Water Body Design & Procurement Guidelines
(replaces 'Water Body Guidelines')

Design:

a. Water bodies (other than swimming pool) should be avoided in Casa residential, Boulevard retail and iThink Office projects and should be minimized in Aspirational residential projects. See Landscape Design policy *'Guidelines for incorporation of water bodies in Lodha projects'.*
b. The entire water body (for all water body types) along with the up stand should be in RCC (not brick / block).
c. The light fixtures should NOT be engineered by Lodha – the consultant/designer should be given the list of Lodha approved Indian/international vendors and should have freedom to decide from the standard product of such vendors. Value engineering and choosing amongst options of such approved/reputed vendors is permissible but it is not permissible to take a fixture from a reputed vendor and assume that it will get locally engineered. Budget should reflect this fact.
d. Water sources for the water bodies should be clearly identified and finalized prior to DD completion (as per Water sources demand types and treatment options policy)
e. A specialist water body expert should be appointed for engineering and design of water bodies (except very minor ones). The concept shall come from the landscape designer/architect.
f. Technical guidelines:

    1. Three types- water against gravity/water that falls with gravity/static water aerated by bio - organisms.
    2. A sump that is not part of the water body is a must- never within the water body.
    3. All sumps must have washout valves and a fill up connection.
    4. Piping/ Headers to be UPVC or SS. (GI /PVC over long run never works)
    5. All piping on the water body floor, to be laid in a false filling, post the water proofing/ implying there by that if the piping is to be repaired, the water proofing is never damaged.
    6. Pump selection should be usually with modified impellers/ and or essentially low head/high discharge pump.
    7. Only submersible pumps to be used.
    8. All water bodies must drain dry once shut. This is a hygiene issue.
    9. Filters to be provided in all cases, unless water body is very small.
    10. Water bodies that work with gravity are preferred since lesser maintenance.
    11. If against gravity, nozzle selection should be a simple broad bore jet, and as such those jets that can get clogged easily to be avoided .
    12. Still water bodies must be designed with right soil layer and fish that are bottom/mid/surface breeders.

13. Vendor/Designer should help in preparing a maintenance guideline for each body specifically at time of T&C and same to be handed over to HFM.

Procurement:

a. Suggested Methodology of Procurement
   - RCC (including waterproofing): Lodha
   - Flooring/tiling: Nominated sub-contractor provided by Lodha
   - Lighting: Water System contractor (key light fittings can be supplied through a nominated vendor)
   - Electrical works: Water System contractor
   - Hydro-pneumatic: Water System contractor
   - Overall testing and commissioning: Water System contractor
   - Engineering / Design of the system: Water System contractor
     - Lodha will need to specify all output/performance parameters at time of award and water system contract will be responsible for engineering and design of the system to meet these output/performance parameters.

b. Procurement should ensure that atleast 15% of the value of the Water System contract is payable only upon satisfactory testing and commissioning of the entire water body.

c. Procurement should ensure that either the Water system agency OR a specialist agency is identified for maintenance of the water body for a period of (min.) 12 months from commencement of possessions. The cost for this is to be debited to HFM budget and should not form part of capital expenses.

A. Design Parameters required from Principle Architect/Landscape architect.

Sl No	Water Body Type	DETAILS REQUIRED	Reference Pictures/Video
1	Lap Pool/ Family Pool/ Reflection Pool	Dimensions, Sectional Depth, Water inlet type, Wave pools requirement, Overflow Type/Skimmer type, Vanishing/Infinity edge details, Pool drain type and location, Lane width and numbers, Pool internal wall finishes, Pool ladder type and overflow drain location, requirements of sanitizers with levels, etc. Pool lighting requirements, material of construction for all visible aesthetical elements	Pool Picture/Video required together with overflow channel, pool drain type and picture of design intent of lighting. Above should be look alike showing the closest design intent.
2	Spa Pool	Dimensions, Concept of Spa pool - salt water pool/hydrotherapy pool, etc. Temperature of operation, Requirement of sanitizers with levels, return water concept, etc. , Overflow Type/Skimmer type, Pool lighting requirements, material of construction for all visible aesthetical elements	Spa pool Picture/Video required together with design intent of lighting. Above should be look alike showing the closest design intent.
5	Rain Pool	Dimensions, Sectional Depth, Size of the Rain Shower curtain required, Rain shower pools separation, number of seats/details of seating arrangement, rain shower head details/drawing, etc , Overflow Type/Skimmer type, Pool drain type and location, Pool internal wall finishes, Deck finishes and overflow drain location, requirements of sanitizers with levels, etc. Pool lighting requirements, material of construction for all visible aesthetical elements	Rain shower Pool picture/video required together with design intent of lighting and rain shower head sample picture. Above should be look alike showing the closest design intent.
6	Hamam	Dimensions, Sectional Depth, number of beds/seats and details of seating arrangement, shower, foot Massaging requirements- Air/Water/combined system, cold/hot water system requirements, Nozzle head details / drawing, etc, Temperature requirements, Outlet pressure requirements, Drain type and location, Seating/bed wall finishes, Finishes and drain location, requirements of sanitizers with levels, etc. Pool lighting requirements	Hamam picture/video required together with nozzle head sample and design intent of lighting picture. Above should be look alike showing the closest design intent.

7	Water Jet Pool	Dimensions, Sectional Depth, Water inlet type- Laminar/Normal Jets, Laminar thickness/Jet Dia with throw distance and height, Overflow Type/Skimmer type, Nozzle type, Pool drain type and location, Pool internal wall finishes, Deck finishes and overflow drain location, requirements of sanitizers with levels, etc. Pool lighting requirements, material of construction for all visible aesthetical elements	Pool Picture/Video required together with water inlet- Laminar/ Normal Jets nozzle/outlet, design intent of lighting and drain picture Above should be look alike showing the closest design intent.
8	Kids Pool	Dimensions, Sectional Depth, Water inlet type, Overflow Type, Pool Ladder and drain type and location, Pool internal wall finishes, Deck finishes and overflow drain location, requirements of sanitizers with levels, requirements of bubblers and type etc. , Overflow Type/Skimmer type, Pool lighting requirements, material of construction for all visible aesthetical elements	Pool Picture/Video required together with bubbler head, design intent of lighting and drain picture. Above should be look alike showing the closest design intent.
9	Water Feature Cascading/ Water walls/ Water curtains	Dimensions, Sectional details with return channel, Water wall/Cascading sections details, slope, etc with dimensions, Laminar flow/divided flow details, thickness of water sheet, requirement of air infusion, details of inlet head, etc. Ejector Jets requirement, Lighting requirements, return overflow Type/Skimmer type, requirement of anemometer, material of construction for all visible aesthetical elements	Video and Picture of Water Feature together with picture for all visible aesthetical elements and design intent of lighting. Above should be look alike showing the closest design intent.
10	Water Fountains/ Normal/Jumping water spouts/ Dry Deck Interactive /etc	Dimensions, Sectional details with trough depth, combination of cascading return with sections details, slope ,etc with dimensions, Laminar flow details, requirement of air infusion, height of the fountain, grouping, details of inlet head, etc. requirement of anemometer, Lighting requirements, material of construction for all visible aesthetical elements	Video and Picture of Water Feature together with picture for all visible aesthetical elements and design intent of lighting. Above should be look alike showing the closest design intent.

B. Scope of Work for Design and Build Contract is divided into following major phases.

1. Tendering
2. Schematic design
3. Detailed Design with Construction Documentation
4. Supply and Installation
5. Testing, commissioning and Handover

1. Tendering

i. Phase 1 shall be controlled mainly by Procurement and Contracts with technical and capability analysis by Lodha Design (Architect+MEP) and Principle Design consultants.

ii. Bidders to quote on the design intent of the Principle Architect/Landscape architect as shown in documents and drawings.

iii. Quote should be divided into Design, Supply and Install, Test and commission with Handover to Facilities Management.

iv. Bidders to include all components/system under Hydromechanics and lighting with accessories, cabling, etc. Pool/Water feature architectural finishes to be excluded from bidder scope however all hydromechanics aesthetical items viz nozzle, fountain head, drain head, skimmer, lighting, etc included in scope of the bidder.

v. Bidders to verify the space allocation for plant room, submerged pump rooms, etc and system requirements and provisions allocated. Bidders to provide detailed BOQ considered for the quote. Since this package is design and build all items to be included in the scope of bidder as per this document. Power, water supply and drainage shall be provided for the system at one point in the plant room (for swimming pools additional drainage point shall be provided below the pool base), further distribution and system integration is the responsibility of the water body vendor on board.

vi. Bidders to provide physical sample board and technical cut sheets of all aesthetical hydro mechanical items viz, nozzle, fountainhead, skimmer, drain head, lights, etc for architect approval.

vii. Bidders to provide list of makes (maximum two) for all aesthetical and lighting items considered during quote for technical approval. On award water body vendor to comply with the two makes.

viii. Bidders to list down the system description with a brief schematic drawing with space allocation requirements together with the quote. Without the documents technical evaluation shall not be taken and bids shall be considered as null and void.

ix. All query to accomplish implementation of architect design intent to be listed as Request for Information (RFI) during bidding stage.

x. Bidders to list down all exclusions in a separate sheet with the quote. Any equipment/system miss out during tender stage shall be deemed included in the scope of contractor post award.

xi. Bidders to list down the quantity of spares and consumable considered during bidding stage.

xii. During the contract period co-ordination with all Design consultants, Lodha Design, Other trade contractors, Construction Management and Lodha Facility management is deemed included in the scope of the bidder.

2. Schematic Design

i. Phase 2 shall be controlled mainly Lodha MEP Design for hydromechanics, Lodha Architect Design for aesthetical and Principle Design consultants.

ii. On successful award of job to Water Body vendor for Design and Build contract, vendor to start with schematic design based on the design intent on Architectural, Structural and MEP VFC/DD.

iii. Design basis report to include hydro mechanical calculations, overall process flow schematics diagram, water supply input flow rate and pressure required, system description and equipment schedule.

iv. Establish Preliminary Machine Room information, including room size and location (2 options to be included), ventilation requirements, and power, water, and draining requirements.

v. Prepare a set of schematic design drawings sufficient to convey the Scheme. Deliverables include: video and other illustrative materials to describe feature's water action / motion design, site plan, sections and elevations.

vi. Participate in teleconference/videoconference (at Lodha) with the Design Consultant to clarify desirable design directions.

vii. Revise the design in response to comments from Design team, as required.

viii. Vendor to update the final presentation for the schematic and submit hard copies (3nos) + soft copies (CAD/PPT/Excel/Word) present the work to Lodha Design and Design Consultant's.

ix. On confirmation from Lodha Design and Design consultants Water Body Vendor to proceed to Detail Design Phase.

3. Detailed Design and Construction Documentation

i. Phase 3 shall be controlled mainly Lodha MEP Design for hydromechanics, Lodha Architect Design for aesthetical, Principle Design consultants with inputs from Lodha Construction Management for constructability.

ii. Vendor to prepare a set of design and engineering drawings based on project Architectural/Structural/MEP VFC drawings to provide detailed design development as per approved schematic design. Vendor to submit 50% and 100% stages of completion for approval from Lodha Design and Design Consultants. Deliverables include: General Sheets, Site Plan, Basin Plan, Finishes Plan, Finishes Schedule, Sections, Elevations, Details, Physical samples and cut sheets of all items for aesthetical components of water body for Architect approval. Drawings should include Builders works drawings and co-ordinate services drawings for approval and site execution. All deliverables should be submitted in soft copies for approval and henceforth hard copies (7sets) for approval and circulation to site.

iii. Engineering Deliverables include: Equipment Schedule (with specifications), Detailed Piping and Instrumentation Diagram (Piping Schematic – indicating pipe sizes, equipment sizes with ratings and capacity, rating of motor with power requirements), Single-Line Diagram (Electrical Schematic), Electrical Panel Schedule, Pump Room Plan and Sections with proper setting out dimensions. Plant room co-ordinated services drawings. Quantities as per item 3(i)

iv. Revise Construction and Maintenance Cost Estimates in accordance with the developed work.

v. Vendor to ensure that all items under the design development are included in the final tendered BOQ.

vi. Vendor shall not be entitled to claim any variation unless otherwise basic design intent of the Principle Architect/Landscape consultant is changed.

vii. Vendor to submit final approved Design Development drawings(A3)- 2 sets with all technical documents, calculations, picture of approved water body aesthetical samples, etc for records in spiral binding.

4. Supply and Installation

5. Testing, Commissioning and Handover

i. Phase 4 and 5 shall be controlled by Lodha Construction management team with the involvement of Lodha Facilities Management team.

ii. Vendor to provide method statement, material submittal, procurement schedule and equipment delivery schedule together with ITP schedule to respective site for approval.

iii. Phase 4 shall be commencing on approval of 50% DD.

iv. Vendor shall call for part, complete, integrated testing and commissioning of water body systems.

v. Before final handover of the system vendor to submit 2 copies of Operation and Maintenance manuals consisting of as built drawing for the water bodies, material availability, fast moving consumables and spares parts list, address/contact information for local vendors for spares availability.

vi. Contract terms should retain sufficient amount as retention in terms of the guidelines for 'Design and Build' contract.