1. All work, equipment, and components shall comply with the governing codes and regulation. Regulations include: Texas Natural Resources Conservation Commission, the Lower Colorado River Authority Highland Lakes Marine Ordinance (HLMO), NFPA 70, NFPA 30, and NFPA 30A-2000, Code for Motor Fuel Dispensing Facilities and Repair Garages.

2. If a regulation or restriction imposed by the HLMO is either more or less restrictive than those imposed by any other governmental authority having jurisdiction, the more restrictive regulation or restriction or those that impose a higher standard shall govern.

3. Above-ground fuel storage tanks (AST) shall consist of two (2) 2000-gallon, double-walled steel tanks in conformance with UL #142 suitable for the storage of Class I, flammable, motor-vehicle fuels. Factory fabricated AST systems shall be UL Subject 2244 Code Compliance Verification List (CCV) listed documenting how the tank system complies with NFPA 30 and the International Fire Code (IFC).

4. Each AST shall be labeled with durable, clearly visible lettering no less than 6 inches in height:

5. Tank sitting and spacing shall be in conformance with NFPA 30A and as shown on the plans. All tank openings shall be above the Design Flood Elevation, see plan.

6. The submersible pump for each tank shall be a 1/2-hp submersible motor unit or alternate approved in writing by the Engineer.

7. Underground product piping consists of 2 product lines conforming to NFPA 30 & 30A. Piping is 1½-inch diameter galvanized steel pipe. Piping in contact with the ground shall be provided suitable corrosion protection and secondary containment with approved leak detection and alarm. Piping shall be grounded to control stray electrical currents.

8. All electrical components and work shall be installed in accordance with the National Electrical Code as defined in Article 501 for Hazardous locations and Article 555 for wet locations.

9. Underwater Laboratory (UL #1144) approved flexible marine fuel lines used between the floating facility and the shore shall be independent of the marine structures. Flexible fuel lines shall be provided with strain relief grips where they connect to rigid lines.

10. Quick-throw shut-off valves shall be installed on each product line prior to the connection to the flexible fuel lines. The location of the shutoff valves shall be as close as practicable to the normal pool shoreline. A fuel solenoid valve for each product line shall be located as indicated.

11. Dry-disconnect valves shall be provided at each end of the flexible product lines delivering product from shore to the floating facility.

12. Fuel Product lines located on the marina shall be 1½-inch diameter galvanized pipe suitable for the purpose. Lines shall be installed no closer than two (2) feet from the exposed edge of the docks, and shall be secured to prevent chaffing.

13. Product dispensing devices, hoses, and nozzles shall conform to NFPA 30A requirements. Latch Open Devices on the nozzles is prohibited. Product Dispensing devices shall in no case be located closer than two (2) feet from the exposed edge of a dock. Product dispensing hoses shall be of adequate length to supply fuel to craft likely to use the facility. In no case shall a hose be longer than 18 feet in length without the provision of a suitable hose reel device. A hose reel device shall be provided by the NFPA 30A approved fueling station.

14. The fuel dock shall be capable of sustaining a collision with the largest motor craft likely to use the facility in a realistic accident scenario. In no case shall the fueling dock be designed for less than a 50 knot boat impacting the dock at a 15°angle from the face traveling at a speed of 4 ft/sec or 3 knots. Protect the fuel lines and dispensing devices from impact energy and damage by the dock structure and fendering.

15. Fuel Dock shall be provided with no less than two widely spaced mooring cleats at each dispensing device.

16. Fuel Docks and their moorings shall be designed to sustain the same area, wind, and see loading as the remainder of the marina.

17. A light shall be provided for each product storage tank and shall be illuminated whenever the submersible pump for that tank is running. Lights shall be visible both from the shore approach and from the dispenser locations.

18. Visible and accessible emergency pump shut-off switches and signs shall be placed 15 to 75 feet from the dispensers.

19. Signs shall read EMERGENCY PUMP SHUTOFF in 3-inch letters.

20. Warnings shall be posted conspicuously about the premises. Such signs shall have letters 4 inches in height on a background of a contrasting color.

21. At the face of the fueling Dock a sign shall be displayed at an elevation clearly visible from the docks of marine craft being fueled that bears the following equivalent wording in letters not less than 3 inches in height on a background of contrasting color:

WARNING No Smoking Stop Engine while Fueling

22. One or more fire extinguishers (FF) shall be UL listed 40 -4BC in conformance with NFPA 10 extra (High) hazard type with an extinguishing agent suitable for exterior use:

23. Fire extinguishers shall be clearly marked and visible and readily available for use mounted at a height of 48 inches above the deck located no more than 50 feet from each pump, storage tank, and fuel dispensers in conformance with NFPA 30A.

24. Provide one (1) Marine O4 Spill Response Kit, accessible to the Fuel Dock, and within 75 feet of the dispensing devices. Standard kits shall be supplied in a covered nominal 50-gallon disposal container with an assortment of mops, sorbent pads, socks, pillows and wipes along with suitable protective gear.

25. On completion of the fuel system installation, the Contractor shall supply the Owner with at least one full set of as-built drawings, copies of all governing codes and ordinances, product data sheets, wiring diagrams, warranties, and specifications as well as a written operation, maintenance, inspection, and testing manual.
General Notes - Electrical
1. All electrical work shall conform to the LCRCA Highland Lakes Marina Ordinance, NFPA 303-2000 (Fire Protection Standard for Marinas and Boatyards), NFPA 70 National Electrical Code (NEC), and the National Electrical Safety Code (NESC) as adopted by Local Authorities.
2. If regulations or restrictions imposed by the HLMO are either more or less restrictive than those imposed by any other governmental authority having jurisdiction, the more restrictive regulations or restrictions or those that impose a higher standard shall govern.
3. Electrical Contractor shall verify and coordinate service and transformer location and all service requirements with the Power Company prior to any installations. Provide transformer pad, grounding, and metering per Power Company requirements.
4. Wire all lights to B Phase and all receptacles to B Phase, for safety.
5. Shore Power receptacles shall be in conformance with NFPA 303 mounted no less than 12" above the dock. Provide dedicated circuits to Shore Power receptacles.
6. Provide dedicated circuits to fuel dispensers.
7. Fifteen and twenty ampere, single-phase, 125-volt outdoor receptacles shall be protected by ground-fault interrupt circuit breakers (GFCI) per NFPA 303.
8. Safety Lighting shall be controlled through a Photocell. Each dock shall have a Photocell wired to B Phase.
9. All Wiring shall be Copper conductors with THHN/THWN insulation except where Type W cable is specified. Provide grounding conductor for all circuits.
10. All conduit shall be schedule 40 PVC or rigid galvanized steel, except where noted. Type W cable is specified. Provide grounding conductor for all circuits. 10. All conduit shall be schedule 40 PVC or rigid galvanized steel, except where noted. Type W cable is specified. Provide grounding conductor for all circuits.
11. Flexible conduit, where used, shall be liquid tight non-metallic to 2" and metallic above 26. Flexible conduit shall not exceed 60' length with approved connections and shall not be used where subject to mechanical damage.
12. Branch circuit conductors shall be 2#12, 1#10, for homeruns less than 500 and 1#10,1#10G for homeruns more than 50'. Provide approved connections. A separate neutral and shall not be used where subject to mechanical damage.
13. Conduit size shall be ½" unless otherwise designated. Conduit shall be flexible where it crosses dock and walkway flex points.
14. Conduit size shall be ½" unless otherwise designated. Conduit shall be flexible where it crosses dock and walkway flex points.
15. Panels shall be mounted on radial/supports constructed of galvanized steel channel with cold-galvanizing applied to field cuts etc.

Electrical Load Analysis
DOCK A
- Shore Power - 2880W
- GFCI Receptacles 2 @180W - 360W
- Lights: 2 Fluorescent - 130W
- 3 Light Stations - 150W
Total Dock A - 3520W
DOCK B
- Shore Power - None
- GFCI Receptacles 2 @180W - 360W
- Lights: 2 Fluorescent - 130W
- 3 Light Stations - 150W
Total Dock B - 640W
SHIP STORE
- Shore Power - None
- GFCI Receptacles 8 @180W - 1440W
- Lights: 8 Fluorescent - 520W
- 3 Light Stations - 150W
- Fuel Dispensers 2 @250W - 500W
Total Ship Store - 2610W
BREATWATER
- Lights: 4 Navigation - 200W
- 6 Light Stations - 300W
Total Breatwater - 500W
TOTAL CALCULATED LOAD - 7270W

200 amp Main Service Equipment (Electrical Datum Plan Above DFE) as determined by and obtained from the Federal Emergency Management Agency (FEMA)

100-yr Design Flood Elevation (DFE) as determined by and obtained from the 100-yr Design Flood Elevation (DFE)

681' MSL Conservation Pool Elevation

715' MLS

Marina Name

Electrical Plan & Notes

Rev 1

For Illustrative Purposes Only