

DESIGN PARAMETERS FOR RFSQ Aquatic Center Outdoor Pool Project

1. Project Services. Consultant to perform professional services for a project known and described as the Aquatic Center Outdoor Pool (“Project”). The Project includes the design of IFC plan set for one 25-yard competition pool (“pool”). The pool dimension is 25 yards (75’) long and 20 yards (60’) wide. The perimeter is 270’0”. The surface area is 4,500 sq. ft. The capacity (volume) is 197,000 gallons. The pool shall be designed with a 9-foot to 4-foot depth, with the shallow end at one end (turn wall) and the deep end at the opposite end (starting blocks side of the pool.) The designed turnover rate will be 547 GPM for a 6-hour turnover. The pool will have a deck level gutter system with the surge capacity held in the gutter.

The Services are described in the following subtasks:

1.1 Schematic Design: Consultant shall perform the following under this task:

A. Code Review:

- Review of Lake Havasu City, Mohave County and Arizona Department of Environmental Equality Health Codes (*as applicable*).
- Review of Americans with Disabilities Act (ADA)/Architecture Barriers Act (ABA) 2010 Title II and Title III.
- Review of Applicable Swim Federation Design Guidelines.
- Review of 2018 International Building Code (IBC).
- Review of International Swimming Pool and Spa Code (ISPSC).
- Review of Model Aquatic Health Code (MAHC) (*as jurisdictionally applicable*).
- Review of Virginia Graeme Baker (VGB) Pool & Spa Safety Act.

B. Layout of Pool and Deck Equipment:

- Complete site survey to be performed by an Arizona Registered Professional Land Surveyor (RPLS).
- Confirm shape and programming intent of pool.
- Confirm programming intent of pool and applicable swim federation design parameters.

C. Hydraulic Calculations:

- Determine turnover requirements and turnover rates of pool
- Determine preliminary sizes of suction, pressure and gravity lines.

D. Mechanical Filtration and Sanitation:

- Establish City’s expectations for chemical treatment and filtration systems.
- Determine primary sanitization systems and alternative disinfectant usage.

E. Equipment Room(s) Design:

- Provide architect with preliminary equipment room (s) dimensions.
- Determine type of mechanical filtration system to condition the water.

- Submit preliminary size and plan view spatial relationship of the pump, filter, and heating device/appliance (*e.g., Boiler, Flat Plate Heat Exchanger, Air Sourced Heat Pump, Water- Sourced Heat Pump or Geothermal Heat Pump*) in the proposed equipment room(s) for pool.
- Determine chemistry control desires/capabilities from City.
- Provide preliminary coordination letter with preliminary equipment load calculations.
- Provide air exchange requirements for equipment room(s) and chemical storage room(s).

F. Sections:

- Preliminary sections through pool illustrating horizontal and vertical plane attributes of structures.

G. Timing System:

- Preliminary selections for the touch pads, cabling, console, scoreboard.

H. Structural Engineering:

- Develop geotechnical report and design criteria.

I. Meetings:

- Access to Consultant for phone/video conferencing commensurate to the coordination needs of the design team specific to this scope of work.

1.2 Design Development: Consultant shall perform the following under this task:

A. Layout of Pool and Deck Equipment:

- Provide applicable rail goods and anchors for pool.
- Provide dimensioned plan view of pool area.

B. Hydraulic Calculations:

- Determine line sizes for suction, return and gravity piping.
- Determine the diameter of backwash piping from filters.

C. Load Calculations and MP+E Consultant Coordination:

- Provide load calculations for pool circulation and booster motors, underwater lights, automated control systems, and alarms.
- Provide MP+E and civil engineering consultants to determine upstream feeders and distribution, branch circuits, and equipment room(s) lighting.
- Provide Btu data for pool heating device/appliance (*e.g., Boiler, Flat Plate Heat Exchanger, Air Sourced Heat Pump, Water-Sourced Heat Pump or Geothermal Heat Pump*).

D. Piping Systems:

- Preliminary coordination with architect and mechanical, plumbing, and electrical ("MP+E") consultant for pipe system routing.

- Complete equipment and piping system schematic illustrating all pipe sizes and velocities.

E. Underwater Lighting:

- Determine preliminary underwater lighting requirements and program effect desire of the City.

F. Sanitation Equipment:

- Size and select disinfection system and disinfection delivery equipment.
- Size and select pH control chemicals and delivery equipment.
- Size and select automated chemistry control devices.

G. Equipment Room(s) Design:

- Provide plan view of pool equipment room(s).
- Provide City a coordination letter introducing the coordination details and load calculations of the pump filter and heating device/appliance (*e.g., Boiler, Flat Plate Heat Exchanger, Air Sourced Heat Pump, Water-Sourced Heat Pump or Geothermal Heat Pump*)
- Provide load calculations for pool circulation and booster motors, underwater lights, automated control systems, and alarms.
- Coordinate the design of the equipment room(s) to meet spatial requirements of selected mechanical filtration and sanitation equipment, pool service panel, backwash pit/riser, entry door location, and storage.
- Coordinate location, size and connection of cold-water supply with mechanical engineer.
- Coordinate connection of backwash line, continuation of line from equipment area shown on civil or mechanical engineer's sheets.
- Coordinate eyewash station location and all required personal protection equipment (PPE) with MP+E; manufacturer and model specified by MP+E.
- Coordinate equipment room(s) floor drain location(s) with MP+E and architect.

H. Structural Engineering:

- Determine steel schedule, mix design, and thickness of pool shell(s).

I. Sections:

- Formalize sections through pool illustrating horizontal and vertical plane attributes of structures.

J. Timing System:

- Formalize design for the touch pads, cabling, console, scoreboard.

K. Detail Pages:

- Provide preliminary detail sheets for all key components of pool design.

L. Written Specifications:

- Provide preliminary written technical specifications in format provided by

architect.

M. Meetings:

- Access to Consultant for phone/video conferencing commensurate to the coordination needs of the design team specific to this scope of work.

1.3 Construction Documentation: Consultant shall perform the following under this task:

A. Site Survey and Layout of Pool and Deck Equipment:

- Provide site survey to be performed by an Arizona RPLS.
- Provide layout of gutter/coping of pool edge.
- Coordinate with both Mohave County Health Department and City Development Services Department for compliant pool enclosure with architect; enclosure to be illustrated and specified in architect's scope of work.
- Provide preliminary spot elevations for pool to meet County Health Code.

B. Provide Load Calculations and MP+E Consultant Coordination:

- Provide final load calculations for pool pump motors, underwater lights and controls.
- Provide electrical schedules, feeders, one line diagrams, electrical calculations, and branch circuits.
- Provide final Btu input calculations for heating device/appliance (*e.g., Boiler, Flat Plate Heat Exchanger, Air Sourced Heat Pump, Water-Sourced Heat Pump or Geothermal Heat Pump*) to architect and MP+E.
- Establish pool service location with architect and MP+E

C. Piping Systems:

- Provide call-out and diagram piping sizes of all suction and pressure-side of systems.
- Coordinate pipe routing with architect and MP+E consultant.
- Provide equipment and piping flow diagram.

D. Equipment Room(s):

- Provide 3D schematic of pool equipment room(s) fully coordinated with MP+E, civil, landscape architect and architect's plan set.

E. Sections:

- Provide final sections through pool showing horizontal and vertical plane attributes of structures.

F. Timing System:

- Provide final design details for the touch pads, cabling, console, and scoreboard.

G. Structural Engineering for Pool and Pool Features:

- Provide plans and calculations for pool shell.
- Provide handicap lift footing and design.
- Provide geotechnical report of the soil below the on-grade pool structure and the recommendations of the geotechnical engineer for the pool shells.
- Provide structural engineering for all equipment/products weighing in excess of 400 pounds for seismic review (*as required by local jurisdiction.*).

H. Deck Drainage:

- Coordinate deck slopes and pool rim elevations with architect and civil engineer.
- Coordinate deck slopes and drainage design by architect, landscape architect and/or civil engineer.

I. Underwater Lighting:

- Provide and coordinate underwater lighting selections, conduit runs, J-Box locations, power requirements and connection points to architect and MP+E consultants.
- J-Box and power wire to panel illustrated on electrical engineer's sheets.

J. Detail Pages:

- Supply final detail sheets applicable for all key components of pool design.

K. Written Specifications:

- Product information for Construction Specifications Institute's (CSI) MasterFormat® Division 13 items will be keynoted on plans (Sheet Specs).
- Sections for qualifications, submittals, shotcrete, waterproofing, tiling, interior finish, and fabrications will be Book-Version Specs.

L. Meetings:

- Access to Consultant for phone/video conferencing commensurate to the coordination needs of the design team specific to this scope of work.

M. Permits:

- Provide plans and supporting calculations bearing the seal and signature of the Arizona registrant licensed as an architect and/or engineer in the State of Arizona.
- Consultant will complete the Health Department Permit application and assemble the appropriate sheets needed for submittal.
- Architect to submit County Health Department pool permit to the City as part of the building permit submittal package.
- Consultant will respond to plan-check corrections for health and building permits.
- Cost of permit(s) is borne by City.

1.4 Deliverables.

- All drawings will be produced on an Autodesk® platform. The Consultant's base drawings shall be created in AutoCAD LT. The mechanical filtration and sanitation system (equipment room) shall be 3D- modeled in AutoCAD MEP, enabling it to be seamlessly integrated into Revit or other BIM Collaborate Pro™ (formerly BIM 360) platforms for clash detection and coordination purposes.
 - The scope includes a completed Bid Form for the pool contractor to populate with unit and aggregate pricing.
 - Detail pages shall be provided as PDF files. Printing and shipping/courier costs shall be billed as incurred and passed through at cost.
 - Reimbursable expenses: An allowance of \$500 is anticipated for reimbursable expenses.
2. Schedule: The Services will commence upon receipt of an executed Agreement and shall be completed within three months of the executed Agreement.
3. Assumptions:
- Equipment room(s) and chemical storage room(s) must have two-hour rated walls.
 - Backwash piping is contingent on selection of sand or diatomaceous earth filtration systems; modular media filtration will not require backwashing.
 - Mechanical filtration and sanitation system component selections shall be made at 100% Design Development or delays in coordination efforts may result and affect the deliverables schedule in Construction Documentation.