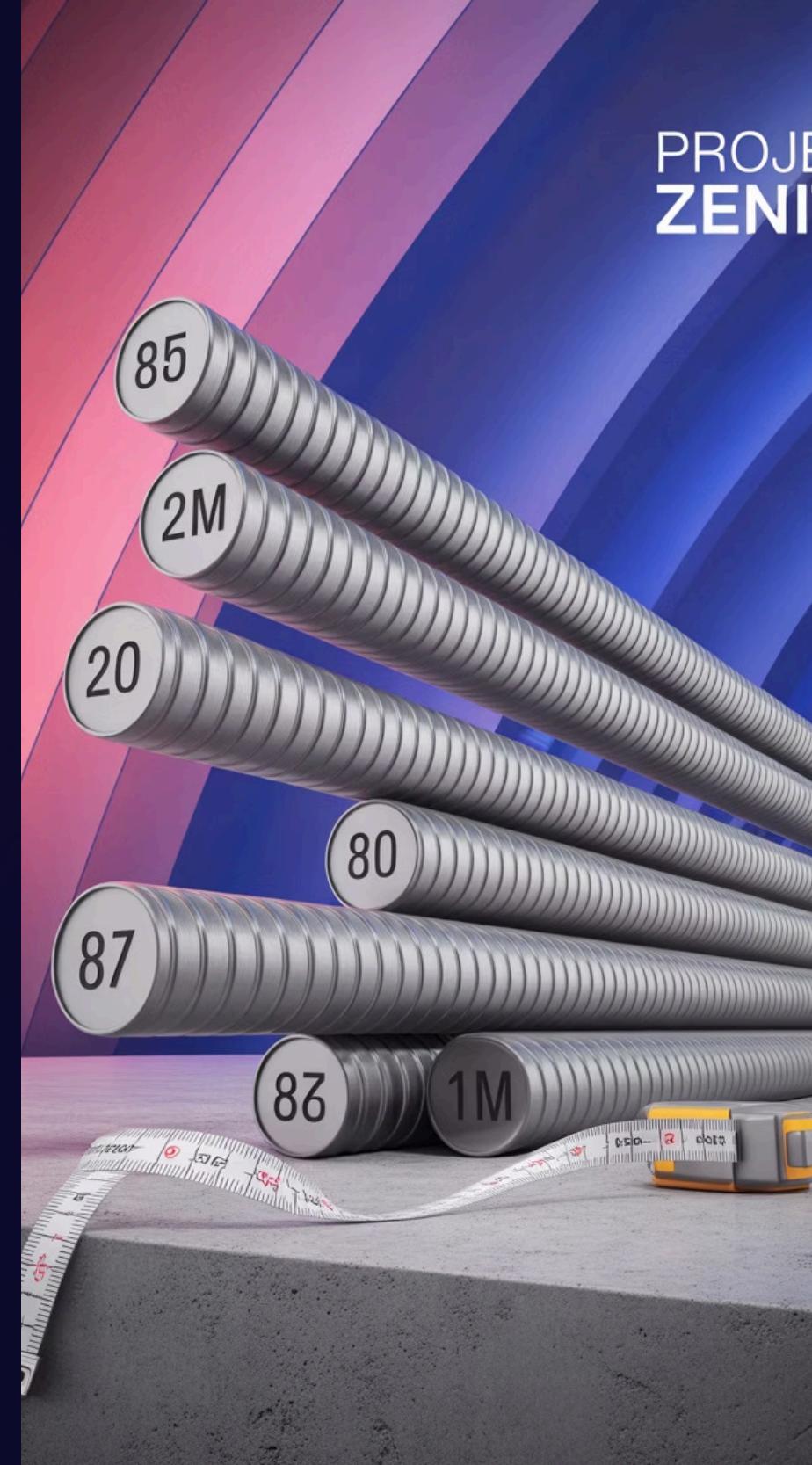
- Sizes to be used: 8mm, 10mm, 12mm, and 16mm diameter bars
- Yield strength: Minimum 500 N/mm²
- Ultimate tensile strength: Minimum 545 N/mm²
- Elongation: Minimum 12%

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Steel Placement Standards

Reinforcement will be placed according to structural drawings with proper cover blocks to ensure adequate concrete coverage.

- Minimum concrete cover: 25mm for slabs, 40mm for beams, 50mm for columns
- Bar bending as per IS 2502 standards
- Lap lengths as per IS 456:2000 requirements
- Anti-corrosive treatment for exposed reinforcement



Masonry Materials and Specifications

Brick Quality and Standards

Fine quality mud bricks manufactured by Paul Company will be used for all masonry work. These premium clay bricks offer:

- Compressive strength: Minimum 3.5 N/mm²
- Water absorption: Less than 20% by weight
- Dimensional tolerance: $\pm 2\text{mm}$
- Efflorescence rating: "Slight" or better

Brick masonry will be constructed with 9" thick walls for external applications and 4.5" thick walls for internal partitions. All brickwork will be constructed with proper bonds and joints not exceeding 10mm thickness.



Mortar Specifications

Mortar mix for brickwork shall be:

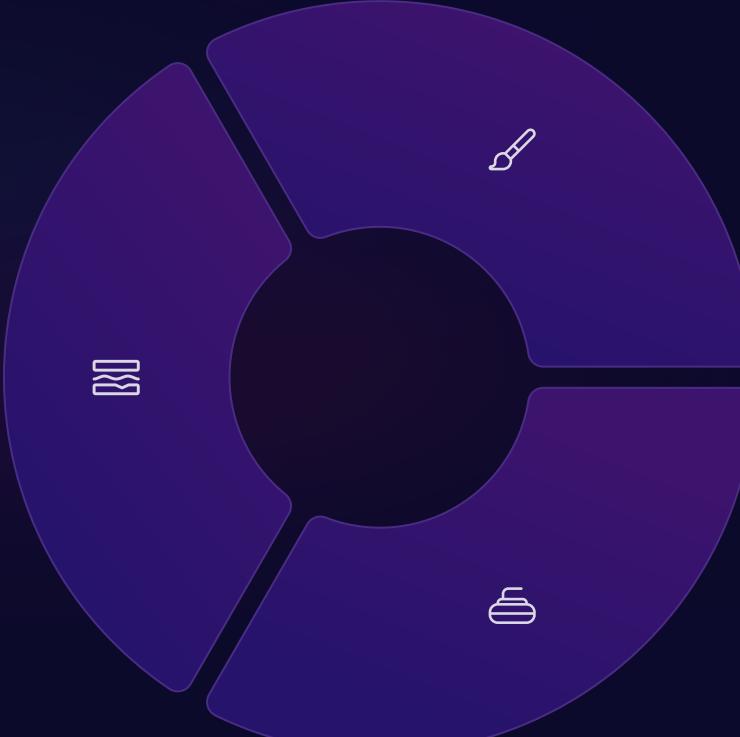
- External walls: 1:4 cement-sand ratio (1 part UltraTech OPC cement to 4 parts Khaperkheda sand)
- Internal walls: 1:5 cement-sand ratio (1 part UltraTech OPC cement to 5 parts Khaperkheda sand)
- Water-cement ratio maintained between 0.5-0.6 for optimal strength

Aggregates and Sand Specifications

Concrete & Brickwork Sand

Khaperkheda sand will be used for concrete mixing and brickwork. This coarse-grained sand provides:

- Proper gradation (Zone II as per IS 383)
- Low silt content (<4%)
- Free from organic impurities



All sand and aggregates will be thoroughly washed before use to remove impurities and contaminants. Material testing certificates will be provided to verify compliance with IS standards before incorporation into the work.

Plastering & Tile Work Sand

Bhandara fine sand will be used for plastering and tile work. This fine-grained sand provides:

- Smooth texture for superior finish
- Proper gradation (Zone III as per IS 383)
- Consistent particle size distribution

Concrete Aggregates

20mm round aggregates will be used for all concrete work. These aggregates offer:

- Proper gradation per IS 383
- Crushing value <30%
- Impact value <30%
- Free from deleterious materials

Concrete Mix Design and Standards

Concrete Grade Specifications

All structural concrete will be machine-mixed to ensure consistency and quality. The following concrete grades will be used:

- M25 grade for RCC columns, beams, and slabs (1:1:2 ratio)
- M20 grade for lintels and chajjas (1:1.5:3 ratio)
- M15 grade for plain cement concrete (PCC) (1:2:4 ratio)

Concrete Placement Standards

Concrete will be placed within 30 minutes of mixing and properly compacted using mechanical vibrators. Proper curing will be ensured for a minimum of 14 days using wet gunny bags or ponding methods.



Quality Control Measures

Regular concrete cube testing will be conducted to verify compressive strength:

- Samples taken for every 50 cubic meters of concrete
- 7-day and 28-day compressive strength tests
- Slump tests to verify workability (75-100mm slump)
- Proper documentation of test results

Interior Finish: Paint Specifications

Interior Wall Finishes

Asian Paints Apcolite will be used for interior walls with the following application system:

1. Surface preparation with thorough cleaning and repair of imperfections
2. Two layers of JK Wall Care putty (thickness 1-2mm per coat) with proper sanding between coats
3. One coat of Asian Paints water-based primer
4. Two coats of Asian Paints Apcolite Premium Emulsion with minimum 4-hour intervals between coats

For living rooms, Asian Paints Royale will be used for a premium finish with:

- Stain resistance and washability
- Low VOC content for healthier indoor air quality
- Superior coverage and color retention

Exterior Wall Finishes

Apex Ultima Weather Shield will be used for exterior surfaces with the following application system:

1. Surface preparation with thorough cleaning and repair of imperfections
2. One layer of Suryacem white cement waterproofing solution
3. One coat of Asian Paints exterior primer
4. Two coats of Apex Ultima Weather Shield with minimum 6-hour intervals between coats

This system provides:

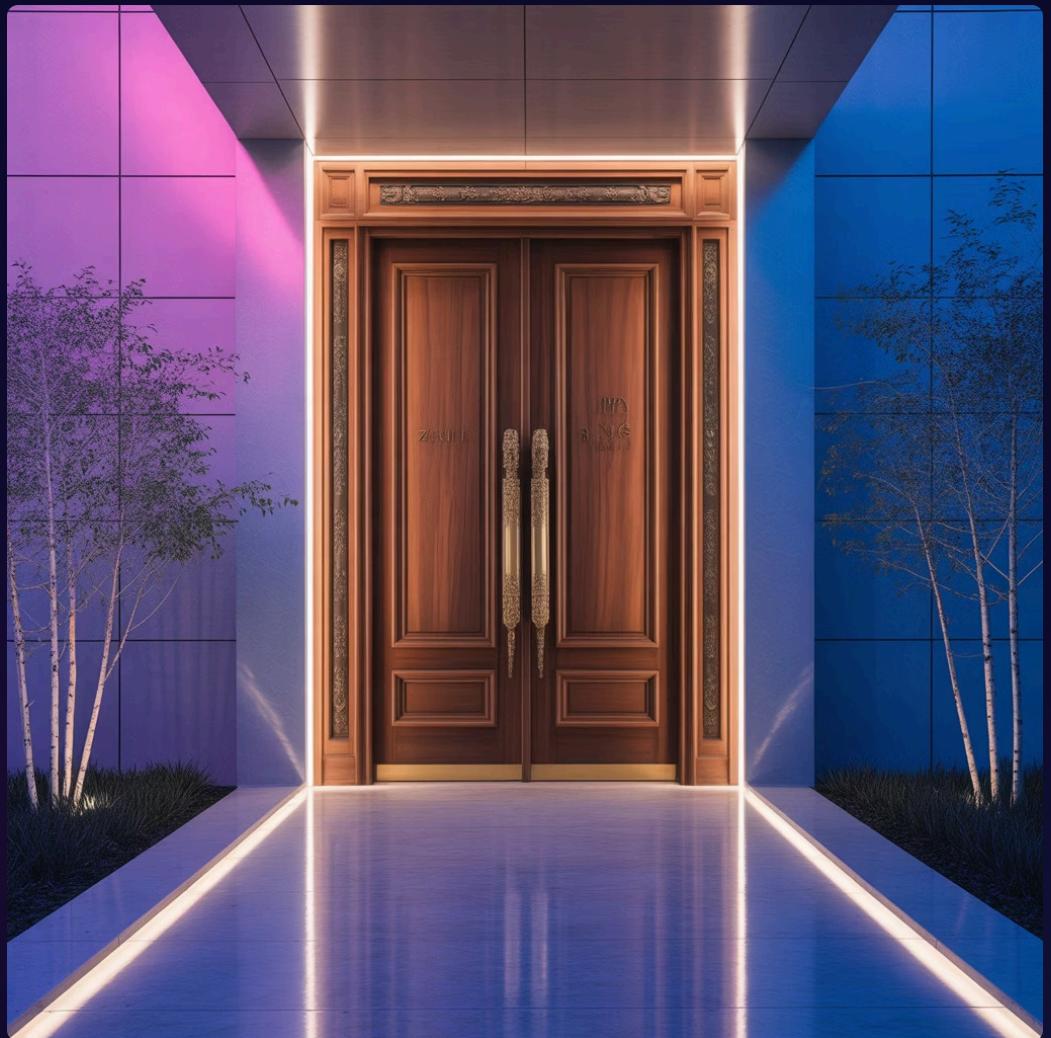
- Superior waterproofing and weather resistance
- UV protection for color longevity
- Anti-algal and anti-fungal properties
- 10-year warranty against peeling and flaking

Door Specifications and Installation

Main Entrance Door

The main entrance door will feature premium materials and security features:

- Bajaj Security door or solid teakwood door (client's choice)
- Budget allocation: Up to ₹40,000 (additional costs to be borne by owner)
- Dimensions: 7' height × 3.5' width × 40mm thickness
- Hardware: Mortise lock, brass hinges, door closer, security peephole
- Finish: Melamine polish with minimum 3 coats



Interior Doors

All interior room doors will be:

- Chemical-pasted flush doors with teakwood frames
- Dimensions: 7' height × 3' width × 35mm thickness
- Hardware: Cylindrical locks, stainless steel hinges
- Finish: Laminate or veneer as per owner's selection

Bathroom and Utility Doors

Bathroom and tower exterior doors will be:

- Laminated doors with heavy-duty waterproof core
- Cement frames with proper waterproofing
- Hardware: Stainless steel hinges, bathroom locks

Window and Railing Specifications



Window Specifications

All windows will feature:

- 3-channel PVC frame with sliding glass windows
- 5mm clear float glass for all panels
- Integrated mosquito mesh with separate track
- Color options: Black or white
- MS quality iron grills for security
- Weatherproof sealant application at all joints



Railing Specifications

Staircase and balcony railings will feature:

- SS quality 18-gauge galvanized steel
- Rounded profile for safety and aesthetics
- Toughened glass panels (8mm thickness)
- Height: 3' from finished floor level
- Balusters spaced at maximum 4" intervals
- All joints welded and ground smooth

Tile Specifications for Various Areas

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Living Areas and Bedrooms

All rooms will feature:

- Digital tiles or double-charged vitrified tiles
- Dimensions: 24" × 48" (600mm × 1200mm)
- Price range: ₹50-70 per sq.ft.
- Finish: Matt or glossy as per owner's selection
- Installation: Thin-set method with 2mm spacers
- Joints filled with epoxy grout for durability

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Bathrooms

Bathroom areas will feature:

- Printed ceramic wall tiles up to 7' height
- Anti-skid ceramic floor tiles
- Price range: ₹40-50 per sq.ft.
- PVC ceiling for moisture resistance
- Waterproofing treatment beneath all bathroom tiles
- Tile skirting of 4" height in matching design

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Kitchen

Kitchen wall areas will feature:

- Printed ceramic tiles up to 7' height above counter
- Price range: ₹40-50 per sq.ft.
- Acid-resistant and easy-to-clean surface
- PVC ceiling for moisture resistance
- Tile dado above countertop with decorative border

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Exterior and Staircase

Special application areas will feature:

- Exterior: 3D printed elevation tiles (₹40-50 per sq.ft.)
- Stairs: Rough-textured anti-skid tiles (₹40-50 per step set) or granite treads
- Weather-resistant and fade-proof qualities
- Non-slip rating R10 or higher for safety

Kitchen Specifications and Cabinetry

Modular Kitchen Specifications

The kitchen will feature a comprehensive 12-foot modular setup with the following specifications:

- 28-inch wide premium granite countertop (thickness: 18mm)
- 3-foot tall overhead cabinets with soft-close mechanisms
- Base cabinets with soft-close drawers and doors
- Cabinet material: BWP (Boiling Water Proof) grade plywood with laminate finish
- Hardware: Stainless steel handles, hinges, and drawer channels
- PVC ceiling for moisture resistance and easy maintenance
- Provision for chimney, hob, microwave, and refrigerator



Kitchen Sink and Fixtures

Kitchen plumbing fixtures will include:

- Stainless steel double-bowl sink (304 grade)
- Chrome-plated Cera brand sink mixer
- Proper drainage system with P-trap
- Water inlet provision for water purifier

POP Ceiling and Design Specifications

Plaster of Paris (POP) Specifications

POP ceiling work will be provided in halls and bedrooms with differentiated design complexity:

- Hall/Living Areas: 2-layer design with cornices and decorative elements
- Bedrooms: 1-layer design with simple cornices
- Material: Premium quality POP with anti-moisture additives
- Thickness: 12-15mm for structural integrity
- Joints reinforced with fiberglass mesh tape



POP Installation Standards

All POP work will adhere to the following standards:

- Perfectly leveled surface with deviation less than 3mm over 3m length
- Provision for concealed LED lighting as per design
- Crack-resistant formulation with polymer additives
- Proper curing and finishing to prevent shrinkage cracks
- Design approval from owner before execution

Plumbing Specifications and Fixtures

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Pipe Materials and Standards

The plumbing system will utilize high-quality materials for different applications:

- Hot and cold water lines: CPVC Plasto pipes (SDR 11)
- Water supply: PVC Plasto pipes (Schedule 40)
- Drainage: UPVC Plasto pipes (10kg/cm² pressure rating)
- Venting: UPVC pipes with proper traps and vents
- All pipes to be concealed within walls or floors

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Fixtures and Fittings

All sanitary fixtures and fittings will be from Cera brand:

- Water closets: Wall-mounted with dual flush cistern
- Wash basins: Counter-mounted or wall-hung as per design
- Shower systems: Diverter with overhead and handheld options
- Faucets: Single-lever chrome-plated brass
- Accessories: Towel rails, toilet paper holders, soap dishes

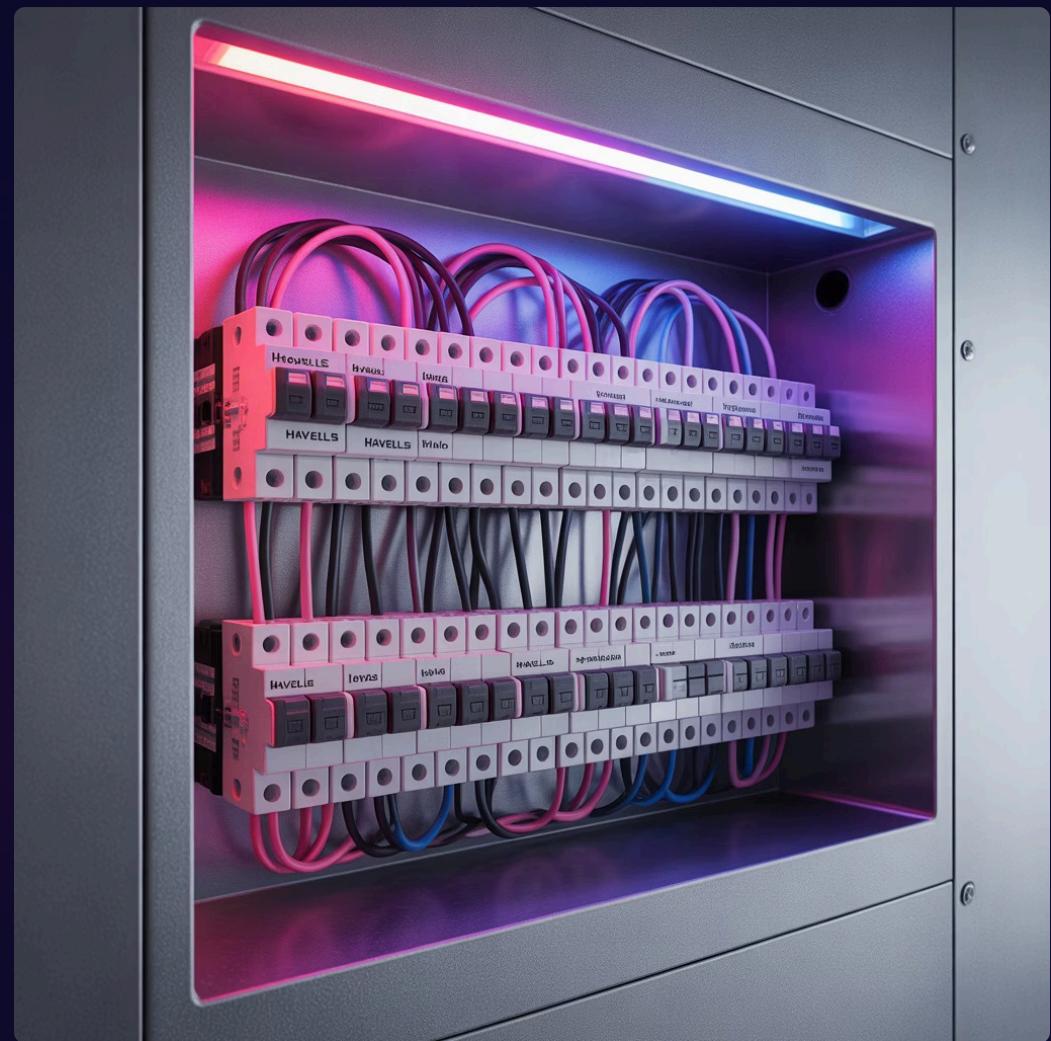


Electrical Specifications and Wiring

Wiring and Conduit Specifications

The electrical system will feature high-quality components:

- Wiring: Havells FR (Flame Retardant) grade copper wires
- Conduits: PVC conduits for concealed wiring throughout
- Wire sizing:
 - 2.5 sq.mm for lighting circuits
 - 4.0 sq.mm for power circuits
 - 6.0 sq.mm for AC circuits
- Circuit segregation: Separate circuits for lighting, power, and heavy appliances
- Earthing: Copper earthing with proper grounding pits



Switches and Outlets

All switches and outlets will be from Le-Grand brand:

- Modular switches with indicator lights
- Dedicated outlets for air conditioners with proper capacity
- GFCI/ELCB protection for bathroom outlets
- USB charging ports in bedrooms and living areas
- TV and telephone outlets in designated locations
- Distribution board with MCB protection for all circuits



Waterproofing and Moisture Protection

- **Terrace Waterproofing**

The terrace waterproofing system will consist of:

- Brick bat coba treatment with proper slopes (1:100) for drainage
- Polymer-modified cementitious waterproofing coating
- Protective screed concrete layer (M15 grade, 40mm thick)
- Expansion joints with sealants at appropriate intervals
- 10-year guarantee against leakage

- **Bathroom Waterproofing**

Bathroom waterproofing will include:

- Integral waterproofing compound in concrete base
- Polymer-modified cementitious coating on walls up to 2' height
- Complete waterproofing treatment for sunken portions
- Proper slopes (1:80) toward floor traps
- Water leakage testing before tile installation

- **External Wall Protection**

External walls will be protected by:

- Suryacem white cement waterproofing solution
- Silicon-based water repellent coating after paint application
- Drip courses at appropriate locations
- Flashing at junctions and penetrations

Quality Control and Testing Requirements



Material Testing

- Cement: Setting time, compressive strength, fineness
- Steel: Tensile strength, yield strength, elongation
- Aggregates: Gradation, impact value, crushing value
- Bricks: Compressive strength, water absorption, efflorescence
- Water: Chemical analysis for construction suitability



Concrete Testing

- Slump tests before placement
- Cube tests at 7 and 28 days
- Non-destructive testing (rebound hammer)
- Core cutting for suspect areas
- Mix design verification



Installation Inspection

- Reinforcement checking before concreting
- Plumb and alignment verification
- Waterproofing integrity testing
- Electrical circuit testing and insulation resistance
- Plumbing pressure testing at 1.5 times working pressure

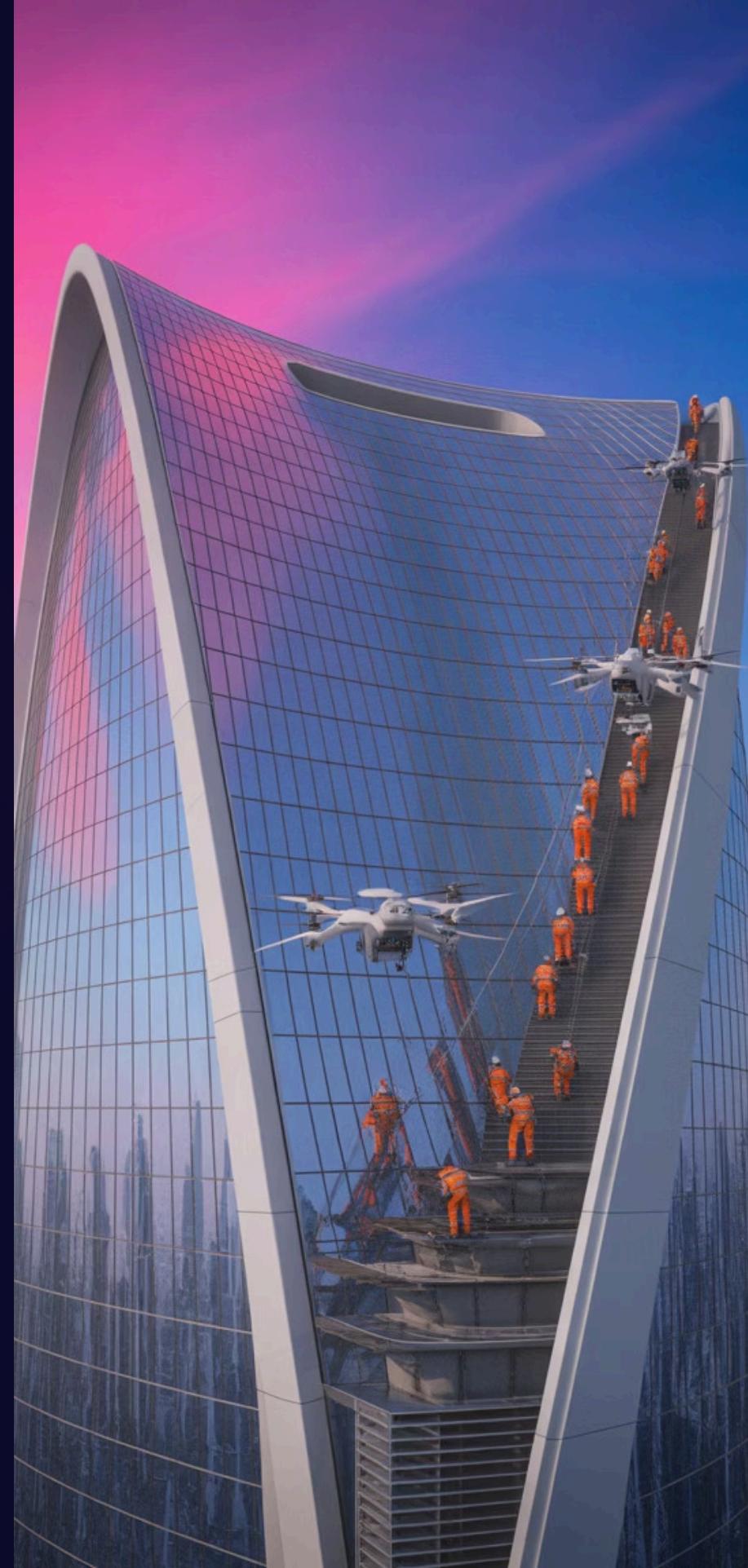


Documentation

- Material test certificates
- Shop drawings approval records
- Site instruction register
- Quality control checklists
- Non-conformance reports and rectification

Construction Timeline and Phasing

- 1** Phase 1: Site Preparation & Foundation (6-8 weeks)
 - Site clearing and excavation
 - PCC and foundation concrete
 - Underground plumbing and electrical conduits
 - Backfilling and compaction
- 2** Phase 2: Structural Work (10-12 weeks)
 - Column and beam construction
 - Slab casting
 - Masonry walls
 - Lintel and sunshade casting
- 3** Phase 3: Service Installation (4-6 weeks)
 - Electrical conduit installation
 - Plumbing pipe installation
 - HVAC roughing-in (if applicable)
 - Waterproofing treatments
- 4** Phase 4: Finishing Work (8-10 weeks)
 - Plastering and POP work
 - Flooring and tiling
 - Door and window installation
 - Kitchen and bathroom fitting
 - Painting and final touches



Important Client Responsibilities

Electricity Connection

The client is responsible for arranging the electrical meter connection before construction begins. This includes:

- Application to the local electricity board
- Payment of necessary fees and deposits
- Obtaining temporary connection for construction
- Upgrading to permanent connection upon completion

Water Supply

Regular water supply must be provided by the client throughout the construction period. This includes:

- Arrangement for water tankers if municipal supply is inadequate
- Construction of temporary storage tanks
- Water for construction activities and curing
- Testing of water quality for construction suitability

Design Selections

The client must select all design elements and color combinations, including:

- Tile designs and layouts
- Paint colors and finishes
- Door and window styles
- Fixture and fitting selections
- POP design approval

Note: Plinth and compound wall rates are subject to structural drawing requirements and may vary based on site conditions. A 5% increase in cost will apply for all rising floors starting from the second floor due to additional material handling and labor requirements.

Payment Schedule and Documentation

Payment Milestones

The construction payment will be divided into the following stages:

1. **Booking Amount:** 10% of total cost
2. **Foundation Completion:** 15% of total cost
3. **Ground Floor Slab Casting:** 20% of total cost
4. **First Floor Slab Casting:** 15% of total cost
5. **Brick Work Completion:** 15% of total cost
6. **Plastering & Flooring:** 10% of total cost
7. **Door & Window Fitting:** 5% of total cost
8. **Painting & Finishing:** 5% of total cost
9. **Handover:** 5% of total cost

Documentation and Warranties

The following documentation will be provided upon project completion:

- Structural stability certificate
- Electrical safety certificate
- Plumbing test reports
- Material test certificates
- As-built drawings
- Manufacturer warranties for fixtures and fittings
- 1-year workmanship warranty
- 10-year structural warranty

Final measurement will be conducted based on the actual slab area measured on site. This will be considered the final calculation for payment purposes. Any variations from the estimated area will be adjusted in the final payment.