Assignment 01

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Answers

(a) Scope of Work

1. Project summary & basic data

- **Building type:** Single-family residential building (multi-Storey).
- **Site dimensions (as given in image):** 17.375 m × 6.095 m = **105.900625 m^2**.
- **Floors:** Ground Floor, First Floor, Second Floor + terraces.
- **Terrace usable area (optional): ~65.6 m^2** (5.868x(4.55+6.63) (total free area on terrace).

2. Rooms

- **Ground floor:** Parking, master bedroom with attached toilet, duct pile, guest room, kitchen, Dining/gallery, store, Sub-mer pump, staircase, Entrance ramp.
- **First floor:** Bedrooms (2), guest room, duct pile, small kitchen corner, store, toilets, balcony, common area (Lobby).
- **Second floor:** Library/recreation room, store, toilet, two terraces (large & small).

Number of Floor=2

Number of Rooms=1(Bedroom Ground floor) + 1(Guest room Ground floor)

+2(Bedroom first floor) +1(Guest room first floor) + 1 (Library Room Second floor)

3. High-level deliverables (PMC scope)

- Review and consolidate architect, structural and MEP drawings.
- Produce missing structural & MEP drawings in coordination with consultants.
- Prepare tender documents (scope of work, BOQ checklist, pre-qualification criteria).
- Manage contractor procurement (invitation, clarifications, evaluation).
- Administer construction contract(s), supervise site execution, quality control & testing.
- Cost control & change management, monthly progress reporting.
- Handover documentation: as-built drawings, O&M manuals and final account.

4. Major construction activities and approximate sequence

1. Mobilization & site setup (fencing, watchman, temporary services).
2. Site survey & benchmark establishment.
3. Geotechnical investigation and foundation design.
4. Excavation & temporary work.
5. Foundations, plinth beams and anti-termite treatment.
6. Superstructure: columns, beams, slab castings, masonry.
7. Roofing/terrace waterproofing & finishes.
8. MEP rough-ins and insulation.
9. Plastering & finishes, flooring, carpentry & glazing.
10. Final services, testing & commissioning, external hardscape.

(b) Details needed to immediately start the work (with priority)

1. **High priority (must have before tendering/foundations):**
    a. Soil report with bearing capacity and groundwater table.
    b. Finished floor levels (FFLs), site datum.
    c. Structural drawings (foundation layout, column/beam sizes, slab thickness, reinforcement schedules).
    d. Statutory approvals: building permit / occupancy approvals / local NOCs.

2. **Medium priority (required before procurement/tendering finishes & services):**
    a. Heights of each floor is not given (eg. Garage heights, rooms or Floor levels) and heights of steps of stairs and stair angle.
    b. Window & door and duct piles schedule and typical details (sizes, materials, hardware).
    c. MEP (**Mechanical, Electrical, and Plumbing)** Preliminary layouts: sanitary stack positions, drainage falls, DB location, water connection point.
    d. Finish schedule: floor finishes, paint, external cladding, tiles, sanitary fixture make/model.

3. **Low priority (required during construction at specific stages):**
    a. Drawings for joinery, windows, grills—before fabrication.
    b. As-built site levels after foundation for accurate superstructure setting out.

(c) Future information required & timing (timeline table)

Item	Purpose	Required by (project stage)
Soil report	Foundation type & depths	Before foundation design/start of excavation
Reinforcement drawings	RC execution & BOQ	Before tendering for structural works
Site levels & FFL	Accurate setting out	Before excavation/foundation
MEP single-line diagrams	Services coordination & BOQ	Before MEP tendering
Window/door size & schedules	Procurement & installation	Before carpentry/window fabrication
Finish schedules & sample approvals	Finalize rates & procurement	Before finishes procurement/tender
Waterproofing & terrace detail	Terrace execution	Before terrace waterproofing works

(d) First agencies / Contractors to appoint

1. **Geotechnical consultant** (boreholes + report).
2. **Surveyor** (benchmarks, contours).
3. **Structural engineer** (full structural design).

4. **Civil contractor** (prequalify & shortlist for early earthworks & foundation).
5. **MEP(Mehcanical ,Electrical and Plumbing) consultant** (or MEP contractor with design capability).
6. **PMC (project manager)** — to coordinate and run tenders, supervise, and handle contract administration.

(e) Ballpark construction cost — detailed working & assumptions

Area basis calculation

- **Total enclosed built-up area: 231.6273 m^2 = 2,493.21 ft^2** (used 1 m^2 = 10.7639 ft^2).
  Assumed construction unit rates
- Expected cost: **₹3,000 – 3500 / ft^2**
  Estimates
- **Total Estimated cost: 2,493.21** × 3000 to **2,493.21** × 3500= 74.79 to 87.26 lakhs
  Sources: rightcon.in ,House Gyan ,MagicBricks

Allowances (add-ons)

- Contingency (10–15%): add price variations & unforeseen works.
- External works & landscaping: estimate separately (driveway, boundary gate, small garden) — assume 3–5% additional.
- Professional fees & statutory charges: architect/agency fees, permit fees — estimate separately.

Final Cost: 1-1.2 crores (Rough estimate)

(f) PMC Fee proposal & client pitch

Fee options

- **Option 1 — Percentage fee:** 1-3% of final construction contract value (negotiable depending on services).
- **Option 2 — Fixed lump-sum fee:** ₹100,000–₹150,000 depending on scope (tendering depth, site supervision frequency).

- **Option 3 — Time-based or hybrid:** Monthly retainer during construction (e.g., ₹15,000–₹20,000/month) + milestone completion fees.

Pitch that can be delivered to Chandler to convince him:

Hiring a PMC guarantees that your project is completed on schedule, within budget and to the quality you prefer. Our team negotiates low bids, coordinates structural and MEP inputs, monitors testing and inspection, and day-to-day execution so you don't have to babysit the site. With the risks of rework (particularly waterproofing and structural errors), a modest management fee provides disproportionate insurance against cost and schedule overruns.

Point to convey to chandler:

1. **Procurement & cost savings:** competitive bid management and value engineering to reduce prices—typically saving more than PMC fees.
2. **Schedule control:** schedule management, weekly updates, early warnings to avoid costly delays and quality maintenance.
3. **Quality assurance:** material testing, supplier checks, defect control, ensuring compliance.
4. **Single-point coordination:** manage architects/engineers/contractors and paperwork including permits.
5. **Risk Estimation and allocation**

(g) Other comments, discrepancies & questions for architect/client

1. Confirm whether terraces are to be included as part of usable area in the estimate.
2. Confirm FFLs and any basement/parking depth assumptions.
3. Clarify discrepancy on an overall length callout on the second-floor drawing — confirm true external dimension (17.375 m vs 18.135 m shown in some locations).
4. Confirm finish level expectations (tiles, paint grade, joinery quality).
5. Confirm statutory approvals status and whether architect has submitted for permits.

BOQ checklist — items to quantify for tender

Refer this checklist to create a proper BOQ. Each line should be measured from drawings and verified with structural and MEP shops.

Earthworks & foundations

- Site clearance & grubbing
- Excavation in soil (m^3)
- Backfilling & compaction (m^3)
- Subgrade preparation & anti-termite treatment
- Plain cement concrete (PCC) blinding
- Reinforced concrete (footings, plinth beams) — quantities for concrete, reinforcement (kg), formwork (m^2)

Superstructure

- Columns: RCC concrete volume, reinforcement
- Beams: concrete volume, reinforcement
- Slabs: RCC concrete volume, reinforcement
- Masonry work: brick/block work (m^2 or m^3)

Finishes

- Internal plastering: area (m^2)
- External plastering/render: area (m^2)
- Flooring: tiles/stone/wood (m^2) + skirting
- Painting: primer + finish paint (m^2)
- Waterproofing: terrace membrane (m^2)

Carpentry & Joinery

- Doors: shutters, frames, hardware (nos & sizes)
- Windows: frames & glazing (m^2 or nos)
- Fixed furniture: kitchen counters, wardrobes (m)

MEP

- Sanitary fixtures & fittings (nos & specs)

- Soil, waste & vent piping (m)
- Water supply piping & fittings (m & nos)
- Electrical distribution: DBs, conduits, wiring (pointwise)
- Lighting fixtures & switches

External works

- Boundary walls & gates
- Drainage works
- Entrance ramp

Testing & commissioning

- Concrete cube testing (nos), soil compaction tests
- Electrical & plumbing pressure tests

Contingency items

- Provisional sum for unforeseen items (suggest 10–15% in BOQ)

Drafting project schedule (baseline milestones — Gantt style)

Assume project duration: 12 months (adjust depending on final scope & category house built)

1. **Mobilization & approvals** - 2 weeks
2. **Soil investigation & structural drawings** - 2–3 weeks (parallel with approvals)
3. **Tendering for civil contractor** - 3 weeks
4. **Mobilization & site setup** - 2 week
5. **Excavation & foundations** - 4 weeks
6. **Superstructure (columns/beams/slabs)** - 12–15 weeks
7. **Roof/terrace & waterproofing** - 4 weeks
8. **First fix MEP & masonry works** - 6 weeks
9. **Plastering & finishes** – 6-7 weeks
10. **Second fix MEP, carpentry & final finishes** - 4–6 weeks
11. **Testing, commissioning & handover** - 3 weeks