



**MARINA BUSINESS
ASSOCIATES**
Strategies • Performance • Results

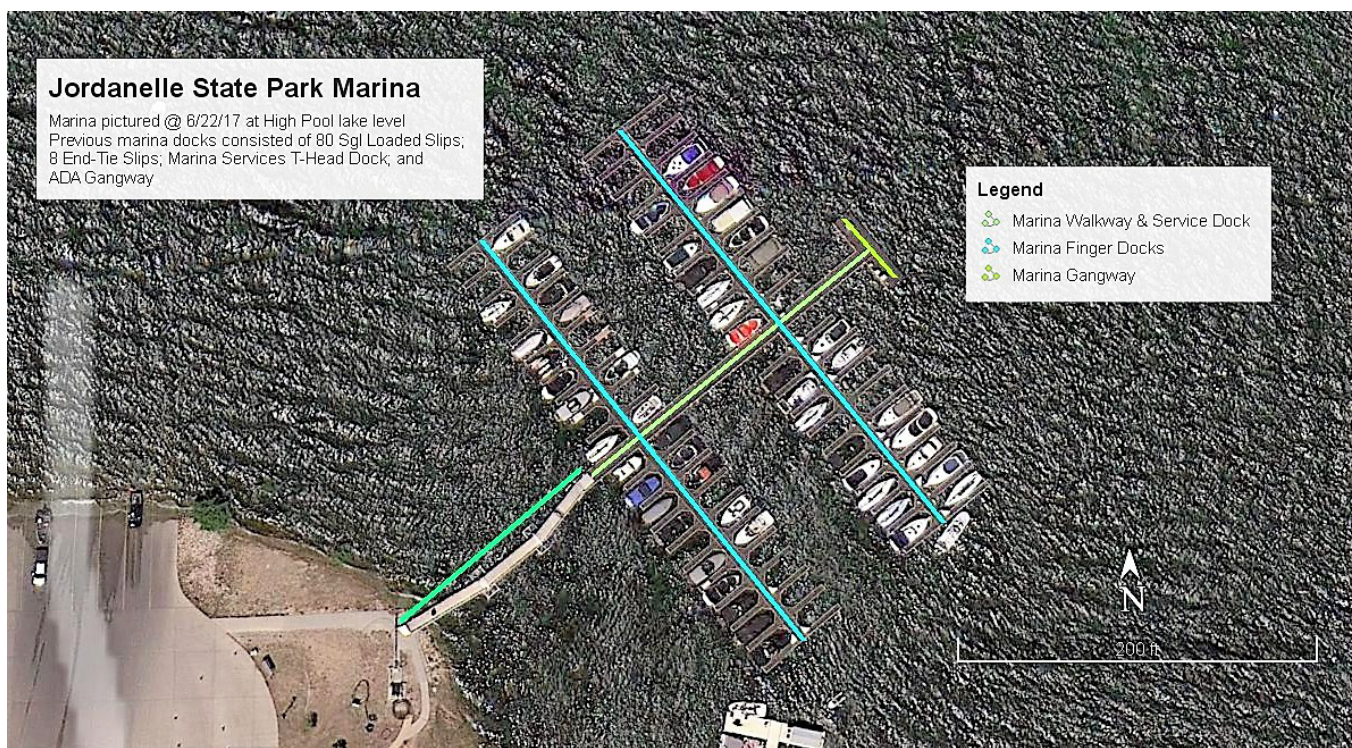
James “J” Mills, Principal-Lead Consultant
Licensed General Engineering Contractor CA-CSLB #920518
Marina, Boatyard & Resort Operations Consulting
CIP Planning, Analysis, Design, & Project Management

MBA – Jordanelle SPM Design Criteria w/Photos v072522

Reference attached “MBA – Jordanelle SPM Docks Conceptual Design and Specifications v072522”

State of Utah, Department of Natural Resources – Parks & Recreation, is seeking Proposals for Engineering, Manufacturing, and Installation of new marina docks at the Jordanelle State Park, similar to the previous marina dock facilities pictured below (*Google Earth image 6/22/17*)

The pictured aluminum structure marina docks (*by ShoreMaster*) were installed in 1994 and heavily damaged and determined to be unreparable and unsafe by an exceptional weather event in 2019



The marina basin is located in the Southwest corner of Jordanelle Reservoir adjacent to Jordanelle Utah State Park, Wasatch County, near Heber, Utah

Reservoir encompasses 3,068 acre lake, fed and drained via the Provo River and other local stream tributaries
High Pool lake elevation is 6,166 feet – Lake level is known to reach a Low Pool level of 6,070 during late Fall, but typically fluctuates 60-70 feet on a seasonal basis

Lake is subject to freezing-over during the winter months (December – March) with a typical maximum seasonal ice formation depth of 12 – 18 inches

Typical maximum seasonal snow accumulation on the frozen lake surface and floating docks is 18 – 24 inches
Spring-thaw typically occurs during April – May creating thinning ice flows, diminishing along the shoreline first, on the lake surface that may potentially create a wind-driven hazard to the marina in the event of high Northerly winds

Marina basin is exposed to an open-water 2-mile fetch from the North at High Pool, which typically is reached by late June as the spring-thaw completes (*see photo below*) and a 1/2 -mile fetch from the East at High Pool Marina basin is well protected and sheltered from the South and West by significant land masses and mountains



The following summary of wind conditions on the lake is compiled from detailed daily wind data for the period of January 1, 2020 thru June 30, 2022 provided by www.windfinder.com and local observations provided by Park management

- Typical prevailing (80%) wind pattern is South to WSW year-round with average maximum daily wind speeds of 10 – 15 MPH and occasional gusts of 20 – 30 MPH; Maximum wind gusts of 50 MPH were recorded during the sample period
 - o Southerly winds tend to increase and move to SE direction during spring and fall peaks averaging daily highs of 15 – 25 MPH with occasional gusts of 40 - 45 MPH
 - o The marina is well protected from southerly winds by significant land mass
- Northerly winds tend to occur 20% of time, usually associated with approaching weather fronts; Typical NNE – NNW winds average daily highs of 15 – 25 MPH with occasional gusts of 35 MPH
 - o Northerly winds tend to increase in frequency (40%) during winter and spring months with typical maximum wind speed in the 15 – 25 MPH range and occasional gusts recorded at 40 MPH during the sample period
 - o Occasional storm winds occur from the NNW to NNE with sustained winds of 25 – 35 MPH and gusts of 40 MPH
 - o An extreme 20-year weather event was experienced in 2019 producing NNE winds of 60 MPH and 3-foot waves, as reported by Park management

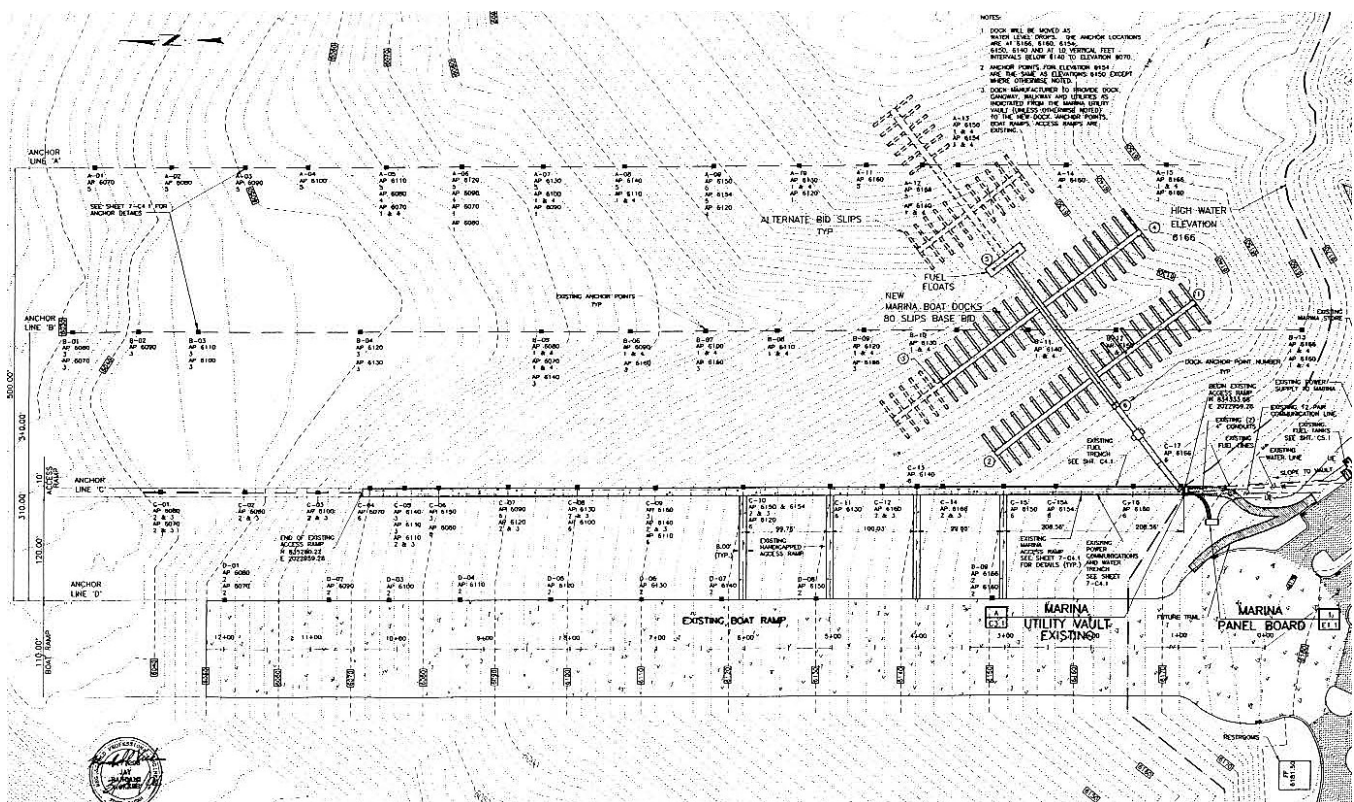
- Diminished lake levels during winter and early spring reduce the northerly fetch during this period
- Although the marina is protected by a typical 200 foot wide “5 MPH Zone” boat wakes in the 1 foot+ range do impact the marina on a regular basis

New marina docks will be anchored by winch & cable system utilizing existing poured-in-place concrete anchors, aligned south to north along (4) anchor lines designated A, B, C, and D (*see Photo below*). Anchors are spaced regularly along declining lake bottom to allow for relocation of floating docks as lake levels rise and fall from elevation 6166 to 6070

- Local divers are used by the marina to relocate anchor points and assist with relocation of the docks - ***Minimizing the number of active anchor points is a primary concern in the dock design***
- **Reference attached “MBA – Jordanelle SPM Docks Conceptual Design and Specifications v071722”** for more information and proposed anchor scheme

New marina docks should be engineered to allow movement of docks and gangway along existing concrete ramp and utility channels aligned with anchor line “C” (*see Photos below*)

Photo / map below illustrates previous marina docks relative to lake bottom topography and approximate existing anchor lines and anchor point locations – This Map shall be provided with Bid Package



Additional Marina Dock Design Considerations and Criteria

Refer to attached Conceptual Drawings of proposed marina docks “MBA – Jordanelle SPM Docks Conceptual Design and Specifications v071722” for additional design specifications and information

- Concrete, steel, and/or aluminum structural frame engineering will be considered from qualified marina dock manufacturers
 - All dock systems should be compatible with specified utility systems per attached Conceptual Drawings, and potential future installation of Fuel Service utilities on marina Service Dock
 - Based on the preceding wind and wave data the marina dock systems should be engineered to mitigate and survive the following environmental conditions
 - Worst case exposure and impact from 3 foot high, 3 second period, wind driven wave
 - Worst case exposure and impact from 2 foot high, 2.5 second period, boat wake wave
 - Worst case exposure and impact from wind-driven broken ice-flows during spring thaw
- Partial and/or complete Proposals with price quotes encompassing the following project components and scope of work shall be considered from qualified manufacturers and contractors
 - Marina docks and gangway materials designed, built, and delivered to site, in as fully assembled condition as practicable, including winch and cable anchoring components and Engineer Stamped Plans and Calculations
 - Receiving, assembly, and installation of marina docks and gangway materials, including initial dock anchoring in place
 - Engineering and installation of approved dock electrical systems including electrical transformer, dock power pedestals, and other electrical outlets, and low-level dock lighting
 - All utility installation shall originate at land-end of gangway and include appropriate quick-connect connections and utility service / access ports
 - Engineering and installation of marina dock water & sewer pump-out systems, including potable water access at all power pedestals, “dry” fire-water system, and vessel pump-out utilities located on service dock
 - All installation shall originate at land-end of gangway and include appropriate quick-connect connections and utility service / access ports
 - Turnkey project management to coordinate above scope of work and contractors

Additional Photos and Comments

Photo below shows previous marina during typical LOW water level



Previous marina gangway was 120 feet long, engineered in (3) sections with 5th wheel type connections – Gangway landing relocates along concrete ramp with utility channels as docks are relocated to accommodate changes in water level



1,000' long sloping shoreline, exposed at LOW water levels, requires long, articulating Gangway capable of being re-located along ramp as docks are moved with changes in water level – Utility channel pictured on RIGHT side typically carries electrical and potable water utilities for connection to downhill side of Gangway



Utility channel pictured above on LEFT side of ramp typically carries sewer utilities for connection to uphill side of Gangway – Gangway should have adjustable legs and transition plate to adapt to varying slope angles





Photo below pictures previous marina T-Head dock with full-service vessel pump-out and waste dump system
Note low-level lighting along dock walkway and T-Head dock, also illustrated on attached Drawing – Fuel services may be added to this dock in future



