DETAILED SPECIFICATION SHEET

SPECIFICATION FOR CUSTOM SHALLOW-WATER BOAT: FORT RANDALL PROJECT

1. Scope

Vendor shall provide and deliver to the Fort Randall Project a custom boat and trailer that will allow the Corps to navigate the shallow waters of the middle Missouri River. Vendor is responsible for all labor, tools, transportation, material, equipment, and supervision necessary to construct the boat and trailer. Vendor must be registered with SAM (www.sam.gov) and have a DUNS number.

All fabrication shall conform to the technical specifications detailed below. This solicitation package includes this Unabridged Detailed Specification and Appendix A: Visual Reference Drawings & Examples. Together, these documents illustrate the intended layout, geometry, fabrication methods, and final appearance of key custom components.

The drawings and pictures in Appendix A are provided to clarify design intent and provide a high-level project visual. However, the exact dimensions, materials, and fabrication methods mandated in this Detailed Specification shall govern. The builder is responsible for notifying the Contracting Officer's Representative (COR) of any perceived conflicts prior to bidding.

2. Technical Specifications

The following specifications outline the structural, mechanical, and layout requirements for the vessel.

2.1 Vessel Overview & Hull Specifications

Length Overall (LOA): 24 feet (Float pods not included in this length)

Bottom Width: 72 inches

Beam (Gunnel Width): 96 inches

Side Wall Height: 27 inches

Transom Height: 27 inches

Hull Shape: Modified V-bow tapering to a flat bottom

Occupant & Carrying Capacity: Vessel design, stability, and seating layout must safely accommodate a carrying capacity of 6 to 8 occupants.

Hull Bottom, Tunnel, & Transom Thickness: Minimum 0.190-inch (3/16“) 5086-H116 Aluminum Plate. Transom must include a 0.250-inch (1/4”) 5086-H116 doubler plate in the engine mounting zone.

Sides, Console, & Pods Thickness: Minimum 0.125-inch (1/8") 5052-H32 Aluminum.

Floor, Raised Decks, & Bench Seating Thickness: Minimum 0.125-inch (1/8“) 5052-H32 Aluminum. All interior walking surfaces (main floor, raised casting deck, aft decks, and steps) must be fabricated from 0.125” Aluminum Diamond Plate (Tread-Brite) to ensure rigidity without oil-canning.

2.1.1 Longitudinal Stringers

Floor Stringers (The Tapered Track): Four (4) continuous 3”x3”x0.250” 6061-T6 T-Bars running the length of the hull. Two of these are “flanking stringers.” These flanking stringers must not run parallel to the centerline. They must angle inward to precisely track and hug the exact 1-inch-per-foot taper of the tunnel‘s outer vertical walls (starting at 28“ wide at the forward initiation point and converging to 22” wide at the transom). The tunnel’s vertical side walls shall weld directly and continuously to the inward-facing side of these flanking stringers. The other two outer floor stringers shall be spaced midway between the tunnel and the outer chines.

Tunnel Roof Stringers (The Converging Spine): Two (2) 2”x2”x0.250” 6061-T6 Angle stringers shall run longitudinally along the 8” elevated tunnel roof to prevent upward flex under hydraulic pressure. To maintain equal support across the tapering 14.5" flat roof, these two roof stringers must also angle slightly inward from front to back, remaining equidistant from the tunnel’s 45-degree diagonal corner plates along the entire 72-inch length of the tunnel.

Mandatory In-Process Inspection: See Section 6.3, Hold Point 1 for inspection and sign-off requirements prior to main deck installation.

2.1.2 Transverse Ribs (The Intercostal Grid)

Material & Spacing: 0.190“(3/16”) formed C-channel or 0.250“ (1/4”) 6061-T6 Angle, spaced twelve (12) inches on-center throughout the entire bottom.

Intercostal Fabrication: Ribs must be installed using the intercostal method. The longitudinal stringers must remain continuous and uncut. The transverse ribs must be cut into separate segments, fitted tightly between the longitudinal stringers, and have their vertical ends welded solidly to the vertical webs of the T-bars to create an interlocking 12“x12” structural grid.

Tunnel Integration: Rib segments must tie directly into the tunnel side-walls and be physically bridged over the top of the tunnel roof to tie the port and starboard halves of the hull together.

Welding & Drainage: Stitch welding (e.g., 2“ weld, 4” skip) must be used where the ribs meet the flat hull skin to prevent warping the 72-inch bottom. All rib segments must feature half-moon weep/limber holes at the bottom corners to allow water to flow to the bilge.

2.1.3 Transom Knee Braces (Engine Torque Support)

Quantity & Purpose: Four (4) heavy-duty braces designed to support the transom against the extreme torque and leverage of the 150 HP engine and 6-inch setback jack plate.

Material: 0.250” (1/4”) 5086-H116 plate. The long diagonal edge of each brace must feature a 2-inch-wide welded flange cap (creating a rigid I-beam/T-beam profile to prevent the plate from buckling under compression).

Dimensions & Placement: The vertical legs (~24“) shall weld directly to the inside of the transom bulkhead. The horizontal legs (~24”-30“) must land directly on top of the continuous 3”x3" longitudinal floor stringers (never on bare hull skin) to drive the engine thrust forward into the hull.

Layout: Two braces shall directly flank the tunnel (landing on the flanking stringers), and two shall sit on the outer longitudinal stringers.

Stress Relief: A 2-inch radius “mouse hole” must be cut at the 90-degree corner of each brace to bridge over the transom-to-floor weld seam, preventing intersecting weld fractures.

2.1.4 Additional Hull Components

Side Frames: Tied to bottom ribs with 0.190" chine gussets and running up the flared side walls to the gunnel on every other rib (24-inch centers).

Bow Chevrons: Two to three 2”x2”x1/4” 6061-T6 Angle chevron (V-shape) braces in the forward 5 feet.

Anti-Slide Ribs: Two 2-inch angle-aluminum ribs, approximately eight feet in length, welded to the stern end of the hull bottom to reduce sliding while cornering.

Mandatory In-Process Inspection: See Section 6.3.2, Hold Point 2: Internal Structure & Transom Support Verification, for inspection and sign-off requirements prior to main deck installation.

2.1.5 Advanced Tunnel Geometry

Total Length & Taper: 72 inches (6 feet) long. Tapering smoothly from 28 inches wide at the forward initiation point down to 22 inches wide at the transom, maintaining a precise 1-inch-of-width-reduction-per-foot-of-length taper. Maximum depth at stern is 8 inches.

Intake Ramp: The forward 40 inches begins flush with the hull via a smooth, radiused (rolled) leading edge and slopes upward to the 8-inch height, creating a gentle 11.3-degree angle. The aft 32 inches runs perfectly horizontal to the transom.

Internal Shape (5-Sided Octagon): At the 22-inch-wide transom exit, the 8-inch-high void is shaped via 5 flat interior planes to optimize water compression: Flat Roof Width is 14.5 inches. Diagonal Corners are 5.3-inch-wide plates welded at a 45-degree angle. Vertical Side Walls are 4.25 inches tall, welded to the flat hull bottom.

Exit Shroud: The tunnel roof and side walls shall extend 2.5” to 3” inches beyond the transom exterior. To withstand the extreme hydraulic pressure of the water hump, the shroud must be fabricated from the same 0.190-inch (3/16") 5086-H116 Aluminum Plate as the main tunnel structure and be heavily gusseted to the transom.

Interior Tunnel Finish (Critical Hydrodynamics): All interior surfaces of the tunnel, including the intake ramp, flat roof, and 5-sided walls, must be exceptionally smooth and fair to ensure clean, laminar water flow. All interior TIG or MIG weld beads must be ground down completely flush with the parent aluminum plate. There shall be no proud (raised) welds, sharp edges, or slag remaining inside the tunnel.

Mandatory In-Process and Upon Delivery Inspection: See Section 6.3.3, Hold Point 3 for inspection and sign-off requirements prior to main deck installation and 6.4.1 Delivery Inspection 1 for further details on tunnel finish assessment metrics.

Hole-Shot Ventilation System: To break hydraulic suction during hole-shot, a ventilation system shall be installed at the tunnel’s apex.

Vent Port: A 2-inch diameter hole shall be cut through the tunnel roof exactly at the apex where the 40-inch intake ramp transitions to the 32-inch flat roof (32 inches forward of the transom).

Aerodynamic Clamshell Scoop: A custom aluminum clamshell scoop shall be welded to the exterior (waterside) of the tunnel roof directly over this vent port. Dimensions: 3.5 inches wide by 5 inches long. Rear exit 1.5 inches high. Juxtaposition: Open end facing the transom (aft), forward edge ground flush. Rear edge must extend at least 1 inch past the aft edge of the vent port.

Valve & Plumbing: Plumbed via heavy-duty marine hose to a 2-inch, heavy-duty Marelon or 316 Stainless Steel ball valve. Handle mounted on the lower face or sidewall of the console for manual control by operator.

2.2 Propulsion & Rigging

Outboard Motor & Shaft Length Optimization: 150 HP EFI four-stroke (Mercury or Yamaha). Motor to be fully rigged. The final determination of shaft length (20-inch vs. 25-inch) is left to the professional discretion of the fabricator to optimize shallow running, deep water operations, and holeshot dynamics. The fabricator's selection and static mounting height must be engineered to achieve an optimal balance of the following performance dynamics:

1) **Shallow Running:** Minimizing the lower unit profile to reduce resting draft and prevent skeg drag when jack plate is fully elevated.

2) **Deep Water Operations:** Ensuring sufficient propeller bite to maintain thrust in heavy current/chop, preventing blowout during sharp cornering, and keeping the powerhead safely above following wakes or surge during rapid deceleration.

3) **Holeshot:** Positioning the propeller at the precise depth within the tunnels "water hump" to maximize initial thrust and minimize cavitation while breaking hydraulic suction.

Mandatory In-Process and Upon Delivery Inspection: See section 6.3.7 Hold Point 7: Builder Pre-Delivery Sea Trials (Mandatory Proof of Performance) and 6.4.8 Delivery Inspection 8: Mandatory Performance Sea Trial & Systems Tests for further details on performance criteria related to shaft length and the performance dynamics outlined above.

Engine Cooling: Engine must be fitted with a low-water pickup nose cone (e.g., Bob's Machine Shop) or feature factory dual-intake ports.

Jack Plate: Bob's Machine Shop Action Series electric hydraulic high-speed jack plate (or equivalent).

To qualify as an 'exact equivalent', any proposed alternative must meet or exceed:

1) Provide exactly six-inch (6") setback.

2) Minimum 6.0 inches of active vertical hydraulic travel, yielding a total system rise of 7.5 inches above the standard transom via a built-in 1.5-inch static structural offset.

3) Feature a completely integrated hydraulic pump (no external reservoir/pumps inside hull).

4) Be rated by the manufacturer to achieve full lift in approximately 6.0 seconds and demonstrate full travel in less than 8.0 seconds under operational load during sea trials.

5) Utilize high-tech polymer bearings with built-in automotive-style grease fittings.

Mandatory Upon Delivery Inspection: See Section 6.4.6 Delivery Inspection 6: Jack Plate Performance Verification: Verified equivalent characteristics per Section 2.2.

6) Complete Kit Requirement: Include all necessary mounting hardware, wiring harnesses, relays, hydraulic fluid, and a pre-installed, integrated sending unit fully compatible with NMEA 2000 or the specified console-mounted height indicator gauge.

Propeller: Stainless steel, double-cupped 4-blade propeller with proper low pitch (e.g., 15“-17”). Examples: PowerTech CF4 or Baumann Blaster.

Compression Plate: Heavy-duty aluminum tunnel compression plate (20-24“wide) fastened to the AV plate, extending 4-6” forward.

Steering: Full hydraulic steering.

Transom & Flotation Pods:

Stepped Flotation Pods (2): Outside stern on both sides.

Length and alignment: 16 to 18 inches total length. The aft edge of the pod shall align approximately flush with the leading edge of the outboard’s lower unit.

Width and Center Gap: 24 inches wide each (at bottom). When mounted on the 72-inch bottom hull, this shall create a 24-inch-wide center motor well between the pods. (Builders Note: The 24-inch-wide center gap and parallel inner walls are critical for water compression. The 16–18-inch pod length must not extend pat the steering pivot-arc of the specified 150 HP outboard on the 6-inch setback, guaranteeing unobstructed lock-to-lock maneuverability.

Top Width and Wall Geometry: Outer walls hall angle/flare to match the 96” hull beam. The inner walls must be plumbed vertically and run parallel to the boat’s centerline.

Single-Tier Boarding Step: The top of each pod shall feature a single integrated, recessed flat boarding step (min. 16“ D x 24” W) sitting approximately 12” below the top gunnel. Step treads must be 0.125 Aluminum Diamond Plate with aggressive non-skid, supported by an internal vertical load-bearing bulkhead.

Safety Handles: A heavy-duty aluminum grab handle shall be welded to the inside of the transom directly above the step on each side.

Bottom Angle: Upward anti-plow angle yielding 1.5” rise at the rear edge.

Drainage: Threaded garboard drain plugs at lowest point, completely sealed from the splashwell drainage system.

2.3 Deck & Interior Layout (Bow to Stern)

Mandatory In-Process Inspection: See Section 6.3.4, Hold Point 4: Sub-Deck Systems (Fuel & Flotation) & CG Verification for inspection and sign-off requirements prior to main deck installation.

Mandatory Upon Delivery Inspection: See Section 6.4.3 Delivery Inspection 3: Dimensional & Layout Conformance: Tape measure verification of critical dimensions.

Forward Deck & Bow Layout: The entire forward section of the vessel shall be a large, single level raised deck with a massive central storage compartment.

Raised Forward Casting Deck: The forward-most 84 inches (7 feet) of the vessel shall be a raised, flat casting deck, sitting at a height of approximately 18 inches above the main floor.

Forward Bulkhead / Step-Down: At the 84-inch mark, a vertical bulkhead shall create a clean, ~18-inch step-down from the raised casting deck to the low main floor of the central cockpit.

Bow Transition Shelf: Raised forward casting deck will have smooth transition up to the bow, with a horizontal shelf directly behind the bow of at least twelve inches, to facilitate stepping in and out of the boat.

Permanently Welded Bow Deck Safety Railing: A 36-inch-tall safety railing system shall be permanently welded to the perimeter of the forward bow deck. The system shall be split into two symmetrical, independent sections (Port and Starboard) to create a clear, unobstructed 24 to 30-inch walk-through gap at the absolute tip of the boat for safe personnel exit/entry during beaching operations. Fabricated from 1.5-inch Schedule 40 Marine-Grade Aluminum Pipe (6061-T6) with a continuous horizontal mid-rail at 18 inches high. Vertical stanchions must pass through the deck plate and weld directly to heavy-duty under-deck structural framing.

Main Forward Deck Storage Compartment (Single Compartment, Dual Doors): One single, large storage compartment shall be centered in the aft portion of the raised forward deck.

Location: The compartment opening shall begin 42 inches aft of the bow tip.

Dimensions: The total hatch opening shall be approximately 56 inches wide (28" Port + 28" Starboard) by 40 inches long. This opening provides access to one single, massive, unobstructed storage bay below deck.

Maximized Depth: By centering the compartment, its floor shall be fabricated to achieve a maximum possible depth of 16 to 18 inches at the boat's centerline, tapering upward as required to conform to the hull's interior V-shape.

Lid Construction & Hinge Orientation: The 56"x40" opening shall be covered by two side-by-side doors, each approximately 28"x40", braced to support 250 lbs (e.g., minimum 7 psi support). To ensure maximum safety and clear walkways, the hinges for both doors must be

located on their forward edge. This allows the doors to swing up and forward, resting securely against the raised forward casting deck and keeping the gunwale access paths completely unobstructed.

Forward Gunwale Storage Lockers & Seating: Inverted-L shaped “rod lockers” shall run along the forward gunwales (ahead of the center console footprint), serving as additional seating with cushioned tops.

Layout: Two "rod locker" style storage units shall run longitudinally along the Port and Starboard gunwales. They shall begin at the aft edge of the 40"x40" forward storage compartment and extend back to the forward edge of the elevated command pod.

Shape & Dimensions: The lockers shall be an inverted-L shape, approximately 18 inches wide at the top and 6 inches wide at the bottom, with a height of approximately 18 inches. This shape creates a narrow footprint on the floor while maximizing seating area and storage volume. Tops fitted with hinged, gasketed lids and covered with cushions.

Bow Transition Step:
To safely bridge the 18-inch vertical rise from the main floor to the forward casting deck, a structural aluminum step will be fabricated between the port and starboard gunwale seats. The builder may fabricate this either as a fully enclosed dry-storage box step (resting on the floor with a flush hatch) or as an open, elevated "bridge" step (leaving the space beneath open for loose gear). Regardless of the build style chosen, it must meet the following criteria:

Height (Rise): 9 inches (Splits the 18" bulkhead rise evenly into two ergonomic steps).

Depth (Fore/Aft): 14.5 inches (Optimizes stepping stride and safe rearward step-downs).

Width: Custom (Spans the exact floor gap, welded directly into port/starboard seat frames).

Adjacent Seat: Leaves exactly 22" of clear cushion length aft of the step on the forward gunwale lockers for one passenger per side.

Structural Support: Top tread must be internally braced with C-channel/angle to support dynamic jumping loads. If built as an elevated bridge step, a 2-3 inch vertical toe-kick lip must drop down from the forward edge to prevent leg entrapment.

Deck Traction: Marine EVA Foam (Top tread covered in routed EVA foam, e.g., SeaDek. No bare metal or standard diamond plate).

Drainage: Must not block deck water. If built as an enclosed box, minimum 1" limber holes must be cut at bottom aft corners for uninterrupted drainage.

Main Deck (Cockpit Floor): The primary floor on the Port and Starboard sides shall be a single, continuous level set at the lowest possible height (approx. 3.125" above the hull bottom), creating two deep, open walkways with a minimum interior freeboard of ~24 inches.

Forward Console "Command Pod": A dedicated, 12-inch high, 24-inch wide, 54-inch long elevated platform shall begin at the 90-inch mark (from transom), on which the console and captain's seating are mounted.

Helm Station & Seating:

Center Console (Notched "Low-Profile" Design): A center console measuring 24 inches wide by 18 inches deep shall be mounted at the forward edge of the Command Pod. To ensure a clear line of sight for all operators, the console shall feature tall outer wings (50-52" high from the platform) and a center dash dropped by 4 to 6 inches from the wing height (44-48” in height above the raised command pod floor).

The Electronics Mounting Brow: To provide a secure mounting surface for navigation electronics, a flat, horizontal shelf or "brow" shall be integrated into the top of the console. This brow shall be approximately 6 to 8 inches deep (front-to-back) and span the width of the dropped center dash, located directly behind the windshield. Two (2) stainless steel, drop-in marine cup holders (sized to accommodate 3.5-inch diameter tumblers) shall be installed flush into the far port and starboard corners of this brow. The cup holders must feature bottom drain fittings plumbed with tubing to route trapped water down through the console and out to the self-bailing main deck. The console face below this brow shall be sloped at approximately 15.5 degrees to provide ergonomic access to gauges and switches.

Windshield & Grab Rail: A low-profile acrylic windshield shall be mounted on the lower center dash, protected by a continuous 1.5-inch Schedule 40 Aluminum grab rail that follows the console's notched contour.

Under-Console Layout (Split Rigging/Storage): The interior of the console shall be logically divided. The Starboard side shall be kept open as a dedicated service area for routing all electrical and mechanical rigging from the bilge to the helm. The Port side shall feature a custom aluminum storage shelf with a 2-3 inch containing lip, located approximately 12-14 inches below the dash, for secure storage of small items.

Tunnel Ventilation Control: The manual handle for the 2-inch tunnel ventilation ball valve (as specified in Section 2.1) shall be mounted on the lower face or lower port sidewall of the console for easy ergonomic reach while underway.

Jack Plate Control & Footrest: The hydraulic jack plate shall be controlled via a heavy-duty, floor-mounted, foot-operated "Up/Down" switch (example: *SKU: HT-1-DP*). To protect this

switch, a split gull-wing footrest system shall be fabricated. Two separate, heavy-duty angled footrest boxes shall be integrated into the base of the console, leaving a protected 10- to 12-inch-wide center channel at floor level for the installation of the foot switch.

Helm & Steering Controls: A marine-grade, adjustable Tilt-Helm shall be mounted on the lower center dash panel so that the center of the steering wheel hub is positioned at 42 to 43 inches vertically from the command pod floor. Equipped with a high-quality, 13.5-inch diameter stainless steel steering wheel featuring an integrated spinner knob.

Throttle Control Placement: The throttle control binnacle shall be surface mounted on the starboard side of the console at a height of approximately 39 to 41 inches from the platform floor, aligning with the natural relaxed hand position.

Captain's Chair/Leaning Post: An adjustable captain's seat measuring 24 inches wide by 18 inches deep shall be mounted 18 inches aft of the console on the command pod. Must be installed on four adjustable legs and fabricated with a 6-inch tall perimeter lip at its base to create an open storage tray beneath. Must be a heavy-duty, marine-grade bolster-style leaning post. The flip-up bolster is mandatory for standing/leaning operation.

Forward Console Storage Seat: A forward-facing bench seat measuring 24 inches wide by 18 inches long with a cushioned, hinged lid shall be mounted on the main hull floor (not the elevated pod), directly in front of the console, providing access to dry storage beneath.

Mid-Ship Crossover Gap: An 18-inch long (from 72" to 90" from the transom) section of the floor shall remain at the low main deck level, creating a clear path to cross from Port to Starboard between the aft spine and the forward console pod.

Crossover Rigging Protection: All fuel, steering, and electrical lines passing through the crossover gap must be protected by a heavy-duty ramped and armored rigging chase. The floor of the crossover shall feature plate aluminum angled on either side to reach a 2.5 to 3-inch height, providing a protected, full-width conduit beneath it.

Aft Centerline Spine (Mechanical Locker): A 17.25-inch high, 30-inch-wide raised spine shall run from the forward bulkhead of the aft deck area forward to the crossover gap (ending 72 inches from the transom). This spine will enclose the aft portion of the tunnel and house the mid-ship battery locker. Access via large, watertight vertical hatches on its Port and Starboard sidewalls.

Aft Centerline Bench Seat: A forward-facing cushioned bench seat shall be mounted on the forward-most end of the 17.25-inch high Aft Centerline Spine, directly overlooking the mid-ship crossover gap. The seat shall span the 30-inch width of the spine and have a footprint depth of 16 to 18 inches, including an integrated, cushioned backrest.

Aft Cockpit Bench Seating (Gusseted Cantilever Design): To maximize floor space, four (4) modular, cantilever storage boxes shall be fabricated. Two shall be installed end-to-end on the Port side, and two on the Starboard side. They will begin at the forward bulkhead of the aft deck and extend forward for a total of 48 inches. Must have a trapezoidal cross-section (e.g., 16" deep at the top, ~12-13" deep at the bottom) to conform to hull flare. Supported from beneath by heavy-duty triangular aluminum gussets tied to side frames, maintaining a 3 to 4 inch "toe-kick" floor clearance. Tops fitted with hinged, gasketed lids and cushions.

Multi-Section "Boxed" Splashwell & Aft Deck:

Layout: The stern shall feature a multi-section, self-bailing splashwell separated from the interior by a raised aft deck structure and a solid, watertight bulkhead.

Raised Aft Service Decks: Located immediately forward of the splashwell, two raised service decks shall be fabricated in the port and starboard corners. Each deck shall be 30 inches wide by 20 inches deep (front-to-back), sitting at a height of 17.25 inches above the main floor.

Central Aft "Work Step": Located between the service decks, a central raised deck 36 inches wide and 10 inches deep (front-to-back) shall sit at the matching 17.25-inch height, forming a continuous U-shaped aft platform.

Primary Bilge Access: A large, rectangular, flush-mount, guttered aluminum access hatch (e.g., 20"W x 8"D) shall be installed on the top surface of both Port and Starboard service decks for bilge access.

Forward Bulkhead: The forward vertical bulkhead of this entire aft deck structure must be a solid structural wall, welded watertight to the main deck. To allow for main cockpit drainage, two limber holes (min. 2" diameter semi-circles) must be cut through the bulkhead at the absolute lowest points on the Port and Starboard sides, flush with the main floor.

"Boxed" Splashwell Design:

Center Motor Well (Deep Section): The central 36 inches of the splashwell shall be 20 inches deep (front-to-back) to provide full tilt clearance. The floor of this deep center section shall be elevated to create a total well depth of approx. 13 to 14 inches from top of transom. Builder must verify final floor height ensures full, unobstructed tilt/trim clearance.

Side Decks (Shallow Sections): On either side of the center well, the splashwell shall step up to a shallower depth, extending only 10 inches deep from the transom.

Inboard Scupper Drainage: The deep center well must be self-bailing via two large-diameter (min. 2-inch) scupper drains. The splashwell floor must be fabricated with a slight "V" or crown, making the centerline scuppers the lowest point to ensure 100% positive drainage.

Gunwale Grab Rail System: A permanently welded grab rail system fabricated from 1.5-inch Schedule 40 Aluminum Pipe to ensure personnel safety throughout the cockpit.

Forward Gunwale Rails: A continuous, 6 to 10-inch high grab rail shall be installed along the top of the gunwales, running from the aft stanchion of the 36-inch tall bow railing back to the forward edge of the elevated command pod.

Aft Gunwale Rails with Helm-Side Boarding Gate: A clear, unobstructed boarding gate of at least 36 inches shall be left open on both the Port and Starboard gunwales, located directly adjacent to the helm station (from the front of the command pod, extending 36 inches aft). Aft of this gate, a continuous 6- to 10-inch-high grab rail shall run along the gunwales all the way to the stern.

Console Side-Grab Handles (Vertical D-Loop): A heavy-duty "D-Loop" or "Hoop" style grab handle, 12-16 inches tall, shall be mounted vertically on the aft-most third of both Port and Starboard console sides. Handles must project no more than 3 to 4 inches to ensure walkways remain clear. Vertical center approximately 38-40" above floor.

Paint & Surface Finishes: The vessel is not to be delivered as bare aluminum.

Walking Surfaces: All interior walking surfaces (decks, floors, steps) must be coated with a light-colored, abrasive spray-in non-skid liner to ensure maximum traction and durability.

General Interior: All other interior aluminum surfaces (hull sides, console, bulkheads) must be painted with a durable, light-colored marine-grade paint (matte or semi-gloss) to reduce glare and heat absorption.

Mandatory In-Process Inspection: See Section 6.3.6, Hold Point 6: Surface Prep (Paint & Non-Skid): Required Submittal: “Surface Prep Log”. Documentation demonstrating proper etching and primer application.

2.4 Systems & Hardware

Battery & Electrical System (Mid-Ship Power Locker):

Battery Location: The dual AGM batteries (min. 1000 MCA) shall be mounted directly to the floor stringers on the Port and Starboard sides of the main tunnel, at the forward-most end of the tunnel structure (approximately 6 feet from the transom), housed securely underneath the 17.25-inch high Aft Centerline Spine.

Access: Access to the batteries, dual-battery switch, and Automatic Charging Relay (ACR) shall be via large, gasketed, vertical hatches on the Port and Starboard sides of the aft spine.

Shutoff Switch: Master power battery shutoff switch installed.

Cable Gauge: All-engine battery cables shall be sized to limit voltage drop to less than 3% under peak cranking load, in strict accordance with ABYC E-11 guidelines. Given the physical distance, the Builder must calculate the true round-trip wire length to ensure compliance. The Builder shall utilize a minimum of 2 AWG, tin-plated, marine-grade copper wire (UL 1426); standard automotive copper wire is strictly prohibited.

Terminations: Voltage drop, and corrosion frequently occur at connection points. Therefore, all battery cable terminations must utilize heavy-wall, tin-plated copper lugs. These lugs must be mechanically crimped using a specialized heavy-duty crimping tool (hammer-crimping or soldering alone is unacceptable) and entirely sealed with adhesive-lined, dual-wall marine heat shrink tubing to prevent moisture intrusion and corrosion.

Mandatory In-Process and Upon Delivery Inspection: See Section 6.3.5, Hold Point 5: Electrical Material, Termination & Factory Load Test Section and Section 6.4.2 Delivery Inspection 2: Electrical System Voltage Drop for further details on electrical system assessment criteria.

Fuel Tank: Minimum 40-gallon tank mounted within the Forward Console Command Pod. *(Builder's Note: This forward compartment is physically separated from the aft battery compartment by the 18-inch mid-ship crossover gap, ensuring complete isolation of the fuel and primary electrical systems).*

- **Bilge Pumps & Drains:** Two (2) 2000 GPH bilge pumps and two (2) heavy-duty threaded garboard drain plugs.

Pump Location: Pumps must be mounted at the absolute lowest, aft-most point of the hull, directly against the interior of the 27-inch transom.

Serviceability Requirement: All bilge pump wiring and discharge hoses must be installed with a minimum 24-inch "service loop" (excess slack) to allow the pumps to be pulled completely up through the aft deck access hatches for replacement or servicing.

Instrumentation & Electronics Network:

The console shall be equipped with at minimum the following:

1) Tachometer, stand-alone Water Pressure Gauge, Fuel Gauge, Trim Gauge, Jack Plate Height Indicator Gauge, Hour Meter, and a Voltmeter.
2) A marine-grade, waterproof 12V / USB combination charging port shall be installed on the console dash.
3) A NMEA 2000 Network Backbone must be installed and connected to the engine and any compatible electronics to allow for data sharing.
4) A digital fuel flow sensor shall be installed in-line and connected to the NMEA 2000 network to provide real-time fuel economy data (GPH/MPG).

2.4.1 Interference-Free Rigging: All electrical wiring, control cables, and hydraulic/fuel hoses must be routed and secured to prevent chafing, pinching, or binding during operation. During the sea trial, the COR will perform lock-to-lock steering tests and fully cycle all systems (hatches, jack plate) to ensure no interference exists. Any identified points of interference will constitute an inspection failure.

Safety & Hardware: USCG safety equipment, six (6) docking cleats, two bow eyes, interior hull mounted USCG fire extinguisher, life ring, built-in horn, standard navigation lights, capacity placard, emergency shutoff lanyard, spare plugs.

2.4.2 Corrosion Control: All hardware, fasteners, and metallic components must be installed in a manner that prevents galvanic corrosion. All stainless-steel fasteners (bolts, screws, snaps) used in contact with aluminum must be fully isolated using nylon/Teflon washers, bushings, and a coating of a suitable marine-grade anti-seize compound (e.g., Tef-Gel). No bare stainless steel shall be in direct contact with bare aluminum.

2.5 Trailer

Type: Tandem axle galvanized steel trailer (5000-5500 lbs. each) with electric-over-hydraulic brakes on both axles and 15-inch wheels.

Calipers & Rotors: Stainless Steel Calipers and Rotors (or at least Dacromet-coated components) rather than standard painted steel.

Actuator Pump: Ensure the electric actuator pump (the brain of the EOH system) is mounted high up on the trailer tongue near the coupler, well above the maximum water-submersion line.

Support: Rollers on the front two-thirds, bunks on the rear third.

Features: Submersible LED lights, guide rails, winch/strap rear tie-downs, jack, matching spare & rim with tire with mount, greaseable bearing hubs.

Step Fenders: Heavy-duty fenders with side steps (min. 12 inches in length) on the front and rear of the fender to assist getting in and out of boat while on trailer.

Suspension: Leaf spring system.

Hitch: A 2” ball is preferred size.

Standards: Meets all DOT federal safety regulations.

Mandatory In-Process and Upon Delivery Inspection: See Section 6.3.8, Hold Point 8: Certified Weight & Trailer Tongue Verification (Pre-Shipment) and 6.4.7 Delivery Inspection 7: Trailer System Verification: Hitch to vehicle, verify lights, brakes, and hull fit.

3. Miscellaneous & General Requirements

1) Bill of sale and title must be furnished upon receipt of vessel.

2) One (1) complete set of operation and maintenance manuals and pertinent literature furnished.

3) Vendor must be authorized by the manufacturer to sell the brand they quote.

4) Boat will meet all U.S. Coast Guard requirements, NMMA certification standards, and marked with appropriate signage.

4. Vendor Value Engineering & Alternative Proposals

The specifications detailed herein represent the Government's ideal baseline design for extreme shallow-water durability. All specified minimum aluminum material thicknesses are absolute, non-negotiable requirements. However, Bidders are highly encouraged to submit proposals utilizing their own proven, value-engineered fabrication methods (e.g., alternative structural grids or 5052-H32 in lieu of 5086-H116). Proposed alternatives must explain how they provide functionally equivalent structural rigidity. *(See Section 6.2.7 for how accepted alternatives modify QASP parameters).*

5. Delivery, Payment & Award Criteria

Option: Bidders are requested to submit a separate line-item charge for delivery to: U.S. Army Corps of Engineers Maintenance Facility, Fort Randall Project, 113 Randall Creek Road, Pickstown, SD 57367.

Payment: Payment will be within 30 days following delivery and acceptance by the Government and receipt of a proper invoice.

Delivery Date: Delivery of the boat and trailer shall be no later than April 30th of 2027.

Award Criteria ("Best Value"): Contract award will be made to the responsible Offeror whose proposal represents the best overall value to the Government. Proposals will be evaluated based on the following factors, Factors 1,2, and 3 are of equal importance:

Priority	Evaluation Criterion & Description
1	Design and Construction (Structural integrity, tunnel design, and material specifications) and any proposed value-added features exceeding the baseline specification)

Priority	Evaluation Criterion & Description
2	Warranty (Minimum 12-month complete coverage with local/on-site service options, and ability to meet or beat the April 30, 2027, deadline)
3	Past Performance (Demonstrated experience with successful fabrication of heavy-gauge aluminum vessels (20-30 ft) featuring integrated tunnel/jack plate builds under rigorous testing protocols.
4	Price (Overall cost-effectiveness and fair/reasonable pricing)

6. Quality Assurance Surveillance Plan (QASP) & Pre-Acceptance Testing

6.1 General Acceptance & Government-Contractor Relationship

The objective of this QASP is to foster continuous communication and collaboration between the Government and the Builder. Final acceptance of the vessel and subsequent payment by the Government are strictly contingent upon the successful completion of all Quality Assurance Surveillance Plan (QASP) Hold Points during construction, as well as a mandatory Pre-Acceptance Delivery Inspection and Float Test. The Government recognizes that boat building is a dynamic process; therefore, this QASP utilizes Acceptable Quality Levels (AQLs) and formal variance procedures to allow flexibility, ensure efficiency, and promote a partnership approach where hydrodynamic and mission safety are not compromised. The vessel shall be delivered in "turn-key condition," fully rigged, with the specified heavy-cup propeller installed, and ready for immediate operational deployment.

6.2 Project Management & QASP Administration

6.2.1 Welder Certification & Personnel Qualifications: The Builder shall be responsible for ensuring that all personnel performing primary structural welds on the vessel hull, transom, stringer system, and other load-bearing components are certified in accordance with the American Welding Society (AWS) D1.2/D1.2M: Structural Welding Code – Aluminum. Prior to the commencement of any hull fabrication, the Builder shall submit to the COR a "Welder Certification Package." This package must contain copies of the active and valid welding certifications for each welder assigned to perform structural welding. The Government reserves the right to reject any proposed personnel who do not hold a current, relevant certification. The Builder is responsible for maintaining these records.

6.2.2 Project Manager Designation & Reporting: Within five (5) days of contract award, the Builder shall designate a primary Project Manager. The Builder must provide a bi-weekly written progress report to the COR, including current timestamped photographs of construction.

6.2.3 Timely Provision of QASP Documentation (Milestone Reviews): The Builder shall submit required QASP documentation to the COR a minimum of five (5) business days prior to the scheduled date of concealment or progression. *Exception:* For time-sensitive, critical-path inspections (such as Hold Point 1 or Hold Point 3), the Builder may request an expedited 48-hour review, provided the COR was given a courtesy notification at least 5 business days in advance of the submittal's arrival. To mitigate risk, the Government encourages virtual or in-person "Joint QASP Baseline Meetings" and "In-Process Reviews" prior to critical hold points.

6.2.4 Variance & Equivalency Request Process: The Government acknowledges potential supply chain shortages or manufacturing constraints. The Builder may submit an "Equivalency Request" or "Variance Request" to the COR for alternative components or alternative construction sequences if supply chain delays occur. The COR will review and respond promptly.

6.2.5 Discrepancy Notification and Cure Plan: If a Hold Point or Inspection uncovers a discrepancy, it shall not result in immediate default. Instead, the Builder and COR will collaboratively establish a mutually agreed-upon "Cure Plan" and timeline for correction.

6.2.6 Consequences of Unauthorized Progression: Under no circumstances shall the Builder proceed past a designated Hold Point without explicit, written authorization or an approved Variance Request. If the Builder proceeds and conceals work subject to a Hold Point without approval, they shall be considered in breach and required to remove obstructing materials to allow physical inspection at their expense.

6.2.7 QASP Modifications for Accepted Design Alternatives (Living Document Clause): The Government acknowledges that the Builder may identify opportunities for improved efficiency, performance, or value. If the Builder submits, and the Contracting Officer (KO) formally approves, a design alternative, material substitution, or Value Engineering Change Proposal (VECP) that alters the vessel's baseline specifications, this QASP shall be treated as a living document. Upon approval, the COR and Builder shall mutually review and revise the affected QASP metrics to accurately reflect the new design before testing begins.

6.3 Phase I: In-Process Verification (Vendor Provided During Construction)

The Builder must capture and submit the following documentation packages to the COR for written approval at designated "Hold Points."

Hold Point	Focus Area	Required Submittal Package	AQL / Flexibility & Critical Tolerances
1	**Stringer Geometry & Tunnel Integration**	Stringer Geometry Verification Package	**CRITICAL:** Stringer and tunnel taper geometry must be maintained within 1.5% of the approved 3D CAD design. Variances up to 5% are strictly prohibited due to severe hydrodynamic safety and speed degradation risks.
2	**Internal Structure & Transom Support**	Internal Structure Photo Package	Minor weld aesthetic variances acceptable if structurally sound.
3	**Initial Tunnel Finish Verification**	Initial Flushness Verification Video	0.010" gauge test target; isolated gaps up to 0.015" acceptable upon review.
4	**Sub-Deck Systems (Fuel & Flotation)**	Sub-Deck Systems Package	**CRITICAL Weight & Center of Gravity (CG) Balance Sheet:** The Builder shall submit a calculated Weight & Center of Gravity (CG) model showing the predicted Longitudinal Center of Gravity (LCG) with the specified engine, full fuel, and passenger load. The COR must review and approve this placement to ensure the vessel will not be "stern-heavy" before the sub-deck is permanently sealed and the engine is rigged. Standard ABYC compliance required for fuel/flotation.

Hold Point	Focus Area	Required Submittal Package	AQL / Flexibility & Critical Tolerances
5	**Electrical Material & Factory Load Test**	Cable, Termination & Pre-Shipment Voltage Report	Voltage drop target < 3%. AQL up to 4% with COR engineering review.
6	**Surface Prep (Paint & Non-Skid)**	Surface Prep Log	Visible welds in non-cosmetic areas are completely acceptable.
7	**Builder Pre-Delivery Sea Trials**	Pre-Delivery Sea Trial Log	Independent pre-delivery sea trial utilizing the exact parameters in Section 6.4.8. Builder shall document results and submit video evidence to the COR.
8	**Certified Weight & Trailer Tongue Verification**	Certified Scale Ticket	Prior to shipment, the Builder must provide a certified scale ticket showing: Total Weight and Tongue Weight (must be 10%-15% of total combined weight on hitch ball).

6.3.1 Hold Point 1: Stringer Geometry & Tunnel Integration: Required Submittal: “Stringer Geometry Verification Package”. Overhead photos at 12-inch intervals with a centerline string and ruler to mathematically prove the taper of the flanking stringers. Macro photography proving continuous direct-contact welding between stringer and tunnel wall. Continuous HD video walkthrough. **CRITICAL:** Geometry must be maintained within 1.5%.

6.3.2 Hold Point 2: Internal Structure & Transom Support Verification: Required Submittal: “Internal Structure Photo Package” (Prior to decking). Photos showing Transom Knee Brace landings, Transverse Rib Grid, Flotation Pod internal structure, and Structural Weldments.

6.3.3 Hold Point 3: Initial Tunnel Finish Verification: Required Submittal: “Initial Flushness Verification Video” (Prior to etching/priming). Unedited HD video showing “Feeler Gauge Test” (0.010”) at three locations along the tunnel. (AQL: isolated 0.015” acceptable).

6.3.4 Hold Point 4: Sub-Deck Systems (Fuel & Flotation) & CG Verification: Required Submittal: "Sub-Deck Systems Package". Photographic evidence of flotation foam distribution and ABYC/USCG fuel system pressure test proof. Additionally, Builder must submit the **Weight & Center of Gravity (CG) Balance Sheet** for COR approval of engine/fuel placement prior to sealing the deck.

6.3.5 Hold Point 5: Electrical Material, Termination & Factory Load Test: Required Submittal: "Cable, Termination & Pre-Shipment Voltage Report". Photos of battery wire/lugs. Live cranking voltage test video showing drop < 3% (AQL: 4%).

6.3.6 Hold Point 6: Surface Prep (Paint & Non-Skid): Required Submittal: "Surface Prep Log". Documentation demonstrating proper etching and primer application.

6.3.7 Hold Point 7: Builder Pre-Delivery Sea Trials (Mandatory Proof of Performance): Prior to shipping, the Builder shall conduct an independent pre-delivery sea trial utilizing the exact parameters in Section 6.4.8. Builder shall document results in a Pre-Delivery Sea Trial Log and submit video evidence to the COR. Government shipment authorization is strictly contingent upon written approval of this log.

6.3.8 Hold Point 8: Certified Weight & Trailer Tongue Verification (Pre-Shipment): Prior to shipment, the Builder must provide a certified scale ticket to the COR showing: (1) **Total Weight:** Combined boat, motor, trailer, and accessories (must not exceed trailer's 5,500 lbs capacity). (2) **Tongue Weight:** Must physically measure between **10% and 15%** of the total combined weight on the hitch ball to guarantee safe highway towing. *Action:* If tongue weight is outside this 10%-15% window, the Builder must adjust the winch stand and trailer axle positions at their facility prior to receiving shipment authorization.

6.4 Phase II: Pre-Acceptance Verification (Government Evaluated Upon Delivery)

The following physical inspections and tests will be performed upon delivery. Successful completion is required for final acceptance and payment.

6.4.1 Delivery Inspection 1: Tunnel Channel Finish (The Feeler Gauge Test): Government inspector physically checks water-contacting surfaces using a 24-inch metal straightedge (0.010" target, AQL 0.015").

6.4.2 Delivery Inspection 2: Electrical System Voltage Drop: Government measures voltage drop during peak cranking load (Target < 3%, AQL 4%).

6.4.3 Delivery Inspection 3: Dimensional & Layout Conformance: Tape measure verification of critical dimensions.

6.4.4 Delivery Inspection 4: Watertight Integrity Test (Storage): Gasketed hatches closed; medium-pressure water hose spray for 60 seconds.

6.4.5 Delivery Inspection 5: Final Fit & Finish Review: Punch list review and documentation handover (manuals, warranty, registration).

6.4.6 Delivery Inspection 6: Jack Plate Performance Verification: Verified equivalent characteristics per Section 2.2. Performance Test: Full vertical range travel time target is under 8.0 seconds. AQL: Up to 8.5 seconds acceptable pending COR review.

6.4.7 Delivery Inspection 7: Trailer System Verification: Hitch to vehicle, verify lights, brakes, and hull fit.

6.4.8 Delivery Inspection 8: Mandatory Performance Sea Trial & Systems Tests: Conducted jointly under Full Mission Load.

Hull Watertight Integrity & Pump Test: Bilges checked after 30 min; pumps/scuppers tested.

Systems Integration: NMEA 2000 network verified.

Shallow-Water Takeoff: Jack plate raised 3.5”–5.0”. Full throttle from stop. Target time-to-plane < 5.0 seconds (AQL: 6.0 seconds). Zero ventilation.

High-Speed Tactical Turn: Jack plate at 0 inches. 25–30 knots, execute aggressive 180-degree turn. Propeller maintains grip (AQL: minor correctable ventilation).

Maximum Elevation Cruise: Jack plate raised to maximum height (6.0 inches active hydraulic lift / 7.5 inches total system rise). Maintain straight-line cruise for 2 minutes. Vessel maintains plane with stable water pressure.

6.5 Discrepancy Resolution & Failure to Meet Criteria

If the vessel fails to meet Phase I or Phase II targets, the Government and Builder will enact a Cure Plan. The Builder is responsible for costs associated with reasonable rework, re-tuning, or structural rework to correct deficiencies. The Government guarantees the right to cure prior to any refusal of acceptance. The vessel will not be accepted until all finalized QASP criteria are successfully passed.

7. Warranty Submission & Evaluation Requirements

7.1 Pre-Award Proposal Submission Requirement

The Offeror shall submit their complete, legally binding, standard commercial warranty document in its entirety. A marketing summary or brochure is strictly unacceptable. Failure to include actual warranty terms may render the offeror non-responsive.

7.2 Pre-Award Warranty Evaluation

The Government will evaluate the warranty prior to vendor selection to ensure it contains no terms that conflict with or limit operational requirements. If the commercial warranty contains conflicting clauses, the Offeror must submit a formal addendum/waiver explicitly overriding those exclusions.

7.3 Minimum Acceptable Warranty Coverage (Evaluation Criteria)

Government/Commercial Use: Explicit statement that coverage is fully valid for 'commercial,' 'governmental,' or 'public service' use without diminishing terms.

Coverage Term: Coverage for the entire vessel (hull, structure, components) for a period of no less than twelve (12) months from final delivery and acceptance.

Claims & Repair Location: Warranty service must be allowed either on-site at the Government's facility (Fort Randall Project) or by a local authorized service center. Shipping to the factory at Government expense is unacceptable.

Parts and Labor: Warranty shall cover 100% of costs for both parts and labor at standard regional shop rates.

Component Pass-Throughs: Clearly delineate builder's warranty versus pass-through warranties (engine, jack plate, electronics), ensuring no gaps in coverage.