KEY AREAS TO BE CHECKED BY CO-ORDINATORS DURING DESIGN PROCESS:

I. Project Initiation stage:

1. Survey of site - Levels & existing structures if any, Utility services in the surrounding, Soil Investigation works,
2. Project brief & Design Basis Reports for Structural & services are prepared appropriately after taking inputs from Director Operations. Project brief to be shared with all consultants.

II. Concept stage:

(In addition to the above)

1. Structural
   a) Check Strata & Excavation depth. If Strata is weak & Basements are planned, then get design of Shore piles from Structural Consultant.
   b) Type of structure (Moment frame / Flat Slab / Post tensioned / Pre-cast) and Method of construction (Conventional / Mivan / Jump form) is discussed with pre-construction team prior to concept finalization for their inputs on cost, schedule & constructability.
   c) In Parking areas or large span buildings like Offices / Retails Span of 8.5 x 8.5 m is more economical from Parking efficiency, steel consumption.

2. Electrical
   a. Co-ordinate with Liaisoning for identifying the source & requirements of Power Supply Company.
   b. If Total demand load is more than 5 MV then Receiving station is required. For conversion of Electrical supply from 22/11 KV to 440 V, Sub-station is required.
   c. Electrical point wiring of apartments to be discussed with Architect to match interior RCP.

3. Plumbing
   a. Study of surrounding sewer, storm water & water supply infrastructure needs to be done. (As per norms, if water discharge of project is more than 50,000, then STP needs to be provided.)

b. Type of Water supply system (Gravity / Hydro pneumatic) to be finalized as per project segment.
c. Types of materials (fittings & fixtures) to be discussed & agreed with Architects as per policy.
d. Rain Water Harvesting system to be discussed & designed by Consultant. Location of recharge pits & tanks are to be agreeable to Architect.

4. Fire Fighting
   a) Fire Safety document & level of fire safety to be finalized based on NBC norms, CFO remarks & project guidelines. (CFO of similar projects to be considered).
   b) Fire fighting system (capacity of fire tanks, requirement of intermediate / Break pressure tanks) to be finalized based on NBC norms & CFO remarks.

5. HVAC
   a) Areas which to be air conditioned are discussed and agreed with architect.
   Types of HVAC system (VRV / Split / Window) are finalized based on project segment.

6. Automation / IBMS
   a) Requirements of automation / IBMS features to be discussed and finalized with Consultant. Also refer project brochure for commitment made to customer. Guideline budget & project segment shall also be taken into consideration before finalizing the system. It is to be insured that shop/working drawings of IBMS cabling/conduiting are finalized prior to completion of Civil DD set so that same can be incorporated in the civil drawings to avoid chasing later.
   b) Any interaction with BMS system to be incorporated into machine software.

7. Vertical Transport
   a) Traffic analysis to be done & no. of Elevators are finalized to meet norms as per policy.
   b) Standard shaft sizes to be maintained as far as possible so that shaft sizes shall suit to 2-3 lift manufacturers to get best quotes.
   c) Any special provisions required for elevators to be incorporated into specifications (finishes, access control needs etc.).

8. Solid Waste Management
    a) Solid waste & Garbage collection & disposal plans to be discussed & finalized with Consultant as per Master Planning layout. Dry & Wet collection should be separate.

9. Infrastructure Services
    a) Road Network: = Internal roads are to be planned w.r.t. Vehicular Traffic / trip generation from new & future development. Decision to be made on type of road construction technology (concrete, regular bitumen etc.)
    b) Common Area Utility Services:= Utility services like Storm Water Drain, Lighting, Water Supply, Electrical Supply, Security, Fire Fighting & Sewerage lines passing through Internal roads & common areas to be identified & finalized. Also provision shall be made to access / repair these services without disturbing the road pavement.

10. Security (including access control)
    a. Security threat assessment to be carried out (based on norms at other projects). Separate consultant to be involved in case of very high-profile development.
    b. Security measures to be discussed and agreed upon. To be finalized in discussion with Architect and incorporated into design.

III. Schematic/IDD Stage:

(In addition to the above)

1. General Requirements
    a) Design parameters / quantities are as per concept budget + concept schedule.
    b) Explicit value engineering discussion is conducted between Design, Pre-Const, Procurement and Const Mgmt and inputs to be incorporated into design.
    c) Schedule deliverables are discussed and agreed with all consultants
    d) Technical Specifications are finalized & handed over to marketing as per requirement.

2. Structural
    a) Plans & Technical Specifications (and all other necessary details/info) are shared with Contracts team for their inputs & to appoint Civil Contractor.
    b) Necessary changes to be made in design as per inputs from Construction Management for constructability.

3. Electrical
    a) Technical Specification for major equipments like Transformers, DG Sets, and Panels are finalized as per requirements of Power Supply Company.
    b) Specifications for materials (Cables, wires, switchgears) are finalized as per project requirements. Guideline budgets are also to be referred.

4. Plumbing
    a) Water Tank & Pump Room layouts to be finalized as per basement plan / parking layout. Tank layout are to be such that +ve suction to pumps is achieved. This reduces load on pumps & also cost effective.
    b) Schematics of Water Supply, Sewage drain, SWD are to be finalized as per design guidelines.
    c) Internal layout of STP is to be finalized.
    d) Location & sizes of ducts are finalized in coordination with Architect & Structural consultant.

5. Fire Fighting
    a) Fire Tanks & Pump room layouts to be finalized.
    b) Schematic details of Sprinklers & Wet Risers to be finalized. Density of Sprinklers shall be 9-12 per Sqmtrs of area.

6. HVAC
    a) Locations of units & route of piping are finalized in co-ordination with Architect.
    b) The drainage & electrical supply to be co-ordinated with plumbing & electrical layouts.

7. Automation
    a) Details of automation & layouts are discussed and agreed with architect keeping the guideline budget & project segment in mind.

8. Vertical Transport
    a) Technical Specifications & finishes to be forward to Procurement cell & inputs from Lift manufacturer for Shaft details are to be incorporated in design.
    b) Requirements of Lift manufacturer are to be shared with other services contractors to incorporate in their designs.

9. Solid Waste Management
    a) Detailed plans & technical specifications of Solid waste & Garbage collection & disposal plans to be finalized in coordination with Consultant.

10. Infrastructure Services
    a) Common Area Utility Services:= Details & routing of Utility services like Storm Water Drain, Lighting, Water Supply, Electrical Supply, Security, Fire Fighting & Sewerage lines which will be passing through Internal roads & common areas to be finalized in co-ordination with Architects & MEP consultant.
    b) Road network: =Levels & Cross-section of Internal roads are to be co-ordinated with underground services which will be passing through these roads.
    c) Ideally slope of internal roads shall not be more than 1:200 to 1:300.
    d) Gradient & Levels of Road are to be finalized w.r.t. Building Plinth levels in co-ordination with Architects & MEP consultant.
    e) For Sewer lines slope shall be considered in the range of 1:80 to 1:150.
    f) For storm water drains slope shall be considered in the range of 1:100 to 1:200.

IV. DD Stage:

(In addition to the above)

1. Respective package are in adherence (quantity and total cost) with concept budget (viz. delivery budget meets necessary deviation from concept budget).
2. FDD Packages are delivered as per agreed schedule deliverables.
3. Detailed review of each VFC package is conducted from technical, cost, schedule, procurement and constructability perspectives.
4. Coordinate with liaison to ensure that all necessary approvals are in place / likely to be in place (at time of finalization of excavation DD).

V. VFC Stage:

(In addition to the above)

1. VFC drawings are checked thoroughly for quantities, content, technical accuracy and adherence with finalized DD intent
2. VFC drawings are delivered as per agreed schedule deliverables (delivery schedule). Same may be adapted as per needs of Const Management team.
3. VFC drawings are handed over to Cost Mgmt for approval (adherence to delivery budget).